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POST-APPLICATION DRAFT BASIC ASSESSMENT REPORT

FOR THE

PROPOSED DEVELOPMENT OF HEROLDS BAY COUNTRY ESTATE ON A PORTION OF PORTION 7, FARM BUFFELSFONTEIN NO. 204, HEROLDS BAY, WESTERN CAPE

In Terms Of The National Environmental Management Act, 1998 (Act No. 107 Of 1998) And The Amended (April 2017) Environmental Impact Assessment Regulations, 2014

PREPARED FOR: LONG ISLAND TRADING 44 (PTY) LTD
POST NET SUITE 194,
PRIVATE BAG X 6950
GEORGE

DATE: September 2020

SES REF NO: CT04/06_DBAR_09
DEA&DP REF NO: 16/3/3/1/D2/29/0008/20

Western Cape Government
Environmental Affairs and Development Planning

FORM NO. BAR10/2019

BASIC ASSESSMENT REPORT

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

NOVEMBER 2019

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

GENERAL PROJECT DESCRIPTION

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

Proposed Development of Herolds Bay Country Estate on a Portion of Portion 7, Farm Buffelsfontein No. 204, Herolds Bay, Western Cape.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

DEPARTMENTAL DETAILS

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

MAPS

Provide a location map (see below) as Appendix A1 to this BAR that shows the location of the proposed development and associated structures and infrastructure on the property.	
Locality Map:	The scale of the locality map must be at least 1:50 000. For linear activities or development proposals of more than 25 kilometres, a smaller scale e.g., 1:250 000 can be used. The scale must be indicated on the map. The map must indicate the following: • an accurate indication of the project site position as well as the positions of the alternative sites, if any; • road names or numbers of all the major roads as well as the roads that provide access to the site(s) • a north arrow; • a legend; and • a linear scale. For ocean based or aquatic activity, the coordinates must be provided within which the activity is to be undertaken and a map at an appropriate scale clearly indicating the area within which the activity is to be undertaken. Where comment from the Western Cape Government: Transport and Public Works is required, a map illustrating the properties (owned by the Western Cape Government: Transport and Public Works) that will be affected by the proposed development must be included in the Report.
Provide a detailed site development plan / site map (see below) as Appendix B1 to this BAR; and if applicable, all alternative properties and locations.	
Site Plan:	Detailed site development plan(s) must be prepared for each alternative site or alternative activity. The site plans must contain or conform to the following: • The detailed site plan must preferably be at a scale of 1:500 or at an appropriate scale. The scale must be clearly indicated on the plan, preferably together with a linear scale. • The property boundaries and numbers of all the properties within 50m of the site must be indicated on the site plan. • On land where the property has not been defined, the co-ordinates of the area in which the proposed activity or development is proposed must be provided. • The current land use (not zoning) as well as the land use zoning of each of the adjoining properties must be clearly indicated on the site plan. • The position of each component of the proposed activity or development as well as any other structures on the site must be indicated on the site plan. • Services, including electricity supply cables (indicate aboveground or underground), water supply pipelines, boreholes, sewage pipelines, storm water infrastructure and access roads that will form part of the proposed development **must** be clearly indicated on the site plan. • Servitudes and an indication of the purpose of each servitude must be indicated on the site plan. • Sensitive environmental elements within 100m of the site must be included on the site plan, including (but not limited to): o Watercourses / Rivers / Wetlands o Flood lines (*i.e.,* 1:100 year, 1:50 year and 1:10 year where applicable); o Coastal Risk Zones as delineated for the Western Cape by the Department of Environmental Affairs and Development Planning ("DEA&DP"): o Ridges; o Cultural and historical features/landscapes; o Areas with indigenous vegetation (even if degraded or infested with alien species). • Whenever the slope of the site exceeds 1:10, a contour map of the site must be submitted. • North arrow A map/site plan must also be provided at an appropriate scale, which superimposes the proposed development and its associated structures and infrastructure on the environmental sensitivities of the preferred and alternative sites indicating any areas that should be avoided, including buffer areas.
Site photographs	Colour photographs of the site that shows the overall condition of the site and its surroundings (taken on the site and taken from outside the site) with a description of each photograph. The vantage points from which the photographs were taken must be indicated on the site plan, or locality plan as applicable. If available, please also provide a recent aerial photograph. Photographs must be attached to this BAR as **Appendix C**. The aerial photograph(s) should be supplemented with additional photographs of relevant features on the site. Date of photographs must be included. Please note that the above requirements must be duplicated for all alternative sites.

Biodiversity Overlay Map:	A map of the relevant biodiversity information and conditions must be provided as an overlay map on the property/site plan. The Map must be attached to this BAR as **Appendix D**.
Linear activities or development and multiple properties	GPS co-ordinates must be provided in degrees, minutes and seconds using the Hartebeeshoek 94 WGS84 co-ordinate system. Where numerous properties/sites are involved (linear activities) you must attach a list of the Farm Name(s)/Portion(s)/Erf number(s) to this BAR as an Appendix. For linear activities that are longer than 500m, please provide a map with the co-ordinates taken every 100m along the route to this BAR as **Appendix A3**.

ACRONYMS

BAR:	Basic Assessment Report
CBA:	Critical Biodiversity Area
DAFF:	Department of Forestry and Fisheries
DEA:	Department of Environmental Affairs
DEA& DP:	Western Cape Government: Department of Environmental Affairs and Development Planning
DHS:	Department of Human Settlement
DoA:	Department of Agriculture
DoH:	Department of Health
DWS:	Department of Water and Sanitation
EIA:	Environmental Impact Assessment
EMPr:	Environmental Management Programme
ESA:	Ecological Support Area
HWC:	Heritage Western Cape
I&APs:	Interested & Affected Parties
NEMA:	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEM:AQA:	National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
NEM:ICMA	National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008)
NFEPA:	National Freshwater Ecosystem Protection Assessment
NHRA:	National Heritage Resources Act, 1999 (Act No. 25 of 1999)
NSBA:	National Spatial Biodiversity Assessment
PPP:	Public Participation Process
TOR:	Terms of Reference
WCBSP:	Western Cape Biodiversity Spatial Plan
WCG:	Western Cape Government

ATTACHMENTS

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

The following checklist of attachments must be completed.

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

	Appendix E9:	**Comment from WCG: DoH**	X
	Appendix E10:	**Comment from DEA&DP: Pollution Management**	X
	Appendix E11:	**Comment from DEA&DP: Waste Management**	X
	Appendix E12:	**Comment from DEA&DP: Biodiversity**	X
	Appendix E13:	**Comment from DEA&DP: Air Quality**	X
	Appendix E14:	**Comment from DEA&DP: Coastal Management**	X
	Appendix E15:	**Comment from the local authority**	✓
	Appendix E16:	**Confirmation of all services (water, electricity, sewage, solid waste management)**	See Addendum 2 Engineering Report
	Appendix E17:	**Comment from the District Municipality**	X
	Appendix E18:	**Copy of an exemption notice**	X
	Appendix E19	**Pre-approval for the reclamation of land**	X
	Appendix E20:	**Proof of agreement/TOR of the specialist studies conducted.**	✓
	Appendix E21:	**Proof of land use rights**	X
	Appendix E22:	**Proof of public participation agreement for linear activities**	X
Appendix F:	**Public participation information: including a copy of the register of I&APs, the comments and responses Report, proof of notices, advertisements and any other public participation information as is required.**		✓
Appendix G:	**Specialist Report(s)** **G.1: Agricultural Potential Evaluation 2005** **G.2: Botanical Report for Farm Buffelsfontein** **G.3: Freshwater Habitat Assessment Report** **G:4: Socio-economic Impact Assessment** **G.5: Visual Statement**		✓
Appendix H:	**EMPr**		✓
Appendix I:	**Screening tool report**		✓

Appendix J:	**The impact and risk assessment for each alternative**	X
Appendix K:	**Need and desirability for the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013)/DEA Integrated Environmental Management Guideline**	X
Appendix L:	**Technical Reports** **APPENDIX L.1: Town Planning Report** **APPENDIX L.2: Technical Electrical Services Report** **APPENDIX L.3: Engineering Services Report** **APPENDIX L.4: Traffic Impact Assessment** **APPENDIX L.5: Geotechnical Report**	✓

SECTION A: ADMINISTRATIVE DETAILS

Highlight the Departmental Region in which the intended application will fall	CAPE TOWN OFFICE:		GEORGE OFFICE:
	REGION 1 (City of Cape Town, West Coast District	REGION 2 (Cape Winelands District & Overberg District)	REGION 3 (Central Karoo District & Garden Route District)

Duplicate this section where there is more than one Proponent **Name of Applicant/Proponent:**	Long Island Trading 44 (Pty) Ltd	
Name of contact person for Applicant/Proponent (if other):	Mr Abraham Jacobus Cronje	
Company/ Trading name/State Department/Organ of State:	Long Island Trading 44 (Pty) Ltd	
Company Registration Number:	2015/059002/07	
Postal address:	Post Net Suite 194, Private Bag X 6950	
	George	Postal code: 6530
Telephone:	(087) 944 0888	Cell: 082 804 9710
E-mail:	jacques@gfaholdings.co.za	Fax: ( )
Company of EAP:	Sharples Environmental Services cc	
EAP name:	Betsy Ditcham	
Postal address:	PO Box 443	
	Milnerton	Postal code: 7435
Telephone:	(021) 554 5195	Cell: 082 456 6918
E-mail:	betsy@sescc.net	Fax: (086) 575 2869
Qualifications:	BSc Hons in Wildlife Management (University Pretoria); BSc in Zoology and Ecology (University of Cape Town)	
EAPASA registration no:	Still awaiting adjudication, EAP has submitted application.	
Duplicate this section where there is more than one landowner **Name of landowner:**	Long Island Trading 44 (Pty) Ltd	
Name of contact person for landowner (if other):	Mr Abraham Jacobus Cronje	
Postal address:	Post Net Suite 194, Private Bag X 6950 George	
		Postal code: 6530
Telephone:	(087) 944 0888	Cell: 082 804 9710
E-mail:	jacques@gfaholdings.co.za	Fax: ( )
Name of Person in control of the land:	*(As Above)*	
Name of contact person for person in control of the land:		
Postal address:		
		Postal code:
Telephone:	( )	Cell:
E-mail:		Fax: ( )

Duplicate this section where there is more than one Municipal Jurisdiction Municipality in whose area of jurisdiction the proposed activity will fall:	George Municipality	
Contact person:	Trevor Botha	
Postal address:	PO Box 19,	
	George	Postal code: 6534
Telephone	(044) 801 9111	Cell:
E-mail:	tbotha@george.gov.za	Fax: ( )

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

1.	**Is the proposed development (please tick):**	**New**	✔	Expansion	
2.	Is the proposed site(s) a brownfield of greenfield site? Please explain.				
A greenfield site, the proposed site is currently used for agricultural activities and is described as largely transformed and undeveloped.					
3.	**For Linear activities or developments**				
3.1.	**Provide the Farm(s)/Farm Portion(s)/Erf number(s) for all routes:**				
N/A					
3.2.	**Development footprint of the proposed development for all alternatives.**				m²
N/A					
3.3.	**Provide a description of the proposed development (e.g. for roads the length, width and width of the road reserve in the case of pipelines indicate the length and diameter) for all alternatives.**				
N/A					
3.4.	**Indicate how access to the proposed routes will be obtained for all alternatives.**				
N/A					
3.5.	**SG Digit codes of the Farms/Farm Portions/Erf numbers for all alternatives**	N/A			
3.6.	**Starting point co-ordinates for all alternatives**				
	Latitude (S)	N/A	‘	“	
	Longitude (E)	N/A	‘	“	
	Middle point co-ordinates for all alternatives				
	Latitude (S)	N/A	‘	“	
	Longitude (E)	N/A	‘	“	
	End point co-ordinates for all alternatives				
	Latitude (S)	N/A	‘	“	
	Longitude (E)	N/A	‘	“	
Note: For Linear activities or developments longer than 500m, a map indicating the co-ordinates for every 100m along the route must be attached to this BAR as Appendix A3.					
4.	**Other developments**				
4.1.	**Property size(s) of all proposed site(s):**				65 400m²
4.2.	**Developed footprint of the existing facility and associated infrastructure (if applicable):**				N/A
4.3.	**Development footprint of the proposed development and associated infrastructure size(s) for all alternatives:**				193 700m²
4.4.	**Provide a detailed description of the proposed development and its associated infrastructure (This must include details of e.g. buildings, structures, infrastructure, storage facilities, sewage/effluent treatment and holding facilities).**				

THE PROPOSED DEVELOPMENT

Long Island Trading 44 (Pty) Ltd is proposing to develop a Housing Estate on a Portion of Portion 7 of Farm Buffelsfontein No. 204 situated in Herolds Bay, Western Cape. The proposed development encompasses 102 single residential erven, 68 group housing units, a filling station, 750m² convenience centre, 250m² restaurant and 300m² offices.

A summary breakdown of the proposed development is given in the table below.

ZONING	LAND USE	NUMBER	AREA (HA)	%
Residential Zone i	Single Dwelling *	102	9.019	47
General Residential Zone II	Group Housing **	3	3.613	19
Business Zone II **Business Zone IV******	Shop *** Office Space ***	1	0.958	5
Open Space II	Private Open Space	3	1.334	7
Transport Zone III	Private Road	1	3.209	16

Transport Zone II	Public Street	1	1.283	6
Servitude	Package Plant	1	0.0106	0.05

*Average erf size = 882m² (min. +/- 733m² and max. = 1020m² – excl. Ptn 65 with existing dwelling)
** Average density:
Ptn 103 = 16 units @ 25,8 / ha
Ptn 104 = 32 units @ 18,4 / ha
Ptn 105 = 20 units @ 16,1 / ha
*** SHOP (Restaurant / Supermarket / Service Station)
**** OFFICE (300m² floor space)

The Site Development Plan (SDP) of the commercial erf, as prepared by Brink Stokes Mkhize Architects, is shown below and is also included as addendum.

Figure 1: The Site Development Plan (SDP)

Bulk Services
The proposed development is classified from an engineering bulk services perspective as an infill development with infill taking place between the existing Herolds Bay township and Oubaai Golf Estate. Infill development is desirous from a bulk engineering services perspective as all or most bulk municipal services are usually already available and in place.

Such infill development will improve the holistic financial sustainability of the local municipality due to additional rates and taxes being generated without the burden of additional capital outlay. According to the Engineering Report, the proposed infill development would subsequently not trigger unaffordable capital cost burdens to the local municipality but would in fact strengthen the financial sustainability of the municipality in both the short- and longer term.

Commercial Buildings
The proposed development would include approximately 68 group housing units, divided into 3 clusters as shown on the development layout. A 750m² convenience centre, 250m² restaurant and 300m² office complex would be constructed on the commercial erf, along with the proposed filling station.

Filling station
The filling station will be a prime attractor on the commercial property, in association with the restaurant and convenience shop.

The design will be finalized during the design stage. Of note are the following conceptual design criteria:

- Fuel delivery truck manoeuvres accommodated on site and indicated on concept layout.
- Allowance in layout for fuel loading bay of 22m.
- Fuel tank configuration will be 3 x 23kl (2 x diesel and 1 x ulp), thus total of 69kl storage
- Fuel tanks will be double walled
- Access width of 7.4m, with 1m additional surfaced shoulders on both sides, total surfaced access of 9.4m.
- Access bellmouth radius 15m.
- Asphalt surfacing 30mm.
- Concrete forecourt.
- 3 pump islands (design for 4, i.e. future expansion)
- Drizit fuel & oil trap for forecourt
- Pavement structural materials to be imported from commercial sources.
- Site crossfall of minimum 0.5%.

Roads and Access

Internal road standards and design criteria are specified as follows:

- Internal road widths of between 5.2m and 7.4m, depending on road class
- Asphalt surfacing 30mm.
- Pavement structural materials to be imported from commercial sources.
- All minimum radii at bellmouths to be 8m.
- Minimum road grade of 0.4% and camber of 2%.
- Road design life of 20 years.

The entire site would have controlled access and would be bordered by a wall along the adjacent roads and a fenceline along the internal borders.

Water

According to the consulting engineers, the annual average daily water demand for the proposed development would be 131kl/day. The site is already serviced by a 200 mm bulk water line along the Oubaai Main Road.

Design Criteria and Standard of Engineering Services

- Design consumption
  - Single residential erven – 900l/unit/day
  - Group housing units – 500l/unit/day
  - Convenience shop – 400l/100m2/day
  - Restaurant – 500l/100m2/day
  - Office space – 400l/100m2/day
- Peak factors as prescribed
- Minimum pressures for the network are calculated for a fire flow 30l/sec and peak demand at the point of lowest pressure under peak conditions.
- Maximum of 4 valves to isolate a pipe section.
- Maximum length of 600m of main pipe per isolated section.
- Air valves to be provided where applicable.
- Minimum cover to pipes to be 900mm.
- Pipe type and class to be uPVC class 6 to 12, depending on existing network pressure.
- Pipe diameters varying between 63mm and 90mm depending on pressure available and flow required.
- Erf connections to be HDPE Class 10.
- Erven to be serviced with a 20mm connection and Aqua-Loc box and meter.
- Fire hydrants to be provided in accordance to relevant guidelines and legislation.

Approval received from the municipality was conditional upon the provision of a new 160mm diameter bulk water line in the western portion of the development. The line would double as the internal reticulation.

Stormwater

A formal stormwater reticulation system will be required and will be provided by a combination of surfaced roadways, kerbs, channels, cut-off drains, strormwater pipes and various minor structures. Energy dissipation will be performed as standard practice with gabion mattresses at all outlets. All pipe outlets will be standard concrete headwalls. Litter traps will be provided at all stormwater outlets and will be cleaned on a regular basis by the estate's landscaping and maintenance teams.

The integrated stormwater and road system form an integral part of layout planning. The system rests on three legs, namely the minor system, the major system and the emergency system. Minor storms and normal flow off will be catered for in the normal road prism and piped system. Major storms would be routed through a linked system of road prisms and public open spaces, using attenuation techniques. The emergency system recognizes failure of the minor and major systems and provides for emergency runoff by providing continuous overland flow routes to minimize flooding of residential areas.

The following standards and design criteria are envisaged:

- Minor system designed for 2-year return period and conveyed in a combination of maximum 200m aboveground in the road prism and underground piped system.
- Major system designed for 50-year return period. Difference between the 50 year and 2-year flood to be conveyed in the road prism with depths not exceeding 150mm and into designated public open spaces, using attenuation techniques.
- Minimum gradients for pipelines to allow minimum flow speeds of 0.7m/s at full flow.
- Maximum pipeline flow velocities to be 3.5m/s.
- Stormwater pipes to be 100D as required by specific loadings or installation conditions.
- Bedding to be Class C.
- Minimum cover on pipes to be 800mm.
- Minimum pipe diameter to be 450mm.
- Gravel traps to be provided in manholes (where required on steeper slopes).
- Gabion mattresses to be provided at all outlets for energy dissipation.
- Litter traps to be provided at all outlets.
- Outlets to be standard concrete headwalls.

Internal design

Approximately 50% of the site drains towards a general western direction towards Herolds Bay. This area is designated as Zone A (refer diagram) and is divided into three sub-drainage zones, namely Zones A1, A2 and A3. The first zone, Zone A1 has an area of approximately 2.36ha with an estimated 1:2 year peak flow of 0.258m3/s and 1:50 year peak flow of

0.729m3/s and will be routed via the formal stormwater system into a proposed internal detention pond of approximately 1,360m3 in volume (refer diagram). The detention pond will be a focus point in the development with ample landscaping and beautification.

Zone A2 has an area of approximately 5.33ha with an estimated 1:2 year peak flow of 0.582m3/s and 1:50 year peak flow of 1.646m3/s and will be routed through the formal stormwater system into the existing main irrigation dam of approximately 29,000m3 in volume (refer diagram). The outlet from the internal detention pond (Zone A1) will trickle as a minor stream into the existing irrigation dam. This stream will also be a focus point with ample landscaping and beautification.

A last minor portion of Zone A, namely Zone A3 has an area of approximately 1.44ha with an estimated 1:2 year peak flow of 0.157m3/s and 1:50 year peak flow of 0.445m3/s and will discharge directly into the unnamed drainage line to the west of the development crossing underneath the R404 in an existing culvert. Energy dissipation will be performed at this outlet with a gabion mattress design. The existing overflow from the existing main irrigation dam, is also into this drainage line underneath the R404.

Approximately 40% of the site drains towards a north-eastern direction towards Oubaai Golf Estate. This area is designated as Zone B (refer diagram) and has an area of approximately 6.1ha with an estimated 1:2 year peak flow of 0.667m3/s and 1:50 year peak flow of 1.883m3/s. Stormwater will be discharged at this point into an unnamed minor natural stream flowing in a north-eastern direction into the Gwaing River. Energy dissipation will be performed at this outlet with a gabion mattress design. A detention pond is not required at this point as drainage is released into a natural stream with no other development possible downstream into the Gwaing River.

A minor percentage of stormwater of approximately 10% drains towards a south-eastern direction towards the ocean. This area is designated as Zone C (refer diagram) and has an area of approximately 2.19ha with an estimated 1:2 year peak flow of 0.239m3/s and 1:50 year peak flow of 0.676m3/s. Stormwater will be discharged into the existing municipal stormwater network at the existing traffic circle at the access to the development.

The diagrams below respectively indicate the stormwater design zones, stormwater design drawing and the external drainage routes on the proposed development as discussed above. These diagrams area also included as Annexures.

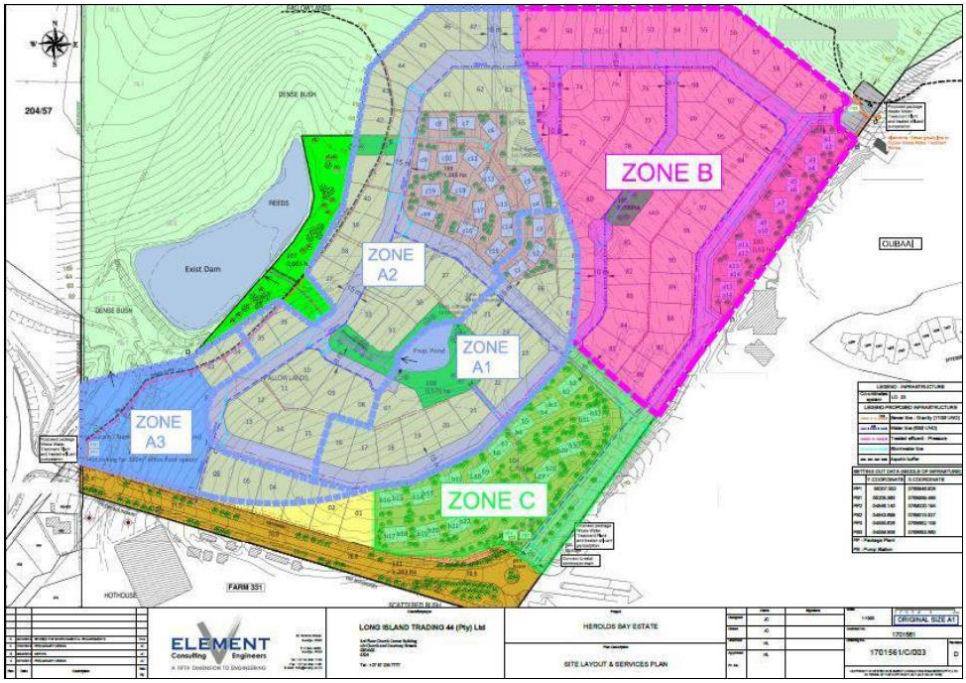


Figure 2: Internal stormwater design zones

Figure 3: Internal stormwater design drawing

Figure 4: External stormwater drainage routes

Electricity

It was noted by BDE Consulting Electrical Engineers, in their report dated 27 November 2018, that the expected demand for the proposed development can be seen in the order of 718kva of the existing stream-medium tension network.

The development site is adjacent to the new Herolds Bay 66/11 kV substation, as well as the Oubaai 11 kV Substation. The existing infrastructure in the area is a High Voltage (66/11 kV) substation (SS Herolds Bay) and a Medium Voltage (11kV) substation (SS Oubaai). Both are adjacent to the proposed development. The municipality requires various servitudes within the development to extend their infrastructure from the adjacent substations to the remainder of Herolds Bay.

An 11 kV underground cable from the adjacent 66/11kV substation will be installed through the development to supply the consumers via strategically placed miniature substations. The low voltage distribution system will be supplied from the above

11/0.4 kV miniature substation via underground low voltage cabling and will supply strategically positioned distribution kiosks. The supply cable to the kiosks will be protected with optimally specified feeder circuit breakers housed inside the minisubstation.

Service connections will be done with underground service cables from these kiosks mentioned above, ending 1 meter x 1 meter inside each single residential site and at a connection box on an external wall for apartment and other buildings as applicable.

Street lighting will be of the low energy, LED type area luminaires, positioned at carefully selected places.

Remote parking-, shuttle service & non-motorized transport facilities

It is recognized that a filling station and limited neighbourhood centre with commercial and office space are much-needed in Herolds Bay. It is further recognized that remote parking are required to facilitate the provision of a shuttle service during peak seasons in order to alleviate seasonal traffic congestion into the Herolds Bay beach area.

It is proposed, as part of the development of the neighbourhood centre, to provide limited safe and convenient seasonal dedicated remote parking to enable a shuttle service to operate to the Herolds Bay beach area. This will bring some relief to the traffic pressure and parking congestion experienced at the beach during peak season. The provision of this dedicated remote parking during peak season has been conceptually discussed with officials of the local municipality. The determination of the number of parking bays, the geometric design and implementation will be discussed with the local municipality.

In addition to the above, safe and dedicated non-motorized transport improvements will be designed and implemented surrounding the proposed development. These will include a.o. pedestrian and cycling facilities. These facilities will serve the larger Herolds Bay community and will link up with similar municipal non-motorized infrastructure into the Herolds Bay township.

Lastly, it is also proposed to engage with the local municipality to provide a future bus stop for the George Integrated Public Transport Network (GIPTN) bus service, at the proposed neighbourhood centre. This proposal has also been conceptually discussed with officials of the local municipality and will be designed to the GIPTN engineering standards.

The diagram below indicates the schematic layout of proposed non-motorized transport facilities (pedestrian walkways) and GIPTN bus stops to be provided at the neighbourhood centre.

Figure 5: Schematic layout of proposed non-motorized transport facilities (pedestrian walkways) and GIPTN bus stops to be provided at the neighbourhood centre.

Sewerage

The proposed development spans over a watershed and three drainage zones have been identified for design and report purposes. Approximately 50% of the site drains towards a general western direction towards Herolds Bay (Zone A). Approximately 40% of the site drains towards a general north-eastern direction towards Oubaai Golf Estate (Zone B). Approximately 10% of the site drains towards a general south-eastern direction towards the ocean (Zone C). These zones are indicated diagrammatically on the figure below:

Figure 6: Sewer Drainage Zones (Source: Element Consulting Engineers, 2019)

The average dry weather flow for the proposed development has been estimated at 120kl/day. The ADWF of Zone A (western zone) can be calculated and estimated as 60kl/day. The ADWF of zone B (north-eastern zone) can be calculated and estimated as 45kl/day. The ADWF of zone C (south-eastern zone) accounts for approximately 15kl/day.

Correspondence with the local municipality indicates that the existing Herolds Bay WWTW located to the south-west of this proposed development does not have any surplus capacity to accommodate the additional flow of the proposed development. The discussions also indicated that the existing sewer network servicing Herolds Bay does not have surplus capacity to accommodate the flow from the proposed development.

The option of connecting into the municipal sewer network was subsequently not pursued further.

As a result, the sewerage treatment solution identified for the proposed development is a package plant at each of the three drainage zones. After thorough research on package plants available in the market, the package plant identified and specified for this development will be a Maskam Clarus Fusion.

The Maskam Clarus Fusion is a 4-stage, modular, biological, activated sludge, package sewage treatment plant. The Maskam Clarus Fusion has a low capital cost outlay, a low operational & maintenance cost and hence a low lifecycle cost of ownership. The plant is gravity fed and have a low energy requirement for the treatment process lifecycle. The treatment media is highly resistant to degradation and remains stable over the long term resulting in little maintenance requirements. Scraping or scarifying is not required. The plant has a small footprint and is quiet in its operation. Treated effluent will be clear and odorless and will meet the Department of Water and Sanitation (DWS) General Standards.

The package plant reduces environmental risk as no raw sewer is accumulated and pumped from any low points and no environmental spill can subsequently occur. Also, having a package plant in each of three drainage zones, further lowers environmental risk by dividing any remaining risks in three.

The treated effluent will be pumped from each of the three package plants to an internal detention pond, subsequent to which it will trickles down as a minor stream through the estate to the large irrigation dam, where it will be utilized for irrigation on the farm.

A detailed process description is provided below.

The Maskam Clarus Fusion is a 4-stage, modular, biological, activated sludge, package sewage treatment plant. The plant consists of four treating chambers internally. A pretreatment and post-treatment process are also prescribed. Pre-treatment will firstly entail a stainless-steel screen for retaining non-sewage matter (plastic bags, rags, sanitary products, etc.) and notices will be published regularly in the homeowners association newsletter that owners should refrain from flushing any of these items into the system. Pre-treatment will secondly entail a concrete buffer-tank with multiple outlets (acting as a splitter box). Each outlet will feed one Maskam Clarus Fusion Unit.

The primary chamber of the Maskam Clarus Fusion package plant will receive sewage from the buffer tank. Here the sludge will settle and digest at the bottom of the tank and the scum will develop on the surface. The solids-free effluent in the middle will be fed by gravity, into the second chamber.

The second chamber is an anaerobic chamber. This chamber contains a sphericalskeleton type of filter media (4.3-inch diameter). Through fixed film processes on the surface of the filter media, biological anaerobic treatment thrives while suspended solids are captured. The microorganisms in this chamber convert nitrates in the recirculated water returning from the aerobic chamber to gaseous nitrogen. The nitrogen then escapes to the atmosphere. The effluent is fed by gravity to the third chamber.

The third chamber is an aerobic filter media chamber. The aerobic floating and circulating filter media chamber consists of an aeration upper section and a filter media lower section. The chamber is filled with hollow, cylindrical filter media (0.6-inch diameter and 0.55 inches long). Biological treatment takes place with the help of the fixed film growth on the filter media surface. Aeration is continuous. Air is introduced with a low-energy air pump. Residual suspended solids are captured by the filter media circulating in this section. The filter media in the aeration chamber are backwashed regularly (10-minute cycle, twice a day) by the backwash system located at the bottom of the chamber. The backwashed water is transferred by an air lift pump back into the sedimentation chamber for further digestion. The effluent is fed by gravity to the fourth chamber.

The fourth chamber is a treated water storage chamber. This chamber is designed to temporarily store treated water coming out of the aerobic filter media chamber. The treated water in the storage chamber is ready for discharge. During normal operation, a recirculation line transfers a small portion of the treated water back into the sedimentation chamber by way of an air lift pump. Effluent released from the unit is lastly post-treated by UV disinfection before pumped further into the scheme as treated effluent.

The figures below respectively contain a diagrammatical 3D view of the unit as well as a diagrammatical top and side view of the unit. The diagrams are also contained as addendum to the report.

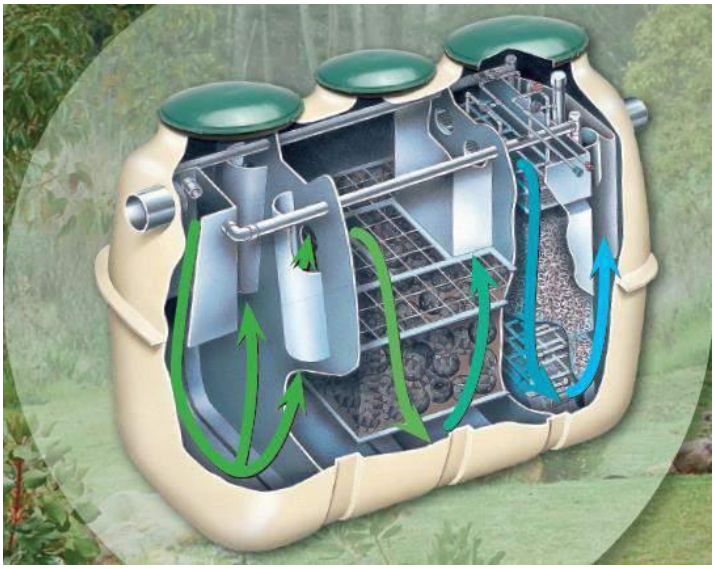


Figure 7: Maskam Clarus Fusion 3D view

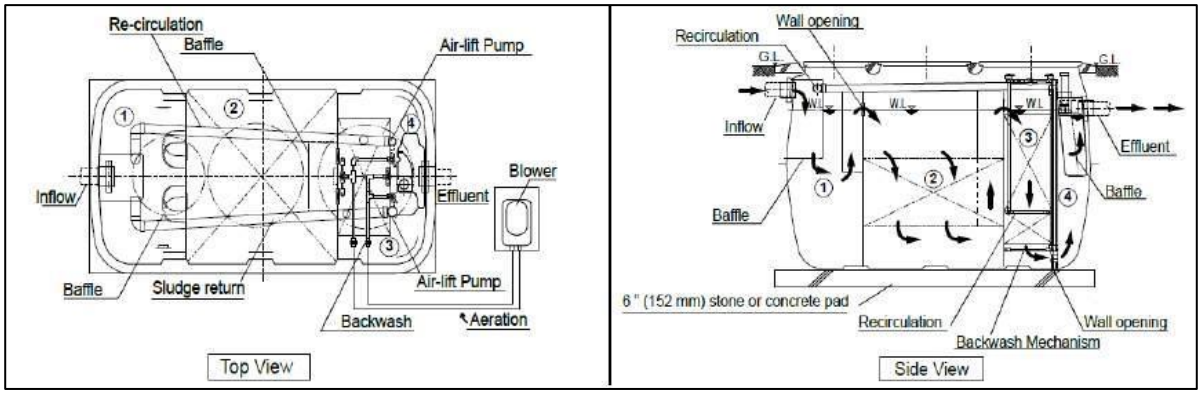


Figure 8: Maskam Clarus Fusion diagrammatic top and side views

Plant design parameter for zones A, B & C

Three drainage zones are identified for the project as discussed earlier in this report, namely zones A, B & C. The plant design for each drainage zone is briefly presented below.

The plant design for zone A is the largest and hence will also be presented diagrammatically:
Zone A (west):

- ADWF 60kl/day
- Installation type – underground
- Stainless steel primary screen
- Buffer tank – 60kl concrete
- Buffer tank size – 5m(w) x 10m(l) x 1.2m(d)
- Unit type – Maskam Clarus Fusion ZF4000
- Unit capacity – 15kl/day/unit
- Number of units – 4 units

- Arrangement of units – parallel
- Size per unit – 4.66m(l) x 2.44m (w) x 2.54m (h)
- Size of parallel unit arrangement (concrete slab area) – 14.76m x 7.16m
- Size of total installation (fenced area) – 20m x 10m
- Post-treatment type – UV
- Treated effluent pumped to detention pond in the middle of the estate (refer SDP) where after it will trickle to the large irrigation dam (refer SDP) on the remainder of the farm for utilization as irrigation water in the farm.

The figures below respectively depict the schematic layout and schematic flow diagrams as well as a tabular summary of inputs and outputs of the zone A installation:

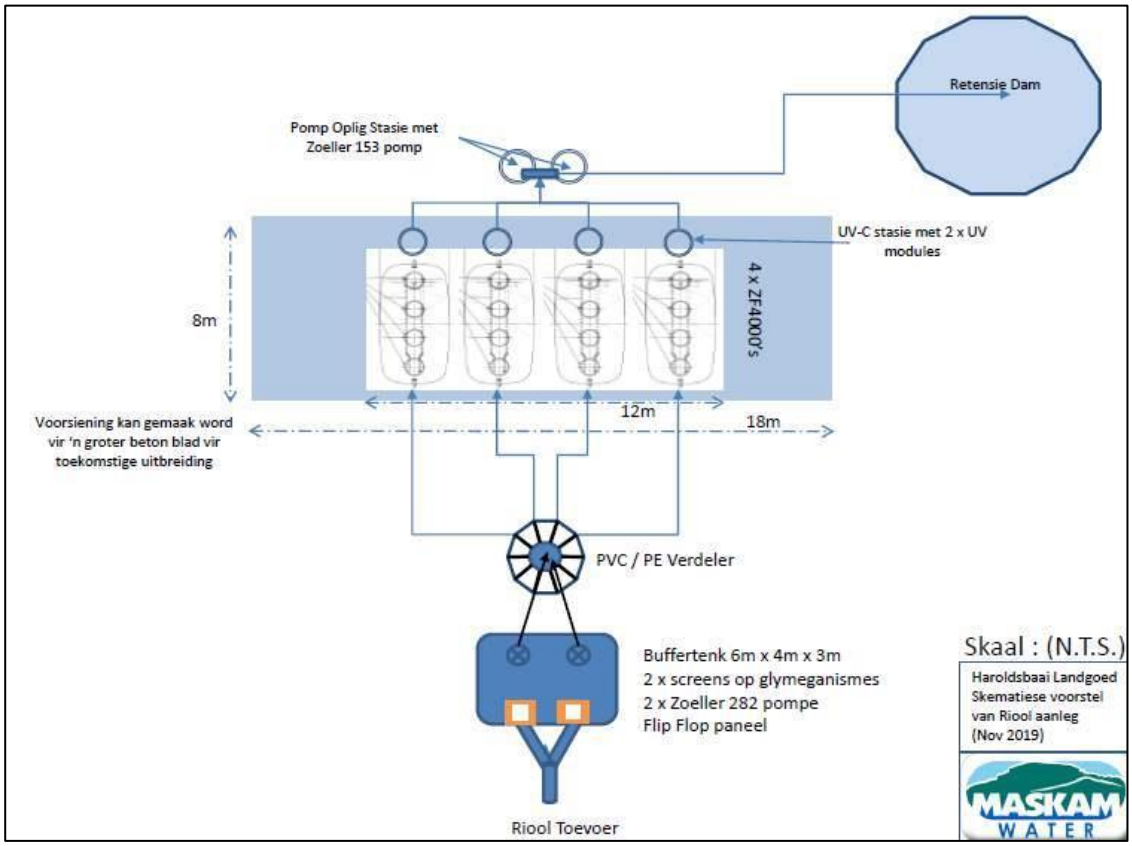


Figure 9: Schematic layout diagram of Zone A installation

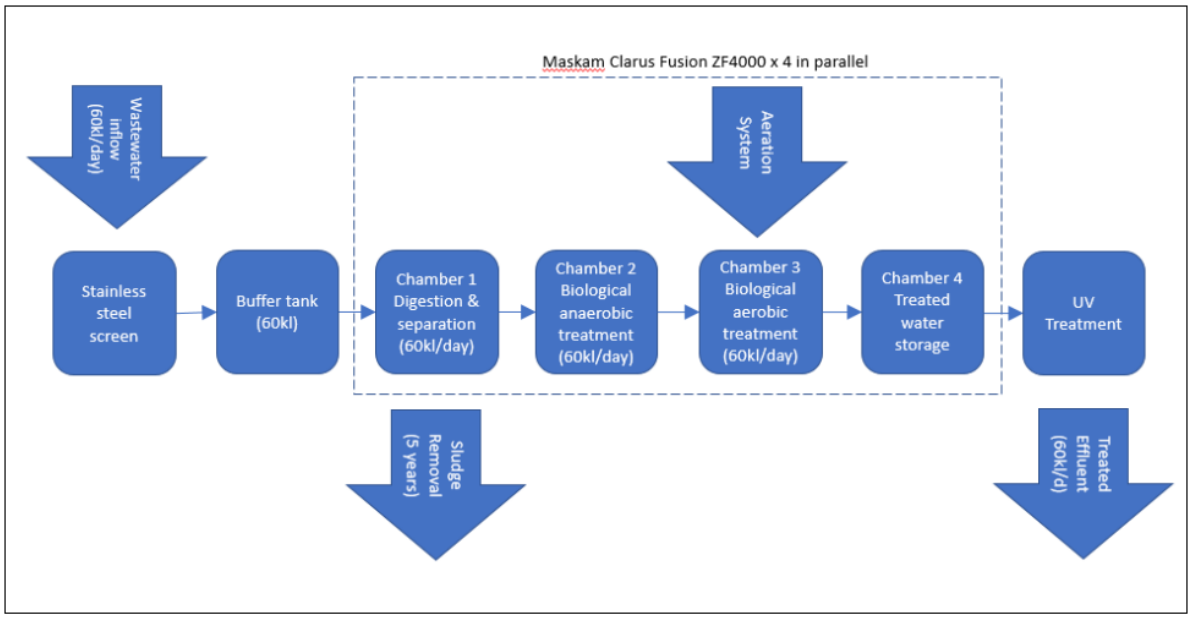


Figure 10: Schematic flow diagram of Zone A installation

The plant design for drainage zones B and C are discussed below. These plant designs will not be presented diagrammatically as they are similar albeit smaller than the plant design for zone A.

Zone B (north-east):

- ADWF 45kl/day
- Installation type – underground
- Stainless steel primary screen
- Buffer tank – 45kl concrete
- Buffer tank size – 5m(w) x 9m(l) x 1m(d)
- Unit type – Maskam Clarus Fusion ZF4000
- Unit capacity – 15kl/day/unit
- Number of units – 3 units
- Arrangement of units – parallel
- Size per unit – 4.66m(l) x 2.44m (w) x 2.54m (h)
- Size of parallel unit arrangement (concrete slab area) – 11.32m x 7.16m
- Size of total installation (fenced area) – 20m x 10m
- Post-treatment type – UV
- Treated effluent pumped to detention pond in the middle of the estate (refer SDP) where after it will trickle to the large irrigation dam (refer SDP) on the remainder of the farm for utilization as irrigation water in the farm.

Zone C (south-east):

- ADWF 15kl/day
- Installation type – underground
- Stainless steel primary screen
- Buffer tank – 15kl concrete
- Buffer tank size – 3m(w) x 5m(l) x 1m(d)
- Unit type – Maskam Clarus Fusion ZF4000
- Unit capacity – 15kl/day/unit
- Number of units – 1 unit
- Arrangement of units – single
- Size per unit – 4.66m(l) x 2.44m (w) x 2.54m (h)
- Size of single unit arrangement (concrete slab area) – 5.44m x 7.16m
- Size of total installation (fenced area) – 10m x 10m
- Post-treatment type – UV
- Treated effluent pumped to detention pond in the middle of the estate (refer SDP) where after it will trickle to the large irrigation dam (refer SDP) on the remainder of the farm for utilization as irrigation water in the farm.

Inspection of the system will be performed by the estate supervisor on a daily basis. Monthly samples of treated effluent will be submitted for laboratory analysis as per legislative requirements and responsible custodianship. The plant will be serviced on a six-monthly basis through a maintenance contract. Although sludge build-up in the system will be minimal due to its design, sludge that do build up will be removed as and when required, but typically will be approximately 5-year intervals. Sludge will be removed to the George regional wastewater treatment works.

Refuse collection

A facility for collecting household waste at the entrance to the proposed development will be installed. A formal agreement will be concluded with the municipality to collect such refuse.

Fat, Oil & Grease (FOG) trap (restaurant)

A fat, oil & grease (FOG) trap is specified at the restaurant on the commercial site. The FOG trap retains all fats, oils and grease from the restaurant and prohibits these substances to flow into the sewer network and into the Maskam sewage package plant. Retention time of 6-hours and a plant of 4kl is specified in order to be most effective. FOG trap to be cleaned on a monthly basis by the restaurant personnel and checked monthly by the estate's maintenance management personnel.

Irrigation

The treated effluent will be utilized for irrigation on the farm.

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

Current and proposed access to the residential development would be obtained via Oubaai Main Road from the existing traffic circle at the entrance to Oubaai Golf Estate. Proposed access to the filling station would be obtained directly from Oubaai Main Road at a point approximately 78m east of the intersection with the R404, opposite an existing intersection servicing an access to the private development to the south. The access points are indicated in the following diagram:

Figure 11: Proposed access points to the development.

According to the Traffic Impact Assessment, sight distances at both of the proposed access points are excellent and would be satisfactory for development purposes in both the vertical and horizontal alignments.

The entire site would have controlled access and would be bordered by a wall along the adjacent roads and a fenceline along the internal borders.

4.6.	**SG Digit code(s) of the proposed site(s) for all alternatives:**	C	0	2	7	0	0	0	0	0	0	0	0	0	2	0	4	0	0	0	0	7

4.7.	**Coordinates of the proposed site(s) for all alternatives:**			
	Latitude (S)	34°	2‘	43.99“
	Longitude (E)	22°	24‘	20.37“

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

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

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

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

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

3. Other legislation

List any other legislation that is applicable to the proposed activity or development.
• The Constitution of South Africa Act, 1998 (Act No. 108 of 1996) • Amended Environmental Impact Assessment Regulations, 2014 • George Land Use Planning By-Law

4. Policies

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

5. Guidelines

List the guidelines which have been considered relevant to the proposed activity or development and explain how they have influenced the development proposal.
• Circular EADP 0028/2014: One Environmental Management System • Guideline for determining the scope of specialist involvement in EIA processes, June 2005. • Guideline for involving biodiversity specialists in the EIA process, June 2005. • Guideline for involving hydrogeology specialists in the EIA process, June 2005. • Guideline for involving visual and aesthetic specialists in the EIA process, June 2005. • Guideline for involving heritage specialists in the EIA process, June 2005. • Guideline for involving social assessment specialists in the EIA process, February 2007. • Guideline on Public Participation (2013) • Guideline on Alternatives (2013) • Guideline on Need and Desirability (2013) • Guideline on Environmental Management Plans (2005) • External Guideline: Generic Water Use Authorization Application Process (2007) • Integrated Environmental Management Information Series 5: Impact Significance (2002) • Integrated Environmental Management Information Series 7: Cumulative Effects Assessment (2004) • Western Cape Biodiversity Spatial Plan Handbook (2017)

GUIDELINES	**How the proposed development complies with and responds:**

Circular EADP 0028/2014: One Environmental Management System	The One Environmental System was taken into consideration for the synchronisation of the Environmental Authorisation process and the WULA process.
Guideline for determining the scope of specialist involvement in EIA processes, June 2005	Guideline considered during the compilation of the Terms of Reference for the Specialists.
• **Guideline for involving biodiversity specialists in the EIA process, June 2005.** • **Guideline for involving hydrogeology specialists in the EIA process, June 2005.** • **Guideline for involving visual and aesthetic specialists in the EIA process, June 2005.** • **Guideline for involving heritage specialists in the EIA process, June 2005.** • **Guideline for involving social assessment specialists in the EIA process, February 2007.**	Guideline consulted while considering the involvement of specialists in the Basic Assessment process.
Guideline on Public Participation (2013)	Guideline considered in the undertaking of the public participation for the proposed development. All relevant provisions contained in the guideline were adhered to in the basic assessment process as appropriate, except where an exemption/ deviation has been granted by the Competent Authority.
Guideline on Alternatives (2013)	Guideline considered when identifying and evaluating possible alternatives for the proposed development. Alternatives that were considered in the impact assessment process are reported on in this Basic Assessment Report (see section E).
Guideline on Need and Desirability (2013)	Guideline considered during the assessment of the Need and Desirability of the proposed development project.
Guideline on Environmental Management Plans (2005)	Guideline considered in the compilation of the EMP attached to this Basic Assessment Report.
Guideline for the Review of Specialist Input into the EIA Process (2005)	Guideline considered during the review and integration of specialist input into this Basic Assessment Report.
External Guideline: Generic Water Use Authorization Application Process (2007)	Guideline considered during the process of applying for the required water use authorization.
Integrated Environmental Management Information Series 5: Impact Significance (2002)	Guideline considering during the identification and evaluation of potential impacts associated with the proposed development, and the reporting thereof in this Basic Assessment Report.
Integrated Environmental Management Information Series 7: Cumulative Effects Assessment (2004)	Guideline considering during the assessment of the cumulative effect of the identified impacts.
Western Cape Biodiversity Spatial Plan Handbook (2017)	This handbook was consulted when determining the desirability of the development within the extent of WCBSP layers.

6. Protocols

Explain how the proposed activity or development complies with the requirements of the protocols referred to in the NOI and/or application form
The following is a summary of the development footprint environmental sensitivities identified by the DEA Screening Tool (see Appendix I). Only the highest environmental sensitivity is indicated.

THEME	VERY HIGH	HIGH	MEDIUM	LOW
Agriculture		X		
Animal Species		X		
Aquatic Biodiversity	X			
Archaeological and Cultural Heritage		X		
Civil Aviation	X			
Plant Species			X	
Defence				X
Terrestrial Biodiversity	X			

According to the results of the screening tool, the following protocols would be appliable to the proposed development:

- Protocol for the specialist assessment and minimum report content requirements for environmental impacts on agricultural resources.
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts on terrestrial biodiversity.
- Protocol for the specialist assessment and minimum report content requirements for environmental impacts on aquatic biodiversity.
- Protocol for the specialist assessment and minimum report content requirements for impacts on civil aviation installations.

Based on the requirements of the Protocols, the following specialist assessments were recommended to be conducted:

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

In response to these recommendations, the following studies were compiled for the proposed development, which is felt addresses all of the potential impact concerns:

- Agricultural Impact Assessment
- Visual Statement
- Terrestrial Biodiversity Impact Assessment with Plant Species Assessment
- Aquatic Biodiversity Impact Assessment
- Socio-Economic Assessment
- Geotechnical & Geohydrological Assessment
- Engineering Services Report

A Notice of Intent to Develop was submitted to Heritage Western Cape, who will recommend whether additional studies with regards to Archaeology / Palaeontology/Cultural Heritage are required.

SECTION D: APPLICABLE LISTED ACTIVITIES

List the applicable activities in terms of the NEMA EIA Regulations

Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 1**	**Describe the portion of the proposed development to which the applicable listed activity relates.**
12	The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;	Although the proposed development layout takes the aquatic buffer zone of a minimum of 32m from the watercourse into consideration, there are areas where the development overlaps this buffer. This infrastructure would possibly exceed 100m^2 in size.
19	The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from a watercourse;	The development of the minor stream which will join the internal detention pond to the existing irrigation dam would require the dredging, excavation, removal or moving of soil, sand, pebbles or rock of more than 10 cubic metres from a watercourse.
24	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 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.	Internal road widths of between 10m and 25m are proposed for the development. The development is considered outside of the urban area.
28	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.	The development is proposed on land used for agriculture and would span an area of approximately 19.37ha outside of the urban area.
Activity No(s):	**Provide the relevant Basic Assessment Activity(ies) as set out in Listing Notice 3**	**Describe the portion of the proposed development to which the applicable listed activity relates.**
10	The development and related operation of facilities or infrastructure for the storage, or storage and handling of dangerous good, where such storage occurs in containers with a combined capacity of 30 but not exceeding 80 cubic meters. i. Western Cape … ii. All areas outside urban areas;	This proposed development includes a filling station with a combined storage tank size of 69m^3, outside of the urban area.

Note:

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

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

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

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

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

SECTION E: PLANNING CONTEXT AND NEED AND DESIRABILITY

1.	Provide a description of the preferred alternative.

The preferred alternative is Alternative C, with the provision of three package plants at strategic locations around the site and consideration of the freshwater buffer.

Alternative C is proposing to develop a Housing Estate on a Portion of Portion 7 of Farm Buffelsfontein No. 204 situated in Herolds Bay, Western Cape. The proposed development would cover an area of approximately 19.37ha, made up of 102 single residential erven (9.019ha), 68 group housing units (3.61ha), a filling station, a 750m^2 convenience centre, a 250m^2 restaurant and a 300m^2 office block. The development would also have 1.334ha of open space, which would include buffer area around the on-site watercourse.

The preferred sewerage treatment solution identified for the development is an On-site Package Plant. It was originally proposed that a single package plant be developed in the south eastern corner of the site, which would treat all of the effluent generated by the development. This was found to be problematic as it required pump stations throughout the site to get the effluent to the plant. As such, it was decided that a package plant would be provided within each of the three drainage zones, i.e. three smaller plants which would be gravity fed.

2.	Explain how the proposed development is in line with the existing land use rights of the property as you have indicated in the NOI and application form? Include the proof of the existing land use rights granted in Appendix E21.

The current zoning of the proposed site is for Agricultural purposes.

An application for rezoning and consent use in terms of the Land Use Planning Ordinance (LUPO) will be concluded once an Environmental Authorisation has been issued.

3.	Explain how potential conflict with respect to existing approvals for the proposed site (as indicated in the NOI/and or application form) and the proposed development have been resolved.

There are no existing approvals for the proposed site.

4.	Explain how the proposed development will be in line with the following?
4.1	The Provincial Spatial Development Framework.

The Provincial Spatial Development Framework (PSDF) for the Western Cape (2014) highlights various "Guiding Principles" that are applied to guide development towards a spatial agenda which conforms with the Provincial Strategic Objectives. The PSDF mentions "Sustainability and Resilience" as one of the guiding principles that should be conceptualized when developing within the province.

The PSDF further explains that in order to incorporate sustainability and resilience into development, development should not involve the conversion of high potential agricultural land and that focus should be on creating complex, diverse and resilient spatial systems that are sustainable in all contexts. An Agricultural Potential Evaluation carried out by Johan Jordaan and Jan Groenewald (2005) states that the agricultural potential of the remainder of Portion 7 of the Farm Buffelsfontein no. 204, in Herolds Bay is low and not economically viable. The development further supports the notion of resilience and sustainability by reacting to the current sewage situation that sees the current Wastewater Treatment Plant not having capacity for the proposed development, therefore a package plant and storage reservoir is proposed as part of the development.

The PSDF outlines various spatial planning themes that are developed in order to achieve the Western Capes strategic objectives. One of these themes is the development of Integrated and Sustainable settlements. The PSDF mentions various policy objectives for the spatial theme, which include the promotion of an appropriate land use mix and the protection and enhancement of sense of place. The proposed development will assist the PSDF in realising the theme of Integrated and Sustainable settlements by assisting in achieving those goals through the appropriate land use mix that the proposed development offers, which includes residential zones, business zones, open spaces and transport zones, as well as provisions for a restaurant, supermarket and service station, which will also provide jobs.

The proposed development also supports the objective to protect and enhance the unique sense of place by ensuring that appropriate buffers are incorporated into the design of the proposed development to conserve and protect the watercourse on site.

4.2	The Integrated Development Plan of the local municipality.

The Integrated Development Plan (IDP) drafted for the George Municipality (2017-2022) outlines various objectives, priorities, strategies and outcomes which have been developed to address the challenges identified during the IDP development process. One of these strategic goals is promotion of a Safe, Clean and Green environment. The IDP continues to explain that the quality of lifestyle offered in the George area is a key selling factor to attract investment, therefore a Safe, Clean and Green environment is an essential priority.

The proposed developed is aligned with this strategic goal as the development aims to create an environment that is safe, clean and green for people to live in. The proposed development intends to provide for the needs of the market by ensuring controlled access and adequate security infrastructure. Furthermore, by designing the development as a single estate

instead of separate stands, the development can provide one security solution to all residents of the estate as oppose to each homeowner acquiring the services of differing security providers or installing different security systems.

A facility for collecting household waste at the entrance to the proposed development will be installed. A formal agreement will be concluded with the municipality to collect such refuse, aligning with the strategic goal outlined in the IDP to create a "clean" environment when developing. In order to maintain a "green" theme within the proposed development, onsite packaging plants are proposed in order to manage the onsite sewage. The treated outflow will be utilised for irrigation on the estate. This aspect of the development encourages re-use and promotes sustainability, reducing the need for excess water to irrigate the estate. The provision for approximately 13 340m^2 of open space and the incorporation of a buffer area around the existing on-site watercourse to minimise disturbance places emphasis on the "green" aspect and maintains the integrity of the environment.

4.3.	**The Spatial Development Framework of the local municipality.**

The proposed development is aligned with the Spatial Development Framework and Vision highlighted by the SDF. The vision 'A city for a sustainable future' is supported by three spatial drivers, the first being the Natural and Rural Environment. The SDF places emphasis on the importance of protecting and managing the environment to ensure it functions optimally. This is reflected within the proposed development by incorporating buffers and no-go areas into the design of the development to ensure that sensitive environments, such as the on-site watercourse, is protected and that any in disturbances will be kept to a minimum.

The second driver is Settlement and Nodal Hierarchy. Under this driver, Herolds Bay is defined as a "Rural/Tourism Settlement" settlement type and emphasis is placed on the importance of implementing a management structure that encourages reinforcement in order to allow the settlements to function as a productive and efficient system. The incorporation of the business zone into the design of the proposed development ensures that jobs will be created and a productive nature is produced.

The third and final driver is "Accessibility and Mobility". The SDF explains that this driver aims to improve the accessibility of the citizens of George to services, opportunities and amenities, as this is a critical precondition for growth of the economy. The proposed development encourages accessibility to services, opportunities and amenities by providing an opportunity of housing to the citizens of George, as well as job opportunities created within the business zone and residential zone for low-skilled jobs.

It is proposed to engage with the local municipality to provide a future bus stop for the George Integrated Public Transport Network (GIPTN) bus service, at the proposed neighbourhood centre. This proposal has also been conceptually discussed with officials of the local municipality and will be designed to the GIPTN engineering standards.

4.4.	**The Environmental Management Framework applicable to the area.**

No EMF developed for the area.

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

The Freshwater Specialist identified the sensitivity of the watercourse on site and highlighted the need to provide a buffer to minimise potential impacts. This was taken into consideration in the revision of the proposed layout.

6.	**Explain how the Western Cape Biodiversity Spatial Plan (including the guidelines in the handbook) has influenced the proposed development.**

The study site is largely transformed, with the proposed development footprints entirely transformed or invaded by woody aliens. The recorded biodiversity therefore presents no constraints to the proposed development.

The Vegetation Map of South Africa (Mucina & Rutherford 2006) classifies the main vegetation type found in the area as Garden Route Granite Fynbos. Also found in the general area, according to the vegetation map, are Southern Afrotemperate Forest and Groot Brak Dune Strandveld.

With only 30% (dated estimate from Mucina & Rutherford 2006) still remaining, Garden Route Granite Fynbos is poorly represented and currently listed as Critically Endangered in the 2017 Western Cape Biodiversity Spatial Plan (Pool-Stanvliet et al. 2017). Much of it has been transformed by farming activities, pine plantations and urban development, with remnants "largely confined to isolated pockets on steeper slopes" (Mucina & Rutherford 2006). Only 1% of Garden Route Granite Fynbos is formally protected in the Garden Route National Park. Therefore, its protection should remain a priority in the coastal areas.

Southern Afrotemperate Forest, on the other hand, is still well represented in the larger area, with 97% still remaining (Mucina & Rutherford 2006). Nearly 60% of the original area of Southern Afrotemperate Forest is formally conserved in the Garden Route National Park, Table Mountain National Park and numerous nature reserves. Only a small portion of forest has been transformed for plantations. Indigenous forest in the area is expected to become more extensive in the deeper valleys to the east of the study area and along the Gwaing River valley.

7.	**Explain how the proposed development is in line with the intention/purpose of the relevant zones as defined in the ICMA.**

The proposed development would not trigger Section 63 of the NEM: ICMA as it is a sufficient distance from the coast.

8.	**Explain whether the screening report has changed from the one submitted together with the application form. The screening report must be attached as Appendix I.**

The screening report has changed from the one submitted with the Application Form.

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

The proposed development is outside of the urban edge.

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

The proposed development will make use of the existing irrigation dam for stormwater retention, as well as to hold the treated effluent water from the three package plants. This water will be used for irrigating the green areas around the estate as well as the remainder of the farm.

11.	**Explain whether the necessary services are available and whether the local authority has confirmed sufficient, spare, unallocated service capacity. (Confirmation of all services must be included in Appendix E16).**

Water
According to the Engineering Services Report compiled by Element Consulting (2019) preliminary investigations and the necessary discussions with the local municipality indicated that bulk water is available for this development. A letter to this regard, confirming the allocation and availability of bulk water for this development has been obtained from the George Municipality.

Power
The maximum expected electricity after diversity demand (ADMD) for the development is 718 kVA. There is sufficient capacity at the adjacent substations to accommodate the development.

Sewage
Correspondence with the local municipality indicates that the existing Herolds Bay WWTW does not have any surplus capacity to accommodate the additional flow of the proposed development. The bulk sewerage treatment solution identified for the proposed development is three package plants at strategic points of the site. The resulting treated effluent will be clear and odourless and be to such a standard as to utilize for irrigation on the estate. The treated effluent would first be discharged into the existing irrigation dam from where it would be pumped out for irrigation purposes.

Solid Waste
A formal solid waste collection area will be provided in the site development plan. A formal arrangement for the removal of solid waste needs to be entered into with the George Municipality.

12.	**In addition to the above, explain the need and desirability of the proposed activity or development in terms of this Department's guideline on Need and Desirability (March 2013) or the DEA's Integrated Environmental Management Guideline on Need and Desirability. This may be attached to this BAR as Appendix K.**

Regional Need & Desirability

Demographic Analysis
Statistics South Africa (Stats SA) defines urbanisation as an increase in the urban population due to natural growth and net migration into a particular area.

The population growth of the Eden District has been very consistent from 2001 to 2011. The average population growth rate from 2001 until 2011 is 2.36%. Currently Eden's population is growing slower than the Provincial Population (2.56%) but faster than the national average of 1.45%.

George as the regional hub shows a higher growth rate, calculated at 2.63% for the period 2001 to 2011 – mainly due to high levels of in-migration. In 2011, the population in George constitutes 3.33% of the Provincial total and 33.73% of the Eden District's total population. In 2017 the George LM population was estimated to be 207 625. The population growth rate between 2011 and 2017 is calculated at 2.17%.

Provision of Housing
The Socio-Economic Assessment completed by Urban-Econ (2018) highlights how the proposed development looks to address the current shortage of developable land, the low vacancy of property in and around the town and increasing property prices around the settlement at this point in time by developing more affordable units.

This would aid in improving the local housing market by allowing it to compete on a regional scale. The development of more affordable units at Herolds Bay will provide more diversity in the housing mix, and allow the town to appeal to a wider range of buyers, including foreign investment, which it doesn't do at the current point in time. The Garden Route has a strong history of foreign demand for properties and, with Herolds bay establishing itself as an attractive location to invest in, the proposed development could bring significant foreign investment into the area, which will benefit the local economy.

Recent high property prices have caused a problem within Herolds Bay by restricting the potential to repurpose suburban properties, or develop vacant land for retail or office needs. The proposed development seeks to address this through the provision of space for a various commercial elements such as:

- Retail centre / supermarket- At this point in time, there is only one small retail establishment in Lower Herolds Bay which does not adequately serve the town's population.
- Filling station- The town does not feature a filling station at this point in time. The closest filling station to the development is located 11.5km away to the East in the town of George or travelling West, 21.6km away in the village of Great Brak. The inclusion of a filling station in Herolds Bay will provide significant benefit to the local community.
- Restaurant - There is only one notable restaurant in the town of Herolds Bay. The provision of space to develop a new restaurant will offer greater variety to local residents and travellers alike. A new restaurant will be of high value in the tourism high seasons when there is significantly higher demand than in the low season.
- Office development - The development of an office development will allow for various professionals, such as doctors and accountants to take up residence in the town.

Alignment with Sector Plans

Various National, Provincial & Municipal land use planning and policy documents have been considered during the assessment process. These include the:

- National Development Plan 2030 (2012);
- Western Cape Provincial Spatial Development Framework (PSDF) 2014;
- George Municipality Integrated Development Plan (IDP) 2017 – 2022;
- Garden Route Environmental Management Framework 2010;
- George Municipal Spatial Development Framework (GMSDF) (2018)

The proposed development is compatible with and supports the key principles and objectives contained in these key land use planning and policy documents that pertain to the area (See Section E). The area has therefore been identified as suitable for development in terms of the spatial priorities and desired spatial patterns of not only the local municipality, but also the Province.

Local Need & Desirability

Location Factors

The proposed development is classified from an engineering bulk services perspective as an infill development with infill taking place between the existing Herolds Bay township and Oubaai Golf Estate. Infill development is desirous from a bulk engineering services perspective as all or most bulk municipal services are normally already available and in place. Such infill development will improve the holistic financial sustainability of the local municipality due to additional rates and taxes being generated without the burden of additional capital outlay.

The proposed infill development will subsequently not trigger unaffordable capital cost burdens to the local municipality but will in fact strengthen the financial sustainability of the municipality in both the short- and longer term.

In addition, the Agricultural Potential Evaluation carried out by Johan Jordaan and Jan Groenewald (2005) states that the agricultural potential of the remainder of Portion 7 of the Farm Buffelsfontein no. 204, in Herolds Bay is low and not economically viable, thus providing evidence that agriculture, as a land use, is not viable.

In terms on environmental sensitivities, as confirmed by the Botanical Assessment, due to the transformed state of the site (for both proposed development footprints), there will be no direct impact on biodiversity. A buffer area has been allocated around the freshwater feature on site, and, as such, impacts on this would be manageable.

The location of the proposed development is one that is described by the Socio-Economic Impact Assessment completed by Urban Econ (2018) as a scenic sea-side town with a high demand for units that are affordable. Therefore, the low agricultural potential and lack of environmentally protected areas, coupled by the need for affordable units which may attract foreign investment and drive the local economy, further indicates that this location favours the land use proposed.

Human Health & Well-Being

The Socio-Economic Impact Assessment completed by Urban-Econ (2018) notes that one key aspect of the development is the provision of a safe and secure environment. The development will provide for the needs of the market by ensuring controlled access and adequate security infrastructure. Furthermore, by designing the development as a single estate instead of separate stands, the development can provide one security solution to all residents of the estate instead of each homeowner acquiring the services of differing security providers, or installing different security systems. This provides greater efficiency and overall lower cost to the consumer, thus having a positive impact on people's health, well-being and safety.

When assessing the potential visual intrusion and impact on the 'sense of place' by the proposed development on the setting, the Visual Impact Assessment completed by Cave Klapwijk and Associates (2018) explains that the local ridge line defines the limit of the landscape bowl and the majority of residential units lie within this local ridge line and therefore have limited visual exposure and poses little visual intrusion. The visibility of the development is limited to those units that lie outside the ridge line on the southern and south eastern part of the development. Both these areas will form part of the visible urban structures that exist on the adjacent properties and include farm dwellings along the access road and houses related to the Oubaai development and The Brink/Breakwater Bay development and therefore add to the visual unit of structures to the east and south of the Site.

There is potential for the proposed development to have an impact on the 'sense of place', as is always the case when new development takes place on the outer edge of existing small urban areas. However, the majority of the residential units are visually shielded from view by the surrounding ridge line within which most of the units will be built. The houses that are visual are only visual by receptors that are more than 300m away and at this distance the view of the unit would be insignificant.

Therefore, the proposed development would not impact the sense of place to a scale and density that would significantly alter scenic views of or across the site and change the sense of place.

There may be an increase in traffic noise associated with the development of the filling station, as this would be utilised by not only the local residents, but potentially the surrounding farmers.

No odour impacts are anticipated for the development, as the packaging plants are designed to be odourless in nature.

Benefits to Society in General and the Local Community

The Socio-Economic Assessment completed by Urban-Econ (2018) states various ways in which the proposed development may be a benefit to society. The proposed development looks to address the shortage of developable land, the low vacancy of property in and around the town and sky rocketing property prices around the settlement by developing more affordable units. Thus improving the local housing market by allowing it to compete on a regional scale. The development of more affordable units at Herolds Bay will provide more diversity in the housing mix, and allow the town to appeal to a wider range of buyers, including foreign investment. The area has a strong history of foreign demand for properties along the Garden Route could bring significant foreign investment into the area, which will benefit the local economy.

High property prices has caused a problem within Herolds Bay by restricting the potential to repurpose suburban properties, or develop vacant land for retail or office needs. According to a property specialist from the area, each estate in the area has its own unique character and reasons why people choose them.

In the case of Breakwater Bay Eco Estate it is 100% sold out from a developers point of view. There were, in May 2020, only sixteen (16) resales available. The estate is characterised by sweeping ocean views and large plots of land. Average prices for plots are R 2 million and the cheapest home for sale is R 10,5million.

In the case of The Brink Eco Estate it was, as of May 2020, 74% sold out with only 9 developer plots remaining and only two (2) resales listed. The estate is also characterised by sweeping ocean views and large plots of land. Average prices for remaining plots are R 3 million and the cheapest home for sale is R 12,95m. Building in the estate has increased in 2019 / 2020.

In the case of Monate Eco Estate it is 100% sold out. The estate lagged behind the newer estates due to the fact that security was not sufficinet at the estate. However, recent additions and fencing have improved
this and there is much building going on. There are good nature views and sea views and plots are generally smaller. Built or under construction properties are 25 or 50%.

In the case of plots in Oubaai Golf Estate it is 95% sold out as of May 2020 with only 17 plots left from the developer of the original 322. As far as completed or under construction homes, there are 207 of the 322 or 64 % already constructed. There are also many approved plans awaiting construction. Resale stock available in Oubaai plots is currently only 24 plots.

As far as character is concerned, the golf course attracts a specific type of buyer.

Apartments from Oubaai Golf Estate developers are now 98% sold out with only 3 available of 128 built. Resales have also reduced considerably. As of May 2020 there are 10 resale apartments available.

The erven in Breakwater Bay, The Brink and Oubaai form part of low density residential estates with large highly priced erven which implies exclusivity and high levies. The proposed development offers not only security but also lower erf prices. The relatively high density of residential development implies substantially lower levies compared to low density residential estates in the area.

The proposed new estate, therefore, will not have an impact on Monate, The Brink or Breakwater Bay Eco Estates in that the views, property sizes and value proposition differ totally. The lower priced properties in the Mountain View area of Oubaai may be slightly affected but once again it is a different value proposition (country estate versus a golf estate).

The proposed development further benefits the local community by providing housing which can offer essential safety and security by ensuring controlled access and adequate security infrastructure, as well as a secure environment by designing the development as a single estate instead of separate stands, the development can provide one security solution to all residents of the estate instead of each homeowner acquiring the services of differing security providers, or installing different security systems. This provides greater efficiency and overall lower cost to the consumer. The opportunity to provide housing with essential safety and security, coupled with a strong focus on sustainable development and limiting the environmental impact of development, benefits the surrounding community greatly.

The Socio-Economic Assessment (2018) continues to support how the proposed development benefits the local community by highlighting how the proposed development will provide benefits to the local community by generating approximately 17 fulltime equivalent jobs directly at the development. The majority of these jobs will be generated by the residential component of the development in maintenance, domestic services, gardening & landscaping, and other property management roles. When considering the jobs created from expenditure to the wider economy, it is calculated that the development will generate a total of approximately 394 jobs across the regional economy. There are further benefits in terms of income generation as employment at the development is expected to increase income to workers by approximately R22.87 million per year. The indirect and induced impacts add an additional R 5.46 million per year resulting in a total increase of employment income of approximately R 28.33 million.

It is also recognized that remote parking facilities and a shuttle service is urgently required during peak seasons in order to alleviate seasonal traffic congestion into the Herolds Bay beach area.

It is proposed, as part of the development of the neighbourhood centre, to provide limited safe and convenient seasonal dedicated remote parking to enable a shuttle service to operate to the Herolds Bay beach area. This will bring some relief to the traffic pressure and parking congestion experienced at the beach during peak season.

SECTION F: PUBLIC PARTICIPATION

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

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

N/A

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

A formal 30-day Public Participation Process (PPP) is being conducted as part of this Basic Assessment Application, in accordance with Regulation 41 of the amended EIA Regulations (Government Notice No R.326 of 7 April 2017) of the National Environmental Management Act, No 107 of 1998 and the DEA&DP Guideline on Public Participation of March 2013. Pre-application PPP has already been conducted for a 30-day period from 17 January 2020 and all comments received have been recorded and responded to in the Comments and Response Report include in Appendix F.

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

• DEADP: Development Region 3 • DEA&DP: Pollution Management • Breede-Gouritz CMA • CapeNature • Heritage Western Cape • George Municipality • Garden Route District Municipality • Department of Agriculture • Department of Forestry and Fisheries • Department of Health • Department of Human Settlement • DEA&DP: Waste Management • DEA&DP: Biodiversity • DEA&DP: Air Quality • WCG: Transport and Public Works

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

The following State Departments were not consulted in the Pre-Application Phase: • DEA: Oceans and Coast • DEA&DP: Coastal Management Due to the proposed site's location, comment from DEA: Oceans and Coast and DEA&DP: Coastal Management was not required, as the development would not have an impact on the coastal environment.

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

No comment was received from the following State Departments and Organs of State during the Pre-Application phase: • DEA&DP: Pollution Management • Breede-Gouritz CMA • Heritage Western Cape • George Municipality • Eden District Municipality • Department of Agriculture • Department of Forestry and Fisheries • Department of Health • Department of Human Settlement • DEA&DP: Waste Management • DEA&DP: Biodiversity

- DEA&DP: Air Quality

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

The following main issues were raised by I&AP's during the Pre-Application phase:

- Alien vegetation eradication and management
  - The EMPr has been revised to include more comprehensive alien vegetation management measures
- Inclusion of fire breaks
  - The EMPr has been revised to include the need for a 25-30m buffer between the indigenous forest and the development.
- Diversity of Housing mix and cost of houses
  - Concern responded to in Comments & Responses Table
- Need for additional residential development
  - Concern responded to in Comments & Responses Table
  - Needs & Desirability updated with input from a property specialist.
- Provision of Services
  - Confirmation of available services for the development has been included into this Draft BAR.
- Location of proposed site outside of the Urban Edge
  - Town Planning Motivation Report and Correspondence with Municipality in this regard included as annexures.

Note:

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

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

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

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

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

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

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

SECTION G: DESCRIPTION OF THE RECEIVING ENVIRONMENT

All specialist studies must be attached as Appendix G.

1. Groundwater

1.1.	**Was a specialist study conducted?**	**YES**	NO
1.2.	**Provide the name and or company who conducted the specialist study.**		
GEOSS South Africa (Pty) Ltd			
1.3.	**Indicate above which aquifer your proposed development will be located and explain how this has influenced your proposed development.**		
The underlying aquifer at the site is classified by the Department of Water Affairs and Forestry (DWAF, 2000) as a "fractured and intergranular" aquifer with an average yield potential of 0.1 – 0.5 L/s.			
1.4.	**Indicate the depth of groundwater and explain how the depth of groundwater and type of aquifer (if present) has influenced your proposed development.**		
According to CapeFarmMapper, the site has a depth to groundwater of 20 mbgl. No groundwater was intersected during the site investigation conducted by the specialist, likely due to the high clay content of the soil and resultant low permeability. The specialist recommended that the site development can proceed with regard to constructing and operating the various aspects of the development, with the implementation of the following mitigation measures: • At least three groundwater monitoring boreholes should be installed downgradient of the filling station in order to detect any potential contamination. • The monitoring boreholes should be appropriately designed and constructed. • A rapid response plan must be developed should any hydrocarbon spillages or leakages be detected. • The package plant integrity and operation must be closely monitored and managed together with analysis of the treated effluent to ensure that the treated effluent is suitable for irrigation.			

2. Surface water

2.1.	**Was a specialist study conducted?**	**YES**	NO
2.2.	**Provide the name and/or company who conducted the specialist study.**		
Debbie Fordham-Sharples Environmental Services			
2.3.	**Explain how the presence of watercourse(s) and/or wetlands on the property(ies) has influenced your proposed development.**		
The presence of the watercourses on site, as identified in the Freshwater Habitat Impact Assessment 2019, influenced the preferred alternative design of the proposed development. It was recommended that a 32m buffer zone be applied around the on-site watercourse. This buffer zone was taken into consideration in the layout design of Alternative C. In addition, various mitigation measures have been included into the EMPr in order to reduce the impacts on the watercourses.			

3. Coastal Environment

3.1.	**Was a specialist study conducted?**	YES	**NO**
3.2.	**Provide the name and/or company who conducted the specialist study.**		
N/A			
3.3.	**Explain how the relevant considerations of Section 63 of the ICMA were taken into account and explain how this influenced your proposed development.**		

N/A	
3.4.	**Explain how estuary management plans (if applicable) has influenced the proposed development.**
N/A	
3.5.	**Explain how the modelled coastal risk zones, the coastal protection zone, littoral active zone and estuarine functional zones, have influenced the proposed development.**
N/A	

4. Biodiversity

4.1.	**Were specialist studies conducted?**	**YES**	NO
4.2.	**Provide the name and/or company who conducted the specialist studies.**		
Mark Berry- Mark Berry Environmental Consultants			
4.3.	**Explain which systematic conservation planning and other biodiversity informants such as vegetation maps, NFEPA, NSBA etc. have been used and how has this influenced your proposed development.**		

Mark Berry consulted the following planning and biodiversity informants:

- The Vegetation Map of Southern Africa (Musina & Rutherford 2006)
- CapeNature's 2016 Threat Status Assessment;
- NEM:BA Alien and Invasive Species List (2016);
- The Red List of South African Plants (Raimondo *et al.* 2009);
- Western Cape Biodiversity Spatial Plan (2017); and
- DEA National List of Ecosystems that are Threatened and in need of Protection (2011).

Due to the transformed state of the site, there would be no direct impacts on biodiversity from the proposed development. No significant fynbos or forest elements remain on site and although the proposed development encroaches onto a mapped CBA, it is not expected to significantly impact on the CBA network.

The proposed development footprint intrudes into an area mapped as degraded CBA2: Forest on CapeFarmMapper, however, it is mapped as an Ecological Support Area on the SANBI Garden Route Biodiversity Assessment.

This area comprises an alien forest, dominated by black wattle and southern blue gum, and has virtually no merit to serve or function as a CBA and it is unlikely that this area was ever an indigenous forest or thicket.

4.4.	**Explain how the objectives and management guidelines of the Biodiversity Spatial Plan have been used and how has this influenced your proposed development.**
As explained above, the site is in a transformed state and, as such, the objectives and management guidelines are not applicable to the proposed development.	
4.5.	**Explain what impact the proposed development will have on the site specific features and/or function of the Biodiversity Spatial Plan category and how has this influenced the proposed development.**

With only 30% (dated estimate from Mucina & Rutherford 2006) still remaining, Garden Route Granite Fynbos is poorly represented and currently listed as Critically Endangered in the 2017 Western Cape Biodiversity Spatial Plan (Pool-Stanvliet et al. 2017). Much of it has been transformed by farming activities, pine plantations and urban development, with remnants "largely confined to isolated pockets on steeper slopes" (Mucina & Rutherford 2006). Only 1% of Garden Route Granite Fynbos is formally protected in the Garden Route National Park. Therefore, its protection should remain a priority in the coastal areas.

However, it should be noted that no fynbos remains on site and, as such, the proposed development would not impact on this Biodiversity Spatial Plan category.

4.6.	**If your proposed development is located in a protected area, explain how the proposed development is in line with the protected area management plan.**
The proposed development is not within a protected area.	
4.7.	**Explain how the presence of fauna on and adjacent to the proposed development has influenced your proposed development.**

The site proposed for development has been transformed into pastures for livestock. As such, very little other significant fauna remains on site. Cattle will be move to more northern pastures once the development has been constructed.

5. Geographical Aspects

Explain whether any geographical aspects will be affected and how has this influenced the proposed activity or development.
The gradients on the site are flat to undulating and there is no natural slope instability present. The natural watershed of the site influenced the identification of the three drainage zones for the development.

6. Heritage Resources

6.1.	**Was a specialist study conducted?**	YES	**NO**

6.2.	Provide the name and/or company who conducted the specialist study.
N/A	
6.3.	**Explain how areas that contain sensitive heritage resources have influenced the proposed development.**
N/A	

7. Historical and Cultural Aspects

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

8. Socio/Economic Aspects

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

Demographic analysis

The population growth of the Eden District has been very consistent from 2001 to 2011. The average population growth rate from 2001 until 2011 is 2.36%. Currently Eden's population is growing slower than the Provincial Population (2.56%) but faster than the national average of 1.45%.

George as the regional hub shows a higher growth rate, calculated at 2.63% for the period 2001 to 2011 – mainly due to high levels of in-migration. In 2011, the population in George constitutes 3.33% of the Provincial total and 33.73% of the Eden District's total population. In 2017 the George LM population was estimated to be 207 625. The population growth rate between 2011 and 2017 is calculated at 2.17%.

In terms of number of households, the Census 2011 figures show 53 522 households in the George Municipal area, at an average size of 3.6 per household. By 2017 this had increased to 56 610 at an average of 3.7 persons per household.

More extensive Ward based data is available in the George Municipality Integrated Development Plan (2012 – 2017). George (and the Garden Route N2 Corridor including Knysna and Mosselbay) is considered an area of rapid growth within the national context. George has further been categorized as an area with high growth potential in the 2013 revision of the Growth Potential of Towns study by the Western Cape Government. Given the general increasing rates of urbanization across South Africa and the local context, the relatively high growth rates should at the very least be sustained over coming years. An annual growth rate of 2.75% is applied below for projection purposes.

George LM had 51 schools in 2014 which had to accommodate 34 158 learners. The proportion of no fee schools has increased from 66.7 per cent in 2012 to 70.6 per cent in 2014, indicating that, given the challenging economic climate, there may be an upsurge in the number of parents being unable to afford school fees. George LM has 8 Public FET Colleges whose mandate is to ensure that education, training and skills development initiatives respond to the economy, rural development challenges and an informed and critical citizenry.

According to recent statistics, ± 28% adults have matric or higher qualification in the George LM. The most recent available education statistics for the settlement of Herolds Bay are from the 2011 National Census. At this time, 58% of residents in the Herolds Bay area had a matric or higher qualification.

The employment rate in George LM is remarkably high compared to many other major towns within South Africa. At 2017, 57.91% of working age residents of George LM are employed with 10.88% unemployed. The number deemed 'Not Economically Active' stands at 31.21% of the working age population. The average weighted household income for the George LM stands at R 57 985.73 (calculated based on 2011 Census income distribution data and adjusted for inflation to 2018 values).

Economic analysis

The George Local Municipality recorded a real average annual output growth of 3.23% over the period 1996 – 2000 and an average annual growth rate of 4.08% from 2000 – 2010. For the most recent period, considered the post-recession recovery period, the George LM recorded an average annual growth rate of 2.90%. Although lower than the preceding periods, this growth rate exceeds those of Provincial and National over the same period. Over the longer term the structure of the economy in George has shifted slightly away from primary and secondary sectors (mainly Agriculture, Forestry and Manufacturing) to a more service driven economy, specifically Finance, Insurance, Real Estate and Business Services.

General government's contribution to the economic output has declined slightly since 1996 but at 13.63% is still a large sector and this confirms both the size of local government and George's status as a regional hub providing higher order services.

Manufacturing grew at a relatively lower average rate than the economy in general and therefore its contribution to the economic output has declined. In 2009, manufacturing output in fact declined in real terms to numbers similar to that of 2005. The historic industries in terms of manufacturing, namely furniture and related manufacturing, continues to decline (-2.17% per annum for 2010 - 2013). Notable however are the interesting growth rates in very specific emerging niche manufacturing areas such as petroleum products, chemicals, rubber and plastic growing at 5.56% per annum for 2010 - 2013.

Construction, whilst registering slower growth rates since 2008 did not decline in terms of real output. The recovery from 2011 - 2013 in this sector lagged behind the overall economic recovery, which can be interpreted as a positive sign as Construction

cannot be deemed the driver of the recovery. This points to a more sustainable recovery with other sectors growing and thus also fuelling construction as secondary sector.

When considering the Tertiary sector, Wholesale, Retail and Trade similarly recorded a drop in total GVA in 2008/2009, also to levels first recorded in 2005. Included here is catering and accommodation (direct tourism spend), which contributes only 1.85% of the economy in 2013. Catering and accommodation has also registered negative annual growth for the period 2010 – 2013. Admittedly Tourism is represented as fragments in various other Industries (e.g. retail and transport), but this negative trend in terms of catering and accommodation is of concern.

Transport, Storage and Communication recorded a slight slowdown in growth but remains one of the strongest growing industries in George.

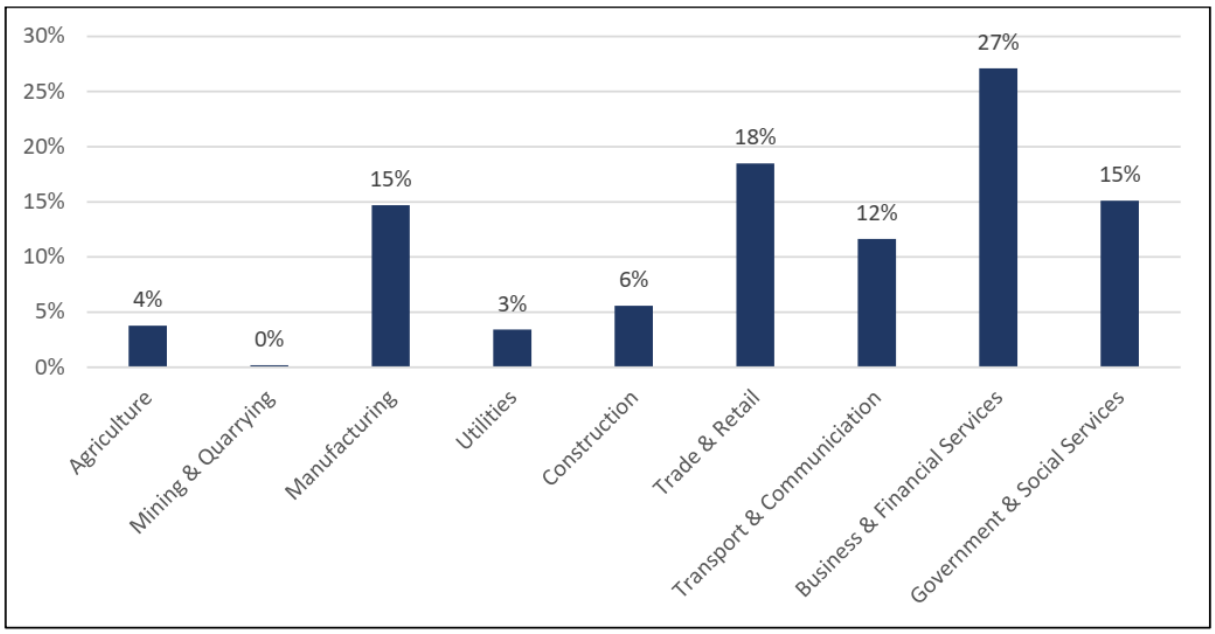


Figure 12: GDP per Sector (Source: UrbanEcon, 2019)

When analysing the contribution to employment per sector over time, Agriculture, forestry and fishing registered a marked decline in employment numbers, from contributing around 13% to total employment in 1995 to only 5.13% in 2013. This can certainly be attributed to automation in these industries, and therefore a drop in actual employment numbers and labour intensity. A further concern is delayed re-planting in the timber industry, already impacting directly in terms of primary job losses, but which could have downstream negative effects on e.g. manufacturing.

Manufacturing also recorded a decline in employment contribution, although not as steeply as in the primary sectors.

Construction showed strong employment growth between 2000 and 2010, but interestingly actual employment numbers in 2013 are still well below those of 1995, showing that over the longer term of 16 years, growth was minimal in this sector in terms of employment numbers. This is indicative of the cyclical nature of construction, creating jobs in times of economic boom, but shedding those just as fast when declines set in.

When considering employment per sector in 2013 (total employment, both formal and informal); Community, Social and Personal services have the highest labour intensity (24 jobs per R1 Million GVA), contributing just more than 5% to GVA, but in excess of 16% in terms of number of persons employed. Only catering and accommodation services can even remotely compare in terms of labour intensity, contributing 21 jobs per R1 Million GVA (although only 1.67% to GVA). General government, Agriculture, Forestry and Fishing as well as Construction also contributes a higher percentage to employment numbers than in GVA, indicating a relatively higher labour intensity. In the case of General government however, actual employment numbers has increased significantly over the past 10 years, whereas it has dropped for both the other sectors.

As is the case nationally, the Finance, Insurance, Real Estate and Business services have a very low labour intensity, contributing only 14.6%% in terms of employment, but close to 25% in terms of GVA.

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

The Socio-Economic Assessment completed by Urban-Econ (2018) states various ways in which the proposed development may be of value. The proposed development looks to address the shortage of developable land, the low vacancy of property in and around the town and sky rocketing property prices around the settlement by developing more affordable units. Thus improving the local housing market by allowing it to compete on a regional scale. The development of more affordable units at Herolds Bay will provide more diversity in the housing mix, and allow the town to appeal to a wider range of buyers, including foreign investment. The area has a strong history of foreign demand for properties along the Garden Route could bring significant foreign investment into the area, which will benefit the local economy.

High property prices have caused a problem within Herolds Bay by restricting the potential to repurpose suburban properties or develop vacant land for retail or office needs. The proposed development seeks to address this through the provision of space for various commercial elements such as:

- Retail centre / supermarket- There is only one small retail establishment in Lower Herolds Bay which does not adequately serve the towns population, thus assisting the local community by proving adequate retails options , as well as healthy competition for the present supermarket.
- Filling station- The town does not feature a filling station. The closest filling station to the development is located 11.5km away to the East in the town of George or travelling West, 21.6km away in the village of Great Brak. The inclusion of a filling station in Herolds Bay will provide significant benefit to the local community.
- Restaurant- There is only one notable restaurant in the town of Herolds Bay. The provision of space to develop a new restaurant will offer greater variety to local residents and travellers alike. A new restaurant will be of high value in the tourism high seasons when there is significantly higher demand than in the low season.
- Office development - The development of an office development will allow for various professionals, such as doctors and accountants to take up residence in the town.

The proposed development will also be seen as valuable to the local community by providing housing which can offer essential safety and security by ensuring controlled access and adequate security infrastructure. The proposed development will contribute towards a secure environment by designing the development as a single estate instead of separate stands, the development can provide one security solution to all residents of the estate instead of each homeowner acquiring the services of differing security providers, or installing different security systems. This provides greater efficiency and overall lower cost to the consumer. The opportunity to provide housing with essential safety and security, coupled with a strong focus on sustainable development and limiting the environmental impact of development, benefits the surrounding community greatly.

The Socio-Economic Assessment (2018) continues to support how the proposed development will contribute to the local economy by generating approximately 317 fulltime equivalent jobs. The majority of these jobs will be generated by the residential component of the development in maintenance, domestic services, gardening & landscaping, and other property management roles. When considering the jobs created from expenditure to the wider economy, it is calculated that the development will generate a total of approximately 394 jobs across the regional economy. There are further benefits in terms of income generation as employment at the development is expected to increase income to workers by approximately R 22.87 million per year. The indirect and induced impacts add an additional R 5.46 million per year resulting in a total increase of employment income of approximately R 28.33 million.

The Spatial Development Framework (SDF) further highlights the socio-economic value of the proposed development as the SDF describes how George and its surrounding areas can grow without further encroaching on the natural and rural environment. There is substantial vacant and under-utilised land within the urban edge of the George city area that can cater for urban growth – optimising the use of existing infrastructure and containing operational costs. In terms of a simple population projection based on a residential density of 25 du/ha (the overall density sought in the SDF). The proposed development looks to address the shortage of developable land around Herolds Bay. The low vacancy of property in and around the town of Herolds Bay coupled with high demand for units at the scenic sea-side town have resulted in sky-rocketing property prices. The development seeks to address this through the development of more affordable units.

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

The majority of the construction sector is dominated by previously disadvantaged individuals. They form the majority of the workforce, including the manufacturing of the construction materials. Where possible, local contractors will be employed for the construction of the development.

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

The Socio-Economic Impact Assessment completed by Urban-Econ (2018) notes that one key aspect of the development is the provision of a safe and secure environment. The development will provide for the needs of the market by ensuring controlled access and adequate security infrastructure. Furthermore, by designing the development as a single estate instead of separate stands, the development can provide one security solution to all residents of the estate instead of each homeowner acquiring the services of differing security providers, or installing different security systems. This provides greater efficiency and overall lower cost to the consumer, thus having a positive impact on people's health, well-being and safety.

When assessing the potential visual intrusion and impact on the 'sense of place' by the proposed development on the setting, the Visual Impact Assessment completed by Cave Klapwijk and Associates (2018) explains that the local ridge line defines the limit of the landscape bowl and the majority of residential units lie within this local ridge line and therefore have limited visual exposure and poses little visual intrusion. The visibility of the development is limited to those units that lie outside the ridge line on the southern and south eastern part of the development. Both these areas will form part of the visible urban structures that exist on the adjacent properties and include farm dwellings along the access road and houses related to the Oubaai development and The Brink/Breakwater Bay development and therefore add to the visual unit of structures to the east and south of the Site.

There is potential for the proposed development to have an impact on the 'sense of place', as is always the case when new development takes place on the outer edge of existing small urban areas. However, the majority of the residential units are visually shielded from view by the surrounding ridge line within which most of the units will be built. The houses that are visual are only visual by receptors that are more than 300m away and at this distance the view of the unit would be insignificant. Therefore, the proposed development would not impact the sense of place to a scale and density that would significantly alter scenic views of or across the site and change the sense of place.

There may be an increase in traffic noise associated with the development of the filling station, as this would be utilised by not only the local residents, but potentially the surrounding farmers.

No odour impacts are anticipated for the development, as the packaging plants are designed to be odourless in nature.

SECTION H: ALTERNATIVES, METHODOLOGY AND ASSESSMENT OF ALTERNATIVES

1. Details of the alternatives identified and considered

1.1.	**Property and site alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.**
Provide a description of the preferred property and site alternative.	
The preferred site is located on a portion of portion 7 of the farm Buffelsfontein, Herolds Bay. The site is located directly north-east of the existing Herolds Bay township and directly west of the existing Oubaai Golf Estate. The site is bounded to the north and west by farmland.	
Provide a description of any other property and site alternatives investigated.	
No property or location alternatives are being proposed.	
Provide a motivation for the preferred property and site alternative including the outcome of the site selectin matrix.	
The proposed development is classified as an infill development with infill taking place between the existing Herolds Bay township and Oubaai Golf Estate. Infill development is desirous from a bulk engineering services perspective as all or most bulk municipal services are normally already available and in place.	
Provide a full description of the process followed to reach the preferred alternative within the site.	
N/A	
Provide a detailed motivation if no property and site alternatives were considered.	
As the applicant does not own any other properties for development and there were no major biodiversity constraints associated with the site, no property and site alternatives were considered. In addition, the site is favourable from a town planning perspective.	
List the positive and negative impacts that the property and site alternatives will have on the environment.	
N/A as no property or site alternatives were investigated.	
1.2.	**Activity alternatives to avoid negative impacts, mitigate unavoidable negative impacts and maximise positive impacts.**
Provide a description of the preferred activity alternative.	
The applicant is proposing to develop a Housing Estate on a Portion of Portion 7 of Farm Buffelsfontein No. 204 situated in Herolds Bay, Western Cape. The proposed development encompasses 102 single residential erven, 68 group housing units, a filling station, 750m^2 convenience centre, 250m^2 restaurant and 300m^2 offices.	
Provide a description of any other activity alternatives investigated.	
No activity alternatives are being proposed	
Provide a motivation for the preferred activity alternative.	
The proposed development is classified as an infill development with infill taking place between the existing Herolds Bay township and Oubaai Golf Estate. Infill development is desirous from a bulk engineering services perspective as all or most bulk municipal services are normally already available and in place. The Socio-Economic Assessment completed by Urban-Econ (2018) highlights how the proposed development looks to address the current shortage of developable land, the low vacancy of property in and around the town and increasing property prices around the settlement at this point in time by developing more affordable units. This would aid in improving the local housing market by allowing it to compete on a regional scale. The development of more affordable units at Herolds Bay will provide more diversity in the housing mix, and allow the town to appeal to a wider range of buyers, including foreign investment, which it doesn't do at the current point in time. The Garden Route has a strong history of foreign demand for properties and, with Herolds bay establishing itself as an attractive location to invest in, the proposed development could bring significant foreign investment into the area, which will benefit the local economy. Recent high property prices have caused a problem within Herolds Bay by restricting the potential to repurpose suburban properties, or develop vacant land for retail or office needs. The proposed development seeks to address this through the provision of space for a various commercial elements such as:	

- Retail centre / supermarket- At this point in time, there is only one small retail establishment in Lower Herolds Bay which does not adequately serve the town's population.
- Filling station- The town does not feature a filling station at this point in time. The closest filling station to the development is located 11.5km away to the East in the town of George or travelling West, 21.6km away in the village of Great Brak. The inclusion of a filling station in Herolds Bay will provide significant benefit to the local community.
- Restaurant - There is only one notable restaurant in the town of Herolds Bay. The provision of space to develop a new restaurant will offer greater variety to local residents and travellers alike. A new restaurant will be of high value in the tourism high seasons when there is significantly higher demand than in the low season.
- Office development - The development of an office development will allow for various professionals, such as doctors and accountants to take up residence in the town.

Provide a detailed motivation if no activity alternatives exist.

As the proposed development is considered desirable with regards to the need for housing and commercial development in the area, no activity alternatives were investigated.

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

N/A as no activity alternatives were investigated.

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

Provide a description of the preferred design or layout alternative.

The preferred alternative is Alternative C, with the provision of three package plants at strategic locations around the site and consideration of the freshwater buffer.

This alternative is approx. 19.3 ha in size and includes;

- Residential 1- 102 units, 9.019ha
- General Residential Zone 2- 68 units, 3.613ha
- Business Zone-0.958ha
- Open Space-1.334

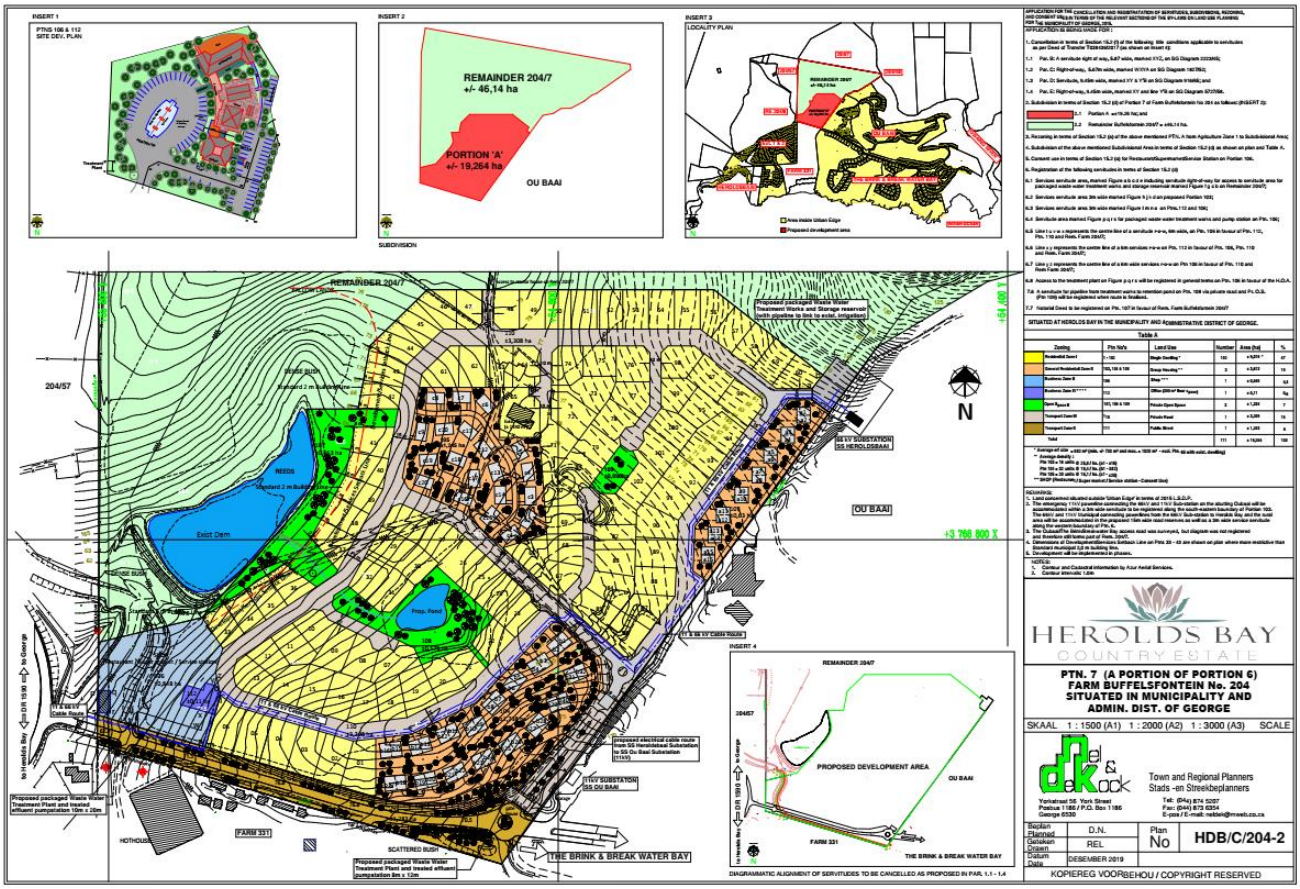


Figure 13: Alternative C: Preferred Layout / Design Alternative

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

Three layout alternatives were originally proposed for the development. These alternatives are summarised below and included as annexures.

	ALTERNATIVE A	ALTERNATIVE B	ALTERNATIVE C
AREA	12.2ha	25.755ha	19.37ha
RESIDENTIAL 1	65 units 6.9ha	151 units 13.22 ha	102 units 9.019ha
GENERAL RESIDENTIAL ZONE 2	32 units 1.58ha	>32 units 2.592ha	68 units 3.613ha
BUSINESS ZONE	0.495ha	0.823ha	0.958ha
OPEN SPACE	n/a	3.391ha	1.334ha
SERVITUDE	n/a	n/a	0.01ha

Provide a motivation for the preferred design or layout alternative.

Upon investigation, Alternative B was also not considered feasible, as it encroached onto the agricultural land to the north of the dam, further reducing the viability of the remaining agricultural area.

As such, only layout Alternative A and C have been further investigated. It should be noted that Alternative C has been revised to take the freshwater buffer area into consideration. In addition, the original layout only included one package plant for sewage treatment. However, from recommendations and concerns raised by the Freshwater specialist, three package plants are now being proposed at strategic locations around the site making use of the natural drainage of the site. This negates the need for sewage pump stations as the plants would be gravity fed.

Alternative C is preferred as it takes into consideration the concerns raised by the Freshwater Specialist and makes use of the natural drainage of the site. In addition, it proposes additional residential and business units which makes it more financially viable for the developer. Alternative C also has provision for 1.334ha of open space.

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

N/A

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

CONSTRUCTION PHASE IMPACTS		
IMPACT	**IMPACT SIGNIFICANCE AFTER MITIGATION**	
	Alternative A	**Alternative C (Preferred Option)**
Freshwater Impact: Loss / Disturbance of Aquatic Habitat.	Low (-)	Low-Medium (-)
Freshwater Impact: Water Pollution	Low (-)	Low-Medium (-)
Freshwater Impact: Modified Hydrology and Hydrodynamics	Low (-)	Low-Medium (-)
Freshwater Impact: Erosion and Sedimentation	Low (-)	Medium (-)
Socio Economic Impact: Job Creation.	Medium (+)	Medium (+)
Sense of Place	Low (-)	Low (-)
Traffic Impacts & Road Safety.	Low (-)	Low (-)
Visual Impact.	Low (-)	Low (-)

OPERATION PHASE IMPACTS		
IMPACT	**IMPACT SIGNIFICANCE AFTER MITIGATION**	
	Alternative A	**Alternative C (Preferred Option)**

Freshwater Impact: Loss / Disturbance of Aquatic Habitat and Sedimentation.	Low (-)	Low-Medium (-)
Freshwater Impact: Water / Soil Pollution	Low (-)	Low-Medium (-)
Freshwater Impact: Modified Hydrology and Hydrodynamics	Low (-)	Low-Medium (-)
Freshwater Impact: Erosion and Sedimentation	Low-Medium (-)	Low-Medium (-)
Socio Economic Impact: Job Creation.	Medium(+)	Medium(+)
Socio Economic Impact: Local Government Revenue	Medium(+)	Medium(+)
Socio Economic Impact: Provision of Housing Opportunities	Medium(+)	Medium(+)
Socio Economic Impact: Property Values	Low (+)	Low-Medium (+)
Socio Economic Impact: Tourism & Accessibility	Low-Medium (+)	Low-Medium (+)
Socio Economic Impact: Retail & Commercial Services	Medium(+)	Medium(+)
Visual Impact	Low-Medium (-)	Low-Medium (-)

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

Provide a description of the preferred technology alternative:

The preferred sewerage treatment solution identified for the development is a package plant at each of the three drainage zones or watersheds. The package plant identified and specified for this development would be a Maskam Clarus Fusion or similar plant. Treated effluent will be clear and odourless and will meet the Department of Water and Sanitation (DWS) General Standards. The treated effluent will be utilized for irrigation of pasture on the farm.

Provide a description of any other technology alternatives investigated.

Three Technology Alternatives regarding sewage treatment were investigated.

Three sewage treatment options were investigated by the engineers in order to determine their feasibility.

Element Consulting Engineers conducted various site visits and meetings with the Oubaai Estate and the George Municipality to determine the feasibility of the sewage treatment options.

Alternative connection point (east of development)
The proposed development is located directly adjacent to the Oubaai Golf Estate. Discussions have been ongoing with Oubaai Golf Estate to accept the sewage generated from this development into their Oubaai WWTW. The Oubaai WWTW is located to the north-east of this proposed development, adjacent to the common boundary with this development.

A new bulk outfall line could be constructed from the north-eastern extremity of the proposed development, following the contour, to the Oubaai WWTW.

A letter confirming the desirousness of the Oubaai Golf Estate Homeowners Association to receive this effluent is attached to the Engineering report as addendum. The design of the Oubaai WWTW has been studied. It has been determined that this WWTW has sufficient surplus capacity to accommodate the additional flow generated from this proposed development. Officials from Oubaai have also confirmed that this WWTW has sufficient spare capacity to accommodate the additional flow.

The developers of the Herolds Bay Estate are desirous to obtain the treated effluent as irrigation water and the Oubaai WWTW alternative is hence not a desirous one for the developer as discussed on the report. Notwithstanding the above, in this scenario, wastewater from the development will have to be pumped over two watersheds to the eastern drainage zone, which will constitute the risk of two wastewater pumpstations on the proposed development.

Alternative connection point (west of development)
The western portion of the development drains towards Herolds Bay. A 160mm diameter uPVC gravity sewer line is available on the northern extreme of the existing Herolds Bay township. Preliminary discussions with municipal officials indicated that this

existing 160mm diameter sewer gravity line and subsequent network does not have surplus capacity to accommodate the flow from the development.

This network drains into the Herolds Bay wastewater treatment works (WWTW) which also does not have any surplus capacity as indicated by the municipality. A letter confirming the lack of capacity in the network and WWTW, has been obtained from the George Municipality and is attached to the report as addendum.

The option of connecting into the municipal sewer network is not viable form a technical and cost perspective. Notwithstanding the above, in this scenario, wastewater from the development will have to be pumped over two watersheds to the western drainage zone, which will constitute the risk of two wastewater pumpstations on the proposed development.

New WWTW

The development of a new WWTW is not captured on the George Municipality's services development plan for Herolds Bay. A new WWTW will have a 500m development exclusion zone. A 500m exclusion zone will render most of the developable land undevelopable and is not a viable option for the purposes of this application.

Notwithstanding the above, in this scenario, wastewater from the development will have to be pumped over several watersheds to the relevant developed drainage zone, which will constitute the risk of a number of wastewater pumpstations on the proposed development.

Provide a motivation for the preferred technology alternative.

The design of the Oubaai WWTW has been studied and a site visit has been conducted. It was determined that this WWTW has sufficient surplus capacity to accommodate the additional flow generated from the proposed development. Officials from Oubaai have also confirmed that this WWTW has sufficient spare capacity to accommodate the additional flow. A letter confirming the surplus capacity in the Oubaai WWTW has been obtained from the Oubaai Golf Estate Homeowners Association and is attached to the Engineering report as addendum.

However, the developers of the Herolds Bay Country Estate desire to retain the treated effluent generated on site as irrigation water and the option of connection to the Oubaai WWTW has subsequently not been investigated further.

While investigating the possibility of utilising the 160mm diameter uPVC gravity line which is available on the northern extreme of the existing Herolds Bay township, it was found that this existing 160mm diameter sewer gravity line and subsequent network does not have surplus capacity to accommodate the flow from the development. This network drains into the Herolds Bay wastewater treatment works (WWTW) which also does not have any surplus capacity as indicated by the municipality. A letter confirming the lack of capacity in the network and WWTW, has been obtained from the George Municipality and is attached to the Engineering report as addendum.

As such, only the preferred sewage treatment alternative has been investigated further.

Provide a detailed motivation if no alternatives exist.

N/A

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

N/A as only one technology alternative was considered feasible.

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

Provide a description of the preferred operational alternative.

The preferred operational alternative comprises a mixed-use development, which includes single residential erven, group housing, a business area, roads and associated infrastructure.

Provide a description of any other operational alternatives investigated.

No operational alternatives are being proposed for the development.

Provide a motivation for the preferred operational alternative.

The Socio-Economic Assessment completed by Urban-Econ (2018) supports the preferred operational alternative. The proposed development looks to address the shortage of developable land, the low vacancy of property in and around the town and sky rocketing property prices around the settlement by developing more affordable units. Thus improving the local housing market by allowing it to compete on a regional scale. The development of more affordable units at Herolds Bay will provide more diversity in the housing mix, and allow the town to appeal to a wider range of buyers, including foreign investment. The area has a strong history of foreign demand for properties along the Garden Route could bring significant foreign investment into the area, which will benefit the local economy.

High property prices has caused a problem within Herolds Bay by restricting the potential to repurpose suburban properties, or develop vacant land for retail or office needs. The preferred operational alternative will address this through the provision of space for various commercial elements such as:

- Retail centre / supermarket- There is only one small retail establishment in Lower Herolds Bay which does not adequately serve the towns population, thus assisting the local community by proving adequate retails options , as well as healthy competition for the present supermarket.
- Filling station- The town does not feature a filling station. The closest filling station to the development is located 11.5km away to the East in the town of George or travelling West, 21.6km away in the village of Great Brak. The inclusion of a filling station in Herolds Bay will provide significant benefit to the area.
- Restaurant- There is only one notable restaurant in the town of Herolds Bay. The provision of space to develop a new restaurant will offer greater variety to local residents and travellers alike. A new restaurant will be of high value in the tourism high seasons when there is significantly higher demand than in the low season.
- Office development - The development of an office development will allow for various professionals, such as doctors and accountants to take up residence in the town.

The preferred operational alternative also provides further benefits the local community by providing housing which can offer essential safety and security by ensuring controlled access and adequate security infrastructure, as well as a secure environment by designing the development as a single estate instead of separate stands, the development can provide one security solution to all residents of the estate instead of each homeowner acquiring the services of differing security providers, or installing different security systems. This provides greater efficiency and overall lower cost to the consumer. The opportunity to provide housing with essential safety and security, coupled with a strong focus on sustainable development and limiting the environmental impact of development, benefits the surrounding community greatly.

The Socio-Economic Assessment (2018) indicates how the preferred operational alternative benefits the local community by highlighting how the proposed development will provide benefits to the local community by generating approximately 317 fulltime equivalent jobs directly at the development. The majority of these jobs will be generated by the residential component of the development in maintenance, domestic services, gardening & landscaping, and other property management roles. When considering the jobs created from expenditure to the wider economy, it is calculated that the development will generate a total of approximately 394 jobs across the regional economy. There are further benefits in terms of income generation as employment at the development is expected to increase income to workers by approximately R 22.87 million per year. The indirect and induced impacts add an additional R 5.46 million per year resulting in a total increase of employment income of approximately R 28.33 million.

Provide a detailed motivation if no alternatives exist.

See motivation above

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

N/A as only one operational alternative was considered feasible.

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

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

The significant benefits expected to accrue to the local economy, and that the development (as designed) will provide to the local community, would not be realised. These benefits include enhancing the functioning of the town for both permanent residents and holiday makers through the provision of remote parking to enable shuttle services to the beach area, as well as the provision of a future bus stop for the George Integrated Public Transport Network (GIPTN) bus service.

Furthermore, the development would not generate the anticipated significant income for the George Local Municipality which is expected to far outweigh any potential increase in expenditure on services and infrastructure resulting from the construction of the development.

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

No other alternatives were investigated.

1.8.	**Provide a concluding statement indicating the preferred alternatives, including the preferred location of the activity.**

The preferred alternative is **Alternative C**, with the provision of three package plants at strategic locations around the site and consideration of the freshwater buffer.

2. "No-Go" areas

Explain what "no-go" area(s) have been identified during identification of the alternatives and provide the co-ordinates of the "no-go" area(s).

The buffer zone surrounding the watercourse on site should be considered a No-Go area. This buffer has been mapped and included as an Annexure.

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

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

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

Determination of Extent (Scale):

Site specific	On site or within 100 m of the site boundary.
Local	The impacted area includes the whole or a measurable portion of the site, but could affect the area surrounding the development, including the neighbouring properties and wider municipal area.
Regional	The impact would affect the broader region (e.g. neighbouring towns) beyond the boundaries of the adjacent properties.
National	The impact would affect the whole country (if applicable).

Determination of Duration:

Temporary	The impact will be limited to the construction phase.
Short term	The impact will either disappear with mitigation or will be mitigated through a natural process in a period shorter than 2 years.
Medium term	The impact will last up to the end of the construction phase, where after it will be entirely negated.
Long term	The impact will continue for the entire operational lifetime of the development but will be mitigated by direct human action or by natural processes thereafter.
Permanent	This is the only class of impact that will be non-transitory. Such impacts are regarded to be irreversible, irrespective of what mitigation is applied.

Determination of Probability:

Improbable	The possibility of the impact occurring is very low, due either to the circumstances, design or experience.
Probable	There is a possibility that the impact will occur to the extent that provisions must therefore be made.
Highly probable	It is most likely that the impacts will occur at some stage of the development. Plans must be drawn up to mitigate the activity before the activity commences.
Definite	The impact will take place regardless of any prevention plans.

Determination of Significance (without mitigation):

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

Determination of Significance (with mitigation):

No significance	The impact will be mitigated to the point where it is regarded to be insubstantial.

Low	The impact will be mitigated to the point where it is of limited importance.
Medium	Notwithstanding the successful implementation of the mitigation measures, the impact will remain of significance. However, taken within the overall context of the project, such a persistent impact does not constitute a fatal flaw.
High	Mitigation of the impact is not possible on a cost-effective basis. The impact continues to be of great importance, and, taken within the overall context of the project, is considered to be a fatal flaw in the project proposal.

Determination of Reversibility:

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

Determination of Degree to which an Impact can be Mitigated:

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

Determination of Loss of Resources:

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

Determination of Degree to which an Impact can be avoided:

High	The impact is completely avoidable
Medium	The impact is avoidable with moderate mitigation
Low	The impact is difficult to avoid and will require significant mitigation
Unavoidable	The impact cannot be avoided

Determination of Degree to which an Impact can be managed:

High	The impact is completely manageable
Medium	The impact is manageable with moderate mitigation
Low	The impact is difficult to manage and will require significant mitigation
Unmanageable	The impact cannot be managed

Determination of Cumulative Impact:

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

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

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

	ALTERNATIVE A	ALTERNATIVE C (PREFERRED OPTION)	NO-GO OPTION
PLANNING, DESIGN AND DEVELOPMENT PHASE			
Potential impact and risk:	**FRESHWATER IMPACTS: DISTURBANCE/LOSS OF HABITAT AND SEDIMENTATION**		
Nature of Impact:	Negative	Negative	Negative
Extent and duration of impact:	Local / Medium Term	Local / Medium Term	Not applicable
Consequence of impact or risk:	There is potential for loss or disturbance of riparian zone vegetation during construction from machinery, vehicles and workers. The movement of topsoil and incorrectly placed stockpiles could bury aquatic habitat. Due to construction, alien invasive species may encroach further into any disturbed areas and outcompete indigenous vegetation thereby reducing aquatic biodiversity.	There is potential for loss or disturbance of riparian zone vegetation during construction from machinery, vehicles and workers. The movement of topsoil and incorrectly placed stockpiles could bury aquatic habitat. Due to construction, alien invasive species may encroach further into any disturbed areas and outcompete indigenous vegetation thereby reducing aquatic biodiversity.	Not applicable, as no construction will mean no such impacts will occur.
Probability of occurrence:	Probable	Probable	Not applicable, as no construction means no impacts.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of Irreplaceable Resources	No loss of Irreplaceable Resources	No loss of resource.
Degree to which the impact can be reversed:	Barely	Partly	Not applicable.
Indirect impacts:	None	None	None.
Cumulative impact prior to mitigation:	Low	Medium	Not applicable.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Medium	Not applicable.
Degree to which the impact can be avoided:	Low	Medium	Not applicable.
Degree to which the impact can be managed:	Medium	Medium	Not applicable.

Degree to which the impact can be mitigated:	Medium	Medium	Not applicable.
Proposed mitigation:	• All watercourses are to be considered no go areas and any unnecessary intrusion into these areas is prohibited. • The No-Go boundary must be demarcated during works, and no disturbance may occur past this point during any stage. • Stockpiles must not be located within 50 metres of the rivers. They should not be placed in vegetated areas that will not be cleared. • 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.	• All watercourses are to be considered no go areas and any unnecessary intrusion into these areas is prohibited. • The No-Go boundary must be demarcated during works, and no disturbance may occur past this point during any stage. • Stockpiles must not be located within 50 metres of the rivers. They should not be placed in vegetated areas that will not be cleared. • 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.	Not applicable.
Residual impacts:	None	None	Not applicable.
Cumulative impacts post mitigation:	Low	Medium	Not applicable.
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low-Medium	Not applicable.
Potential impact and risk:	**FRESHWATER IMPACTS: WATER POLLUTION**		
Nature of Impact:	Negative	Negative	Negative
Extent and duration of impact:	Local / Short Term	Regional / Short Term	Not applicable
Consequence of impact or risk:	During construction there are a number of potential pollution inputs into the wetlands (such as hydrocarbons and raw cement). The likelihood of these entering Stream A is larger as there will be construction works directly surrounding the system. These pollutants alter the water quality parameters such as turbidity, nutrient levels, chemical oxygen	During construction there are a number of potential pollution inputs into the wetlands (such as hydrocarbons and raw cement). The likelihood of these entering Stream A is larger as there will be construction works directly surrounding the system. These pollutants alter the water quality parameters such as turbidity, nutrient levels, chemical oxygen	Not applicable, as no construction will mean no such nuisances will occur.

	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 entering 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.	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 entering 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.	
Probability of occurrence:	Probable	Probable	Not applicable, as no construction means no nuisances.
Degree to which the impact may cause irreplaceable loss of resources:	Will not cause irreplaceable loss of resources	Will not cause irreplaceable loss of resources	No loss of resource.
Degree to which the impact can be reversed:	Partly	Partly	Not applicable.
Indirect impacts:	None	None	None.
Cumulative impact prior to mitigation:	Low	Medium	Not applicable.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Medium	Not applicable.
Degree to which the impact can be avoided:	Medium	High	Not applicable.
Degree to which the impact can be managed:	Medium	High	Not applicable.
Degree to which the impact can be mitigated:	Medium	High	Not applicable.

Proposed mitigation:	• All watercourses are to be considered no go areas and any unnecessary intrusion into these areas is prohibited. • The No-Go boundary must be demarcated during works, and no disturbance may occur past this point during any stage.	• All watercourses are to be considered no go areas and any unnecessary intrusion into these areas is prohibited. • The No-Go boundary must be demarcated during works, and no disturbance may occur past this point during any stage. • The solid domestic waste must be removed and disposed of offsite. All post-construction building material and waste must be cleared in accordance with the EMPr. • A monitoring programme shall be in place, not only to ensure compliance with the EMPr throughout the construction phase, but also to monitor any post-construction environmental issues and impacts such as increased surface runoff. The monitoring should be regular and additional visits must be taken when there is potential risk to watercourses.	Not applicable.
Residual impacts:	None	None	Not applicable.
Cumulative impacts post mitigation:	Low	Low	Not applicable.
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low-Medium	Not applicable.
Potential impact and risk:	**FRESHWATER IMPACTS: FLOW MODIFICATION**		
Nature of Impact:	Negative	Negative	Negative
Extent and duration of impact:	Local / permanent	Local / permanent	Not applicable
Consequence of impact or risk:	Land clearing and earth works in and adjacent to the dam and riparian systems will reduce infiltration rates and increase the surface runoff volume and velocity. Such 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	Land clearing and earth works in and adjacent to the dam and riparian systems will reduce infiltration rates and increase the surface runoff volume and velocity. Such 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	Not applicable, as no construction will mean no such nuisances will occur.

	water distribution and retention patterns will ultimately affect the hydrological integrity of water resources.	ultimately affect the hydrological integrity of water resources.	
Probability of occurrence:	Highly Likely	Highly Likely	Not applicable, as no construction means no nuisances.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of irreplaceable resources	No loss of irreplaceable resources	No loss of resource.
Degree to which the impact can be reversed:	Partly	Partly	Not applicable.
Indirect impacts:	None	None	None.
Cumulative impact prior to mitigation:	Medium	Medium	Not applicable.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	Not applicable.
Degree to which the impact can be avoided:	Medium	Medium	Not applicable.
Degree to which the impact can be managed:	Medium	Medium	Not applicable.
Degree to which the impact can be mitigated:	Medium	Medium	Not applicable.
Proposed mitigation:	• The excavations within aquatic habitat should be, as far as possible, manually hand-dug rather than dug using machinery. • The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project) and the establishment of indigenous vegetation cover to filter run-off before it enters the freshwater habitat. • Removal of vegetation must only be when essential for the continuation of the project. Do not allow any disturbance to the adjoining natural vegetation cover or soils.	• The excavations within aquatic habitat should be, as far as possible, manually hand-dug rather than dug using machinery. • The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project) and the establishment of indigenous vegetation cover to filter run-off before it enters the freshwater habitat. • Removal of vegetation must only be when essential for the continuation of the project. Do not allow any disturbance to the adjoining natural vegetation cover or soils.	Not applicable.

	• Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised. This may also include the need to deactivate any erosion headcuts/rills/gullies that may have developed. • It is the contractor's responsibility to continuously monitor the area for newly established alien species during the contract and establishment period, which if present must be removed. Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas. • Alien/ invasive species shall not be stockpiled, they should be removed from site and dumped at an approved site. • Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use, for the necessity, type proposed to be used, effectiveness and impacts of the product on aquatic biota. • A monitoring programme shall be in place, not only to ensure compliance with the EMPr throughout the construction phase, but also to monitor any post-construction environmental issues and impacts such as increased surface runoff. The monitoring should be regular and additional visits must be taken when there is potential risk to watercourses.	• Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised. This may also include the need to deactivate any erosion headcuts/rills/gullies that may have developed. • It is the contractor's responsibility to continuously monitor the area for newly established alien species during the contract and establishment period, which if present must be removed. Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas. • Alien/ invasive species shall not be stockpiled, they should be removed from site and dumped at an approved site. • Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use, for the necessity, type proposed to be used, effectiveness and impacts of the product on aquatic biota. • A monitoring programme shall be in place, not only to ensure compliance with the EMPr throughout the construction phase, but also to monitor any post-construction environmental issues and impacts such as increased surface runoff. The monitoring should be regular and additional visits must be taken when there is potential risk to watercourses.	
Residual impacts:	None	None	Not applicable.
Cumulative impacts post mitigation:	Low	Low	Not applicable.
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low - Medium	Not applicable.

Potential impact and risk:	**FRESHWATER IMPACT: EROSION & SEDIMENTATION**		
Nature of Impact:	Negative	Negative	Negative
Extent and duration of impact:	Regional / Medium Term	Regional / Permanent	Not applicable
Consequence of impact or risk:	Vegetation clearing and exposure of bare soils upslope of freshwater habitat during construction will decrease the soil binding capacity and cohesion of the soils and thus increase the risk of erosion and sedimentation downslope. The relatively steep slopes surrounding Stream B increase the risk of erosion. This activity may cause the burying of aquatic habitat. Ineffective site stormwater management, particularly in periods of high runoff, can lead to soil erosion from confined flows. Formation of rills and gullies from increased concentrated runoff. This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface. Soil compaction resulting in reduced infiltration and increased surface runoff together with the artificial creation of preferential flow paths due to construction activities, will result in increased quantities of flow entering the systems.	Vegetation clearing and exposure of bare soils upslope of freshwater habitat during construction will decrease the soil binding capacity and cohesion of the soils and thus increase the risk of erosion and sedimentation downslope. The relatively steep slopes surrounding Stream B increase the risk of erosion. This activity may cause the burying of aquatic habitat. Ineffective site stormwater management, particularly in periods of high runoff, can lead to soil erosion from confined flows. Formation of rills and gullies from increased concentrated runoff. This increase in volume and velocity of runoff increases the particle carrying capacity of the water flowing over the surface. Soil compaction resulting in reduced infiltration and increased surface runoff together with the artificial creation of preferential flow paths due to construction activities, will result in increased quantities of flow entering the systems.	Not applicable, as no construction will mean no such nuisances will occur.
Probability of occurrence:	Probable	Highly Likely	Not applicable, as no construction means no nuisances.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of irreplaceable resources.	No loss of irreplaceable resources.	No loss of resource.
Degree to which the impact can be reversed:	Partly	Partly	Not applicable.
Indirect impacts:	None	None	None.
Cumulative impact prior to mitigation:	Medium	Medium	Not applicable.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	Not applicable.
Degree to which the impact can be avoided:	Medium	Medium	Not applicable.

Degree to which the impact can be managed:	Medium	Medium	Not applicable.
Degree to which the impact can be mitigated:	Medium	Medium	Not applicable.
Proposed mitigation:	• Removal of vegetation must only be when essential for the continuation of the project. • Do not allow any disturbance to the adjoining natural vegetation cover or soils. • Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised. This may also include the need to deactivate any erosion headcuts/rills/gullies that may have developed. • It is the contractor's responsibility to continuously monitor the area for newly established alien species during the contract and establishment period, which if present must be removed. • Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas. • Alien/ invasive species shall not be stockpiled, they should be removed from site and dumped at an approved site. • Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use, for the necessity, type proposed to be used, effectiveness and impacts of the product on aquatic biota.	• Removal of vegetation must only be when essential for the continuation of the project. • Do not allow any disturbance to the adjoining natural vegetation cover or soils. • Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised. This may also include the need to deactivate any erosion headcuts/rills/gullies that may have developed. • It is the contractor's responsibility to continuously monitor the area for newly established alien species during the contract and establishment period, which if present must be removed. • Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas. • Alien/ invasive species shall not be stockpiled, they should be removed from site and dumped at an approved site. • Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use, for the necessity, type proposed to be used, effectiveness and impacts of the product on aquatic biota.	Not applicable.
Residual impacts:	None	None	Not applicable.
Cumulative impacts post mitigation:	Low	Medium	Not applicable.
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	LMedium	Not applicable.

Potential impact and risk:	**SENSE OF PLACE**		
Nature of Impact:	Negative	Negative	Negative
Extent and duration of impact:	Local and temporary	Local and temporary	Not applicable
Consequence of impact or risk:	General construction nuisances i.e. dust, noise, odour, etc. will impact on the sense of place, although mainly temporary in nature.	General construction nuisances i.e. dust, noise, odour, etc. will impact on the sense of place, although mainly temporary in nature.	Not applicable, as no construction will mean no such nuisances will occur.
Probability of occurrence:	Definite	Definite	Not applicable, as no construction means no nuisances.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource.	No loss of resource.	No loss of resource.
Degree to which the impact can be reversed:	Completely reversible.	Completely reversible.	Not applicable.
Indirect impacts:	None.	None.	None.
Cumulative impact prior to mitigation:	Negligible.	Negligible.	Not applicable.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low	Not applicable.
Degree to which the impact can be avoided:	Medium-High.	Medium-High.	Not applicable.
Degree to which the impact can be managed:	Medium.	Medium.	Not applicable.
Degree to which the impact can be mitigated:	Medium	Medium	Not applicable.
Proposed mitigation:	<u>Dust Mitigation:</u> • Land clearing and earthmoving activities should not be undertaken during strong winds, where possible. • Cleared areas should be provided with a suitable cover as soon as possible, and not left exposed for extended periods of time. • Stockpiles of topsoil, spoil material and other material that may generate dust must be protected from wind erosion (e.g. covered with	<u>Dust Mitigation:</u> • Land clearing and earthmoving activities should not be undertaken during strong winds, where possible. • Cleared areas should be provided with a suitable cover as soon as possible, and not left exposed for extended periods of time. • Stockpiles of topsoil, spoil material and other material that may generate dust must be protected from wind erosion (e.g. covered with	Not applicable.

	netting, tarpaulin or other appropriate measures. Note that topsoil should not be covered with tarpaulin as this may kill the seedbank). • The location of stockpiles must take into account the prevailing wind direction, and should be situated so as to have the least possible dust impact to surrounding residents, road-users and other land-users. • Speed limits must be enforced in all areas, including public roads and private property to limit the levels of dust pollution. • The speed limit should be set at 20-40km/h. • Dust must be suppressed on access roads and the construction site during dry periods by the regular application of non-potable water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that will not result in the generation of excessive run off. • Dust suppression measures such as the wetting down of sand heaps as well as exposed areas around the site must be implemented especially on windy days. • The use of straw worked into the sandy areas may also help and the ECO must advise when this is necessary. • If dust appears to be a continuous problem the option of using shade cloth to cover open areas may be necessary or the erecting of shade netting above the fenced off are may need to be explored. • All vehicles transporting sand need to have tarpaulins covering their loads which will assist in any windblown sand occurring off the trucks. • Work on site must be well-planned and should proceed efficiently so as to minimise the handling of dust generating material. • Material loads should be properly covered during transportation. • Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not	netting, tarpaulin or other appropriate measures. Note that topsoil should not be covered with tarpaulin as this may kill the seedbank). • The location of stockpiles must take into account the prevailing wind direction, and should be situated so as to have the least possible dust impact to surrounding residents, road-users and other land-users. • Speed limits must be enforced in all areas, including public roads and private property to limit the levels of dust pollution. • The speed limit should be set at 20-40km/h. • Dust must be suppressed on access roads and the construction site during dry periods by the regular application of non-potable water or a biodegradable soil stabilisation agent. Water used for this purpose must be used in quantities that will not result in the generation of excessive run off. • Dust suppression measures such as the wetting down of sand heaps as well as exposed areas around the site must be implemented especially on windy days. • The use of straw worked into the sandy areas may also help and the ECO must advise when this is necessary. • If dust appears to be a continuous problem the option of using shade cloth to cover open areas may be necessary or the erecting of shade netting above the fenced off are may need to be explored. • All vehicles transporting sand need to have tarpaulins covering their loads which will assist in any windblown sand occurring off the trucks. • Work on site must be well-planned and should proceed efficiently so as to minimise the handling of dust generating material. • Material loads should be properly covered during transportation. • Dust levels specified in the National Dust Control Regulations (GN 827 of November 2013) may not	

	be exceeded. i.e. dust fall in residential areas may not exceed 600mg/m2/day, measured using reference method ASTM D1739; • A Complaints Register must be available at the site office for inspection by the ECO of dust complaints that may have been received. • The appointed Environmental Control Officer (ECO) must undertake a site inspection once per week, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP. <u>Noise Mitigation:</u> • A noise complaints register will be opened. • Excavations and earth-moving activities must be restricted to normal construction working hours (7:30 – 17:30) as far as possible. • Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. • Vehicles and equipment must be kept in good working condition. If deemed necessary, machinery and equipment should be fitted with mufflers/ exhaust silencers. No unnecessary disturbances should be allowed to emanate from the construction site. • Due to the proximity of the proposed development site to residents, noise levels must be kept to a minimum at all times. If excessive noise is expected on the boundary of the residential erven bordering the site they must be informed in advance of when the high noise levels will occur and for how long they will occur. • Workers should be educated on how to control noise-generating activities that have the potential to become disturbances, particularly over an extended period of time.	be exceeded. i.e. dust fall in residential areas may not exceed 600mg/m2/day, measured using reference method ASTM D1739; • A Complaints Register must be available at the site office for inspection by the ECO of dust complaints that may have been received. • The appointed Environmental Control Officer (ECO) must undertake a site inspection once per week, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP. <u>Noise Mitigation:</u> • A noise complaints register will be opened. • Excavations and earth-moving activities must be restricted to normal construction working hours (7:30 – 17:30) as far as possible. • Work on site must be well-planned and should proceed efficiently so as to limit the duration of the disturbance. • Vehicles and equipment must be kept in good working condition. If deemed necessary, machinery and equipment should be fitted with mufflers/ exhaust silencers. No unnecessary disturbances should be allowed to emanate from the construction site. • Due to the proximity of the proposed development site to residents, noise levels must be kept to a minimum at all times. If excessive noise is expected on the boundary of the residential erven bordering the site they must be informed in advance of when the high noise levels will occur and for how long they will occur. • Workers should be educated on how to control noise-generating activities that have the potential to become disturbances, particularly over an extended period of time.	

	• Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate. • Affected parties must be informed of the excessive noise factors. • The noise management and monitoring measures prescribed in the EMPr must be adhered to. • The appointed Environmental Control Officer (ECO) must undertake a site inspection once per week, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP.	• Noise levels must comply with the relevant health & safety regulations and SANS codes and should be monitored by the Health & Safety Officer as necessary and appropriate. • Affected parties must be informed of the excessive noise factors. • The noise management and monitoring measures prescribed in the EMPr must be adhered to. • The appointed Environmental Control Officer (ECO) must undertake a site inspection once per week, for the duration of the construction phase, and to produce a short monthly ECO monitoring audit report, auditing on the compliance of the property developer with the conditions of the Environmental Authorisation and the approved EMP.	
Residual impacts:	None.	None.	Not applicable.
Cumulative impacts post mitigation:	None.	None.	Not applicable.
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low.	Low.	Not applicable.
Potential impact and risk:	**TRAFFIC**		
Nature of Impact:	Negative	Negative	Negative
Extent and duration of impact:	Local and temporary	Local and temporary	Not applicable
Consequence of impact or risk:	Minor disruptions to traffic to the surrounding areas will occur during the construction stage, as construction vehicles will be utilising the areas to access the sites.	Minor disruptions to traffic to the surrounding areas will occur during the construction stage, as construction vehicles will be utilising the areas to access the sites.	Not applicable, as no construction will mean no such nuisances will occur.
Probability of occurrence:	Definite	Definite	Not applicable, as no construction means no nuisances.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource.	No loss of resource.	No loss of resource.

Degree to which the impact can be reversed:	Completely reversible.	Completely reversible.	Not applicable.
Indirect impacts:	None.	None.	None.
Cumulative impact prior to mitigation:	Negligible.	Negligible.	Not applicable.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low	Not applicable.
Degree to which the impact can be avoided:	Medium-High.	Medium-High.	Not applicable.
Degree to which the impact can be managed:	Medium.	Medium.	Not applicable.
Degree to which the impact can be mitigated:	Can be mitigated.	Can be mitigated.	Not applicable.
Proposed mitigation:	• All construction vehicles need to adhere to traffic laws. The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. As far as possible care should be taken to ensure that the local traffic flow pattern is not significantly disrupted, and all vehicle operators therefore need to be educated in terms of "best-practice" operation to minimise unnecessary traffic congestion or dangers. Construction vehicles should therefore, not unnecessarily obstruct the access point or traffic lanes used to access the site. Construction vehicles also need to consider the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles. Adequate signage, that is both informative and cautionary to passing traffic (motorists and pedestrians), warning them of the construction activities must be suitably located in the area where the construction is occurring and must be easily visible by all road users. Signage	• All construction vehicles need to adhere to traffic laws. The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. As far as possible care should be taken to ensure that the local traffic flow pattern is not significantly disrupted, and all vehicle operators therefore need to be educated in terms of "best-practice" operation to minimise unnecessary traffic congestion or dangers. Construction vehicles should therefore, not unnecessarily obstruct the access point or traffic lanes used to access the site. Construction vehicles also need to consider the load carrying capacity of road surfaces and adhere to all other prescriptive regulations regarding the use of public roads by construction vehicles. Adequate signage, that is both informative and cautionary to passing traffic (motorists and pedestrians), warning them of the construction activities must be suitably located in the area where the construction is occurring and must be easily visible by all road users. Signage needs to	Not applicable.

	needs to be clearly visible and needs to include, among others, the following: o Identifying working area as a construction site; o Cautioning against relevant construction activities; o Prohibiting access to construction site; o Clearly specifying possible detour routes and/or delay periods; o Possible indications of time frames attached to the construction activities, and; o Listings of which contractors and engineers are working on the site. • If needed, appropriate traffic management measures and/ or points men (traffic marshals) should be utilized to assist vehicles entering/ exiting the site, particularly where vehicles must cross the path of oncoming traffic. • 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.	be clearly visible and needs to include, among others, the following: o Identifying working area as a construction site; o Cautioning against relevant construction activities; o Prohibiting access to construction site; o Clearly specifying possible detour routes and/or delay periods; o Possible indications of time frames attached to the construction activities, and; o Listings of which contractors and engineers are working on the site. • If needed, appropriate traffic management measures and/ or points men (traffic marshals) should be utilized to assist vehicles entering/ exiting the site, particularly where vehicles must cross the path of oncoming traffic. • 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.	
Residual impacts:	None.	None.	Not applicable.
Cumulative impacts post mitigation:	None.	None.	Not applicable.
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low.	Low.	Not applicable.

Potential impact and risk:	**VISUAL**		
Nature of Impact:	Negative	Negative	Negative
Extent and duration of impact:	Local and temporary	Local and temporary	Not applicable
Consequence of impact or risk:	Visual impacts are to be expected during this stage of the development, but the sites will be fenced or screened for health and safety purposes and access controlled, thus limiting the visual impact of the actual construction work.	Visual impacts are to be expected during this stage of the development, but the sites will be fenced or screened for health and safety purposes and access controlled, thus limiting the visual impact of the actual construction work.	Not applicable, as no construction will mean no such nuisances will occur.
Probability of occurrence:	Definite	Definite	Not applicable, as no construction means no nuisances.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of resource.	No loss of resource.	No loss of resource.
Degree to which the impact can be reversed:	Partly	Partly	Not applicable.
Indirect impacts:	None.	None.	None.
Cumulative impact prior to mitigation:	Low	Low	Not applicable.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low/Medium	Low/Medium	Not applicable.
Degree to which the impact can be avoided:	Medium	Medium	Not applicable.
Degree to which the impact can be managed:	Medium.	Medium.	Not applicable.
Degree to which the impact can be mitigated:	Can be mitigated.	Can be mitigated.	Not applicable.
Proposed mitigation:	• The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible.	• The site camp, storage facilities, stockpiles, waste bins, and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible.	Not applicable.

	• Work on site must be well-planned and well-managed so that work proceeds quickly and efficiently, thus minimizing the disturbance time. • The site camp, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. The site camp may require visual screening via shade cloth or other suitable material. • Special attention should be given to the screening of highly reflective material. • Use of lighting (if required) should take into account surrounding residents and land users and should present little or no nuisance. Downward facing, spill-off type lighting is recommended. • Construction vehicles must enter and leave the site during working hours. • Working areas, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible.	• Work on site must be well-planned and well-managed so that work proceeds quickly and efficiently, thus minimizing the disturbance time. • The site camp, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. The site camp may require visual screening via shade cloth or other suitable material. • Special attention should be given to the screening of highly reflective material. • Use of lighting (if required) should take into account surrounding residents and land users and should present little or no nuisance. Downward facing, spill-off type lighting is recommended. • Construction vehicles must enter and leave the site during working hours. • Working areas, storage facilities, stockpiles, waste bins, elevated tanks and any other temporary structures on site should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible.	
Residual impacts:	None.	None.	Not applicable.
Cumulative impacts post mitigation:	None.	None.	Not applicable.
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low.	Low.	Not applicable.
Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS: JOB CREATION: -Creation of temporary job opportunities with potential for skills transfer, for members of the local community.**		
Nature of Impact:	Positive.	Positive.	Negative.
Extent and duration of impact:	Local and temporary.	Local and temporary.	None.

Consequence of impact or risk:	The local community benefits from the employment opportunities created during the construction phase. Apart from the engineers, contractors etc., it is expected that approximately 2029 job opportunities will be created during the construction phase of the proposal. Approximately 75% of this will accrue to previously disadvantaged individuals. Additionally, the skills learned could lead to future opportunities.	The local community benefits from the employment opportunities created during the construction phase. Apart from the engineers, contractors etc., it is expected that approximately 2029 job opportunities will be created during the construction phase of the proposal. Approximately 75% of this will accrue to previously disadvantaged individuals. Additionally, the skills learned could lead to future opportunities.	Negative impact, as no new jobs would be created for the local community if no construction occurs.
Probability of occurrence:	Definite.	Definite.	No transfer of skills occurs, and the no new jobs are created if no construction occurs.
Degree to which the impact may cause irreplaceable loss of resources:	No loss of a resource.	No loss of a resource.	Significant loss of a resource, as no opportunities will be available as a result of this option.
Degree to which the impact can be reversed:	Completely reversible.	Completely reversible.	Irreversible.
Indirect impacts:	There may be opportunities to transfer skills from more experienced workers to less experienced workers. The local community benefits from the employment opportunities created during the construction phase. Increase in local economy.	There may be opportunities to transfer skills from more experienced workers to less experienced workers. The local community benefits from the employment opportunities created during the construction phase. Increase in local economy.	No upskilling of the local community members occurs, as no new jobs created.
Cumulative impact prior to mitigation:	None.	None.	None.
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium.	Medium.	Medium-High, as job opportunities are a focal point for social-economic aspects of the development to have a positive impact.
Degree to which the impact can be avoided:	High.	High.	Unavoidable.
Degree to which the impact can be managed:	High.	High.	Low.
Degree to which the impact can be mitigated:	No mitigation proposed, as it is a positive impact.	No mitigation proposed, as it is a positive impact.	No mitigation proposed, as no impact created.
Proposed mitigation:	This impact can be enhanced through the sourcing of local companies to provide construction related services. Local businesses are more likely to employ residents of the local area and more likely to use suppliers from the local economy.	This impact can be enhanced through the sourcing of local companies to provide construction related services. Local businesses are more likely to employ residents of the local area and more likely to use suppliers from the local economy.	None proposed.
Residual impacts:	The majority of the construction team will be from the local community, with preference given to historically disadvantaged individuals.	The majority of the construction team will be from the local community, with preference given to historically disadvantaged individuals.	No new job opportunities created, as no construction occurs.

	Skills transfer from experienced to less experienced workers will be actively encouraged on site.	Skills transfer from experienced to less experienced workers will be actively encouraged on site.	
Cumulative impacts post mitigation:	High.	High.	Medium.
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	Medium (+)	Medium (-).
OPERATIONAL PHASE:			
Potential impact and risk:	**FRESHWATER IMPACTS: DISTURBANCE / LOSS OF HABITAT**		
Nature of Impact:	Negative	Negative	Positive
Extent and duration of impact:	Site Only / Permanent	Site Only / Permanent	Site only / Long Term
Consequence of impact or risk:	There is less direct risk to aquatic habitat during the operational phase as it will have been transformed already during construction. The project may promote the establishment of disturbance-tolerant biota, including colonization by invasive alien species, weeds and pioneer plants if there is any ongoing disturbance near the riparian zone. Although this impact is initiated during the construction phase it is likely to persist into the operational phase. Additionally, the stormwater infrastructure of the housing and associated road network will increase and concentrate flows into the systems. This may indirectly lead to erosion in the remaining wetland habitat that compromises the remaining vegetated habitat.	There is less direct risk to aquatic habitat during the operational phase as it will have been transformed already during construction. The project may promote the establishment of disturbance-tolerant biota, including colonization by invasive alien species, weeds and pioneer plants if there is any ongoing disturbance near the riparian zone. Although this impact is initiated during the construction phase it is likely to persist into the operational phase. Additionally, the stormwater infrastructure of the housing and associated road network will increase and concentrate flows into the systems. This may indirectly lead to erosion in the remaining wetland habitat that compromises the remaining vegetated habitat.	No disturbance or loss of habitat or sedimentation.
Probability of occurrence:	Improbable	Improbable	Probable
Degree to which the impact may cause irreplaceable loss of resources:	No irreplaceable loss of resources.	No irreplaceable loss of resources.	No irreplaceable loss of resources.
Degree to which the impact can be reversed:	Barely	Barely	Reversible
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Low	Low	Low

Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low	Low
Degree to which the impact can be avoided:	Low	Medium	Low
Degree to which the impact can be managed:	Low	Medium	Low
Degree to which the impact can be mitigated:	Low	Medium	Low
Proposed mitigation:	• The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly concentrated before entering the buffer area. • The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area. • Maintenance of the freshwater habitat and buffer area must be implemented for it to remain effective. Apart from erosion control and alien invasive plant eradication, the encroachment of any further infrastructure or vehicles must be prevented. • Engage with the homeowners to explain the reasons why the buffer and the water resources are protected and what human activities are allowed. Encourage recreational activities within the buffer area that are not in conflict with water resource management. The community could be involved in the monitoring e.g. the packaging plant effluent.	• The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly concentrated before entering the buffer area. • The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area. • Maintenance of the freshwater habitat and buffer area must be implemented for it to remain effective. Apart from erosion control and alien invasive plant eradication, the encroachment of any further infrastructure or vehicles must be prevented. • Engage with the homeowners to explain the reasons why the buffer and the water resources are protected and what human activities are allowed. Encourage recreational activities within the buffer area that are not in conflict with water resource management. The community could be involved in the monitoring e.g. the packaging plant effluent.	No mitigation measures proposed

Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Low	Low	Medium (+)
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low / Medium	Medium (+)
Potential impact and risk:	**FRESHWATER IMPACTS: WATER / SOIL POLLUTION**		
Nature of Impact:	Negative	Negative	Positive
Extent and duration of impact:	Regional / Permanent	Regional / Permanent	Local / Long Term
Consequence of impact or risk:	If not prevented, litter, and contaminants, including sand, silt, and dirt particles, will enter storm water runoff and pollute the systems. Micro-litter such as cigarette butts may travel through certain stormwater grids and grids may not be regularly cleared. The number of vehicles on the property due to the development increases the potential for pollutants to enter the system. During maintenance of the development there could be water pollution impacts similar to those encountered in the construction phase. The establishment of sewer pipes in close proximity to watercourse always poses a long term threat to the water quality and ecological health of freshwater ecosystems due to the relatively high likelihood that surcharge events will occur at some point in the future. A complete shift in the structure and composition of aquatic biotic communities is the result, as well as a general degradation in water resource quality that could have negative impacts to downstream human users e.g. abstraction from the Gwaiing River. Over the lifetime of the development, surcharge events and/or pipe leakages will likely occur and as a result some pollution as a result of sewerage infrastructure is inevitable.	If not prevented, litter, and contaminants, including sand, silt, and dirt particles, will enter storm water runoff and pollute the systems. Micro-litter such as cigarette butts may travel through certain stormwater grids and grids may not be regularly cleared. The number of vehicles on the property due to the development increases the potential for pollutants to enter the system. During maintenance of the development there could be water pollution impacts similar to those encountered in the construction phase. The establishment of sewer pipes in close proximity to watercourse always poses a long term threat to the water quality and ecological health of freshwater ecosystems due to the relatively high likelihood that surcharge events will occur at some point in the future. A complete shift in the structure and composition of aquatic biotic communities is the result, as well as a general degradation in water resource quality that could have negative impacts to downstream human users e.g. abstraction from the Gwaiing River. Over the lifetime of the development, surcharge events and/or pipe leakages will likely occur and as a result some pollution as a result of sewerage infrastructure is inevitable.	Reduced water or soil pollution

Probability of occurrence:	Highly Likely	Highly Likely	Probable
Degree to which the impact may cause irreplaceable loss of resources:	No irreplaceable loss of resources	No irreplaceable loss of resources	No irreplaceable loss of resources.
Degree to which the impact can be reversed:	Partly	Partly	Reversible
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Medium	Medium	Low
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	Low
Degree to which the impact can be avoided:	High	High	Low
Degree to which the impact can be managed:	High	High	Low
Degree to which the impact can be mitigated:	High	High	Low
Proposed mitigation:	• The recommended use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater. • Appropriate waste water infrastructure must be designed to prevent any such water from entering the surrounding environment. • Engage with the homeowners to explain the reasons why the buffer and the water resources are protected and what human activities are allowed. Encourage recreational activities within the buffer area that are not in conflict with water resource management. The community could be involved in the monitoring e.g. the packaging plant effluent.	• The recommended use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater. • Appropriate waste water infrastructure must be designed to prevent any such water from entering the surrounding environment. • Engage with the homeowners to explain the reasons why the buffer and the water resources are protected and what human activities are allowed. Encourage recreational activities within the buffer area that are not in conflict with water resource management. The community could be involved in the monitoring e.g. the packaging plant effluent.	No mitigation measures proposed

Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Low	Low	Medium (+)
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low / Medium	Medium (+)
Potential impact and risk:	**FRESHWATER IMPACTS: MODIFIED HYDROLOGY AND HYDRODYNAMICS**		
Nature of Impact:	Negative	Negative	Positive
Extent and duration of impact:	Local / Permanent	Regional / Permanent	Local / Long Term
Consequence of impact or risk:	One has to ensure that surface flows are slowed and enter the rivers in a diffuse pattern. Ultimately, the operational surface 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. According to the SANRAL (2006), urbanisation typically increases the runoff rate by 20 -50%, compared with natural conditions. Increased volumes and velocities of storm water draining from the area and discharging into the rivers will alter the natural ecology, increasing the risk of erosion and channel incision/scouring.	One has to ensure that surface flows are slowed and enter the rivers in a diffuse pattern. Ultimately, the operational surface 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. According to the SANRAL (2006), urbanisation typically increases the runoff rate by 20 -50%, compared with natural conditions. Increased volumes and velocities of storm water draining from the area and discharging into the rivers will alter the natural ecology, increasing the risk of erosion and channel incision/scouring.	Modified Hydrology and Hydrodynamics
Probability of occurrence:	Highly Likely	Highly Likely	Probable
Degree to which the impact may cause irreplaceable loss of resources:	No irreplaceable loss of resources	Irreplaceable loss of resources	No irreplaceable loss of resources.
Degree to which the impact can be reversed:	Partly	Partly	Reversible
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Medium	Medium	Medium
Significance rating of impact prior to mitigation	Medium	Medium	Medium

(e.g. Low, Medium, Medium-High, High, or Very-High)			
Degree to which the impact can be avoided:	Medium	Medium	Low
Degree to which the impact can be managed:	Medium	Medium	Low
Degree to which the impact can be mitigated:	Medium	Medium	Low
Proposed mitigation:	• The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly concentrated before entering the buffer area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area. • Maintenance of the freshwater habitat and buffer area must be implemented for it to remain effective. Apart from erosion control and alien invasive plant eradication, the encroachment of any further infrastructure or vehicles must be prevented.	• The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly concentrated before entering the buffer area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area. • Maintenance of the freshwater habitat and buffer area must be implemented for it to remain effective. Apart from erosion control and alien invasive plant eradication, the encroachment of any further infrastructure or vehicles must be prevented.	No mitigation measures proposed
Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Low	Low	High (+)
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low / Medium	High (+)

Potential impact and risk:	**FRESHWATER IMPACTS: EROSION & SEDIMENTATION**		
Nature of Impact:	Negative	Negative	Positive
Extent and duration of impact:	Regional / Permanent	Local / Permanent	Local / Long Term
Consequence of impact or risk:	Reduced reed habitat is likely to be permanent if maintenance is applied to the proposal. This will reduce the buffering services it currently provides. The project will promote the establishment of disturbance-tolerant biota, including colonization by invasive alien species, weeds and pioneer plants within the remaining habitat. Failure of infrastructure, whether during a flood event or not, will impact the habitat and biota of both the estuary and the wetland.	Reduced reed habitat is likely to be permanent if maintenance is applied to the proposal. This will reduce the buffering services it currently provides. The project will promote the establishment of disturbance-tolerant biota, including colonization by invasive alien species, weeds and pioneer plants within the remaining habitat. Failure of infrastructure, whether during a flood event or not, will impact the habitat and biota of both the estuary and the wetland.	No erosion or sedimentation
Probability of occurrence:	Highly Likely	Highly Likely	Probable
Degree to which the impact may cause irreplaceable loss of resources:	No irreplaceable loss of resources	No irreplaceable loss of resources	No irreplaceable loss of resources.
Degree to which the impact can be reversed:	Partly	Partly	Reversible
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Medium	Medium	Medium
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	Medium
Degree to which the impact can be avoided:	Medium	Medium	Low
Degree to which the impact can be managed:	Medium	Medium	Low
Degree to which the impact can be mitigated:	Medium	Medium	Low
Proposed mitigation:	• The stormwater management infrastructure must be designed to ensure the runoff from the	• The stormwater management infrastructure must be designed to ensure the runoff from the	No mitigation measures proposed

	development is not highly concentrated before entering the buffer area. • The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area. • Maintenance of the freshwater habitat and buffer area must be implemented for it to remain effective. Apart from erosion control and alien invasive plant eradication, the encroachment of any further infrastructure or vehicles must be prevented. • Engage with the homeowners to explain the reasons why the buffer and the water resources are protected and what human activities are allowed. Encourage recreational activities within the buffer area that are not in conflict with water resource management. The community could be involved in the monitoring e.g. the packaging plant effluent.	development is not highly concentrated before entering the buffer area. • The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion. • Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area. • Maintenance of the freshwater habitat and buffer area must be implemented for it to remain effective. Apart from erosion control and alien invasive plant eradication, the encroachment of any further infrastructure or vehicles must be prevented. • Engage with the homeowners to explain the reasons why the buffer and the water resources are protected and what human activities are allowed. Encourage recreational activities within the buffer area that are not in conflict with water resource management. The community could be involved in the monitoring e.g. the packaging plant effluent.	
Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Low / Medium	Low	High (+)
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low / Medium	Low / Medium	High (+)
Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS: PERMANENT EMPLOYMENT**		
Nature of Impact:	Positive	Positive	Negative

Extent and duration of impact:	Regional and permanent.	Regional and permanent.	Regional and permanent.
Consequence of impact or risk:	It is expected that approximately 317 job opportunities will be created during the construction phase of the proposal. Approximately 75% of this will accrue to previously disadvantaged individuals.	It is expected that approximately 317 job opportunities will be created during the construction phase of the proposal. Approximately 75% of this will accrue to previously disadvantaged individuals.	The No-Development option would represent a lost opportunity in terms of the benefits associated with employment opportunities during the operation phase.
Probability of occurrence:	Highly probable.	Highly probable.	Improbable
Degree to which the impact may cause irreplaceable loss of resources:	No significant loss of a resource.	No significant loss of a resource.	No significant loss of a resource.
Degree to which the impact can be reversed:	Positive impact so does not need to be reversed.	Positive impact so does not need to be reversed.	Can be reversed.
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Medium	Medium	Medium
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	High
Degree to which the impact can be avoided:	Medium	Medium	Unavoidable
Degree to which the impact can be managed:	Medium	Medium	Low
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated.
Proposed mitigation:	The impact on employment is enhanced through the focus on employment of residents of the local area.	The impact on employment is enhanced through the focus on employment of residents of the local area.	Implementation of the proposed development.
Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Medium	Medium	Medium
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	Medium (+)	Medium (-)

Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS: LOCAL GOVERNMENT REVENUE**		
Nature of Impact:	Positive	Positive	Negative
Extent and duration of impact:	Regional and permanent.	Regional and permanent.	Regional and permanent.
Consequence of impact or risk:	The proposed infill development will not trigger unaffordable capital cost burdens to the local municipality but will strengthen the financial sustainability of the municipality in both the short- and longer term. This would be through the collection of local property rates, and fees for basic services. Properties at the development look set be valued in the R 2 million – R 4.5 million price range. It is estimated that with the present rates structure, the development will generate between R 3 – 4.5 million in rates per year for the George Local Municipality.	The proposed infill development will not trigger unaffordable capital cost burdens to the local municipality but will strengthen the financial sustainability of the municipality in both the short- and longer term. This would be through the collection of local property rates, and fees for basic services. Properties at the development look set be valued in the R 2 million – R 4.5 million price range. It is estimated that with the present rates structure, the development will generate between R 3 – 4.5 million in rates per year for the George Local Municipality.	The No-Development option would represent a lost opportunity in terms of the benefits associated with increased local Government revenue during the operation phase.
Probability of occurrence:	Highly probable.	Highly probable.	Improbable
Degree to which the impact may cause irreplaceable loss of resources:	No significant loss of a resource.	No significant loss of a resource.	No significant loss of a resource.
Degree to which the impact can be reversed:	Positive impact so does not need to be reversed.	Positive impact so does not need to be reversed.	Can be reversed.
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Medium	Medium	Medium
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	High
Degree to which the impact can be avoided:	Medium	Medium	Unavoidable
Degree to which the impact can be managed:	Medium	Medium	Low
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated.
Proposed mitigation:	The proposed development represents an enhancement measure on its own.	The proposed development represents an enhancement measure on its own.	Implementation of the proposed development.

Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Medium	Medium	Medium
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	Medium (+)	Medium (-)
Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS: PROVISION OF HOUSING OPPORTUNITIES**		
Nature of Impact:	Positive	Positive	Negative
Extent and duration of impact:	Local and permanent.	Local and permanent.	Regional and permanent.
Consequence of impact or risk:	The Herolds Bay Country Estate would address the shortage of developable land around the settlement. The low vacancy of property in and around the town of Herolds Bay coupled with high demand for units at the scenic sea-side town have resulted in sky-rocketing property prices. The development would address this through the development of more affordable units and diversity in the housing mix.	The Herolds Bay Country Estate would address the shortage of developable land around the settlement. The low vacancy of property in and around the town of Herolds Bay coupled with high demand for units at the scenic sea-side town have resulted in sky-rocketing property prices. The development would address this through the development of more affordable units and diversity in the housing mix.	The No-Development option would represent a lost opportunity in terms of the provision of housing.
Probability of occurrence:	Highly probable.	Highly probable.	Improbable
Degree to which the impact may cause irreplaceable loss of resources:	No significant loss of a resource.	No significant loss of a resource.	No significant loss of a resource.
Degree to which the impact can be reversed:	Positive impact so does not need to be reversed.	Positive impact so does not need to be reversed.	Can be reversed.
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Medium	Medium	Medium
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	High
Degree to which the impact can be avoided:	Medium	Medium	Unavoidable

Degree to which the impact can be managed:	Medium	Medium	Low
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated.
Proposed mitigation:	The proposed development represents an enhancement measure on its own.	The proposed development represents an enhancement measure on its own.	Implementation of the proposed development.
Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Medium	Medium	Medium
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	Medium (+)	Medium (-)
Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS: PROPERTY VALUES**		
Nature of Impact:	Positive	Positive	Negative
Extent and duration of impact:	Local and permanent.	Local and permanent.	Local and permanent.
Consequence of impact or risk:	Property values are likely to be affected in two ways. Firstly, the provision of new housing will alleviate the supply constraints at Herolds Bay, easing price pressure. This may be seen as detrimental to some existing property owners. This effect is likely to only persist in the shortterm. The older properties in Lower Herolds Bay, properties with a view in Upper Herolds Bay, as well as properties in the up-market estates neighbouring the town, are unlikely to be affected in the medium to long-term. In the long-term, the development of the estate is likely to strengthen the local property market providing more options and improving the functioning of the town through the provision of new services which are presently lacking (such as retail and office space).	Property values are likely to be affected in two ways. Firstly, the provision of new housing will alleviate the supply constraints at Herolds Bay, easing price pressure. This may be seen as detrimental to some existing property owners. This effect is likely to only persist in the shortterm. The older properties in Lower Herolds Bay, properties with a view in Upper Herolds Bay, as well as properties in the up-market estates neighbouring the town, are unlikely to be affected in the medium to long-term. In the long-term, the development of the estate is likely to strengthen the local property market providing more options and improving the functioning of the town through the provision of new services which are presently lacking (such as retail and office space).	The No-Development option would represent a lost opportunity in terms of the strengthening of the property market.
Probability of occurrence:	Probable.	Probable.	Improbable
Degree to which the impact may cause	No significant loss of a resource.	No significant loss of a resource.	No significant loss of a resource.

irreplaceable loss of resources:			
Degree to which the impact can be reversed:	Positive impact so does not need to be reversed.	Positive impact so does not need to be reversed.	Can be reversed.
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Low	Low	Medium
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low	Low-Medium	Medium
Degree to which the impact can be avoided:	Medium	Medium	Unavoidable
Degree to which the impact can be managed:	Medium	Medium	Low
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated.
Proposed mitigation:	The proposed development represents an enhancement measure on its own.	The proposed development represents an enhancement measure on its own.	Implementation of the proposed development.
Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Low	Low-Medium	Medium
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low (+)	Low-Medium (+)	Medium (-)
Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS: TOURISM & ACCESSIBILITY**		
Nature of Impact:	Positive	Positive	Negative
Extent and duration of impact:	Regional and permanent.	Regional and permanent.	Regional and permanent.
Consequence of impact or risk:	The development is likely to increase tourism to the town as well as the general area through the provision of increased accommodation at Herolds Bay. The development will also improve the capacity for tourism at Herolds Bay through the park-and-ride	The development is likely to increase tourism to the town as well as the general area through the provision of increased accommodation at Herolds Bay. The development will also improve the capacity for tourism at Herolds Bay through the park-and-ride	The No-Development option would represent a lost opportunity in terms of the benefits associated with increased tourism opportunities and accessibility to the beach area.

	facility, allowing more people access to the beach without increasing the traffic along the beachfront. The inclusion of retail and restaurant space is another aspect which will help support tourism growth to the area. The development is expected to increase the amount of vehicular traffic in the general area around Herolds Bay, and will likely increase traffic to the beach marginally during the low season, however the provision of the park-and-ride facility will greatly improve accessibility to the beach during the high season and weekends.	facility, allowing more people access to the beach without increasing the traffic along the beachfront. The inclusion of retail and restaurant space is another aspect which will help support tourism growth to the area. The development is expected to increase the amount of vehicular traffic in the general area around Herolds Bay, and will likely increase traffic to the beach marginally during the low season, however the provision of the park-and-ride facility will greatly improve accessibility to the beach during the high season and weekends.	
Probability of occurrence:	Highly probable.	Highly probable.	Improbable
Degree to which the impact may cause irreplaceable loss of resources:	No significant loss of a resource.	No significant loss of a resource.	No significant loss of a resource.
Degree to which the impact can be reversed:	Positive impact so does not need to be reversed.	Positive impact so does not need to be reversed.	Can be reversed.
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Low-Medium	Low-Medium	Medium
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low-Medium	Low-Medium	Medium
Degree to which the impact can be avoided:	Medium	Medium	Unavoidable
Degree to which the impact can be managed:	Medium	Medium	Low
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated.
Proposed mitigation:	The impact on tourism is enhanced through the provision of adequate signage to notify users of the service, electronic monitoring of parking availability at the beachfront to reduce needless traffic at busy times, and restricting traffic to the beachfront through the use of parking meters, or other forms of traffic management to encourage the use of the park-and-ride facility.	The impact on tourism is enhanced through the provision of adequate signage to notify users of the service, electronic monitoring of parking availability at the beachfront to reduce needless traffic at busy times, and restricting traffic to the beachfront through the use of parking meters, or other forms of traffic management to encourage the use of the park-and-ride facility.	Implementation of the proposed development.

	Great care must be used in designing the transit programme to the service is priced adequately and to ensure that the programme has the maximal impact on traffic in the town. The impact on tourism and residents can be further enhanced through adequate research to identify the best candidates for businesses to take up retail and office space at the development to ensure the maximal impact on tourism.	Great care must be used in designing the transit programme to the service is priced adequately and to ensure that the programme has the maximal impact on traffic in the town. The impact on tourism and residents can be further enhanced through adequate research to identify the best candidates for businesses to take up retail and office space at the development to ensure the maximal impact on tourism.	
Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Low-Medium	Low-Medium	Medium
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low-Medium (+)	Low-Medium (+)	Low-Medium (-)
Potential impact and risk:	**SOCIO-ECONOMIC IMPACTS: RETAIL & COMMERCIAL SERVICES**		
Nature of Impact:	Positive	Positive	Negative
Extent and duration of impact:	Local and permanent.	Local and permanent.	Regional and permanent.
Consequence of impact or risk:	The development of retail and commercial office space will provide opportunities for new businesses, and address critical gaps in the Herolds Bay property market. The provision of retail, restaurants, and office space will lead to the provision of new services which will improve the functioning of the town for permanent residents and holiday travellers alike.	The development of retail and commercial office space will provide opportunities for new businesses, and address critical gaps in the Herolds Bay property market. The provision of retail, restaurants, and office space will lead to the provision of new services which will improve the functioning of the town for permanent residents and holiday travellers alike.	The No-Development option would represent a lost opportunity in terms of the benefits associated with the proposed retail area and the commercial services.
Probability of occurrence:	Highly probable.	Highly probable.	Improbable
Degree to which the impact may cause irreplaceable loss of resources:	No significant loss of a resource.	No significant loss of a resource.	No significant loss of a resource.
Degree to which the impact can be reversed:	Positive impact so does not need to be reversed.	Positive impact so does not need to be reversed.	Can be reversed.
Indirect impacts:	None	None	None
Cumulative impact prior to mitigation:	Medium	Medium	Medium

Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium	Medium	High
Degree to which the impact can be avoided:	Medium	Medium	Unavoidable
Degree to which the impact can be managed:	Medium	Medium	Low
Degree to which the impact can be mitigated:	N/A – This is a positive impact proposed to be enhanced.	N/A – This is a positive impact proposed to be enhanced.	Can be mitigated.
Proposed mitigation:	The impact can be further enhanced through adequate research to identify the best candidates for businesses to take up retail and office space at the development to ensure the maximal impact on tourism.	The impact can be further enhanced through adequate research to identify the best candidates for businesses to take up retail and office space at the development to ensure the maximal impact on tourism.	Implementation of the proposed development.
Residual impacts:	None	None	None
Cumulative impacts post mitigation:	Medium	Medium	Medium
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Medium (+)	Medium (+)	Medium (-)
Potential impact and risk:	**VISUAL IMPACT:**		
Nature of Impact:	Negative	Negative	Negative.
Extent and duration of impact:	Local and permanent.	Local and permanent.	Not applicable
Consequence of impact or risk:	Change in sense of place.	Change in sense of place.	Not applicable.
Probability of occurrence:	Improbable.	Improbable.	Not applicable.
Degree to which the impact may cause irreplaceable loss of resources:	No irreplaceable loss of resources.	No irreplaceable loss of resources.	Not applicable

Degree to which the impact can be reversed:	Irreversible.	Irreversible.	Not applicable
Indirect impacts:	Change in sense of place of the surrounding area.	Change in sense of place of the surrounding area.	Not applicable
Cumulative impact prior to mitigation:	Medium	Low	Not applicable
Significance rating of impact prior to mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low-Medium	Low-Medium	Not applicable
Degree to which the impact can be avoided:	Medium	Medium	Not applicable
Degree to which the impact can be managed:	Medium	Medium	Not applicable
Degree to which the impact can be mitigated:	Can be partly mitigated.	Can be partly mitigated.	Not applicable
Proposed mitigation:	• Consideration should be given to the materials used for the construction so as to create the least visual disturbance in the surrounding area. • Indigenous trees could be used in the landscaping of the development, which may aide in reducing the visual impact particularly at the commercial site.	• Consideration should be given to the materials used for the construction so as to create the least visual disturbance in the surrounding area. • Indigenous trees could be used in the landscaping of the development, which may aide in reducing the visual impact particularly at the commercial site.	No mitigation measures proposed.
Residual impacts:	Visual disturbance	Visual disturbance	Not applicable
Cumulative impacts post mitigation:	Low-Medium	Low-Medium	Not applicable
Significance rating of impact post mitigation (e.g. Low, Medium, Medium-High, High, or Very-High)	Low -Medium (-)	Low-Medium (-)	Not applicable

SECTION I: FINDINGS, IMPACT MANAGEMENT AND MITIGATION MEASURES

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

Botanical Survey – Mark Berry (2019)

VEGETATION & FLORA
The study site is largely transformed, with the proposed development footprints entirely transformed or invaded by woody aliens. Apart from the pastures and alien forests, several farm dwellings, sheds and a large farm dam were also noted. The recorded biodiversity therefore presents no constraints to the proposed development. Concern is expressed about the presence of dense stands of black wattle as it presents a significant fire risk.

As a condition of approval, the alien forests should be cleared of all alien trees and the indigenous forest and watercourses suitable buffered from development related impacts. The small copses of alien trees above the farm dam and next to the farm houses could perhaps be retained (except for black wattle). In any event, a firebreak is needed between the development and the forest. This will also aid in safeguarding the property and adjacent properties from wildfires. A buffer width of 25-30 m is recommended, to be confirmed by a fire safety specialist. The cleared areas could potentially be cultivated and/or restored to fynbos. It is a legal requirement for landowners to clear the alien vegetation on their land.

Alien vegetation management and the need for a firebreak has been included into the EMPr.

Freshwater Habitat Impact Assessment – SEScc (2019)

The assessment identified two freshwater ecosystems within the 500 m regulated area that are likely to be impacted by the proposed development.

The mitigation of impacts should focus on managing the runoff generated by the development and introducing it responsibly into the receiving environment. The stormwater flows must enter the riparian buffer areas in a diffuse flow pattern without pollutants.

Soft infrastructure must be considered where practical. For example, permeable surfaces can be done via permeable concrete block pavers (such as Amorflex), brick pavers, stone chip, and gravel and may contribute to slowing surface flows (especially if maintained). Stormwater managed by the development could be discharged into porous channels / swales ('infiltration channels or basins') running near parallel or parallel to contours within and along the edge of the development. This will provide for some filtration and removal of urban pollutants (e.g. oils and hydrocarbons), provide some attenuation by increasing the time runoff takes to reach low points, and reduce the energy of storm water flows within the stormwater system through increased roughness when compared with pipes and concrete V-drains.

Frequent stormwater outlets must be designed to prevent erosion at discharge points. All erosion protection measures (e.g. Reno-mattresses) must be established to reflect the natural slope of the surface and located at the natural ground level. All stormwater infrastructure, such as reno mattresses at pipe outlets, must be located within the development footprint and not encroach into the buffer areas.

Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development. Also include the placement of stormwater grates (or similar). The use of grease traps/oil separators to prevent pollutants from entering the environment from stormwater is mandatory. To ensure the efficiency of these, they must be regularly maintained. Key maintenance will include litter and sediment clearing and the servicing and maintenance of key collection points like catch pits, detention tanks etc. Such maintenance should be the responsibility of the relevant owners/estate associations and budgeted for.

Stockpiles must not be located within 50 metres of the rivers. The furthest threshold must be adhered to. They should not be placed in vegetated areas that will not be cleared. 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.

Regular inspections during the operational phase should also be undertaken to ensure that functions are not undermined by inappropriate activities.

Post-construction/ Rehabilitation Phase
Although it is recommended that no construction should be allowed to occur within or impact upon watercourses under the current proposal, there is always potential for accidental disturbance therefore guidelines for rehabilitation of aquatic habitats are provided. The aim of the rehabilitation is to ensure the necessary procedures are appropriately implemented in the natural environment that may be negatively affected by the development. The plan will promote the re-establishment of the ecological functioning of any area disturbed by construction activities.

Important guidelines for rehabilitation are:
- The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project) and the establishment of indigenous vegetation cover to filter run-off before it enters the freshwater habitat.
- The solid domestic waste must be removed and disposed of offsite. All post-construction building material and waste must be cleared in accordance with the EMPr.

- Removal of vegetation must only be when essential for the continuation of the project. Do not allow any disturbance to the adjoining natural vegetation cover or soils.
- Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised. This may also include the need to deactivate any erosion headcuts/rills/gullies that may have developed.
- It is the contractor's responsibility to continuously monitor the area for newly established alien species during the contract and establishment period, which if present must be removed. Removal of these species shall be undertaken in a way which prevents any damage to the remaining indigenous species and inhibits the re-infestation of the cleaned areas.
- Alien/ invasive species shall not be stockpiled, they should be removed from site and dumped at an approved site.
- Any use of herbicides in removing alien plant species is required to be investigated by the ECO before use, for the necessity, type proposed to be used, effectiveness and impacts of the product on aquatic biota.
- A monitoring programme shall be in place, not only to ensure compliance with the EMPr throughout the construction phase, but also to monitor any post-construction environmental issues and impacts such as increased surface runoff. The monitoring should be regular and additional visits must be taken when there is potential risk to watercourses.

Operational Phase

- The stormwater management infrastructure must be designed to ensure the runoff from the development is not highly concentrated before entering the buffer area. The volume and velocity of water must be reduced through discharging the surface flow at multiple locations surrounding the development, preventing erosion.
- Any evidence of erosion from this stormwater system must be rehabilitated and the volume/velocity of the water reduced through further structures and/or energy dissipaters. These structures must be incorporated within the layout area.
- The recommended use and maintenance of grease traps/oil separators to prevent pollutants from entering the environment from stormwater.
- Appropriate waste water infrastructure must be designed to prevent any such water from entering the surrounding environment.
- Maintenance of the freshwater habitat and buffer area must be implemented for it to remain effective. Apart from erosion control and alien invasive plant eradication, the encroachment of any further infrastructure or vehicles must be prevented.
- Engage with the homeowners to explain the reasons why the buffer and the water resources are protected and what human activities are allowed. Encourage recreational activities within the buffer area that are not in conflict with water resource management. The community could be involved in the monitoring e.g. the packaging plant effluent.

The recommendations of the Freshwater specialist were taken into consideration during the compilation of the preferred layout. In addition, the recommendations were considered and included into the proposed stormwater management plan for the development, as well as the EMPr.

Socio-Economic Impact Assessment – Urban-Econ (2018)

The report shows significant benefits are expected to accrue to the local economy, and that the development (as designed) will provide numerous benefits to the local community mitigating any potential risks and enhancing the functioning of the town for both permanent residents and holiday makers. Furthermore, the development is likely to generate significant income from the George Local Municipality which is expected to far outweigh any potential increase in expenditure on services and infrastructure resulting from the construction of the development.

The positive economic impacts identified can be enhanced through the following actions:

- The sourcing of local companies to provide construction related services. Local businesses are more likely to employ residents of the local area and more likely to use suppliers from the local economy.
- The operational impacts on the economy can be enhanced through the hiring of local persons, and the contracting of local businesses to provide property management services.
- The impact on tourism is enhanced through the provision of adequate signage to notify users of the service, electronic monitoring of parking availability at the beachfront to reduce needless traffic at busy times, and restricting traffic to the beachfront through the use of parking meters, or other forms of traffic management to encourage the use of the park-and-ride facility.
- Great care must be used in designing the transit programme to the service is priced adequately and to ensure that the programme has the maximal impact on traffic in the town.
- The impact on tourism and residents can be further enhanced through adequate research to identify the best candidates for businesses to take up retail and office space at the development to ensure the maximal impact on tourism.

These enhancements will be carried through to the detailed design phase when tender documents are compiled and contractors are appointed.

Agricultural Potential Evaluation – Jordaan & Groenewald (2005)

The evaluation undertook a soil analysis of the farm and investigated the history of farm operations, trends in agriculture in the area and existing infrastructure and natural resources of the property. It was determined that dairy farming would be an appropriate type of agricultural enterprise for the area, and this was used as a proxy for determining the agricultural potential of the farm.

The evaluation revealed that a dairy operation yields *low returns* and the land use for agriculture would not be sustainable over the long term. The unit was found to be too small for generating a sustainable living as it would not be able to yield a permonal disposable income commensurate with what an ale manager could earn elsewhere.

In addition, the farm is too small to take advantage of the economies of scale. Intensification is usually capital intensive rather than labour intensive and higher levels of entrepreneurial, technical and managerial competencies. Not only does intensification pose a business and financial risk, it is often more detrimental to the environment than low input systems on large tracts of land.

The over-utilisation of land and water could produce effluents and pollutants which may have unintended consequences on the natural environment and additional environmental and social externalities.

With regards to dairy production, the farm's potential contribution to the regional economy amounts to approximately 0.7%, and in terms of contribution to Western Cape dairy production about 0.101% which is fairly insignificant. As there has been very little significant agricultural output from the farm over the last number of years, rezoning would only mean loss of potential contribution and not actual loss of current physical or economic output.

The evaluation concluded that the location of Buffelsfontein 204 amidst the existing and expanding high-end residential properties and golf estates renders it practically unsuitable for conventional farming and to preserve it as agriculturally zoned land may result in environmental and social externalities forced by intensification of operations on a small unit.

Visual Impact Assessment – Cave Klapwijk & Associates (2020)
The following aspects were identified as relevant in the visual assessment of the proposed Development.

The suburb of Herolds Bay extension 1 and 2 (north-western sections) will experience the greatest visual exposure to the Development. Conversely the new Development will experience the greatest visual exposure of Herolds Bay Extensions 1 and 2.

The prime views are northwards of the Outeniqua Mountain Range. The sea views to the south east are restricted by landform to a narrow area below the horizon line of the ocean. The sea views to the south west extend as far as Mossel Bay

The existing and possible future proposed housing on the property immediately south of the Oubaai and Bayview access road will experience direct views of the residential units on the Development's southern boundary. This will result in a loss of visual privacy for existing and proposed housing units if no screening facility is provided.

Some units of the main village are currently shown to straddle the ridgeline. The ridgelines within the Development boundary are significant visual lines that form a base to the views from within the Development of the Outeniqua range to the north, north-west and west. Development of two storey buildings along these lines will alter the quality of views towards the mountains unless the roof lines of the houses or profile can be visually softened.

The existing homestead and some surrounding buildings are visually attractive in scale, form and setting, and should be considered as a visual (and functional) asset which provides a link to the existing land use and sense of place.

The placement of the collector road or open space on the ridgeline will allow structures to be placed on either side of the ridge and facilitate a better fit of these structures onto the landscape.

The dam is the feature of visual focus for the proposed development that lies within the "bowl" as defined by the western, northern and eastern ridgeline. The existing large trees, mostly exotic, provide scale and character to the setting. Retention of some of these will add to the new visual character of the Development.

Viewpoints that will present direct views of parts of the Development to the public are:

- Travelling northbound from Herolds Bay towards the Oubaai - Bayview road intersection.
- Travelling southbound on the George – Herolds Bay road towards the Oubaai – Bayview road - two points at the first right angle bend and just before reaching the T intersection. Views are eastward and south eastward respectively.
- The circle at Oubaai and Bayview entrance.
- Travelling eastward and westward between the T intersection and the aforementioned circle.

The views from Oubaai onto the eastern edge of the Development, while at present areas are not significant because the residential units predominantly face the golf course fairways and north to the Outeniqua Mountains. Views north-west and west from the Oubaai hotel are possible. Aspects of privacy may be raised, as a result of the tall 3 storey hotel by the owners of the units on the eastern edge of the Development. The hotel will be approximately 200 metres to the east and, therefore, should not present a significant privacy risk.

The following mitigation measures were recommended:

- Development on Ridges

The ridgelines are the highest landform edge which encloses the proposed Development. These are the most visible landforms of the site. The roof lines of the houses should be kept low on either side so as not to form a new higher ridge of structures. The no build area along the ridges should vary between 24 and 30 metres wide.

- Space around the Dam

Residential buildings should be built well away from the full supply level (FSL) of the dam to allow for a riparian vegetation zone on the moist ground and for public access around the Dams perimeter. The Dam is the focal area of the Development and due to its narrowness, it will require the extra space to provide better visual access to it from the surrounding development. The line from the full supply should vary from 10 to 20 metres depending on the wetness of the soil and to allow for a boardwalk where necessary.

- Vary roof lines of adjacent attached units particularly those near the ridgeline

This will provide a more organic line in the setting when combined with tree and large shrub planting.

- Retain indigenous trees and vegetation groupings of shrub, trees and aloes

Connect these groupings by planting additional indigenous mixed vegetation to provide corridors for integrating the existing vegetation so that populations of insects, birds and small mammals can be attracted to the gardnes of the Development.

- Retain selected large existing trees

These large trees provide a visual scale and connection with the original cultural landscape. The trees can provide visual relief in form where buildings do appear along the horizon. To ensure the survival of these trees there must be no ground level change within the drip line of the branches and selected branches should be removed.

- Avoid bright contrasting colours for roofs and buildings

Subdued and complimentary shades and tints blend easily into a landscape setting.

- Roads and Pathways

Roads and pathways paved with a durable brick of brown/sand colour. The light brown colour is a similar colour to existing gravel roads in the area. The light colour will also not generate high surface temperatures as an asphalt surface would.

- Provide spaces between group housing large enough to present views beyond.

- Step down slope building heights to provide views over units below. Step building heights as units' progress down slope.

- The cut slope along the road on the Southern boundary should be re- graded to a flatter slope and planted with indigenous shrubs and groundcover. The objective is to provide a privacy screen for the existing housing on the southern property as well as for new residences.

- Keep surface drainage ways open and arrange residential units along and around these open space corridors to provide visual connection with the Dam. These areas will provide pedestrian access, as well as facilities for managing surface water runoff from roads and buildings.

- The placement of units near the northern and eastern ridgeline should not be that tall or close to the ridge that views north and north-west obstruct or obscure large portions of the base of the mountains in view, to a great extent. The space between buildings that form an horizon to views of residents in Herolds Bay extension 1 and 2 should be linked by tree and shrub planting. These buildings should present preferably one storey above the natural horizon line from that view area.

- Consideration should be given to the placement of the main collector road or open space on the ridgelines for the following visual reasons:

    - Residential units are then located off the highest most visible part of the site.
    - Through traffic along the mid-slope and between residential unit groupings is eliminated as well as their visual disturbance.
    - The pedestrian ring pathways and tree and shrub planting can be accommodated along the higher ground and views both towards the mountains and the sea are possible.
    - The tree and shrub planting will assist in visually integrating the roof lines into the horizon line.
    - The combination of the road and adjacent pedestrian circular route will free up the area in the mid slope to enable visual integration of the residential buildings into the landscape at a detail level.

- Retain some large existing trees on the eastern property boundary to partially screen views of the Oubaai Hotel, Recreation centre and nearby houses. In addition, mound and plant a dense indigenous grouping along the south eastern boundary with Oubaai to screen the service area and related buildings.

- Consideration should be given to the retention of the existing homestead and adjacent building. This will provide a visual and cultural link to the previous land use. The Development should incorporate these buildings into the layout and provide a visual connection to the open space systems and the dam.

- Lighting

Street and other lighting such as signage, park and office / commercial precinct will increase the visual impact of the project at night. All lighting therefore should be carefully considered with regard to the extent of illumination, the intensity and colour of lights and the luminaire.

It is recommended that lighting is designed by a lighting engineer in collaboration with the landscape architect for the project. The aspects of the lighting solution should include the following:

- Light fittings should have shields to eliminate sight of the light source from sensitive nearby land uses.
- Down lighting of areas is preferrable to up lighting;
- Perimeter lights to be directed downwards and inwards;
- Emitted light colour to be softer than sodium (yellow) or mercury halide (blue-white). Florescent lights provide a softer visual effect,
- Do not flood light the entire main structure but incorporate concealed lights high on a structure to shine downwards. Darker areas on the building elevations will provide a less visually noticeable structure;
- No light fittings should spill light upwards or be directed upwards from a distance towards the area or building to be illuminated;
- The lighting plan should strive to maximise the light energy use. This should include a hierarchy of lights that are essential to those that are switched on only when needed.

- Lighting Colour

Should also be considered with knowledge of what colour will attract insects. It is important that a colour type and spread of light will not cause insects to be attracted to it and in so doing deplete the insect diversity of the region. For this purpose an entomologist should be consulted.

- Construction Phase

During the bulk infrastructure (sewer lines, electrical cables, water pipes and roads) installation phase – one site laydown and site offices should be located in a suitable area north of the eastern access so that it will be screened by existing vegetation from both Oubaai Golf Estate and the residential area within the "bowl". Security lighting should not shine outwards from the site camp. The suppression of dust by regular wetting down of dirt roads will reduce the visual nuisance. The cladding of fences around the site camp area with shade netting will screen the visual clutter of these areas. Create berms, where appropriate, to screen views onto the site using topsoil stripped from roads and platforms.

The various mitigation measures have been taken into consideration in the preferred layout and included into the EMPr. It is recommended that a Landscape Architect be appointed at the site design stage to collaborate with the design team to integrate the buildings and landform into the setting so that the identified visual impacts are reduced.

Traffic Impact Assessment – Element Consulting Engineers (2020)

Trip generation rates for the proposed development were determined in accordance with the TMH17 South African Trip Data Manual. The peak hour trip generation of the residential development during the morning and afternoon peak hour of the adjacent road network was found to be 141 vehicles. The peak hour trip generation of the commercial development for the afternoon peak hour was found to be 33 vehicles. As such, total anticipated new trips for the development for the afternoon peak hour is 174.

The peak hour deflected and passer-by trips of the commercial development for the afternoon peak hour is 19 trips.

Traffic counts were conducted from 06:00 to 18:000 in order to obtain existing background traffic volumes.
A capacity analysis was performed for the weekday AM and PM peak hours for the existing background (2020), future background (2025) and total future traffic (2025) conditions. The capacity analysis was performed by means of the Sidra Intersection 8.0 software to compare the impact of the development against the background traffic.
The analysis concluded the following:

- **Intersection 1 (Oubaai Main Road and Development Access – Traffic circle):** The development has a negligible impact on the Level of Service during both the morning and afternoon horizon year peak hours and the intersection will continue to operate at a Level of Service A for both the morning and afternoon peak hours;
- **Intersection 2 (Oubaai Main Road and Commercial Access):** The development has a negligible impact on the Level of Service during both the morning and afternoon horizon year peak hours and the intersection will continue to operate at a Level of Service A for both the morning and afternoon peak hours;
- **Intersection 3 (Oubaai Main Road and Rooidraai Road/R404):** The development has a negligible impact on the Level of Service during both the morning and afternoon horizon year peak hours and the intersection will continue to operate at a Level of Service A for both the morning and afternoon peak hours;

The design of the main access gate shall provide separate visitors and residents lanes in order to minimise congestion at the gate. A minimum stacking distance of 20m is required at the access gate. The design shall also provide for a u-turn facility. No vehicular thoroughfare may be obtained between the boundaries of the commercial site and the residential development, however pedestrian access may be provided at this point.

Sight distances at both proposed access points are excellent in both the horizontal and vertical alignments and satisfactory for development purposes.

The findings of the TIA will be taken into account during detailed design of the development.

Groundwater Impact Assessment – GEOSS (2020)

The study site was classified as having a groundwater vulnerability classification of "low/medium". Given that no groundwater was intersected during the site investigation, likely due to the high clay content of the soil and resultant low permeability, the development of the filling station was deemed to pose a low risk to groundwater if appropriate mitigation measures are employed.

The planned irrigation using treated effluent is a commendable example of re-use of water and will result in less pressure on the current surface water demand. This will require ongoing management and monitoring to be successful in the long term, and to ensure quality is compliant with discharge limits.

Surface water contamination on the other hand may occur more readily due to the low permeability of the soil in times of high rainfall. Appropriate measures need to be taken to ensure stormwater management reduces the chance of surface water contamination, and this together with groundwater monitoring, will further lower the risk posed by the filling station and treated effluent to groundwater and the environment.

The following recommendations were made:

- In terms of the site developments potential risk to groundwater, the data indicates that the site development can proceed with necessary mitigation measures employed. Monitoring should be installed on site, with regard to constructing and operating the filling station.
- Relevant mitigation measures and best practice procedures must be employed to ensure no contamination of the subsurface takes place (Table 6, 7, 8, – Proposed Mitigation).

- At least three groundwater monitoring boreholes should be installed in order to detect any potential contamination, downgradient of the filling station.
- The monitoring boreholes should be appropriately designed and constructed – that is the depth of the monitoring boreholes should be deeper than the bottom of the USTs and seated within the intact granite (just beyond the weathered zone), and below the water table.
- A rapid response plan must be developed should any hydrocarbon spillages or leakages be detected.

The recommendations have been include into the EMPr.

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

The Environmental Management Programme has been attached as an Annexure of the Basic Assessment Report. The EMPr was compiled by SES to adhere to the requirements of the amended EIA Regulations (2014), as amended. The following Impact Management measures are of particular importance for this proposal:

Objective: Prevent pollution in the watercourse.

Impact Management Actions

- Vehicles and machinery must be in good working order and must be regularly inspected for leaks.
- Drip trays must be utilised for vehicle and construction machinery maintenance on site, where there is a risk of fuel/ oil/ lubricant spillage.
- Ablution facilities provided for construction workers, must be placed outside the buffer zone and prevented from blowing over. The ablution facilities must have a closed system and must not be linked to the river and/or dam in any way. The ablution facilities must also be serviced regularly. Care must be taken to prevent spillages when moving or servicing chemical toilets.
- The pollution entering the watercourse at the stormwater outlet must be prevented, and assessed as successful, prior to the commencement of construction for further stormwater management.
- Frequent stormwater outlets must be designed to prevent erosion at discharge points.
- The latest engineering measures to stop pollution before the stormwater outlets must be incorporated in these activities.
- Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development.
- Also include the placement of stormwater grates (or similar). The use of grease traps/oil separators to prevent pollutants from entering the environment from stormwater should be mandatory. To ensure the efficiency of these, they must be regularly maintained.
- Key maintenance will include litter and sediment clearing and the servicing and maintenance of key collection points like catch pits, detention tanks etc.
- Such maintenance should be budgeted for.
- At least three groundwater monitoring boreholes should be installed in order to detect any potential contamination, downgradient of the filling station.
- The monitoring boreholes should be appropriately designed and constructed – that is the depth of the monitoring boreholes should be deeper than the bottom of the USTs and seated within the intact granite (just beyond the weathered zone), and below the water table.
- A rapid response plan must be developed should any hydrocarbon spillages or leakages be detected.

Objective: Prevent disturbance / loss of habitat and sedimentation
Impact Management Actions

- Construction must be immediately followed by rehabilitation.
- Soil replacement must be conducted in same sequence as excavated.
- Any areas that have been compacted are required to be ripped to allow for the establishment of vegetation. This ripping must not result in the mixing of sub- and topsoil.
- The solid domestic waste must be removed and disposed of offsite. All postconstruction building material and waste must be cleared in accordance with the EMPr.
- Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised. This may also include the need to deactivate any erosion headcuts/rills/gullies that may have developed.
- The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project) and the establishment of indigenous vegetation cover to filter run-off before it enters the aquatic habitat.
- Maintenance operations must ensure a minimal footprint and should include the supervision of an ECO (whether independent or the relevant municipal environmental officer).
- No additional excavations or vegetation clearance should be involved, only necessary maintenance such as debris and pollution removal, the cutting of the instream vegetation (but not complete clearance), and minor bank stabilisation if necessary.
- This maintenance should be undertaken with manual labour unless otherwise approved by an environmental authority.
- The landowner must be made aware of the alien clearance obligations under the CARA Act, to ensure that the construction area and wetland habitat is not invaded in the future.
- Regular inspections during the operational phase should also be undertaken to ensure that functions are not undermined by inappropriate activities.
- The use of indigenous landscaping should be encouraged to assist with stabilisation measures during the rehabilitation phase.

Objective: Prevent modification of hydrology and hydrodynamics
Impact Management Actions

- The excavations within aquatic habitat should be, as far as possible, manually hand-dug rather than dug using machinery.

Objective: Retain Sense of Place and Minimise Visual Impact
Impact Management Actions

- Development on Ridges

The roof lines of the houses should be kept low on either side so as not to form a new higher ridge of structures. The no build area along the ridges should vary between 24 and 30 metres wide.

- Space around the Dam

Residential buildings should be built well away from the full supply level (FSL) of the dam to allow for a riparian vegetation zone on the moist ground and for public access around the Dams perimeter. The Dam is the focal area of the Development and due to its narrowness, it will require the extra space to provide better visual access to it from the surrounding development. The line from the full supply should vary from 10 to 20 metres depending on the wetness of the soil and to allow for a boardwalk where necessary.

- Vary roof lines of adjacent attached units particularly those near the ridgeline

This will provide a more organic line in the setting when combined with tree and large shrub planting.

- Retain indigenous trees and vegetation groupings of shrub, trees and aloes

Connect these groupings by planting additional indigenous mixed vegetation to provide corridors for integrating the existing vegetation so that populations of insects, birds and small mammals can be attracted to the gardens of the Development.

- Retain selected large existing trees

These large trees provide a visual scale and connection with the original cultural landscape. The trees can provide visual relief in form where buildings do appear along the horizon. To ensure the survival of these trees there must be no ground level change within the drip line of the branches and selected branches should be removed.

- Avoid bright contrasting colours for roofs and buildings

Subdued and complimentary shades and tints blend easily into a landscape setting.

- Roads and Pathways

Roads and pathways paved with a durable brick of brown/sand colour. The light brown colour is a similar colour to existing gravel roads in the area. The light colour will also not generate high surface temperatures as an asphalt surface would.

- Provide spaces between group housing large enough to present views beyond.
- Step down slope building heights to provide views over units below. Step building heights as units' progress down slope.
- The cut slope along the road on the Southern boundary should be re- graded to a flatter slope and planted with indigenous shrubs and groundcover. The objective is to provide a privacy screen for the existing housing on the southern property as well as for new residences.
- Keep surface drainage ways open and arrange residential units along and around these open space corridors to provide visual connection with the Dam. These areas will provide pedestrian access, as well as facilities for managing surface water runoff from roads and buildings.
- The placement of units near the northern and eastern ridgeline should not be that tall or close to the ridge that views north and north-west obstruct or obscure large portions of the base of the mountains in view, to a great extent. The space between buildings that form an horizon to views of residents in Herolds Bay extension 1 and 2 should be linked by tree and shrub planting. These buildings should present preferably one storey above the natural horizon line from that view area.
- Consideration should be given to the placement of the main collector road or open space on the ridgelines for the following visual reasons:
    - Residential units are then located off the highest most visible part of the site.
    - Through traffic along the mid-slope and between residential unit groupings is eliminated as well as their visual disturbance.
    - The pedestrian ring pathways and tree and shrub planting can be accommodated along the higher ground and views both towards the mountains and the sea are possible.
    - The tree and shrub planting will assist in visually integrating the roof lines into the horizon line.
    - The combination of the road and adjacent pedestrian circular route will free up the area in the mid slope to enable visual integration of the residential buildings into the landscape at a detail level.
- Retain some large existing trees on the eastern property boundary to partially screen views of the Oubaai Hotel, Recreation centre and nearby houses. In addition, mound and plant a dense indigenous grouping along the south eastern boundary with Oubaai to screen the service area and related buildings.
- Consideration should be given to the retention of the existing homestead and adjacent building. This will provide a visual and cultural link to the previous land use. The Development should incorporate these buildings into the layout and provide a visual connection to the open space systems and the dam.
- Lighting

Street and other lighting such as signage, park and office / commercial precinct will increase the visual impact of the project at night. All lighting therefore should be carefully considered with regard to the extent of illumination, the intensity and colour of lights and the luminaire.
It is recommended that lighting is designed by a lighting engineer in collaboration with the landscape architect for the project. The aspects of the lighting solution should include the following:

- Light fittings should have shields to eliminate sight of the light source from sensitive nearby land uses.
- Down lighting of areas is preferrable to up lighting;
- Perimeter lights to be directed downwards and inwards;
- Emitted light colour to be softer than sodium (yellow) or mercury halide (blue-white). Florescent lights provide a softer visual effect,
- Do not flood light the entire main structure but incorporate concealed lights high on a structure to shine downwards. Darker areas on the building elevations will provide a less visually noticeable structure;

- No light fittings should spill light upwards or be directed upwards from a distance towards the area or building to be illuminated;
- The lighting plan should strive to maximise the light energy use. This should include a hierarchy of lights that are essential to those that are switched on only when needed.

- Lighting Colour

Should also be considered with knowledge of what colour will attract insects. It is important that a colour type and spread of light will not cause insects to be attracted to it and in so doing deplete the insect diversity of the region. For this purpose an entomologist should be consulted.

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

All recommended management measures are proposed to be implemented.

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

The Socio-Economic Assessment completed by Urban-Econ (2018) states various ways in which the proposed development may be a benefit to society. The proposed development looks to address the shortage of developable land, the low vacancy of property in and around the town and sky rocketing property prices around the settlement by developing more affordable units. Thus improving the local housing market by allowing it to compete on a regional scale. The development of more affordable units at Herolds Bay will provide more diversity in the housing mix, and allow the town to appeal to a wider range of buyers, including foreign investment. The area has a strong history of foreign demand for properties along the Garden Route could bring significant foreign investment into the area, which will benefit the local economy.

High property prices has caused a problem within Herolds Bay by restricting the potential to repurpose suburban properties, or develop vacant land for retail or office needs. The proposed development seeks to address this through the provision of space for various commercial elements such as:

- Retail centre / supermarket- There is only one small retail establishment in Lower Herolds Bay which does not adequately serve the towns population, thus assisting the local community by proving adequate retails options , as well as healthy competition for the present supermarket.
- Filling station- The town does not feature a filling station. The closest filling station to the development is located 11.5km away to the East in the town of George or travelling West, 21.6km away in the village of Great Brak. The inclusion of a filling station in Herolds Bay will provide significant benefit to the local community.
- Restaurant- There is only one notable restaurant in the town of Herolds Bay. The provision of space to develop a new restaurant will offer greater variety to local residents and travellers alike. A new restaurant will be of high value in the tourism high seasons when there is significantly higher demand than in the low season.
- Office development - The development of an office development will allow for various professionals, such as doctors and accountants to take up residence in the town.

The proposed development further benefits the local community by providing housing which can offer essential safety and security by ensuring controlled access and adequate security infrastructure, as well as a secure environment by designing the development as a single estate instead of separate stands, the development can provide one security solution to all residents of the estate instead of each homeowner acquiring the services of differing security providers, or installing different security systems. This provides greater efficiency and overall lower cost to the consumer. The opportunity to provide housing with essential safety and security, coupled with a strong focus on sustainable development and limiting the environmental impact of development, benefits the surrounding community greatly.

The Socio-Economic Assessment (2018) continues to support how the proposed development benefits the local community by highlighting how the proposed development will provide benefits to the local community by generating approximately 317 fulltime equivalent jobs directly at the development. The majority of these jobs will be generated by the residential component of the development in maintenance, domestic services, gardening & landscaping, and other property management roles. When considering the jobs created from expenditure to the wider economy, it is calculated that the development will generate a total of approximately 394 jobs across the regional economy. There are further benefits in terms of income generation as employment at the development is expected to increase income to workers by approximately R 22.87 million per year. The indirect and induced impacts add an additional R 5.46 million per year resulting in a total increase of employment income of approximately R 28.33 million.

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

According to the Western Cape Department of Environmental Affairs and Development Planning[1], climate change will affect the Western Cape in the following ways:

- Higher average annual temperature;
- Higher maximum temperatures;
- More hot days and more heat waves;
- Higher minimum temperatures;
- Fewer cold days and frost days;
- Reduced average rainfall in the Western Cape, particularly the western parts;
- Rising sea levels;
- Increased fire risks; and
- Increase in the frequency and intensity of extreme weather events, including floods, droughts, and storm surges.

[1] https://www.westerncape.gov.za/general-publication/climate-change

In line with the Sustainable Water Management Plan for the Western Cape Province (2011), the proposed development aims to use water more efficiently and ensure sustainable integrity of the freshwater systems on the site. This is being done through the consideration of the freshwater buffer area and the reuse of stormwater and treated effluent for irrigation purposes.

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

There are no conflicting recommendation between the specialists.

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

As the majority of the mitigation measures related to the freshwater impacts, an integrated approach was not required. All proposed mitigation measures have been included into the EMPr for implementation during the construction and operational phases.

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

The mitigation hierarchy refers to the steps taken to mitigate environmental impacts relating to a proposed development. The hierarchy begins with the most beneficial method of mitigation and moves to the least beneficial, as illustrated below.

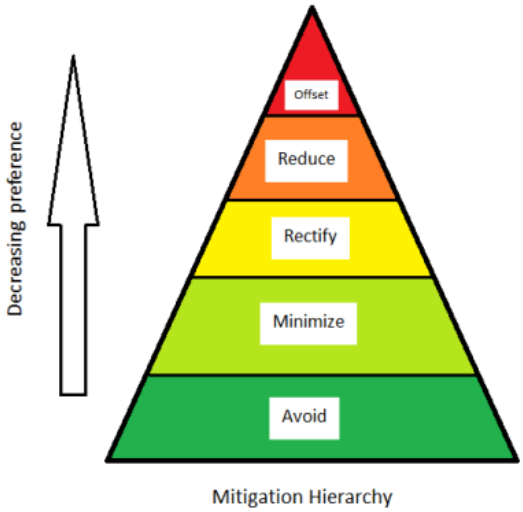


Figure 14: The Mitigation Hierarchy

This hierarchy was considered while determining the best practicable environmental option for the proposed development. The sensitive watercourses on site have been avoided and the impacts on these minimised through the implementation of the buffer zone. Impacts have further been reduced through the inclusion of additional mitigation measures into the EMPr.

No offsets are required for the proposed development.

SECTION J: GENERAL

1. Environmental Impact Statement

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

Through the EIA process, the following key findings were made by the EAP:

- No Property Location, Activity or Operational Alternatives were investigated.
- Three Layout and Three Technology Alternatives were originally proposed for the development.
- Based on the recommendation of the Freshwater Specialist, Alternative's A and C are proposed.
- Limited impacts are expected to occur during construction of the various proposed mitigation activities.
- If the mitigation measures and recommendations of the Basic Assessment Report and the EMPr are implemented and adhered to, no significant negative impacts are expected to occur during the construction phase.
- Approximately 2029 temporary job opportunities will be created during the construction phase and 394 during the operational phase.
- The proposed development would have significant benefits to the local economy and community, both permanent residents and holiday makers.
- Furthermore, the development is likely to generate significant income for the George Local Municipality which is expected to far outweigh any potential increase in expenditure on services and infrastructure resulting from the construction of the development.

1.2.	**Provide a map that that superimposes the preferred activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers. (Attach map to this BAR as Appendix B2)**
	Included as Appendix B2

1.3.	**Provide a summary of the positive and negative impacts and risks that the proposed activity or development and alternatives will have on the environment and community.**

The table below depicts the impacts associated with the **construction phase** of the proposed development.

CONSTRUCTION PHASE IMPACTS		
IMPACT	**IMPACT SIGNIFICANCE AFTER MITIGATION**	
	Alternative A	**Alternative C (Preferred Option)**
Freshwater Impact: Loss / Disturbance of Aquatic Habitat.	Low (-)	Low-Medium (-)
Freshwater Impact: Water Pollution	Low (-)	Low-Medium (-)
Freshwater Impact: Modified Hydrology and Hydrodynamics	Low (-)	Low-Medium (-)
Freshwater Impact: Erosion and Sedimentation	Low (-)	Medium (-)
Socio Economic Impact: Job Creation.	Medium (+)	Medium (+)
Sense of Place	Low (-)	Low (-)
Traffic Impacts & Road Safety.	Low (-)	Low (-)
Visual Impact.	Low (-)	Low (-)

The table below depicts the impacts associated with the **operational phase** of the proposed development.

OPERATION PHASE IMPACTS		
IMPACT	**IMPACT SIGNIFICANCE AFTER MITIGATION**	
	Alternative A	**Alternative C (Preferred Option)**
Freshwater Impact: Loss / Disturbance of Aquatic Habitat and Sedimentation.	Low (-)	Low-Medium (-)
Freshwater Impact: Water / Soil Pollution	Low (-)	Low-Medium (-)

Freshwater Impact: Modified Hydrology and Hydrodynamics	Low (-)	Low-Medium (-)
Freshwater Impact: Erosion and Sedimentation	Low-Medium (-)	Low-Medium (-)
Socio Economic Impact: Job Creation.	Medium(+)	Medium(+)
Socio Economic Impact: Local Government Revenue	Medium(+)	Medium(+)
Socio Economic Impact: Provision of Housing Opportunities	Medium(+)	Medium(+)
Socio Economic Impact: Property Values	Low (+)	Low-Medium (+)
Socio Economic Impact: Tourism & Accessibility	Low-Medium (+)	Low-Medium (+)
Socio Economic Impact: Retail & Commercial Services	Medium(+)	Medium(+)
Visual Impact	Low-Medium (-)	Low-Medium (-)

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

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

The Environmental Management Programme has been attached as Appendix H of the Basic Assessment Report. The EMPr was compiled by SES to adhere to the requirements of the amended EIA Regulations (2014), as amended. The following Impact Management Objectives are of particular importance for this proposal:

Objective: Prevent pollution in the watercourse.
Impacts to avoid:

- Fuel, oil, lubricant or other pollutants may leak from vehicles and/or construction machinery and contaminate soil, surface water and/or ground water.
- Spills of hazardous substances may contaminate the environment.
- Leaking chemical toilets.
- Contaminated run-off from the site or site camp facilities may pollute soil or water resources.
- Waste (solid or liquid) from the construction site may be blown or washed into surrounding environment.
- Contamination of water may impact surrounding watercourse, namely the Great Brak estuary and river mouth and negatively affect water users thereof, as well as potential pollution of the nearby marine and beach area.

Impact Management Actions

- Vehicles and machinery must be in good working order and must be regularly inspected for leaks.
- Drip trays must be utilised for vehicle and construction machinery maintenance on site, where there is a risk of fuel/ oil/ lubricant spillage.
- Ablution facilities provided for construction workers, must be placed outside the buffer zone and prevented from blowing over. The ablution facilities must have a closed system and must not be linked to the river and/or dam in any way. The ablution facilities must also be serviced regularly. Care must be taken to prevent spillages when moving or servicing chemical toilets.
- The pollution entering the watercourse at the stormwater outlet must be prevented, and assessed as successful, prior to the commencement of construction for further stormwater management.
- Frequent stormwater outlets must be designed to prevent erosion at discharge points.
- The latest engineering measures to stop pollution before the stormwater outlets must be incorporated in these activities.
- Stormwater exit points must include a best management practice approach to trap any additional suspended solids and pollutants originating from the proposed development.
- Also include the placement of stormwater grates (or similar). The use of grease traps/oil separators to prevent pollutants from entering the environment from stormwater should be mandatory. To ensure the efficiency of these, they must be regularly maintained.
- Key maintenance will include litter and sediment clearing and the servicing and maintenance of key collection points like catch pits, detention tanks etc.
- Such maintenance should be budgeted for.

Impact Management Outcome:

- The environment (including soil, surface water and groundwater) is not contaminated.

Objective: Prevent disturbance / loss of habitat and sedimentation
Impacts to avoid

- Habitat loss on the disturbed areas

- Excessive sedimentation in the watercourse

Impact Management Actions
- Construction must be immediately followed by rehabilitation.
- Soil replacement must be conducted in same sequence as excavated.
- Any areas that have been compacted are required to be ripped to allow for the establishment of vegetation. This ripping must not result in the mixing of sub- and topsoil.
- The solid domestic waste must be removed and disposed of offsite. All postconstruction building material and waste must be cleared in accordance with the EMPr.
- Erosion features that have developed due to construction within the aquatic habitat due to the project are required to be stabilised. This may also include the need to deactivate any erosion headcuts/rills/gullies that may have developed.
- The area must be maintained through alien invasive plant species removal (which is the landowner's responsibility regardless of mitigation associated with this project) and the establishment of indigenous vegetation cover to filter run-off before it enters the aquatic habitat.
- Maintenance operations must ensure a minimal footprint and should include the supervision of an ECO (whether independent or the relevant municipal environmental officer).
- No additional excavations or vegetation clearance should be involved, only necessary maintenance such as debris and pollution removal, the cutting of the instream vegetation (but not complete clearance), and minor bank stabilisation if necessary.
- This maintenance should be undertaken with manual labour unless otherwise approved by an environmental authority.
- The landowner must be made aware of the alien clearance obligations under the CARA Act, to ensure that the construction area and wetland habitat is not invaded in the future.
- Regular inspections during the operational phase should also be undertaken to ensure that functions are not undermined by inappropriate activities.
- The use of indigenous landscaping should be encouraged to assist with stabilisation measures during the rehabilitation phase.

Impact Management Outcome
- Habitat loss is kept to a minimum and the watercourse is not impacted significantly as a result of sedimentation.

Objective: Prevent modification of hydrology and hydrodynamics
Impacts to avoid
- Changes in the quantity, timing and distribution of water inputs and flows within the watercourse

Impact Management Actions
- The excavations within aquatic habitat should be, as far as possible, manually hand-dug rather than dug using machinery.

Impact Management Outcome
- No changes to quantity, timing and distribution of water inputs and flows within the watercourse.

Objective: Retain Sense of Place and Minimise Visual Impact
Impacts to avoid
- Changes in the sense of place and visual impacts on surrounding land users.

Impact Management Actions
- Development on Ridges

The roof lines of the houses should be kept low on either side so as not to form a new higher ridge of structures. The no build area along the ridges should vary between 24 and 30 metres wide.
- Space around the Dam

Residential buildings should be built well away from the full supply level (FSL) of the dam to allow for a riparian vegetation zone on the moist ground and for public access around the Dams perimeter. The Dam is the focal area of the Development and due to its narrowness, it will require the extra space to provide better visual access to it from the surrounding development. The line from the full supply should vary from 10 to 20 metres depending on the wetness of the soil and to allow for a boardwalk where necessary.
- Vary roof lines of adjacent attached units particularly those near the ridgeline

This will provide a more organic line in the setting when combined with tree and large shrub planting.
- Retain indigenous trees and vegetation groupings of shrub, trees and aloes

Connect these groupings by planting additional indigenous mixed vegetation to provide corridors for integrating the existing vegetation so that populations of insects, birds and small mammals can be attracted to the gardens of the Development.
- Retain selected large existing trees

These large trees provide a visual scale and connection with the original cultural landscape. The trees can provide visual relief in form where buildings do appear along the horizon. To ensure the survival of these trees there must be no ground level change within the drip line of the branches and selected branches should be removed.
- Avoid bright contrasting colours for roofs and buildings

Subdued and complimentary shades and tints blend easily into a landscape setting.
- Roads and Pathways

Roads and pathways paved with a durable brick of brown/sand colour. The light brown colour is a similar colour to existing gravel roads in the area. The light colour will also not generate high surface temperatures as an asphalt surface would.
- Provide spaces between group housing large enough to present views beyond.
- Step down slope building heights to provide views over units below. Step building heights as units' progress down slope.

- The cut slope along the road on the Southern boundary should be re- graded to a flatter slope and planted with indigenous shrubs and groundcover. The objective is to provide a privacy screen for the existing housing on the southern property as well as for new residences.
- Keep surface drainage ways open and arrange residential units along and around these open space corridors to provide visual connection with the Dam. These areas will provide pedestrian access, as well as facilities for managing surface water runoff from roads and buildings.
- The placement of units near the northern and eastern ridgeline should not be that tall or close to the ridge that views north and north-west obstruct or obscure large portions of the base of the mountains in view, to a great extent. The space between buildings that form an horizon to views of residents in Herolds Bay extension 1 and 2 should be linked by tree and shrub planting. These buildings should present preferably one storey above the natural horizon line from that view area.
- Consideration should be given to the placement of the main collector road or open space on the ridgelines for the following visual reasons:
    - Residential units are then located off the highest most visible part of the site.
    - Through traffic along the mid-slope and between residential unit groupings is eliminated as well as their visual disturbance.
    - The pedestrian ring pathways and tree and shrub planting can be accommodated along the higher ground and views both towards the mountains and the sea are possible.
    - The tree and shrub planting will assist in visually integrating the roof lines into the horizon line.
    - The combination of the road and adjacent pedestrian circular route will free up the area in the mid slope to enable visual integration of the residential buildings into the landscape at a detail level.
- Retain some large existing trees on the eastern property boundary to partially screen views of the Oubaai Hotel, Recreation centre and nearby houses. In addition, mound and plant a dense indigenous grouping along the south eastern boundary with Oubaai to screen the service area and related buildings.
- Consideration should be given to the retention of the existing homestead and adjacent building. This will provide a visual and cultural link to the previous land use. The Development should incorporate these buildings into the layout and provide a visual connection to the open space systems and the dam.
- Lighting

Street and other lighting such as signage, park and office / commercial precinct will increase the visual impact of the project at night. All lighting therefore should be carefully considered with regard to the extent of illumination, the intensity and colour of lights and the luminaire.
It is recommended that lighting is designed by a lighting engineer in collaboration with the landscape architect for the project. The aspects of the lighting solution should include the following:

- Light fittings should have shields to eliminate sight of the light source from sensitive nearby land uses.
- Down lighting of areas is preferrable to up lighting;
- Perimeter lights to be directed downwards and inwards;
- Emitted light colour to be softer than sodium (yellow) or mercury halide (blue-white). Florescent lights provide a softer visual effect,
- Do not flood light the entire main structure but incorporate concealed lights high on a structure to shine downwards. Darker areas on the building elevations will provide a less visually noticeable structure;
- No light fittings should spill light upwards or be directed upwards from a distance towards the area or building to be illuminated;
- The lighting plan should strive to maximise the light energy use. This should include a hierarchy of lights that are essential to those that are switched on only when needed.

- Lighting Colour

Should also be considered with knowledge of what colour will attract insects. It is important that a colour type and spread of light will not cause insects to be attracted to it and in so doing deplete the insect diversity of the region. For this purpose an entomologist should be consulted.

Impact Management Outcome

- Reduced changes to sense of place and minimal visual impact.

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

The alien forests should be cleared of all alien trees and the indigenous forest and watercourses suitable buffered from development related impacts. The small copses of alien trees above the farm dam and next to the farm houses could perhaps be retained (except for black wattle). In any event, a firebreak is needed between the development and the forest. This will also aid in safeguarding the property and adjacent properties from wildfires. The cleared areas could potentially be cultivated and/or restored to fynbos.

An Environmental Control Officer must be appointed to monitor the implementation of the Environmental Management Programme and the mitigation measures included in the Basic Assessment Report.

Additional conditions may be included into the Water Use Licence.

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

The EAP is of the opinion that the proposed development should be authorised .

It is recommended that Alternative C, the preferred alternative, be considered for approval for the following reasons:

- The construction phase impacts can be mitigated to low significance and will therefore not result in detrimental effects on the biophysical environment.

- If the recommendations and mitigation measures included in this report and the EMPr are implemented and strictly adhered to, the impact of the construction activities is considered not to be detrimental to the environment.

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

- It is assumed that all the information provided in this report and on which the report is based is correct and valid at the time receipt thereof.
- It is assumed that the proposed mitigation measures, as listed in this report and the EMPr (Appendix H), will be implemented and adhered to by all the relevant stakeholders involved.
- The study included every effort to enable public consultation but is limited to the public input which was forthcoming.
- There are no known uncertainties or gaps in knowledge presently, apart from those highlighted by the Freshwater and Botanical specialists.

2.5.	**The period for which the EA is required, the date the activity will be concluded and when the post construction monitoring requirements should be finalised.**

- The period for which the EA is required = 5 years
- The date the activity will be concluded = 10 years
- When the post construction monitoring requirements should be finalised = 10 years

3. Water

Since the Western Cape is a water scarce area explain what measures will be implemented to avoid the use of potable water during the development and operational phase and what measures will be implemented to reduce your water demand, save water and measures to reuse or recycle water.

The proposed package plants would treat the effluent produced on site to Department of Water and Sanitation (DWS) General Standards. The treated effluent will be pumped from each of the three package plants to an internal detention pond, subsequent to which it will trickles down as a minor stream through the estate to the large irrigation dam, where it will be utilized for irrigation on the farm and estate.

In addition, approximately 50% of the stormwater generated on site would be routed via the formal stormwater system into the proposed internal detention pond and the irrigation dam.

Through these processes, the demand on the municipal water supply would be reduced through the reuse and recycling of water.

4. Waste

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

Management of wastes during Construction

1. General waste

- An integrated waste management approach (AVOID first, then REDUCE, then RECYCLE, then DISPOSAL) must be adopted. Recycling bins for the various categories (paper, glass, plastic, etc.) must be provided.
- These bins must be emptied on a weekly basis and dropped off at a collection point for recycling by recycling companies.
- Bins must also be provided for builder's waste.
- These bins must be emptied on a regular basis and solid waste must be disposed of at a landfill licensed in terms of section 20 of the Environment Conservation Act, 1989 (Act No. 73 of 1989) or the National Environmental Management: Waste Act (Act No. 59 of 2008).
- Biodegradable refuse generated from the office / site camp, construction areas, vehicle yard, storage area or any other area shall be handled as indicated above.

Adequate waste receptacles, bins and skips will be available for the collection and removal of waste.

5. Energy Efficiency

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

Street lighting will be of the low energy, LED type area luminaires, positioned at carefully selected places.

With regards to the development of the commercial / business area, the use of cost effective alternative energy sources, such as gas and solar power will be considered as well as the installation of energy efficient installations as required by the National Building regulations.

SECTION K: DECLARATIONS

DECLARATION OF THE APPLICANT

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

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

- I am fully aware of my responsibilities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), the Environmental Impact Assessment ("EIA") Regulations, and any relevant Specific Environmental Management Act and that failure to comply with these requirements may constitute an offence in terms of relevant environmental legislation;
- I am aware of my general duty of care in terms of Section 28 of the NEMA;

- I am aware that it is an offence in terms of Section 24F of the NEMA should I commence with a listed activity prior to obtaining an Environmental Authorisation;

- I appointed the Environmental Assessment Practitioner ("EAP") (if not exempted from this requirement) which:
  - meets all the requirements in terms of Regulation 13 of the NEMA EIA Regulations; or
  - meets all the requirements other than the requirement to be independent in terms of Regulation 13 of the NEMA EIA Regulations, but a review EAP has been appointed who does meet all the requirements of Regulation 13 of the NEMA EIA Regulations;

- I will provide the EAP and any specialist, where applicable, and the Competent Authority with access to all information at my disposal that is relevant to the application;

- I will be responsible for the costs incurred in complying with the NEMA EIA Regulations and other environmental legislation including but not limited to –
  - costs incurred for the appointment of the EAP or any legitimately person contracted by the EAP;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the NEMA EIA Regulations;
  - Legitimate costs in respect of specialist(s) reviews; and
  - the provision of security to ensure compliance with applicable management and mitigation measures;

- I am responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority, hereby indemnify, the government of the Republic, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which I or the EAP is responsible in terms of the NEMA EIA Regulations and any Specific Environmental Management Act.

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

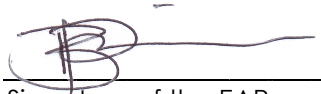
Signature of the Applicant: Date:

Name of company (if applicable):

DECLARATION OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER ("EAP")

I Betsy-Jane Ditcham, EAPASA Registration number 1480 as the appointed EAP hereby declare/affirm the correctness of the:

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



10/09/2020

Signature of the EAP: Date:

Sharples Environmental Services cc

Name of company (if applicable):

DECLARATION OF THE SPECIALIST

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

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

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

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

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

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

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

Signature of the EAP: Date:

Name of company (if applicable):

SECTION L: DECLARATIONS

DECLARATION OF THE APPLICANT

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

I, Abraham Jacobus Cronje, ID number 7108265101083, in my personal capacity or duly authorised thereto hereby declare/affirm that all the information submitted or to be submitted as part of this application form is true and correct, and that:

- I am fully aware of my responsibilities in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) ("NEMA"), the Environmental Impact Assessment ("EIA") Regulations, and any relevant Specific Environmental Management Act and that failure to comply with these requirements may constitute an offence in terms of relevant environmental legislation;

- I am aware of my general duty of care in terms of Section 28 of the NEMA;

- I am aware that it is an offence in terms of Section 24F of the NEMA should I commence with a listed activity prior to obtaining an Environmental Authorisation;

- I appointed the Environmental Assessment Practitioner ("EAP") (if not exempted from this requirement) which:
  - meets all the requirements in terms of Regulation 13 of the NEMA EIA Regulations; or
  - meets all the requirements other than the requirement to be independent in terms of Regulation 13 of the NEMA EIA Regulations, but a review EAP has been appointed who does meet all the requirements of Regulation 13 of the NEMA EIA Regulations;

- I will provide the EAP and any specialist, where applicable, and the Competent Authority with access to all information at my disposal that is relevant to the application;

- I will be responsible for the costs incurred in complying with the NEMA EIA Regulations and other environmental legislation including but not limited to –
  - costs incurred for the appointment of the EAP or any legitimately person contracted by the EAP;
  - costs in respect of any fee prescribed by the Minister or MEC in respect of the NEMA EIA Regulations;
  - Legitimate costs in respect of specialist(s) reviews; and
  - the provision of security to ensure compliance with applicable management and mitigation measures;

- I am responsible for complying with conditions that may be attached to any decision(s) issued by the Competent Authority, hereby indemnify, the government of the Republic, the Competent Authority and all its officers, agents and employees, from any liability arising out of the content of any report, any procedure or any action for which I or the EAP is responsible in terms of the NEMA EIA Regulations and any Specific Environmental Management Act.

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

Signature of the Applicant: _____ Date: 31/7/2020

Long Island Trading Pty Ltd

Name of company (if applicable):