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FINAL ENVIRONMENTAL MANAGEMENT PROGRAMME

FOR THE

**THE PROPOSED UPGRADING OF THE HEROLD'S BAY
SEWAGE PUMP STATION 1 AND ASSOCIATED RISING
MAIN AND THE DEVELOPMENT OF PUMP STATION 4 AND
NEW ASSOCIATED INFRASTRUCTURE, ON ERF 116, ERF 110,
ERF 113, REMAINDER OF ERF 95, FARM 386,
REMAINDER OF FARMS 236 AND 237 AND PORTIONS 0,
10, 35 AND 37 OF FARM BRAKFONTAIN NO. 236, HEROLDS
BAY, GEORGE MUNICIPALITY, WESTERN CAPE**

APPLICATION IN TERMS OF THE NATIONAL ENVIRONMENTAL MANAGEMENT ACT, 1998
(ACT NO. 107 OF 1998), AS AMENDED, AND THE ENVIRONMENTAL IMPACT ASSESSMENT REGULATIONS, 2014

PREPARED FOR: George Municipality
Water & Sanitation: Civil Engineering
Services
PO Box 19
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DATE: 30 April 2026

DEADP REF NO: 16/3/3/1/D2/29/0003/26
SES REF NO: 14/HBPS/GM/EMP/05/24

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- Environmental Impact Assessments • Basic Assessments • Environmental Management Planning
 - Environmental Control & Monitoring • Water Use License Applications • Aquatic Assessments



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Appendix 4 of the EIA Regulations 2014 (as amended 2017).

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

(1) An EMPr must comply with section 24N of the Act and include— (a) details of— (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae;	Appendix G- EAP CV
(b) a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 4 – Description of the Activity
(c) a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers;	Section 4 - Description of the Activity
(d) a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all phases of the development including— (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities;	Section 8 - Environmental Impact Management: Planning and Design Phase Section 9 - Environmental Impact Management: Pre-construction Phase Section 10 - Environmental Impact Management : Construction Phase Section 11 - Environmental Impact Management : Post Construction Rehabilitation Phase & Operational Phase
(f) a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraph (d) will be achieved, and must, where applicable, include actions to — (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provision for rehabilitation, where applicable;	Section 8 - Environmental Impact Management: Planning and Design Phase Section 9 - Environmental Impact Management: Pre-construction Phase Section 10 - Environmental Impact Management: Construction Phase Section 11 - Environmental Impact Management: Post Construction Rehabilitation Phase & Operational Phase
(g) the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 14 - Roles and Responsibilities Section 16 - Monitoring, Record Keeping and Reporting
(h) the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 14 - Roles and Responsibilities Section 16 - Monitoring, Record Keeping and Reporting
(i) an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 8 - Environmental Impact Management: Planning and Design Phase Section 9 - Environmental Impact Management: Pre-construction Phase Section 10 - Environmental Impact Management: Construction Phase Section 11 - Environmental Impact Management: Post Construction Rehabilitation Phase & Operational Phase Section 14 - Roles and Responsibilities
(j) the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Section 8 - Environmental Impact Management: Planning and Design Phase Section 9 - Environmental Impact Management: Pre-construction Phase

Environmental Management Programme

	<p>Section 10 - Environmental Impact Management: Construction Phase</p> <p>Section 11 - Environmental Impact Management: Post Construction Rehabilitation Phase & Operational Phase</p>
(k)the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	<p>Section 14 - Roles and Responsibilities</p> <p>Section 16 - Monitoring, Record Keeping and Reporting</p>
(l)a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	<p>Section 8 - Environmental Impact Management: Planning and Design Phase</p> <p>Section 9 - Environmental Impact Management: Pre-construction Phase</p> <p>Section 10 - Environmental Impact Management: Construction Phase</p> <p>Section 11 - Environmental Impact Management: Post Construction Rehabilitation Phase & Operational Phase</p> <p>Section 14 - Roles and Responsibilities</p> <p>Section 16 - Monitoring, Record Keeping and Reporting</p>
(m)an environmental awareness plan describing the manner in which— (i)the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii)risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 14 - Roles and Responsibilities
(n)any specific information that may be required by the competent authority.	tbd

DOCUMENT DETAILS

Project Ref. No:	14/HBPS/GM/EMP/05/24
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Sharples Environmental Services cc (SES) has been actively engaged since 1998 in the fields of environmental planning, assessment and management. Clients include private, corporate and public enterprises on a variety of differing land use applications ranging from large-scale residential estates and resorts to golf courses, municipal service infrastructure installations and the planning of major arterials. The consultants have over 40+ years of combined experience and operate in the Southern, Eastern and Western Cape regions.

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Michael studied at the University of Cape Town completing a Bachelor of Science degree majoring in Environmental and Geographic Science and Ocean and Atmospheric Science. Michael joined SES in 2014 and has extensive experience in assessments and monitoring and has worked on a variety of technical projects. See Appendix C for his curriculum vitae. Michael is registered with EAPASA as a certified Environmental Practitioner (EAPASA # 2021/3163).

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John started Sharples Environmental Services in 1998 and has overseen the company's growth and development since then. John also started the Cape Town office in 2010. John holds a Masters in Environmental Management from the University of the Free State as well as a Bachelor's degree in Conservation. He has consulted for 18 years running a team of highly trained and qualified consultants and prior to this gained 12 years of experience working for environmental organizations. John is registered with EAPASA as a certified Environmental Practitioner.

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1. Introduction

Sharples Environmental Services cc (SES) has been appointed by the *George Municipality (the applicant)* to apply for Environmental Authorisation for the Proposed upgrade of the Herold's Bay Pump Station and its associated Rising Main and the development of a new associated infrastructure on Erf 116, Erf 113, Erf 110, Remainder of Erf 95, Remainder of Farm 236 and 237 and Portions 10, 35 and 37 of Farm Brakfontein No. 236, Herold's Bay, George Municipality, Western Cape.

The proposed upgrades and construction will trigger listed activities in terms of the Amended Environmental Impact Assessment Regulations of 2014 (GN No. R.324 - 327 of 7 April 2017). Environmental Authorisation is therefore required from the competent authority (Western Cape Department of Environmental Affairs & Development Planning) before construction can commence.

2. About this EMPr

This document is intended to serve as a guideline to be used by *the George Municipality: Water & Sanitation: Civil Engineering Services* (as the Implementing Agent) and any person/s acting on behalf of *George Municipality: Water & Sanitation: Civil Engineering Services*, during the pre-construction, construction, post-construction, and rehabilitation phases of the proposed upgrade and development. This document provides measures that must (where practical and feasible) be implemented to ensure that any environmental degradation that may be associated with the development is avoided, or where such impacts cannot be avoided entirely, are minimised, and mitigated appropriately.

This EMPr has been prepared in accordance with the requirements of an EMPr as specified in the Amended Environmental Impact Assessment Regulations, 2014 (GN No. R. 326 of 7 April 2017), and with reference to the "Guidelines for Environmental Management Programmes" published by the Department of Environmental Affairs and Development Planning (2005).

It is important to note that the EMPr is not designed to manage the physical establishment of the upgrade and development *per se* but should rather be seen as a tool which can be used to manage the environmental impacts of the development.

The rehabilitation, mitigation, management, and monitoring measures prescribed in this EMPr must be seen as binding to *George Municipality: Water & Sanitation: Civil Engineering Services*, and any person acting on its behalf, including but not limited to agents, employees, associates, guests, or any person rendering a service to the development site.

2.1 Important caveat to the report

In the past, some developments have had a devastating impact on the environment even though they have had Environmental Management Programmes in place, while other developments have had a low impact even though no management plans have been compiled.

The Implementing Agent and the attitude of the construction team play an integral role in determining the impact that the development will have on the environment. The ECO (see Chapter 14) needs to ensure that all role-players are "on board" with regard to the constraints that the EMPr places on the development and construction team. The end result relies on cooperation and mutual respect and understanding of all parties involved.

3. How to use this document

It is essential that this EMPr be carefully studied, understood, implemented, and adhered to as far as reasonably possible, throughout all phases of the proposed development. The *George Municipality: Water & Sanitation: Civil Engineering Services* must retain a copy of this EMPr, and another copy of this EMPr must be kept on site at all times during the pre-construction, construction, and post-construction rehabilitation phases of the development.

This EMPr must be included in all contracts compiled for contractors and subcontractors employed by *George Municipality: Water & Sanitation: Civil Engineering Services*, as this EMPr identifies and specifies the procedures to be followed by engineers and other contractors to ensure that the adverse impacts of construction activities are either avoided or reduced. *George Municipality: Water & Sanitation: Civil Engineering Services* and any appointed contractors must make adequate financial provision to implement the environmental management measures specified in this document.

This EMPr must be seen as a working document, which may be amended from time to time as needed, in order to accommodate changing circumstances on site or in the surrounding environment, or in order to accommodate requests/ conditions issued by the competent authority, the Department of Environmental Affairs & Development Planning. Amendments to this EMPr must first be approved by the competent authority, in writing.

4. Background and Location of the activity

4.1 Background and description

The Herold's Bay Pump Station no. 1 is located at the Herold's Bay beachfront, at the main parking lot on Uitspanning Street and can be accessed by following the R404 into Herold's Bay. The pump station was refurbished in 2004 and is the main sewage pump station in Herold's Bay, receiving all sewage gravity flows from the area and pumped flows from two smaller pump stations along the cove. The sewage is subsequently pumped to the Herold's Bay Wastewater Treatment Works (WWTW).

The scope of work for this project can further be broken down as follows:

Existing Herold's Bay Pump Station Number 1 (PS1)

- Upgrade the existing pump station's civil infrastructure to handle 32L/s (ultimate design flow) and the mechanical operating capacity from 5 L/s (low season) to 32 L/s (extreme events).
- Refurbish the entire pump station building and equipment, including all mechanical, electrical and electronic equipment. All structures are to be stormproof as much as reasonably possible.
- Install mechanical equipment to cater to the highly abrasive pumping conditions.
- Install three (3) new submersible vortex pumps. The pumps shall be operated on a rotational basis as duty/assist/standby.
- Replace the odour control unit.
- Provide a new emergency storage tank.
- Provide an emergency generator supply, integrated from PS4, with existing supply as a backup
- Provide a new sand trap and manual coarse screen.
- Provide an architectural conceptual proposal and cost estimate for the aesthetic enhancement of the existing building.

New Pump Station Number 4 (PS4)

- Construct a new high lift pump station (civil works) with a normal operating capacity of 52 L/s, and an emergency operating capacity of 70L/s.
- Construct new inlet works comprising of:
 - a screening station,
 - a grit removal station,
 - a Parshall flume for inflow measurement.

- Install two (2) new dry well pumps. The pumps shall be operated rotationally as duty/standby.
- New MCC with variable-speed drives on all pumps, complete with PLC and HMI.
- Install odour control unit.
- Installation of electrical and electronic equipment associated with the new pump station and inlet works.
- Provision of an indoor backup generator, supplying PS1 and PS4.
- Provide above-ground fuel storage for the generator, within a dedicated room.
- The civil works will comprise the construction of new buildings, retaining walls, fences, access roads etc.
- Reduce sound pollution generated by the pump station as far as reasonably possible.

Rising Main

Construction of a new rising main pipeline between the

- existing pump station (PS1) and the new pump station (PS4)
- new pump station (PS4) and the Herold's Bay WWTW.

Bulk Electrical

- Upgrade and relocation of the electrical mini substation currently located on PS4 site, including all affected MV and LV cables.
- Install new LV electrical supply cable between PS4 and PS1, integrated with generator changeover.



Figure 1: Approximate Locality of the proposed site.



Figure 4: Existing and proposed pipeline between PS1 and PS4



Figure 5: Pipeline route from PS4 following Speckie Gerecke Drive



Figure 6: Pipeline route from the intersection of Speckie Gerecke Drive and Gus Meyer Avenue to the WWTW



Figure 7: Pipeline route at the WWTW

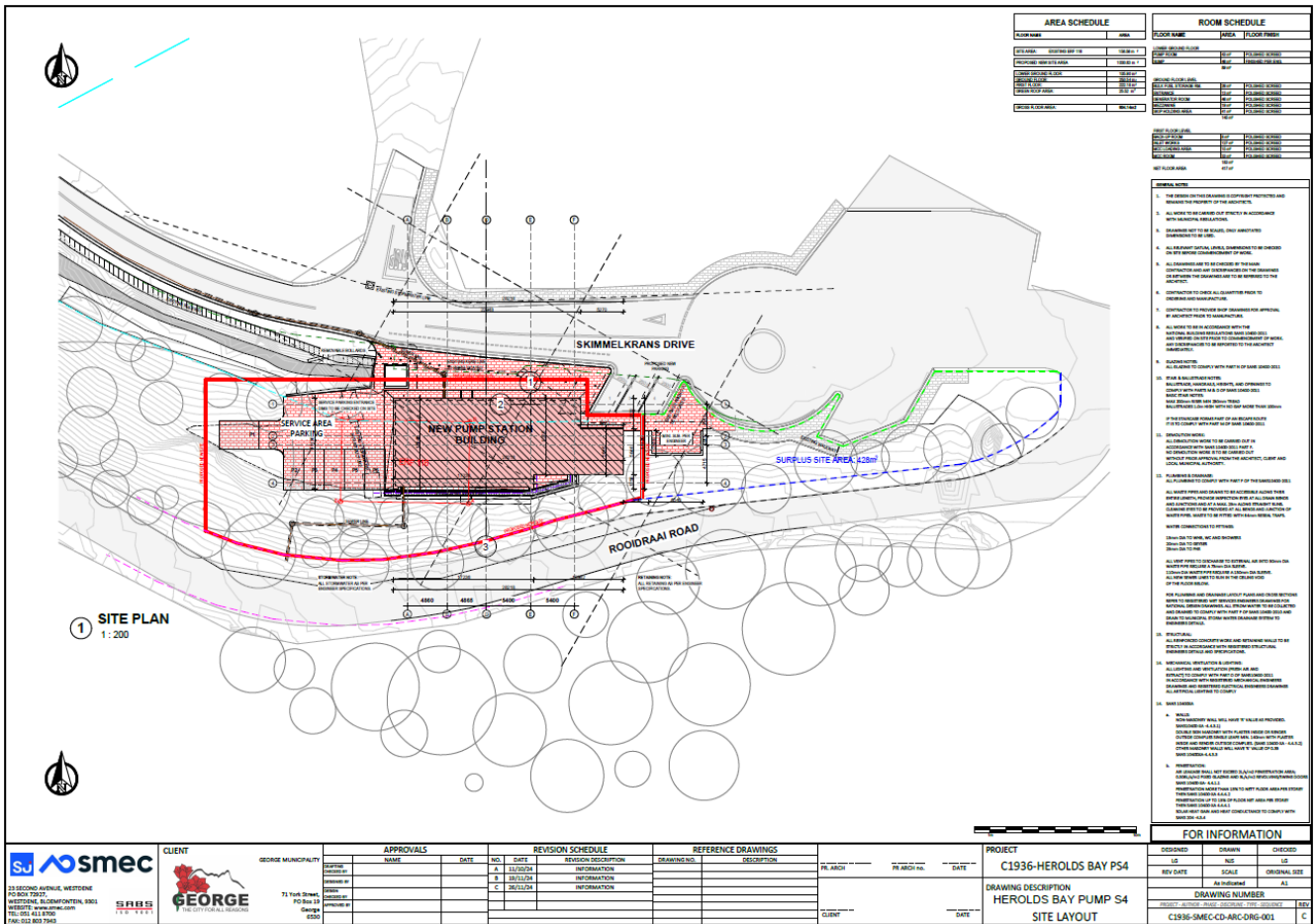


Figure 8: Proposed PS4



Figure 9: Position of PS1

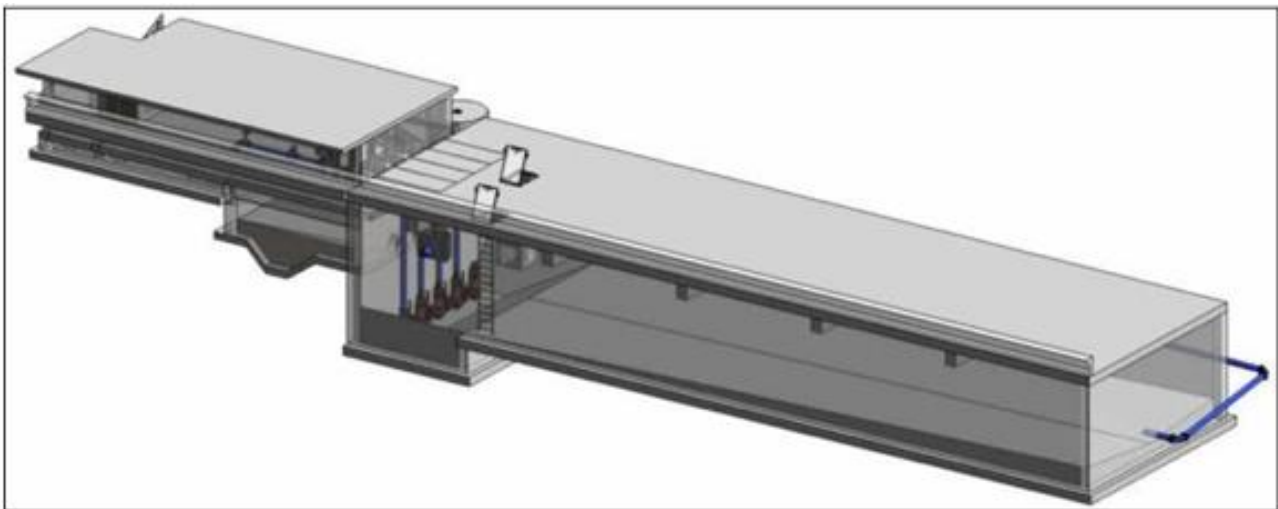


Figure 10: Model of proposed PS1 and emergency storage tank

Site Access and temporary storage/working/laydown areas

All proposed sites can be accessed from existing roads. The existing Pump Station 1 will be directly accessed via Uitspanning Street. The new Pump Station 4 will be accessed via Skimmelkrans Lane. The pipeline between PS1 and PS4 can be accessed directly through Skimmelkrans Lane. The first 220m of the pipeline between PS4 and the WWTW can be accessed through Skimmelkrans Lane and Spekie Gericke Drive. The rest of the pipeline between PS4 and the WWTW can be accessed by following the R404 road and turning on a gravel road to the WWTW. An existing two-track jeep track will be used to access the pipeline for the steeper sections.

The existing parking in Uitsig road and a Municipal owned campground on Skimmelkrans Lane can be used as a storage/working/laydown area. Any other disturbed/grassed area that will not trigger listed activities can be used as a storage area; the ECO must however confirm if any activities are triggered by the proposed storage area.



Figure 11: Proposed storage/working/laydown area

Table 1: Summary Table: Site and Erf Details

Province	Western Cape
District Municipality	Garden Route District Municipality
Local Municipality	George Municipality
Ward number	Ward 23
Erf name	Farm 37/236 Brakfontein, Farm 35/236 Brakfontein, Farm 236 Brakfontein, Erf 116, Erf RE/95, Farm 237, Erf 110, Erf 113, Farm 10/236 Brakfontein and Portion 36 of 236.

5. Legal Framework

5.1 Environmental Impact Assessment Regulations (2017)

The following listed activities, in terms of the amended Environmental Impact Assessment Regulations, 2017 (GN No. R. 324 – 327) will be triggered by the proposed development:

Table 2: Listed activities in terms of the amended Environmental Impact Assessment Regulations (2017)

Listed Activity No(s):	Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 1 (GN No. R. 983)
12	<p>The development of—</p> <p>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or</p> <p>(ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs—</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; —</p> <p>excluding—</p> <p>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p>

	<p>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such development occurs within an urban area;</p> <p>(ee) where such development occurs within existing roads, road reserves or railway line reserves; or</p> <p>(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.</p>
19A	<p>The infilling or depositing of any material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from—</p> <p>(i) the seashore;</p> <p>(ii) the littoral active zone, an estuary or a distance of 100 metres inland of the highwater mark of the sea or an estuary, whichever distance is the greater; or</p> <p>(iii) the sea; —</p> <p>but excluding where such infilling, depositing, dredging, excavation, removal or moving—</p> <p>(f) will occur behind a development setback;</p> <p>(g) is for maintenance purposes undertaken in accordance with a maintenance management plan;</p> <p>(h) falls within the ambit of activity 21 in this Notice, in which case that activity applies;</p> <p>(i) occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or</p> <p>where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies.</p>
25	<p>The development and related operation of facilities or infrastructure for the treatment of effluent, wastewater or sewage with a daily throughput capacity of more than 2 000 cubic metres but less than 15 000 cubic metres.</p>
48	<p>The expansion of—</p> <p>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or</p> <p>(ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more; where such expansion occurs—</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;</p> <p>excluding—</p> <p>(aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such expansion occurs within an urban area; or</p> <p>(ee) where such expansion occurs within existing roads, road reserves or railway line reserves.</p>
Listed Activity No(s):	<p>Describe the relevant Basic Assessment Activity(ies) in writing as per Listing Notice 3 (GN No. R. 985)</p>
12	<p>The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p>i. Western Cape</p> <p>i. Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</p>

- | |
|---|
| <p>ii. Within critical biodiversity areas identified in bioregional plans;</p> <p>iii. Within the littoral active zone or 100 metres inland from high water mark of the sea or an estuarine functional zone, whichever distance is the greater, excluding where such removal will occur behind the development setback line on erven in urban areas;</p> <p>iv. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning; or</p> <p>v. On land designated for protection or conservation purposes in an Environmental Management Framework adopted in the prescribed manner, or a Spatial Development Framework adopted by the MEC or Minister.</p> |
|---|

5.2 Other applicable legislation

George Municipality: Water & Sanitation: Civil Engineering Services, is responsible for ensuring that all contractors, labourers and any other appointed person/entity acting on their behalf, remain compliant with the conditions of the received environmental authorisation and water-use authorisations, as well as the provisions of all other applicable legislation, including *inter alia*:

- National Environmental Management Act (NEMA) (Act No 107 of 1998, as amended);
- National Environmental Management Biodiversity Act (Act 10 of 2004);
- National Water Act (Act 36 of 1998)
- National Environmental Management: Waste Act (Act 59 of 2008);
- National Forest Act (Act No 84 of 1998);
- National Heritage Resources Act (Act No 25 of 1999);
- Occupational Health and Safety Act (Act 85 of 1993);
- Amended Environmental Impact Assessment Regulations, GN No. R. 324 – 327 (7 April 2017)
- The Constitution of the Republic of South Africa, 1996 (Act 108 of 1996)
- Spatial Planning and Land Use Management Act, No. 16 of 2013 (SPLUMA)
- Infrastructure Development Act, 2014 (Act No. 23 of 2014)
- The National Environmental Management Laws Amendment Act, 2022
- Natural Scientific Professions Act, 2003 (Act 27 of 2003)
- Regulation 41 of the EIA Regulations, 2014 (as amended)
- Section 24O (2) and (3) of NEMA and Regulations 7(2) and 43(2) of the EIA Regulations, 2014

The above listed legislation has general applicability to most development applications, and it is George Municipality: Water & Sanitation: Civil Engineering Services responsibility to ensure that all contractors and employees are aware of their obligations in terms of these Acts. This EMPr does not detract from any other legal requirements.

6. Scope of this EMPr

This EMPr describes the measures that must be implemented in order to avoid, minimise, manage and monitor the potential environmental impacts of the development, during all phases of the project life cycle, namely:

- Planning and Design Phase
- Pre-construction Phase
- Construction Phase
- Rehabilitation Phase

General environmental management measures that must be applied throughout the project lifecycle (as and where applicable) are described in Chapter 7. Additional management measures that must be

implemented to address specific impacts that may arise during each phase are provided in **Chapters 8-11** of this EMPr.

7. General Environmental Management

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

7.1 Site access and traffic management

The proposed new pumpstation (PS4) will be located on Skimmelkrans Lane. The existing pumpstation (PS1) is located on Uitspanning Street. The two pumpstations are easily accessed from these roads. The pipeline between PS1 and PS4 can be accessed directly through Skimmelkrans Lane. The first 220m of the pipeline between PS4 and the WWTW can be accessed through Skimmelkrans Lane and Spekie Gericke Drive. The rest of the pipeline between PS4 and the WWTW can be accessed by following the R404 road and turning on a gravel road to the WWTW. An existing two-trek jeep track will be used to access the pipeline for the steeper sections.

In general, all construction vehicles need to adhere to traffic laws. The speed of construction vehicles and other heavy vehicles must be strictly controlled to avoid dangerous conditions for other road users. As far as possible care must be taken to ensure that the local traffic flow pattern is not too significantly disrupted, and all vehicle operators therefore need to be educated in terms of "best-practice" operation to minimise unnecessary traffic congestion or dangers. Construction vehicles must 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. Signage would need to be clearly visible and need to include, among others, the following:

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

Other mitigation measures include:

- ECO to do awareness training with the contractor and labourers before construction commences.
- Ensure appropriate behaviour of operators of construction vehicles.

7.2 Site demarcation

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

Construction working area

Prior to the commencement of any construction activities, the outer boundary of the development area must be surveyed and pegged. The demarcation boundary must be tight around the site, typically allowing a working area of no more than 2.5m around the development footprint, however for the installation of the pipeline between PS4 and the WWTW (220m – 1470m), a 10m working corridor is allowed due to possible deviations from the existing pipeline route. This demarcation boundary is to ensure that construction activities are restricted to only that area strictly required for the proposed development, and to prevent unnecessary disturbance of soil surfaces and vegetation outside of the development footprint.

No-go areas

Prior to the commencement of any construction activities, all No-Go areas, must be demarcated and must not be disturbed during the construction phase. For guidance purposes, and to prevent indirect impacts, any area outside the developmental footprint, with a reasonable allowance for activities, and the 10m working corridor allowed for the installation of 220m-1470m of the rising main between PS4 and the WWTW, and the areas to be used for site camp and storage is considered a no-go area.

No-go areas must be off-limits to all construction workers, vehicles, and machinery during all phases of the development. No vegetation may be cleared from within the no-go areas, and no dumping of any material (waste, topsoil, subsoil etc.) may occur in these areas. Construction workers must be informed of the no-go areas, and if necessary appropriate signage and/or temporary fencing (e.g., droppers with danger tape) can be used to enforce the no-go areas.

Demarcation of the site camp

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

7.3 Site camp and associated facilities

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

7.3.1 Fencing & Security

The site camp area must be secured to prevent any un-authorised individuals from entering the site camp and possibly getting injured or posing a safety and/or security risk. Adequate signage must be displayed, designating the site office / camp as a restricted area to non-personnel. If required, the site camp and associated areas may be fenced off along the demarcated boundaries of these areas, preferably with 2m high fence and shade netting or similar.

7.3.2 Fire Fighting Equipment

No less than 2 fire extinguishers must be present in the site camp. The extinguishers must be in a working condition and within their service period. A fire extinguisher must always be present wherever any "hot works" (e.g., welding, grinding etc.) are taking place. It is recommended that all construction workers receive basic training in fire prevention and basic fire-fighting techniques and are informed of the emergency procedure to follow in the event of accidental fires. No open fires may be made on the construction site during any phase of the project. Construction workers may make small, contained fires

(e.g., for warming or cooking purposes), within the site camp provided the small fire is encircled by a corrugated iron structure, drum or similar, to prevent wind-blown cinders from causing fires elsewhere. Such fires may not be left unattended and must be thoroughly extinguished after use. No smoking must be allowed on the construction site. In the case of accidental fires, the contractor must (if required) alert the Local Authority's Fire Department as soon as a fire starts prior to the fire becoming uncontrollable.

7.3.3 Waste Storage Area

Sufficient bins for the temporary storage of construction related waste must be provided inside the site camp and/or at the working area and should be located in such a way that they will present as little visual impact to surrounding residents and road users as possible. Label each waste receptacle for waste separation, and ensure waste is contained either by use of lids or by ensuring waste receptacles are emptied prior to filling up, making them susceptible to wind dispersion. Sufficient signage and awareness should be created to ensure that these bins are properly used.

7.3.4 Hazardous Substances Storage Area

Fuels, chemicals, lubricants and other hazardous substances must be stored in a demarcated, secured and clearly sign-posted area within the site camp away from the watercourses on site. Sufficient signage and awareness should be created to ensure that these bins are properly used. Ensure that when substances are transferred, this is done on an impermeable and/or bunded surface, to contain any spillage. Spillage, should it occur, should be disposed of appropriately.

7.3.5 Potable Water

An adequate supply of potable water must be provided to construction workers at the site camp. It is the Contractors duty to ensure that the labour has adequate access to potable water throughout construction phase, and to monitor weather conditions, to ensure that labour has enough drinking water on hotter days, or construction activity must cease, until conditions are safe to continue.

7.3.6 Ablution Facilities

Chemical toilets should be maintained on the site camp for the duration of the construction phase and rehabilitation, on a level surface and secured from blowing over and located in such a way that the toilets will not cause any form of pollution. As per the SANS10400 requirement, one ablution facility for every 8 male workers and 2 ablution facilities for every 8 female workers will be provided.

The ablution facilities must not be linked to a river system, estuary or the ocean in any way. Toilets must be serviced regularly and kept in an orderly state. The contractor must ensure that no spillage occurs when the toilets are cleaned, serviced or moved. The toilet facilities should be emptied on a weekly basis, by an appropriately registered service provider. Proof of this weekly servicing must be obtained and filed in the Environmental File on site. Performing ablutions outside of the provided toilet facilities is strictly prohibited and the ECO would need to regularly inspect the state of the chemical toilets to ensure compliance.

7.3.7 Eating Area & Rest Area

A dedicated area within which construction workers can rest and eat during breaks should be provided within the site camp. Seating and shade should be provided.

7.3.8 Vehicle & Equipment Maintenance Yard

Where possible, construction vehicles and equipment that require repair must be removed from site and taken to a workshop for servicing. If emergency repairs and/or basic maintenance of construction vehicles or equipment are necessary on site, such repair work must be undertaken within the designated maintenance yard area away from any watercourses. Repairs must be conducted on an impermeable surface, and/or a tarpaulin and/or drip trays must be laid down prior to emergency repairs taking place,

in order to prevent any fuel, oil, lubricant or other spillages from contaminating the surrounding environment.

7.3.9 House-keeping

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

7.4 Vegetation clearing

Jan Vlok and Bionerds must be contacted during the search and rescue before construction commences by the appointed specialists undertaking the search and rescue.

Where vegetation must be cleared the following measures must be implemented where applicable, reasonable and practical:

- Where feasible vegetation must simply be trimmed to facilitate access/ construction, rather than being completely cleared or removed.
- Vegetation clearing/trimming must be cleared by hand (i.e. brush cut) and stockpiled for use as mulch/ brush-packing during rehabilitation of the site. Any alien vegetation that is cleared must be disposed of in consultation with the ECO, unless the cleared alien vegetation does not contain seeds in which case it may be retained for use in site rehabilitation.
- No bulldozing must be undertaken for the purpose of vegetation clearing.
- Only the areas required to accommodate the construction activities and access to the construction site must be cleared/trimmed of vegetation.
- Vegetation outside of the construction footprint and beyond any No-Go areas must not be cleared.

7.5 Topsoil and subsoil management

It is recommended that topsoil be removed from any area where physical disturbance of the surface will occur, including within the footprint of the development site (working area) and possibly within the site camp, ablution area, vehicle maintenance yard, refuelling area and temporary waste storage area. Topsoil removal and stockpiling must be undertaken only after consultation with the ECO.

- Removed topsoil and subsoil must be stockpiled for the duration of the active construction period and utilised for the final landscaping and rehabilitation of disturbed areas on site.
- The removed topsoil must be stockpiled in a berm, in a demarcated area as agreed with the ECO.
- Removed subsoil must be stockpiled separately from topsoil.
- The topsoil & subsoil storage area must be located on a level area outside of any surface drainage channels and at a location where it can be protected from disturbance during construction and where it will not interfere with construction activities.
- Where applicable topsoil and subsoil stockpiles must be adequately protected from being blown away or eroded by storm water. If necessary, shade cloth or other suitable measures must be used to stabilise and protect the stockpile from wind/water erosion. Topsoil stockpiles must not be covered with tarpaulin, as this may smother and decrease the virility of topsoil.
- Handling of topsoil must be minimised as much as possible, and the location of the topsoil berm must be chosen carefully to avoid needing to relocate the topsoil berm at a later date. The ECO must be consulted with regards to the placement of the stockpiles, to ensure that the selected location is in compliance with this EMP and EA (once granted).

- Ideally, topsoil is to be handled twice only, once to strip and stockpile, and once to replace, level, shape and scarify.
- If soil stockpiles will be stored for an extended period of time, the stockpiles must be kept clear of weeds and alien vegetation growth by regular weeding, (or application of herbicides if agreed with the ECO).
- Spoil material that will not be re-utilised on site may be removed from site and taken to an appropriate site for re-use or disposal.
- Note that the topsoil must be the final layer applied to a rehabilitated/ re-landscaped site, after subsoil/ spoil material has been placed and shaped on the site.

7.6 Integrated waste management approach

It is recommended that an integrated waste management system is adopted on site. The system must be based on waste minimisation and must incorporate reduction, recycling, re-use and disposal where appropriate. Waste bins for the different categories of recyclable waste (i.e., paper, plastic, metal) must be provided on site. These bins must be emptied, and the waste must be taken to a registered recycling facility. The receipts from the facility must be kept on file and must be available on request. Images 1 and 2 show two such systems within a construction site.



Image 1: Recycling system implemented on a construction site. Skips provided for general waste, plastic, cardboard and metal.



Image 2: Recycling system implemented on a construction site. Lidded bins provided for general waste, plastic, cardboard, and metal.

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

7.7 Hazardous substances and fuels

If hazardous substances and fuels such as diesel, oil, lubricant, detergents etc. are to be stored on site for construction purposes, a designated area must be set aside for this within the site camp.

- All hazardous substances must be stored in the designated area within the site camp.
- The area selected for storage of hazardous fuels must be located on a level area, well outside of any water courses, water bodies or surface drainage channels.
- The designated area must be clearly demarcated and secured by use of fencing and/or cages, to prevent access by un-authorised persons and/or animals.
- Access to the hazardous material storage area must be restricted to authorised personnel only and must be treated as a no-go zone to unauthorised personnel.
- Appropriate hazard signage indicating the nature of the stored materials must be prominently displayed at the storage area.
- Those persons tasked with handling any hazardous substances must be equipped with the knowledge, equipment, and safety gear necessary to handle the substance/s safely.
- Material Safety Data Sheets (MSDSs) must be available on site for all hazardous chemicals and hazardous substances to be used on site. Where possible and available, MSDSs must additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes
- Storage vessels of hazardous substances must be situated in an impermeable bunded area large enough to accommodate at least 110% of the capacity of the tank in question. If plastic sheeting is used to line the bunded area, care must be taken to ensure it is not punctured in any way during the course of the construction period.
- Fuel tanks must ideally be elevated so that leaks can easily be detected.
- No smoking may be permitted at or surrounding the area where fuels and hazardous substances are stored.
- Firefighting equipment must be located in close proximity to the storage area.

7.8 Cement and concrete batching

Cement and concrete batching is permitted on site, but may only take place on designated impermeable, bunded surfaces, as agreed with the ECO.

- Cement/ concrete must not be mixed on bare ground.
- Cement/concrete must not be mixed within any drainage lines.
- The impermeable/ bunded area must be established in such a way that cement slurry, runoff and cement water will be contained and will not flow into the surrounding environment or contaminate the soil.
- Cement run-off and excess cement slurry must be collected in the designated impermeable area, allowed to dry and then disposed of at an appropriate facility. Alternately, the contaminated water can be collected in sealed tanks and transported to an appropriate disposal site for disposal.
- Empty cement bags are currently not recycled within the Garden Route and must be disposed of in the un-recyclables waste bins on site.

7.9 Erosion control and stormwater management

Appropriate measures must be implemented to control the flow of storm water across the construction site, to prevent possible flooding, soil loss and dispersion of pollutants. All exposed earth surfaces must also be protected from wind and water erosion. Stripped areas must not remain uncovered for extended periods of time and must be provided with a suitable cover (vegetation, mulch, brush-packing) as soon as possible.

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

It may be necessary to implement small-scale erosion protection measures at the construction site, to prevent soil erosion. Such measures may include the use of shade netting, geo-fabric, brush-packing, logs and stakes or similar barriers in areas susceptible to erosion and along exposed slopes. The netting/fabric is placed directly across the path of flow of storm water. Poles and logs, staked in along the contours of a slope susceptible to erosion may also be used.

7.10 Construction near a watercourse

Construction within the vicinity of the aquatic system needs to be conducted in a conscious manner. The Freshwater Assessment Report completed by Confluent Aquatic Consulting & Research highlights the following mitigation measures to be adhered to during construction.

- Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. No machinery or vehicles with leaks are permitted to work in the watercourse; No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed within the banks of the watercourse;
- Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills;
- Cement/concrete used in the construction must not be mixed on bare ground or within the watercourse. An impermeable/bunded area must be established in such a way that cement slurry, runoff and cement water will be contained and will not flow into the surrounding environment, the stream or riparian zone or contaminate the soil;
- The watercourse should be inspected on a regular basis (at least weekly) by an appropriately qualified ECO for signs of disturbance, sedimentation and pollution during the construction phase. If signs of disturbance, sedimentation or pollution are noted, immediate action should be taken to remedy the situation and, if necessary, a freshwater ecologist should be consulted for advice on the most suitable remediation measures.
- Areas where instream access is required must be confined to clearly demarcated areas so as to prevent unnecessary disturbance of instream habitat outside of these areas.
- No dumping of waste materials in the watercourse;
- Surface runoff originating from the road surface upslope of the construction area, must be diverted (by means of a barrier – e.g. sandbags) to avoid stormwater flows through any excavated section of the road surface;
- Any diversion of surface runoff must not cause erosion to the bed and banks of the watercourse);
- No construction materials to be stockpiled in the watercourse;
- All waste materials must be removed from the watercourse;

7.11 Excavations and Earthworks

Any major earthworks with heavy machinery must be under constant supervision and operators are to be aware of all the environmental obligations, as there is always the potential to inflict damage to the sensitive areas. Any unnecessary or excessive heavy machinery movement must be kept to a minimum i.e., only what is absolutely necessary. Areas to be excavated must be clearly demarcated. It may be necessary to demarcate excavations or earthworks along busier haulage routes with orange barrier netting (or a similar product).

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

7.12 Site closure and rehabilitation

Upon completion of the construction phase, all disturbed areas, including the working area (disturbance corridor), temporary access roads, and all areas utilised for the site camp and associated site camp facilities will require rehabilitation as follows:

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

8. Environmental Impact Management Planning and design phase

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

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

The environmental management objectives (goals) during this phase are to:

- Appoint an Environmental Control Officer.
- Environmental Control Officer to conduct an inspection prior to the commencement of construction activities on site

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

OBJECTIVE 1: APPOINTMENT OF AN ENVIRONMENTAL CONTROL OFFICER

Impact Management Objective: To appoint a suitably qualified and experienced Environmental Control Officer.		
Potential impact to avoid	Failure to appoint an ECO will result in non-compliance with the Environmental Authorisation and the requirements of the EMPr.	
Impact Management Outcome	The conditions of Environmental Authorisation and the requirements of the EMPr are implemented and monitored during all phases of the development, which will promote sound environmental management on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> • A suitably qualified and experienced Environmental Control Officer must be appointed before any activities commence on site. • The appointed ECO must adhere to the requirements stated in Chapter 15 and 17 of the EMPr and any other requirements specified in the Environmental Authorisation. • The appointed ECO must be advised of the construction start date, before any activities commence on site so that the ECO can perform a pre-commencement inspection and plan for environmental awareness training of construction workers. 	George Municipality: Water & Sanitation: Civil Engineering Services	During design phase

Performance Indicator	A qualified ECO is appointed prior to the commencement of any construction activities (including pre-construction set-up activities) on site.
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OBJECTIVE 2: UPDATE ENVIRONMENTAL MANAGEMENT PROGRAMME

The Environmental Authorisation issued for the development may require certain amendments to be applied to the EMPr. In addition, the final site layout and detailed design may also necessitate the amendment of the EMPr, in order to ensure that the development is accommodated in the EMPr.

<i>Impact Management Objective: To ensure the EMPr adheres to the requirements of the Environmental Authorisation and makes provision for the final detailed site layout.</i>		
Potential impact to avoid	<ul style="list-style-type: none"> • Failure to update the EMPr in accordance with conditions specified in the EA may result in non-compliance with the EA. • Failure to update the EMPr to accommodate the final detailed site layout may result in non-compliance with the EA. 	
Impact Management Outcome	Good environmental management is promoted on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> • An independent Environmental Consultant must be appointed to amend the EMPr. • All amendments to the EMPr specified in the EA must be applied to the EMPr unless agreed otherwise in writing with the Competent Authority. • Amendments to the EMPr must be approved in writing by the Competent Authority. • Public participation may be required on the proposed EMPr amendments. The Competent Authority must be consulted for clarity on these requirements. 	George Municipality: Water & Sanitation: Civil Engineering Services	During design phase
Performance Indicator	An updated EMPr that adheres to the conditions of the EA and that reflects the requirements of the final detailed site layout is approved by the Competent Authority prior to commencing activities on site.	

9. Environmental Impact Management Pre-Construction Phase

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

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

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

OBJECTIVE 1: IDENTIFY & DEMARCATe NO-GO AND WORKING AREAS

<i>Impact Management Objective: Identify and demarcate no-go areas, working areas and site facilities.</i>		
Potential impact to avoid	<ul style="list-style-type: none"> • Insensitive location of working areas and site facilities may result in environmental impacts during construction phase. • Failure to accurately demarcate working areas may result in increased disturbance footprint. • Failure to demarcate no-go (open spaces) areas may result in disturbance to these areas during construction. 	
Impact Management Outcome	Future construction activities will be restricted to within the designated areas & environmentally sensitive areas (no-go areas) will be protected from disturbance.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> • The no-go areas must be identified. • Demarcation of working area and no-go areas must be done in accordance with Section 8.2 of this EMPr. • Site camp facilities must be situated as far away from the No-Go areas as possible. 	Engineer / Contractor	Pre-construction phase (prior to arrival of construction equipment, machinery, or workers on site)
Performance Indicator	No-go areas, working areas and areas for site camp facilities have been identified and appropriately demarcated to the satisfaction of the ECO, before construction activities commence on site.	

OBJECTIVE 2: ESTABLISH ENVIRONMENTALLY SENSITIVE SITE CAMP & SITE FACILITIES

<i>Impact Management Objective: To set up and equip the site camp and associated site facilities in a manner that will promote good environmental management.</i>		
Potential impact to avoid	<ul style="list-style-type: none"> • Inappropriate siting of site camp facilities may result in impacts to sensitive resources (e.g. contaminated run-off from refuelling area may contaminate soil). • Failure to properly demarcate and set up site facilities may result in disorganised construction activities and unnecessary disturbance to the site. • Failure to provide the necessary site facilities and/or failure to equip these facilities with the necessary equipment/materials may impede good environmental management & compromise ability to respond to emergencies. 	
Impact Management Outcome	Site camp facilities do not impact significantly on environment. The equipment required to implement the provisions of the EMPr are provided on site.	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> • The site camp and site facilities described in Section 8 of this EMPr must be provided on site. • The site camp and associated site facilities must be set-up and managed in accordance with the general environmental management measures specified in Section 8 of this EMPr. 	Contractor	Pre-construction phase (prior to start of construction activities)
Performance Indicator	Appropriate, well organised and properly equipped site facilities are available on site prior to commencement of construction activities. The location and set up of the facilities do not impact on the natural resources.	

OBJECTIVE 3: PRE-CONSTRUCTION ECO INSPECTION

It is essential that the appointed ECO be advised of the intended construction start date before construction activities commence on site, so that the ECO can conduct an initial site inspection to assess the pre-commencement condition of the site. The ECO can also advise on the appropriate siting and demarcation of the site facilities, and the identification and demarcation of the no-go areas. The ECO may also conduct the first round of environmental awareness training at this stage, if the construction workers are present on site.

<i>Impact Management Objective: Environmental Control Officer to conduct an inspection prior to the commencement of construction activities on site.</i>		
Potential impact to avoid	<ul style="list-style-type: none"> • Failure to appoint ECO or to notify ECO of commencement prior to commencement will result in non-compliance with the EA. • If a pre-commencement ECO inspection is not performed, the Applicant may be held liable for environmental degradation that took place prior to the Contractor commencing work on site. 	
Impact Management Outcome	<ul style="list-style-type: none"> • Good environmental management is promoted and enforced by the ECO during the full pre-construction and construction phases. • Site facilities are appropriately located on site. • Construction workers receive environmental awareness training before commencing work on site. 	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> • The appointed ECO must be advised of the construction start date, before any activities commence on site so that the ECO can perform a pre-commencement inspection and plan for environmental awareness training of construction workers. 	Contractor	Start of construction phase
Performance Indicator	A pre-commencement site inspection is conducted by the appointed ECO before construction activities commence on site.	

OBJECTIVE 4: PRE-CONSTRUCTION SEARCH AND RESCUE

<i>Impact Management Objective: Identify and demarcate no-go areas, working areas and site facilities.</i>			
Potential impact to avoid	<ul style="list-style-type: none"> Loss of SCC species 		
Impact Management Outcome	No avoidable loss of indigenous flora and SCC.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure	Responsible party	Time period	
<ul style="list-style-type: none"> Conduct pre-construction search and rescue according to Objective 4 of the environmental impact management of the construction phase. The appointed specialist conducting the search and rescue must contact Jan Vlok and Bionerds, to confirm survey timing, methodology and possible locations of recorded species. 	Search and rescue specialist	Pre-construction phase (prior to arrival of construction equipment, machinery, or workers on site)	
Performance Indicator	No avoidable loss of indigenous flora and SCC		

10. Environmental Impact Management Construction Phase

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

The environmental management actions and mitigation measures prescribed in this section must be implemented throughout the construction phase, and must be implemented in conjunction with the general management measures specified in Chapter 8 of this EMPr as well as any other conditions stated in the Environmental Authorisation. The Environmental Control Officer must monitor and enforce the implementation of the relevant environmental management measures and may provide guidance on the implementation of these environmental management measures as and when required.

The environmental management objectives (goals) for the Construction phase are:

- Prevent pollution of watercourses
- Limit surface runoff and input of sediment into the watercourse
- Limit the impact on terrestrial biodiversity
- Reduce the loss of indigenous flora and SCC
- Limit noise
- Create employment opportunities

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

OBJECTIVE 1: PREVENT POLLUTION OF WATERCOURSE

Impact Management Objective: To prevent pollution of watercourses		
Potential impact to avoid	<ul style="list-style-type: none"> • Pollution of watercourse through leakage of fuels, oils and other pollutants from vehicles • Poor management could lead to sewage spills or leaks 	
Impact Management Outcome	No change in watercourse quality due to construction activities	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> • Excavators and all other machinery and vehicles must be checked for oil and fuel leaks daily. • No machinery or vehicles with leaks are permitted to work in the watercourse; 	Contractor	Construction phase

<ul style="list-style-type: none"> • No fuel storage, refuelling, vehicle maintenance or vehicle depots to be allowed within the banks of the watercourse; • Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them (sized to contain 110 % of the tank capacity) to contain any possible spills; • The area(s) chosen for the stockpiling of imported building materials should be demarcated, and notices put up declaring what must be stockpiled where. • Chemical toilets should be provided on-site at 1 toilet per 10 persons; • Waste from chemical toilets must be disposed of regularly (at least once a week) in a responsible manner by a registered waste contractor; • Cement/concrete used in the construction must not be mixed on bare ground or within the watercourse. An impermeable/bunded area must be established in such a way that cement slurry, runoff and cement water will be contained and will not flow into the surrounding environment, the stream or riparian zone or contaminate the soil; • Workers must be properly instructed in the proper care of the environment, especially with respect to poaching, disturbance of nesting and roosting areas, disposal of human waste, garbage etc.; • The watercourse should be inspected on a regular basis (at least weekly) by an appropriately qualified ECO for signs of disturbance, sedimentation and pollution during the construction phase. If signs of disturbance, sedimentation or pollution are noted, immediate action should be taken to remedy the situation and, if necessary, a freshwater ecologist should be consulted for advice on the most suitable remediation measures. 		
<p>Performance Indicator</p>	<p>No pollution occurring on the site or surroundings as a result of construction activities.</p>	

OBJECTIVE 2: TO LIMIT SURFACE RUNOFF AND INPUT OF SEDIMENT INTO THE WATERCOURSE

<i>Impact Management Objective: To prevent pollution of surface water</i>		
Potential impact to avoid	Surface water runoff through excavated sections of the road surface could lead to input of sediment and other construction materials into the watercourse	
Impact Management Outcome	Surface water is not polluted as a result of construction activities	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> • No dumping of waste materials in the watercourse • Surface runoff from the originating from the road surface upslope of the construction area, must be diverted (by means of a barrier – e.g. sandbags) to avoid stormwater flows through any excavated section of the road surface • Any diversion of surface runoff must not cause erosion to the bed and banks of the watercourse • No construction materials to be stockpiled in the watercourse • All waste materials must be removed from the watercourse 	Contractor	Construction phase
Performance Indicator	Surface water is not polluted as a result of construction activities	

OBJECTIVE 3: LIMIT THE IMPACT ON TERRESTRIAL BIODIVERSITY

Impact Management Objective: To limit the impact on terrestrial biodiversity			
Potential impact to avoid	<ul style="list-style-type: none"> • Destruction of habitats • Direct mortality of fauna • Impact on biodiversity network • Erosion on steeper slopes due to poor rehabilitation efforts 		
Impact Management Outcome	Impact on terrestrial biodiversity is limited to what is only required to undertake the activities		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure	Responsible party	Time period	
<ul style="list-style-type: none"> • Destruction of habitat should be limited to the smallest project footprint possible (i.e., minimisation mitigation). • The 10m-12m working area footprint should be rehabilitated and allowed to regenerate naturally. • Every effort should be made to save and relocate any mammal, reptile, amphibian, bird, or invertebrate that cannot flee of its own accord, encountered during site preparation (i.e., to avoid and minimise the direct mortality of faunal species). These animals should be relocated to a suitable habitat area immediately outside the project footprint (in the adjoining natural habitats), but under no circumstance to an area further away. • During the construction phase, demarcate/fence off the construction footprint. • Restrict all construction activities, such as stockpiling, parking and cement mixing, to already disturbed areas away from natural vegetation. • The contractor(s) must be made aware of the sensitive surroundings and the presence of SCC and protected trees. • The thicket and fynbos outside the footprint must be declared a 'no-go' area and not be disturbed in any way. • Pollutant substances brought onto site must be properly contained. Cement/concrete mixing must be contained on impervious and banded surfaces. No cement mixing is allowed inside vegetated areas. Cement water is highly alkaline and considered toxic. • Engage in alien clearing, focussing on invasive species such as black wattle and rooikrans. These species are category 1b and 2 invaders that require compulsory control as part of an invasive species control programme. Their control will become a short- to medium-term maintenance requirement. 	Contractor	Construction phase	
Performance Indicator	Impact on terrestrial biodiversity is limited to what is only required to undertake the activities		

OBJECTIVE 4: REDUCE THE LOSS OF INDIGENOUS FLORA AND SCC

Impact Management Objective: To reduce the loss of indigenous Flora and SCC		
Potential impact to avoid	Loss of indigenous flora and SCC	
Impact Management Outcome	No avoidable loss of indigenous flora and SCC	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> During the staking out of the construction footprint take cognisance of the presence of SCC and protected trees (<i>Pittosporum viridiflorum</i> & <i>Sideroxylon inerme</i>). Try and avoid these as far as practically possible. Removal of the latter requires a permit from the Department of Forestry. It is recommended that the protected trees be marked prior to the start of construction activities. Search and rescue succulents and bulbs from the construction footprint for replanting in the disturbed areas after construction. Topsoil, cuttings and seedbearing plant material can also be salvaged for this purpose, especially cuttings from <i>Carpobrotus</i> and <i>Pelargonium</i> species. Geophytes (e.g. <i>Dioscorea sylvatica</i>, <i>Albuca bracteata</i>, <i>Chasmanthe aethiopica</i> and <i>Bonatea speciosa</i>) should be removed along with some soil, placed in gel, bagged and then taken to a nursery for temporary storage or transplanted directly in the receiving area. Ideally, bulbs should be salvaged during leaf fall, but before or after flowering. 	Contractor	Construction phase
Performance Indicator	No avoidable loss of indigenous flora and SCC	

OBJECTIVE 5: TO LIMIT NOISE AND TRAFFIC CONGESTION

<i>Impact Management Objective: To limit noise generated by construction activities</i>			
Potential impact to avoid	<ul style="list-style-type: none"> No unnecessary noise should be allowed Residents are able to get to and from their houses 		
Impact Management Outcome	No avoidable noise or traffic impacts emanate from the site during the construction phase		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure	Responsible party	Time period	
<ul style="list-style-type: none"> Construction should only be allowed during normal construction working hours. A register will be kept on site in order to report any complaints received. No unnecessary noise disturbances should be allowed to emanate from the construction site (i.e., loud music). A stop and go system are implemented in Skimmelkrans lane Work is done during off seasons to limit traffic disturbances and congestion 	Contractor	Construction phase	
Performance Indicator	No complaints about noise or traffic is received		

OBJECTIVE 6: JOB CREATION

<i>Impact Management Objective: To create employment opportunities with potential for skills transfer, for members of the local community.</i>			
Potential impact to be promoted	<ul style="list-style-type: none"> Temporary jobs opportunities There may be opportunities to transfer skills from more experienced workers to less experienced workers. 		
Impact Management Outcome	The local community benefits from the employment opportunities created during the construction phase.		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure	Responsible party	Time period	
<ul style="list-style-type: none"> No mitigation required for this positive benefit. However, where practical preference must be given to previously disadvantaged individuals from the local community when appointing contractors/ workers. Skills transfer between members of the workforce should be encouraged 	Contractor	Construction phase	
Performance Indicator	The majority of the construction team is from the local community, with preference given to historically disadvantaged individuals. Skills transfer from experienced to less experienced workers is actively encouraged on site.		

11. Environmental impact management post construction rehabilitation phase

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

The environmental management objective (goal) for this phase is to:

- Rehabilitate all areas disturbed by construction activities in an environmentally sensitive manner
- Prevent alien vegetation establishment on the site
- Limit impact on terrestrial biodiversity

OBJECTIVE 1: SITE CLOSURE & REHABILITATION

Impact Management Objective: To rehabilitate all areas disturbed by construction activities in an environmentally sensitive manner.		
Potential impact to avoid	<ul style="list-style-type: none"> • Failure to remove all construction related waste and materials may result in environmental pollution. • Failure to remove all construction related equipment, machinery and site facilities may pose an impact to the natural environment. • Failure to stabilise disturbed surfaces may result in soil erosion and increased storm water run-off, which may limit successful revegetation of the site. 	
Impact Management Outcome	<ul style="list-style-type: none"> • The site is neat and tidy, and all exposed surfaces are suitably covered/ stabilised. • There is no construction-related waste or pollution remaining on site. 	
IMPACT MANAGEMENT ACTIONS		
Mitigation measure	Responsible party	Time period
<ul style="list-style-type: none"> • On completion of the construction operations, the site camp area must be cleared of all site camp facilities, ablution facilities, fencing, signage, waste and surplus material. • Rehabilitate/revegetate all the disturbed surfaces. • Surfaces are to be checked for waste products from activities such as concreting or asphaltting and cleared in a manner approved by the ECO. • Any contaminated soil must be collected and disposed of as hazardous waste. • All construction waste, litter and rubble are to be removed from the site and re-used elsewhere or recycled/disposed of at an appropriate facility. • Burying or burning of waste or rubble on site is prohibited. • All areas within the working area and site camp that have become devoid of vegetation or where soils have been compacted due to construction activities must be scarified or ripped. • Topsoil removed during the establishment of the site camp and the working area must be spread evenly over the entire site camp area and all other disturbed/ exposed areas after those areas have been ripped, scarified, shaped and contoured (as required). • Where necessary seeding and planting of vegetation can take place after the replacement of the topsoil. Hardy, drought tolerant, non-invasive plant species must be selected. If needed, a layer of mulch can be applied to the newly shaped/ landscaped and topsoiled areas. The mulch will serve to limit erosion and will promote the re-vegetation of the site by retaining moisture in the soil and providing organic material (compost) for new plant growth. Mulched material must be spread to a depth of ± 50mm – a thinner layer is likely to be ineffective in protecting the site, while thicker layers may suppress plant growth. 	Contractor	Post-Construction phase

<ul style="list-style-type: none"> • All exposed soils and recently topsoiled areas are to be re-vegetated or stabilised to the satisfaction of the ECO, to protect these areas from wind and water erosion. No areas are to be left exposed to erosive forces. Erosion protection measures that can be applied include mulching (described above), the placement of geotextile, onion bags filled with wood chips, brush-packing or other similar measures. • Any topsoil, subsoil or other excavated material that cannot be utilised during site rehabilitation must be removed from the site and reused elsewhere on the property or disposed of at an appropriate disposal site. • Where necessary disturbed soils must be revegetated with the local indigenous vegetation such as that which occurs at the site or provided with other suitable cover. • It is recommended that follow-up alien clearing be conducted 6 months after construction is complete. 		
<p>Performance Indicator</p>	<ul style="list-style-type: none"> • All construction-related materials, equipment, facilities, waste and contaminated soils have been removed from the site. • Compacted soils have been scarified/ ripped and stabilised. • All disturbed/exposed surfaces have been provided with a suitable covering and/or stabilised. • No alien vegetation is evident on site. 	

OBJECTIVE 2: PREVENT ALIEN VEGETATION ESTABLISHMENT ON THE SITE

<i>Impact Management Objective: To prevent alien vegetation establishment on the site</i>			
<p>Potential impact to avoid</p>	<ul style="list-style-type: none"> • Establishment of alien vegetation on site • Displacement of indigenous flora 		
<p>Impact Management Outcome</p>	<p>The site is free of alien vegetation and indigenous flora is not displaced</p>		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure	Responsible party	Time period	
<ul style="list-style-type: none"> • Remove topsoil and/or seedbearing plant material from the vegetated areas to be disturbed for use in the rehabilitation of disturbed areas after construction. Avoid using seed-bearing alien plant material for rehabilitation purposes. • Rehabilitate/revegetate all the disturbed surfaces. Erosion prevention measures will be needed on the steep slopes, such as silt fences, logs or netting, to slow down runoff and potential erosion. Mulching and seeding with indigenous grass seed may also be needed. 	<p>Contractor/ holder of EA</p>	<p>Post-Construction phase</p>	

<p>However, due to the linear nature of the project, it is expected that the disturbed areas will recover relatively quickly without the need for much intervention.</p> <ul style="list-style-type: none"> Engage in alien clearing, focussing on invasive species such as black wattle and rooikrans. These species are category 1b and 2 invaders that require compulsory control as part of an invasive species control programme. Their control will become a short- to medium-term maintenance requirement. Search and rescue succulents and bulbs from the construction footprint for replanting in the disturbed areas after construction. Topsoil, cuttings and seedbearing plant material can also be salvaged for this purpose, especially cuttings from Carpobrotus and Pelargonium species. Geophytes (e.g. Dioscorea sylvatica, Albuca bracteata, Chasmanthe aethiopica and Bonatea speciosa) should be removed along with some soil, placed in gel, bagged and then taken to a nursery for temporary storage or transplanted directly in the receiving area. Ideally, bulbs should be salvaged during leaf fall, but before or after flowering. Alien and invasive vegetation should be cleared by hand All regrowth and seed germination to be monitored and any new recruitment be removed 		
Performance Indicator	The site is free of alien vegetation and indigenous flora is not displaced	

OBJECTIVE 3: Limit impact on terrestrial biodiversity

Impact Management Objective: To limit the impact on terrestrial biodiversity			
Potential impact to avoid	<ul style="list-style-type: none"> Collision of fauna with vehicles Illegal waste dumping Illegal hunting Fire risk 		
Impact Management Outcome	Only authorise vehicles and people are allowed on the access road		
IMPACT MANAGEMENT ACTIONS			
Mitigation measure	Responsible party	Time period	
<ul style="list-style-type: none"> The access road should be access controlled so as not to allow novel indirect impacts into this previously undisturbed part of the landscape. Access control should also be applied to the new rising main footprint. 	Contractor/ holder of EA	Post-Construction phase	
Performance Indicator	Terrestrial biodiversity is not impacted		

12. Emergency Preparedness

12.1 Emergency response procedures

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

- The construction contractor is responsible for ensuring that the requirements of the Occupational Health & Safety Act (OHSA) are adhered to during the construction phase. The Applicant is responsible for ensuring compliance with the OHSA during the undertaking of construction activities.

12.2 Emergency preparedness

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

- All workers on site during the construction and maintenance phase must be properly educated about possible emergency incidents that may arise, how to avoid such incidents and how to respond in the event of an incident. "Refresher" training sessions on emergency procedures must be held if needed.
- All workers must ideally be given basic fire-awareness training and advised on basic firefighting and safety techniques. Fire-fighting equipment must be available on site during construction activities (see section 7.3).
- All workers must be trained on how to respond in the event of a spill of a hazardous substance (fuel, chemicals etc.), if hazardous substances are to be used on site.
- A spill kit for containing and/or neutralising spills of hazardous substances (e.g., hydrocarbons) must be available on site at all times, when hazardous substances are present.
- Any incidents of pollution or spillage of hazardous materials during construction must be reported to the ECO as soon as possible. The ECO must then (depending on the nature of the spill) notify the relevant authorities, if needed. A first aid kit must be available on site at all times.
- Emergency contact numbers (including the fire department, police and ambulance) must be prominently displayed on site at all times and regularly updated.
- All emergency incidents must be recorded in a site incident log. The cause of the incident, the measures taken in response to the incident and the efficacy of those measures must also be recorded. This information must be used to inform future emergency preparedness planning, and to avoid prevent similar incidents from arising again.

12.3 Control of emergency incidents

In the event of an emergency incident, Section 30 of the National Environmental Management Act, 1998, must be complied with.

Any incidents must be reported to the relevant authorities and within the prescribed period.

Table 3: NEMA Section 30

<p>30.(1) in this section</p> <p>(a) "incident" means an unexpected sudden occurrence, including a major emission, fire or explosion leading to serious danger to the public or potentially serious pollution of or detriment to the environment. Whether immediate or delayed.</p> <p>(b) "responsible person" includes any person who</p> <p>(i) is responsible for the incident</p> <p>(ii) owns any hazardous substance involved in the incident; or</p> <p>(iii) was in control of any hazardous substance involved in the incident at the time of the incident</p> <p>(c) "relevant authority" means</p> <p>(i) a municipality with jurisdiction over the area in which an incident occurs</p> <p>(ii) a provincial head of department or any other provincial official designated for that purpose by the MEC in a province in which an incident occurs;</p> <p>(iii) the Director-General</p> <p>(iv) any other Director-General of a national department</p> <p>(2) Where this section authorises a relevant authority to take any steps, such steps may only be taken by</p> <p>(a) the person referred to in subsection (1)(c)(iv) if no steps have been taken by any of the other persons listed in subsection (1)(c):</p> <p>(b) the person referred to in subsection (1)(c)(iii) if no steps have been taken by 20 any of the persons listed in subsection (1)(c)(i) and (c)(ii):</p> <p>(c) the person referred to in subsection (1)(c)(ii) if no steps have been taken by the person listed in subsection (1)(c)(i):</p> <p>Provided that any relevant authority may nevertheless take such steps if it is necessary to do so in the circumstances and no other person referred to in subsection (1)(c) has yet taken such steps.</p> <p>(3) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer must forthwith after knowledge of the incident, report through the most effective means reasonably available.</p> <p>(a) the nature of the incident</p> <p>(b) any risks posed by the incident to public health, safety and property</p> <p>(c) the toxicity of substances or by-products released by the incident; and</p> <p>(d) any steps that should be taken in order to avoid or minimise the effects of the incident on public health and the environment to</p> <p>(i) the Director-General</p> <p>(ii) the South African Police Services and the relevant fire prevention service;</p> <p>(iii) the relevant provincial head of department or municipality; and</p> <p>(iv) all persons whose health may be affected by the incident</p> <p>(4) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, as soon as reasonably practicable after knowledge of the incident</p>
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(a) take all reasonable measures to contain and minimise the effects of the incident, including its effects on the environment and any risks posed by the incident to the health, safety and property of persons;

(b) undertake clean-up procedures:

(c) remedy the effects of the incident:

(d) assess the immediate and long-term effects of the incident on the environment and public health:

(5) The responsible person or, where the incident occurred in the course of that person's employment, his or her employer, must, within 14 days of the incident, report to the Director-General, provincial head of department and municipality such information as is available to enable an initial evaluation of the incident, including

(a) the nature of the incident

(b) the substances involved and an estimation of the quantity released and their possible acute effect on persons and the environment and data needed to assess these effects;

(c) initial measures taken to minimise impacts:

(d) causes of the incident, whether direct or indirect, including equipment, technology, system, or management failure; and

(e) measures taken and to be taken to avoid a recurrence of such incident.

(6) relevant authority may direct the responsible person to undertake specific measures within a specific time to fulfil his or her obligations under subsections (4) and (5): Provided that the relevant authority must, when considering any such measure or time period, have regard to the following:

(a) the principles set out in section 2

(b) the severity of any impact on the environment as a result of the incident and the costs of the measures being considered;

(c) any measures already taken or proposed by the person on whom measures are to be imposed, if applicable:

(d) the desirability of the state fulfilling its role as custodian holding the environment in public trust for the people

(e) any other relevant factors.

(7) A verbal directive must be confirmed in writing at the earliest opportunity. Which must be within seven days.

(8) Should

(a) the responsible person fail to comply, or inadequately comply with a directive under subsection (6):

(b) there be uncertainty as to who the responsible person is: or

(c) there be an immediate risk of serious danger to the public or potentially serious detriment to the environment

A relevant authority may take the measures it considers necessary to

(i) contain and minimise the effects of the incident:

(ii) undertake clean-up procedures: and

(iii) remedy the effects of the incident.

(9) A relevant authority may claim reimbursement of all reasonable costs incurred by it in terms of subsection (8) from every responsible person jointly and severally.

(10) A relevant authority which has taken steps under subsections (6) or (8) must, as soon as reasonably practicable, prepare comprehensive reports on the incident. Which reports must be made available through the most effective means reasonably available to

(a) the public;

(b) the Director-General

(c) the South African Police Services and the relevant fire prevention service;

(d) the relevant provincial head of department or municipality; and

(e) all persons who may be affected by the incident.

(11) A person who contravenes or fails to comply with subsection (3), (4), (5) or (6) is guilty of an offence and liable on conviction to a fine not exceeding R1 million or to imprisonment for a period not exceeding 1 year, or to both such a fine and such imprisonment.

13. Method statements

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

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

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

- Establishment of site camp and stockpile area.
- Cement/ concrete batching, disposal and emergency contingencies.
- Topsoil and sub-soil storage/ stockpiling.
- Storage of fuels and hazardous chemicals and emergency contingencies.
- Waste management system.
- Storm water management and control.
- Emergency preparedness plan / emergency response procedure (see Chapter 13).

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

14. Roles and Responsibilities

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

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

Duty of Care:

“Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm cannot reasonably be avoided or stopped, to minimize and rectify such pollution or degradation of the

14.1 Duties and Responsibilities of the Applicant

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

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

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

14.2 Duties and Responsibilities of the Contractor

The “Construction Contractor” is the entity responsible for undertaking the physical construction of the residential development. The construction contractor is responsible for ensuring that all environmental management measures specified in this EMPr and in the EA are implemented during the pre-construction, construction and post-construction rehabilitation phases, unless agreed otherwise with the Applicant. The contractor will be responsible for all costs incurred in the rehabilitation of the site and for ensuring effective environmental management during construction. The contractor must therefore make adequate financial provision for the implementation of all prescribed measures.

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

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

- Identify emergency situations that may arise as a result of construction activities and formulate appropriate emergency response procedures (see Chapter 12).
- Ensure that all construction workers, including sub-consultants and service providers, undergo environmental awareness training prior to commencing work on site, or as soon as possible thereafter (see Chapter 15).
- Compile the required method statements, which must be to the satisfaction of the ECO, before commencing with the activity to be governed by the method statement (Chapter 13).

- Respond to concerns or issues identified by the ECO, as relates to environmental management, and implement the appropriate management or remediation measures, at the Contractor's own expense (unless agreed otherwise)
- Should third parties be called to the site to perform clean up and rehabilitation procedures, the Construction Contractor will be responsible for all associated costs.

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

14.3 Duties and Responsibilities of the ECO

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

Competency of the ECO

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

Duties of the ECO

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

- Conduct a pre-construction site inspection to ascertain the pre-commencement condition of the site (i.e. the status quo) and determine whether faunal search-and-rescue is required;
- Conduct environmental awareness training (see Chapter 15);
- Undertake regular site visits to monitor compliance with all mitigation, monitoring and management measures contained in the EMPr and the Environmental Authorisation, during the pre-construction, construction and rehabilitation phases of the development (see section below regarding frequency of ECO visits).
- Evaluate the achievement of the performance indicators associated with each impact management outcome specified in this EMPr (Chapters 8-11)
- Liaise with site contractors, engineers and other members of the development team with regard to the requirements of the EMPr;
- Provide guidance as and when required regarding the implementation of the environmental management measures contained in the EMPr and EA, so as to assist the Applicant and contractor in remaining compliant with these measures;
- Assist in finding environmentally acceptable solutions to construction problems;
- Ensure that the working area, site camp facilities, access roads and no-go areas are properly demarcated;
- Ensure that proper topsoil management practices are adhered to on site;
- Ensure that proper waste management & pollution prevention strategies are practised on site;

- Examine method statements;
- Email contractors with potential non compliance notices in case of contravention of the EMPr;
- Ensure satisfactory rehabilitation of disturbed areas on site, after construction is complete;
- Keep detailed records of all site activities that may pertain to the environment, and produce compliance-monitoring reports (ECO Reports) for submission to the Applicant, and the Competent Authority at regular intervals during the construction phase;
- Submit a final post-construction inspection report, within 6 months of completion of the construction phase. The audit report must detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.
- All ECO Reports and Inspection Reports must be submitted to the Applicant and Competent Authority.

Frequency of ECO visits

The ECO must conduct weekly site visits during the initial clearing and earthwork activities until the activities shift to internal mechanical aspects of the pump stations. Thereafter, the frequency of the site visits may taper at the discretion of the ECO, to check compliance with the conditions of the EA, mitigation measures and recommendations of this EMPr. The ECO has the discretion to undertake additional visits if he / she feels this is justified due to the actions of the contractors, and to make *ad hoc* visits in order to ensure compliance.

The ECO must also undertake a final inspection (audit) 6 months of completion of construction activities. The purpose of this final inspection is to ensure that the rehabilitation measures applied at the conclusion of the construction phase have been sufficient to promote the successful rehabilitation of the site, and to identify any further issues that require attention or follow-up.

Authority of the ECO

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

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

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

15. Environmental Awareness Plan

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

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

1. This EMPr must be kept on site at all times.
2. The provisions of this EMPr and the conditions of the Environmental Authorisation must be explained in detail to all staff during Awareness Training.
3. Training booklets will be handed out to all labourers and must be explained to them.
4. Weekly checks to be done by the Applicant's environmental representative (where available) who must be on site at all times.
5. The ECO to do frequent site visits, as recommended in Section 14.3 of the EMPr.
6. Monthly monitoring reports to be compiled by the ECO. These reports will be circulated to all parties involved (including the applicant, contractor and the competent authority).

The Construction Contractor must make allowance for all construction site staff, including all subcontractors that will be working at the site, to attend environmental awareness training sessions (undertaken by the ECO) before commencing any work on site. During this training, the ECO will explain the EMPr and the conditions contained therein. Attention will be given to the construction process and how the EMPr fits into this process. Other items relating to sound environmental management which must be discussed and explained during the environmental awareness training sessions include:

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

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

16. Monitoring, Record Keeping and Reporting

16.1 Environmental Auditing

In accordance with the requirements of the Amended Environmental Impact Assessment Regulations of 2014 (GN No. R.327 of 7 April 2017), the holder of the Environmental Authorisation (i.e. the Applicant) must, for the period that the Environmental Authorisation is valid, appoint a suitably qualified independent person to conduct an environmental audit to audit compliance with the conditions of the Environmental Authorisation and the EMPr.

The appointed auditor must undertake environmental audits within 6 months after the completion of the rehabilitation measures. Following each audit the environmental auditor must submit an audit report to the Competent Authority (in this instance the DEA&DP). The Auditor must be independent from the EAP and ECO.

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

16.2 Construction phase monitoring, reporting and record keeping.

The appointed Environmental Control Officer (ECO) is responsible for monitoring the site at regular intervals during the construction phase, in order to ensure that the provisions of this EMPr and the Environmental Authorisation are adhered to and that sound environmental management is ensuing on site.

The ECO must compile a monthly ECO report detailing the ECO's observations on site, any instances of non-compliance and any issues or aspects that require attention, follow-up or remedial action. The ECO reports must be submitted to the Applicant, and to the Competent Authority as requested by the DEADP in the EA. The ECO inspection reports must include both photographic and written records.

ECO Inspections - Photographic Records

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

ECO Inspections - Written Records

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

- The ECO must compile an ECO monitoring report and submit this to the Applicant, the Contractor and the Competent Authority (the latter only if required by the Competent Authority). The monthly reports must be a summary of the ECO inspections from the preceding month and must highlight the key concerns/ issues on site, instances of non-compliance with the EA and EMPr, all instructions issued to the contractor, actions taken and aspects that still require attention.
- All ECO reports and ECO instructions must be retained on file by the Applicant at least for the duration of the construction period (retaining reports for a period of at least 5 years is recommended, in the event that the Competent Authority should request information).

- A record (minutes) of construction site meetings, liaison site meetings between the ECO and resident engineer or contractor, monitoring reports, ECO instructions and ECO observations should be clearly documented and filed on a master file off-site for safe keeping.
- It is recommended that a site register (incident register) should be kept on site at the site office for the recording of any environmental incidents (e.g., fires, spills etc.), observations which are contrary to the stipulations within the EMPr and any other contravention deemed necessary for the attention of the resident engineer. Actions taken to remedy the incidents should also be recorded.
- A complaints register should be kept on site in which complaints by any member of the public should be logged.
- The ECO must compile a final post-construction audit report, within 6 months of completion of each construction phase. The audit report should detail the rehabilitation measures undertaken, describe all major incidents or issues of non-compliance and any issues or aspects that require attention or follow-up.

Construction Phase Record Keeping

A copy of the approved EMPr, the Environmental Authorisation and any relevant construction method statements must be kept on site at all times during pre-construction, construction and rehabilitation activities. The ECO Reports must be retained by the Applicant for a period of at least 5 years and must be provided to the Competent Authority upon request. Additionally any groundwater or water quality results must be made available to all relevant authorities upon request.

16.3 Corrective Action Procedure

Correction actions need to be followed in the event where there is non-compliance with a condition of the EA and any recommendation and mitigation measure as stipulated in this EMPr in order to rectify the non-compliance and to prevent reoccurrence.

The ECO will be responsible for reporting non-compliance with any condition of the EA and the recommendations and mitigation measures as included in this EMPr. The ECO will also be responsible for the compilation of non-compliance reports and identifying steps to correct the non-compliance.

The ECO must report all non-compliance issues to the contractor whose responsibility it is to correct. A timeframe for the completion of the corrective actions must be agreed to the ECO. Once the corrective actions have implemented the contractor must notify the ECO. The ECO must review the effectiveness of the corrective actions and if it is found to be inadequate, additional measures must be implemented. Only once the corrective actions have been completed to the satisfaction of the ECO will the matter be considered as closed.

In instances where there are repeated instances where the requirements and conditions of this EMPr and the Environmental Authorisation are contravened or not fully complied with, the Construction Contractor may be liable for financial penalties. Penalties shall be issued by the Engineer, in accordance with the Schedule of Fines contained in the table below. Penalties may be issued at the Engineer's discretion, and/or upon the request/ recommendation of the ECO or Competent Authority.

Depending on the nature of transgression, the Engineer and/or ECO may issue one or more warnings to the Contractor prior to the issuing of a fine. Warnings may be given in writing or orally, but oral warnings must be followed up with written confirmation of the warning within 48 hours of the oral warning. The Engineer has the discretion to issue a fine without first issuing a warning, if the severity of the transgression is judged by the Engineer and/or ECO and/or Competent Authority to warrant such action.

The Engineer must ensure that the levying of fines/penalties forms part of the contract between the Construction Contractor and the Engineer and is subject to the provisions of South African contract law.

Environmental Management Programme

The table below specifies the transgressions for which the Construction Contractor may incur financial penalties, and the amount of the fines that may be levied. Levying of fines/ penalties is subject to alignment with South African Contractual Law. For repeat offences of the same/ similar transgression by the same party, the value of the fine shall be doubled for each subsequent repeat offence to a maximum value of **R50 000.00** per offence.

Note: "Provisions", as stated in the table below, relates to the requirements specified in this EMPr and any requirements or conditions specified in the EA, as well as any other requirements governing the environmental management aspects of the development, which the Contractor is responsible for implementing.

#	Finable Transgression	Min Fine	Max Fine
1	Failure to notify the ECO of the commencement of construction or pre-construction activities, prior to the commencement of such activities	R1 000	R2 000
2	Failure to comply with the provisions relating to the demarcation of the working area, site camp and associated facilities, and the maintenance of the demarcated boundaries.	R1 000	R5 000
3	Failure to comply with the provisions relating to the demarcation of all "no-go" areas, and the maintenance of the demarcated boundaries.	R2 000	R5 000
4	Failure to provide secured ablution facilities (1:30 ratio) on site.	R500	R15 000
5	Failure to comply with the provisions relating to the clearance of vegetation on site.	R2 000	R5 000
6	Clearance of indigenous vegetation (regardless of the density of alien vegetation present) outside of the demarcated boundaries of the working area and site camp.	R2 500	R15 000
7	Damage to indigenous vegetation in the surrounding areas within No-Go areas	R2 000	R10 000
8	Failure to apply herbicide to alien vegetation when required to do so.	R500	R2 000
9	Failure to adhere to designated access routes and/or the driving of vehicles through undeveloped vegetation outside of the demarcated working area or site camp.	R1 000	R5 000
10	Movement of vehicles and/or construction workers in no-go areas;	R1 000	R10 000
11	Empty cement bags found on site or surrounding vegetation. Open cement bags on site with cement blowing from the bag	R2 500	R15 000
12	Parking or storage of vehicles, machinery, tools and other materials or equipment related to the Contractors operations, within designated "no-go" areas.	R1 000	R10 000
13	Parking or storage of vehicles, machinery, tools and other materials or equipment related to the Contractors operations, outside of the areas demarcated for such parking/storage.	R500	R5 000
14	Failure to comply with the provisions relating to the management of topsoil and subsoil.	R1 000	R5 000
15	Excessive excavation of material in areas not depicted for such purpose / activity on the approved design plans.	R2 500	R10 000
16	Failure to comply with the provisions relating to waste management on site i.e. recycling of waste	R500	R5 000
17	Failure to comply with the provisions relating to the storage, use and management of hazardous substances and fuels on site and/or the spillage of hydrocarbons or hazardous substances on site.	R1 000	R10 000
18	Mixing cement or concrete on bare ground and/or failure to comply with any other provision regarding cement/ concrete batching	R1 000	R5 000

Environmental Management Programme

19	Failure to provide adequate fire-fighting equipment (in working order) on site at all times and/or failure to comply with the provisions relating to fire prevention and/or the occurrence of unattended or out of control fires.	R500	R5 000
20	Refuelling of vehicles, machinery or equipment outside of the designated refuelling area.	R500	R2 000
21	Maintenance of vehicles, machinery or equipment outside of the designated maintenance yard, except in emergencies	R500	R2 000
22	Failure to undertake refuelling or repairs over a drip tray or other impermeable bunded surface to collect spilled hydrocarbons (fuels, lubricants, oils etc.) and other hazardous substances; failure to provide drip trays under fuel burning equipment (including pumps and generators) where there is a risk of hydrocarbon leakage.	R500	R2 000
23	Storing / placing fuel containing equipment (i.e. bowsers and other fuel containers) within a drainage line.	R2 500	R10 000
24	Failure to produce a required method statement/s to the engineer's and ECO's satisfaction prior to undertaking the activity concerned and/or failure to adhere to an approved method statement	R1 000	R5 000
25	Waste found to be buried or burnt on site	R5 000	R15 000

17. CONCLUSION

The recommendations and mitigation measures prescribed in this EMPr have been formulated with the intention of addressing potential pre-construction, construction and operational phase impacts on the environment. It is likely that if the conditions, requirements and recommendations of the above EMPr are implemented as described and the relevant stakeholders adhere to the various mitigation measures, then the project will be completed without unforeseen negative environmental impacts. Familiarity with the contents of this EMPr by the contractors and other individuals involved in the development project will assist in achieving “environmental best-practice”, which ultimately ensures that the project arrives at a sustainable outcome.

APPENDIX A LOCALITY MAP



Legend
Farm Portions

Map Center: Lon: 22°23'14.4"E
Lat: 34°3'5.8"S
Scale: 1:18,056
Date created: 2024/20/03



APPENDIX A LOCALITY MAP



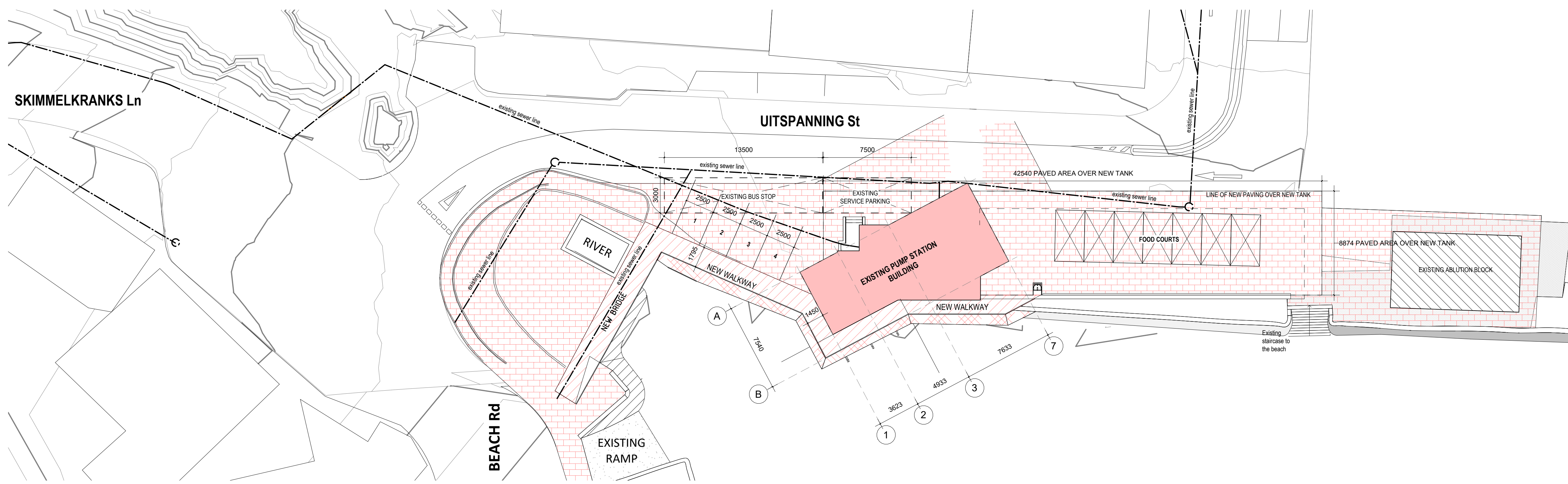
Legend
 Farm Portions

Map Center: Lon: 22°23'10.8"E
 Lat: 34°3'13.3"S
 Scale: 1:4,514
 Date created: 2024/03/20



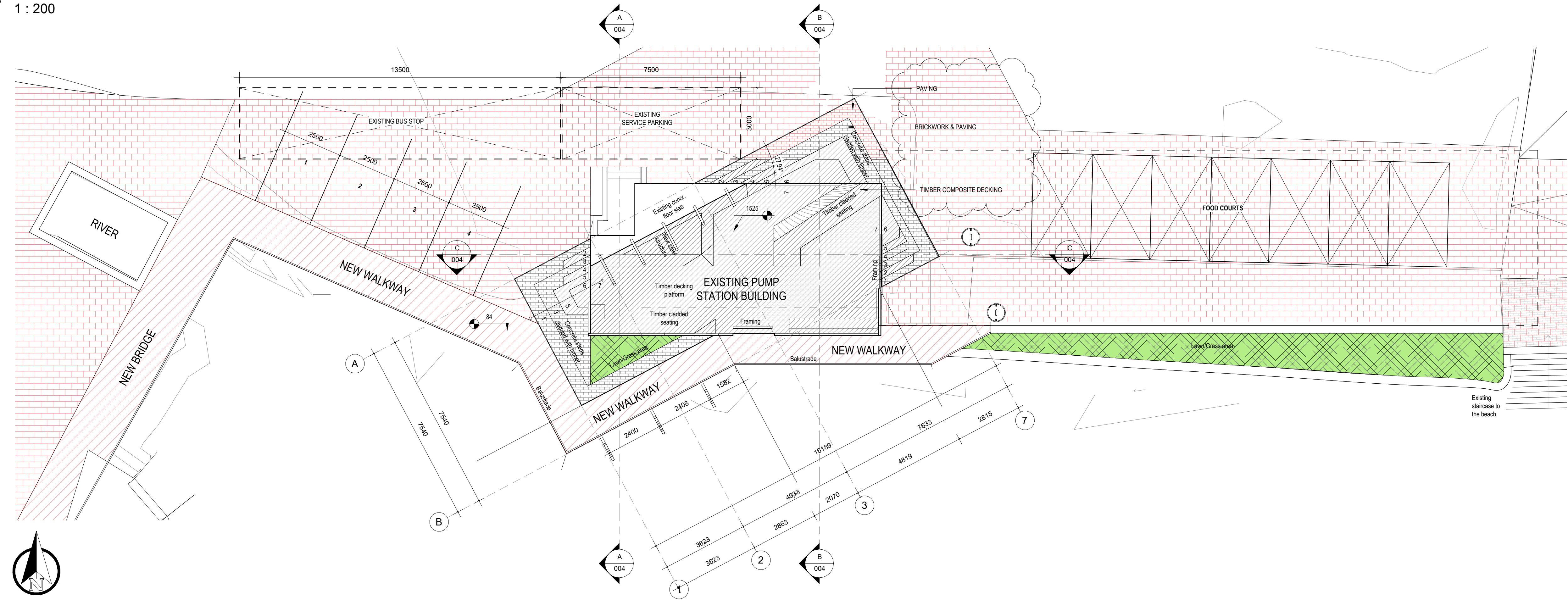
PREPARED FOR GEORGE MUNICIPALITY
 SEPTEMBER 2024





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 - CONTRACTOR TO PROVIDE SHOP DRAWINGS FOR APPROVAL BY ARCHITECT PRIOR TO MANUFACTURE.
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 - GLAZING NOTES:**
ALL GLAZING TO COMPLY WITH PART N OF SANS 10400-2011
 - STAIR & BALUSTRADE NOTES:**
BALUSTRADE, HANDRAILS, HEIGHTS, AND OPENINGS TO COMPLY WITH PARTS M & D OF SANS 10400-2011
BASIC STAIR NOTES:
MAX 200mm RISER MIN 250mm TREAD
BALUSTRADES 1.0m HIGH WITH NO GAP MORE THAN 100mm
IF THE STAIRCASE FORMS PART OF AN ESCAPE ROUTE IT IS TO COMPLY WITH PART M OF SANS 10400-2011
 - DEMOLITION WORK:**
ALL DEMOLITION WORK TO BE CARRIED OUT IN ACCORDANCE WITH SANS 10400-2011 PART F.
NO DEMOLITION WORK IS TO BE CARRIED OUT WITHOUT PRIOR APPROVAL FROM THE ARCHITECT, CLIENT AND LOCAL MUNICIPAL AUTHORITY.
 - PLUMBING & DRAINAGE:**
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ALL LIGHTING AND VENTILATION (FRESH AIR AND EXTRACT) TO COMPLY WITH PART O OF SANS 10400-2011 IN ACCORDANCE WITH REGISTERED MECHANICAL ENGINEERS DRAWINGS AND REGISTERED ELECTRICAL ENGINEERS DRAWINGS ALL ARTIFICIAL LIGHTING TO COMPLY
 - SANS 10400XA**
 - WALLS:**
NON-MASONRY WALL WILL HAVE 'R' VALUE AS PROVIDED.
SANS 10400-XA-4.4.3.1)
DOUBLE SKIN MASONRY WITH PLASTER INSIDE OR RENDER OUTSIDE COMPLETES SINGLE LEAF MIN. 140mm WITH PLASTER INSIDE AND RENDER OUTSIDE COMPLETES. (SANS 10400-XA-4.4.3.2)
OTHER MASONRY WALLS WILL HAVE 'R' VALUE OF 0.35
SANS 10400XA-4.4.3.3
 - FENESTRATION:**
AIR LEAKAGE SHALL NOT EXCEED 2L/s/m² FENESTRATION AREA:
0.306L/s/m² FIXED GLAZING AND 5L/s/m² REVOLVING/SWING DOORS
SANS 10400-XA-4.4.1.1
FENESTRATION MORE THAN 15% TO NETT FLOOR AREA PER STOREY THEN SANS 10400-XA-4.4.2
FENESTRATION UP TO 15% OF FLOOR NET AREA PER STOREY THEN SANS 10400-XA-4.4.4.1
SOLAR HEAT GAIN AND HEAT CONDUCTANCE TO COMPLY WITH SANS 204-4.3.4

1 SITE PLAN
1 : 200



2 ROOR PLAN
1 : 100



sj smec
23 SECOND AVENUE, WESTDENE
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WESTDENE, BLOEMFONTEIN, 9301
WEBSITE: www.smec.com
TEL: 051 411 8700
FAX: 012 803 7943

SABS
150 9001

CLIENT

DESIGNED BY	DATE
DESIGN CHECKED BY	01/04/22
APPROVED BY	

APPROVALS

NAME	DATE
	01/04/22

REVISION SCHEDULE

NO.	DATE	REVISION DESCRIPTION
A	11/10/24	INFORMATION

REFERENCE DRAWINGS

DRAWING NO.	DESCRIPTION

PROJECT

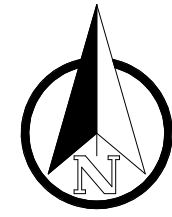
C1936-HEROLDS BAY PS1

DRAWING DESCRIPTION

HEROLDS BAY PUMP S1
SITE LAYOUT

FOR INFORMATION

DESIGNED	DRAWN	CHECKED
LG	NJS	LG
REV DATE	SCALE	ORIGINAL SIZE
	As indicated	A1
DRAWING NUMBER		
PROJECT - AUTHOR - PHASE - DISCIPLINE - TYPE - SEQUENCE		
C1936-SMEC-01-ARC-DRG-001		
		REV
		A

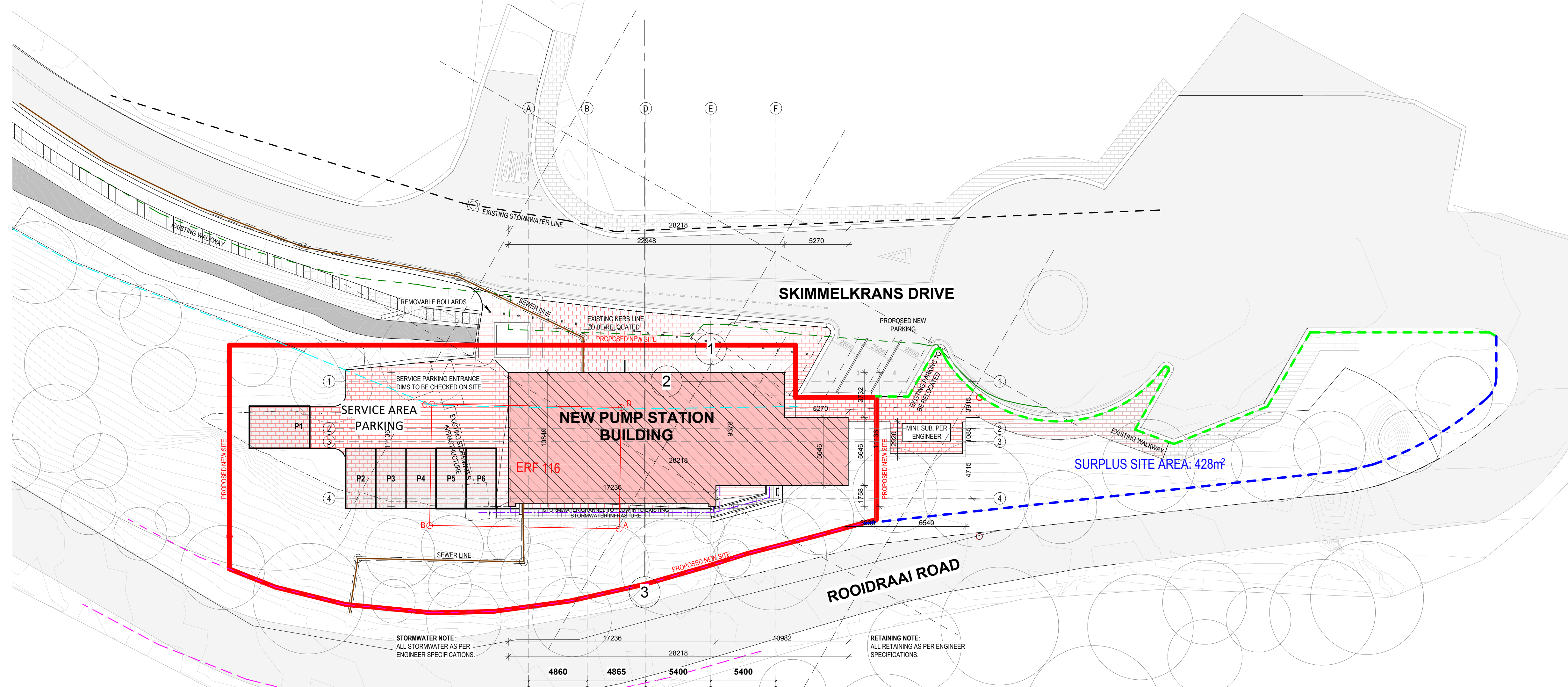


AREA SCHEDULE	
FLOOR NAME	AREA
SITE AREA: EXISTING ERF 116	158.56 m ²
PROPOSED NEW SITE AREA	1030.83 m ²
LOWER GROUND FLOOR	105.90 m ²
GROUND FLOOR	250.54 m ²
FIRST FLOOR	222.18 m ²
GREEN ROOF AREA:	25.52 m ²
GROSS FLOOR AREA:	604.14m²

ROOM SCHEDULE		
FLOOR NAME	AREA	FLOOR FINISH
LOWER GROUND FLOOR		
PUMP ROOM	43 m ²	POLISHED SCREED
SUMP	46 m ²	FINISHED PER ENG.
	89 m ²	
GROUND FLOOR LEVEL		
BULK FUEL STORAGE RM.	26 m ²	POLISHED SCREED
ENTRANCE	13 m ²	POLISHED SCREED
GENERATOR ROOM	46 m ²	POLISHED SCREED
MEZZANINE	19 m ²	POLISHED SCREED
SKIP HOLDING AREA	41 m ²	POLISHED SCREED
	145 m ²	
FIRST FLOOR LEVEL		
BACK-UP ROOM	8 m ²	POLISHED SCREED
INLET WORKS	127 m ²	POLISHED SCREED
MCC LOADING AREA	15 m ²	POLISHED SCREED
MCC ROOM	33 m ²	POLISHED SCREED
	183 m ²	
NET FLOOR AREA		
	417 m ²	

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1 SITE PLAN
1 : 200



FOR INFORMATION

DESIGNED	DRAWN	CHECKED
LG	NJS	LG
REV DATE	SCALE	ORIGINAL SIZE
	As Indicated	A1
DRAWING NUMBER		
PROJECT - AUTHOR - PHASE - DISCIPLINE - TYPE - SEQUENCE		
C1936-SMEC-CD-ARC-DRG-001		REV
		C

smec
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PO BOX 72927,
WESTDENE, BLOEMFONTEIN, 9301
WEBSITE: www.smec.com
TEL: 051 411 8700
FAX: 012 803 7943

SABS
150 9001

CLIENT
GEORGE MUNICIPALITY
71 York Street,
PO Box 19
George
6530

GEORGE
THE CITY FOR ALL REASONS

APPROVALS		
NAME	DATE	
DRAFTING CHECKED BY		
DESIGNED BY		
DESIGN CHECKED BY		
APPROVED BY		

REVISION SCHEDULE		
NO.	DATE	REVISION DESCRIPTION
A	11/10/24	INFORMATION
B	19/11/24	INFORMATION
C	26/11/24	INFORMATION

REFERENCE DRAWINGS	
DRAWING NO.	DESCRIPTION

PR. ARCH	PR. ARCH no.	DATE
CLIENT		DATE

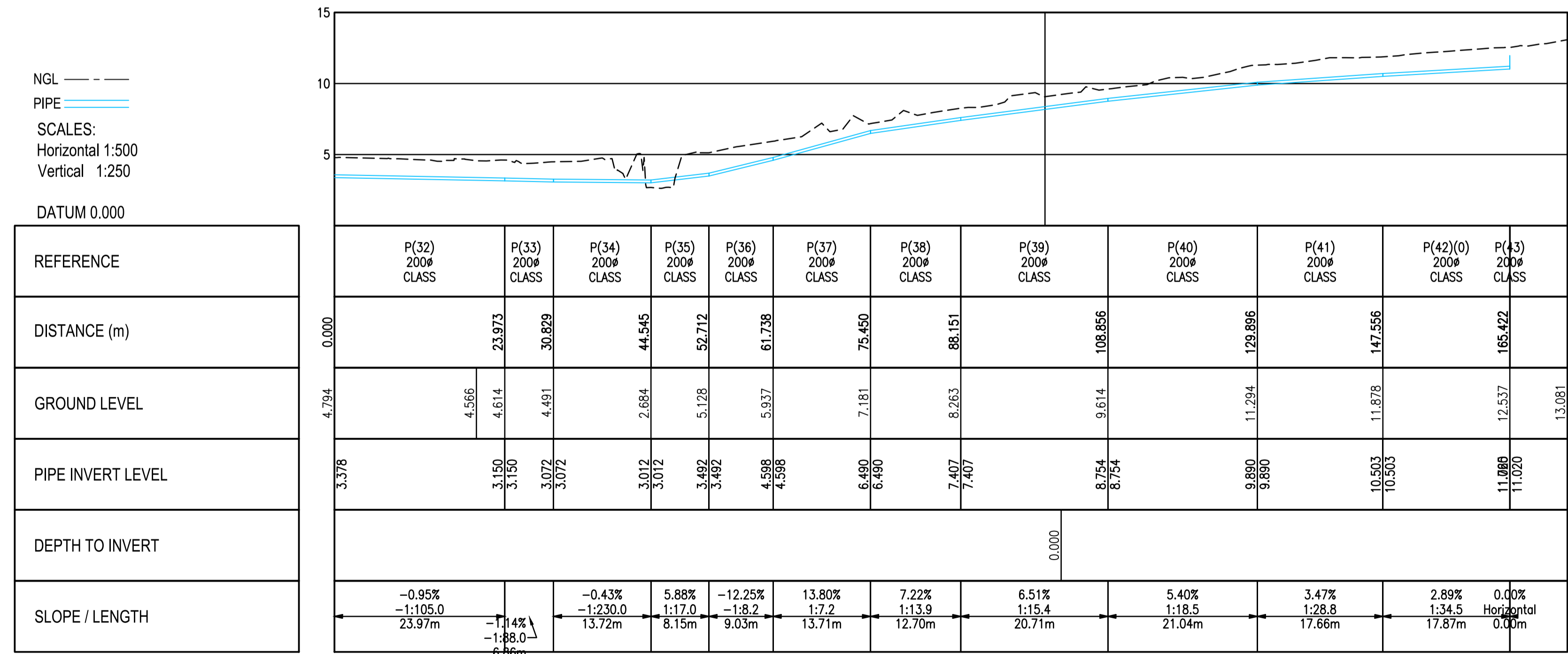
PROJECT
C1936-HEROLDS BAY PS4

DRAWING DESCRIPTION
HEROLDS BAY PUMP S4
SITE LAYOUT

NOTE:
1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



SEWER RISING MAIN PIPE TABLE				
NAME	SIZE	LENGTH	SLOPE	MATERIAL
P(32)	200 mm	24.0 m	-0.95%	uPVC
P(33)	200 mm	6.9 m	-1.14%	uPVC
P(34)	200 mm	13.7 m	-0.43%	uPVC
P(35)	200 mm	8.2 m	5.88%	uPVC
P(36)	200 mm	9.0 m	-12.25%	uPVC
P(37)	200 mm	13.7 m	13.80%	uPVC
P(38)	200 mm	12.7 m	7.22%	uPVC
P(39)	200 mm	20.7 m	6.51%	uPVC
P(40)	200 mm	21.0 m	5.40%	uPVC
P(41)	200 mm	17.7 m	3.47%	uPVC
P(42)(0)	200 mm	17.9 m	2.89%	uPVC
P(43)	200 mm	0.0 m	0.00%	uPVC



LEGEND:

- FIRE HYDRANT MARKER
- TREE
- GATE
- LAMP POLE
- WATER METER/WATER VALVES
- TELEPHONE POLE
- ROCK OUTCROP
- BENCH MARK
- ELECTRICITY BOX
- EXISTING SEWERLINE
- EXISTING MANHOLE
- EXISTING MANHOLE
- STORMWATER
- PROPOSED RISING PIPELINE
- SERVITUDE 4m WIDE
- EMERGENCY STORAGE TANK

NGL - - - -
PIPE - - - -
SCALES:
Horizontal 1:500
Vertical 1:250
DATUM 0.000

LONGSECTION PROPOSED RISING MAIN 1
FROM 0.000 TO 173.527

NO.	DATE	DESCRIPTION	INITIAL
0B	07-07-2023	FOR DISCUSSION	WA

DESIGNED	T CRONJE
CHECKED	J HOUGH
DRAWN	M GQWETHA
CHECKED	W ANNANDALE

SIGNED _____
SMEC South Africa
DATE _____

PO Box 10633
George 6530
e-mail: george@smec.com
website: www.smec.com

13 Progress St
George 6529
Tel (044) 873-5029
Fax (044) 873-5086

PO Box 19
George 6530
e-mail: cvllinfo@george.org.za
website: www.george.org.za

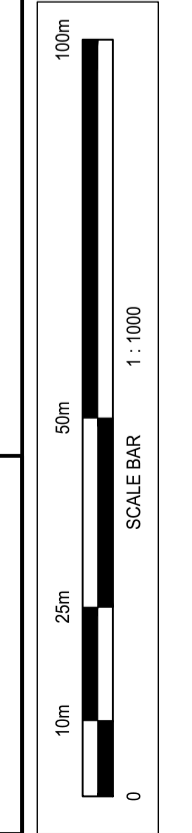
SIGNED _____
George Municipality
DATE _____

FOR DISCUSSION

Upgrading of Herolds Bay Pumpstation

Sewer Rising Main From Herolds Bay PS No. 1 to Herolds Bay PS No. 4 SV 0 to SV 171

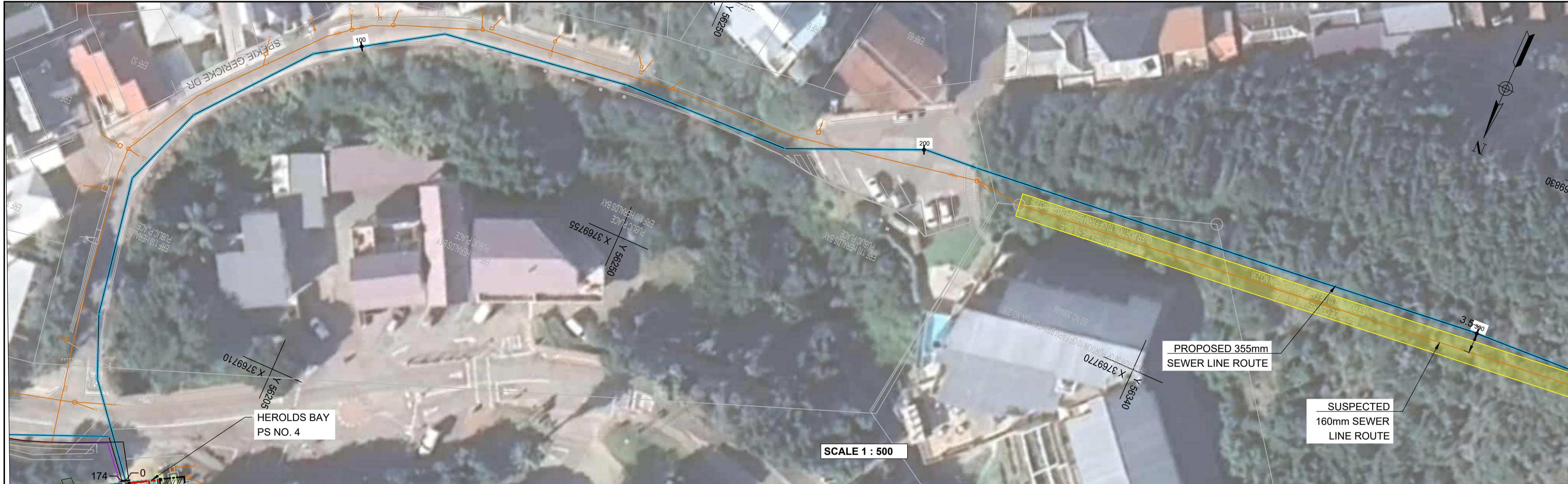
SIZE	A1	SCALE	AS SHOWN
PROJECT DRAWING NUMBER			
C1936 - 520 - 001			
REV	OB	SHEET No.	01 OF 05



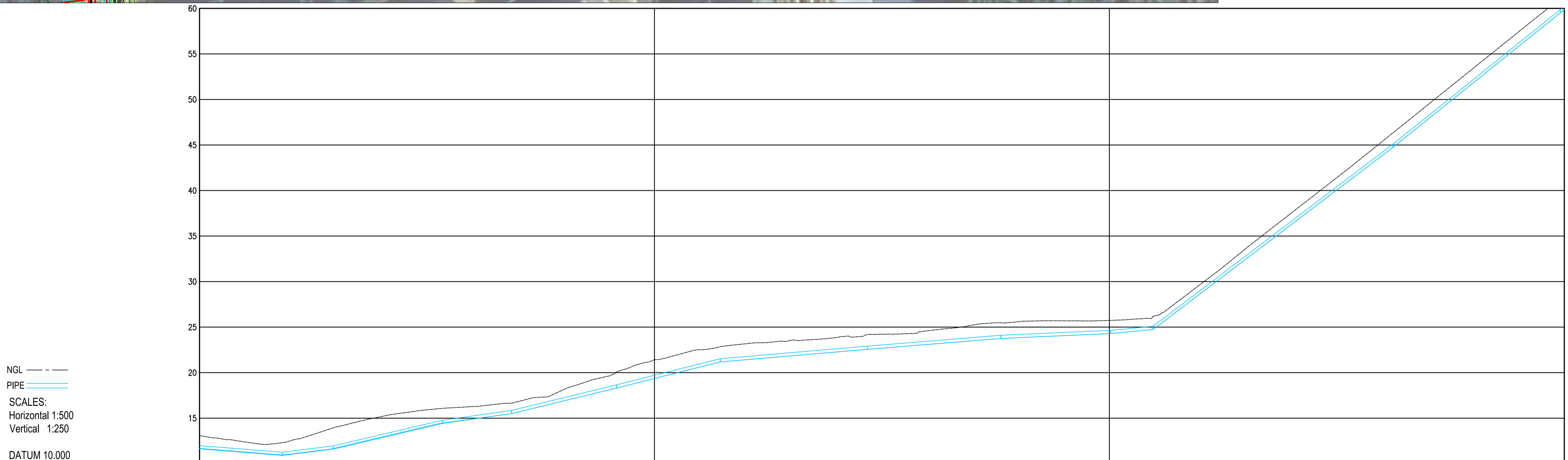
SEWER RISING MAIN PIPE TABLE

NAME	SIZE	LENGTH	SLOPE	MATERIAL
P(1)	355 mm	18.2 m	-3.97%	uPVC
P(2)	355 mm	11.2 m	6.26%	uPVC
P(3)	355 mm	24.0 m	11.73%	uPVC
P(4)	355 mm	15.1 m	7.09%	uPVC
P(5)	355 mm	23.1 m	12.18%	uPVC
P(6)	355 mm	22.8 m	12.58%	uPVC
P(7)	355 mm	32.4 m	4.27%	uPVC
P(8)	355 mm	29.3 m	4.07%	uPVC
P(9)	355 mm	24.1 m	2.23%	uPVC
P(10)	355 mm	9.3 m	4.72%	uPVC
P(11)	355 mm	52.7 m	37.95%	uPVC
P(12)	355 mm	36.8 m	40.13%	uPVC
P(13)	355 mm	27.3 m	40.48%	uPVC

NOTE:
1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.



NGL ---
PIPE ---
SCALES:
Horizontal 1:500
Vertical 1:250
DATUM 10.000

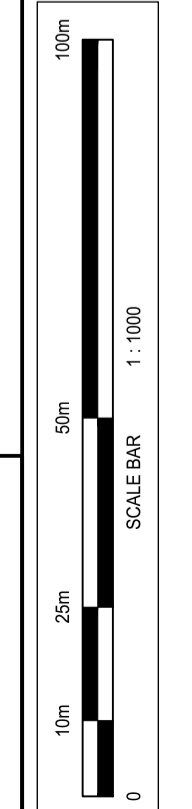


REFERENCE	P(1) 355# CLASS	P(2) 355# CLASS	P(3) 355# CLASS	P(4) 355# CLASS	P(5) 355# CLASS	P(6) 355# CLASS	P(7) 355# CLASS	P(8) 355# CLASS	P(9) 355# CLASS	P(10) 355# CLASS	P(11) 355# CLASS	P(12) 355# CLASS	P(13) 355# CLASS
DISTANCE (m)	18.223	29.409	53.422	68.541	91.645	114.452	146.879	176.137	200.280	209.581	262.293	300.185	300.000
GROUND LEVEL	12.318	13.939	16.078	16.645	20.057	22.851	24.184	25.476	25.736	26.182	46.315	61.000	61.000
PIPE INVERT LEVEL	10.904 10.904	11.604 11.604	14.420 14.420	15.492 15.493	18.306 18.306	21.175 21.175	22.561 22.561	23.753 23.753	24.291 24.291	24.730 24.730	44.733 44.733	59.556 59.556	59.556
DEPTH TO INVERT	1.361	2.238	1.625	1.152	1.751	1.676	1.623	1.723	1.446	1.453	1.582	1.692	1.692
SLOPE / LENGTH	-3.97% -1.25.2 18.22m	6.26% 1:16.0 11.19m	11.73% 1:8.5 24.01m	7.09% 1:14.1 15.12m	12.18% 1:8.2 23.10m	12.58% 1:7.9 22.61m	4.27% 1:23.4 32.43m	4.07% 1:24.5 29.26m	2.23% 1:44.9 24.14m	4.72% 1:21.2 9.30m	37.95% 1:2.6 52.71m	40.13% 1:2.5 36.81m	40.48% 1:2.5 27.33m

LONGSECTION PROPOSED RISING MAIN 2
FROM 0.000 TO 300.000

LEGEND:

- FIRE HYDRANT MARKER
- TREE
- GATE
- LAMP POLE
- WATER METER/WATER VALVES
- TELEPHONE POLE
- ROCK OUTCROP
- BENCH MARKS
- ELECTRICITY BOX
- EXISTING SEWERLINE
- EXISTING MANHOLE
- STORMWATER
- PROPOSED RISING PIPELINE
- SERVITUDE 4m WIDE



FOR DISCUSSION

REVISIONS	NO.	DATE	DESCRIPTION	INITIAL
	OB	07-07-2023	FOR DISCUSSION	WA

DESIGNED	T CRONJE
CHECKED	J HOUGH
DRAWN	M GQWETHA
CHECKED	W ANNANDALE

SIGNED	SMEC South Africa
DATE	

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George 6530

13 Progress St
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website: www.smec.com

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website: www.george.org.za

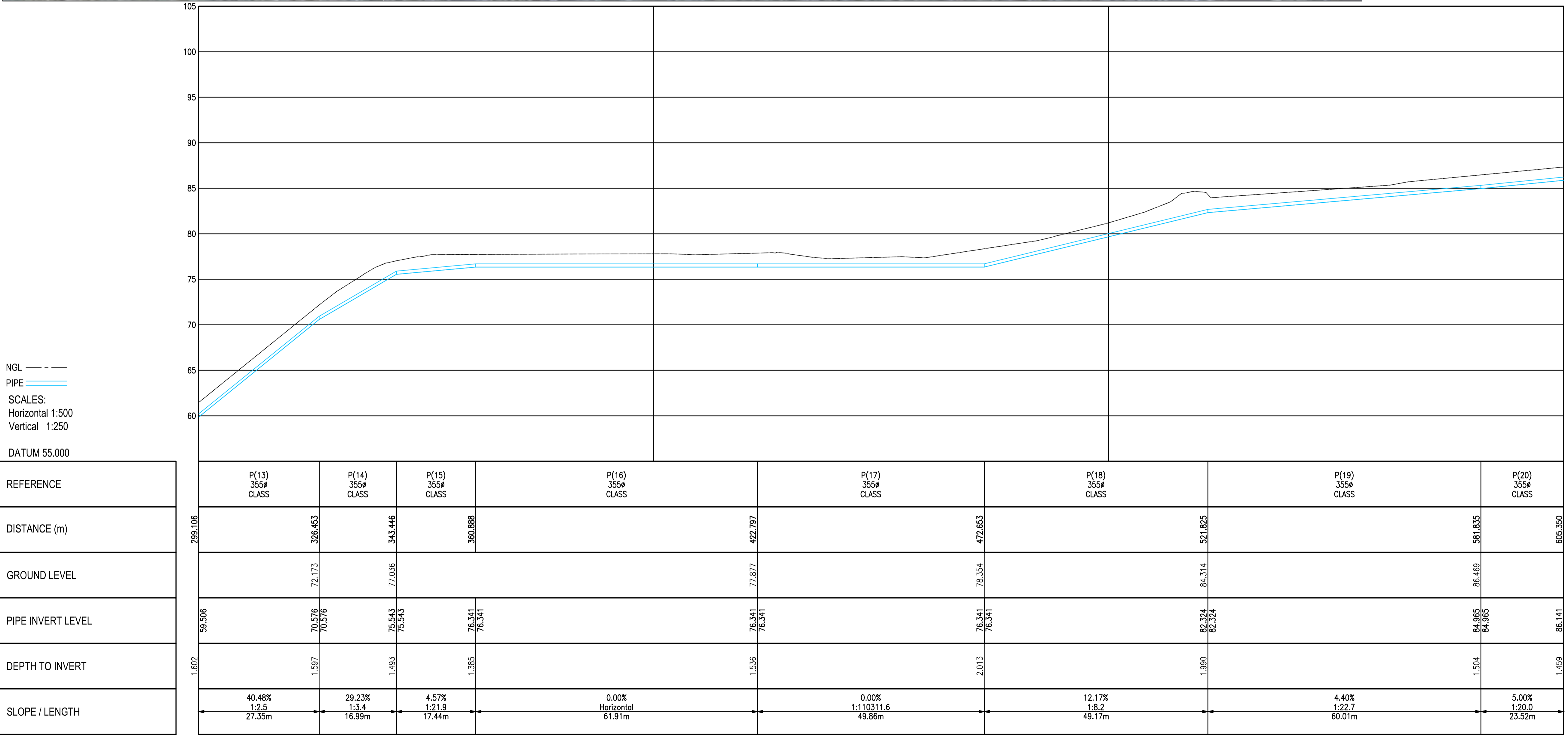
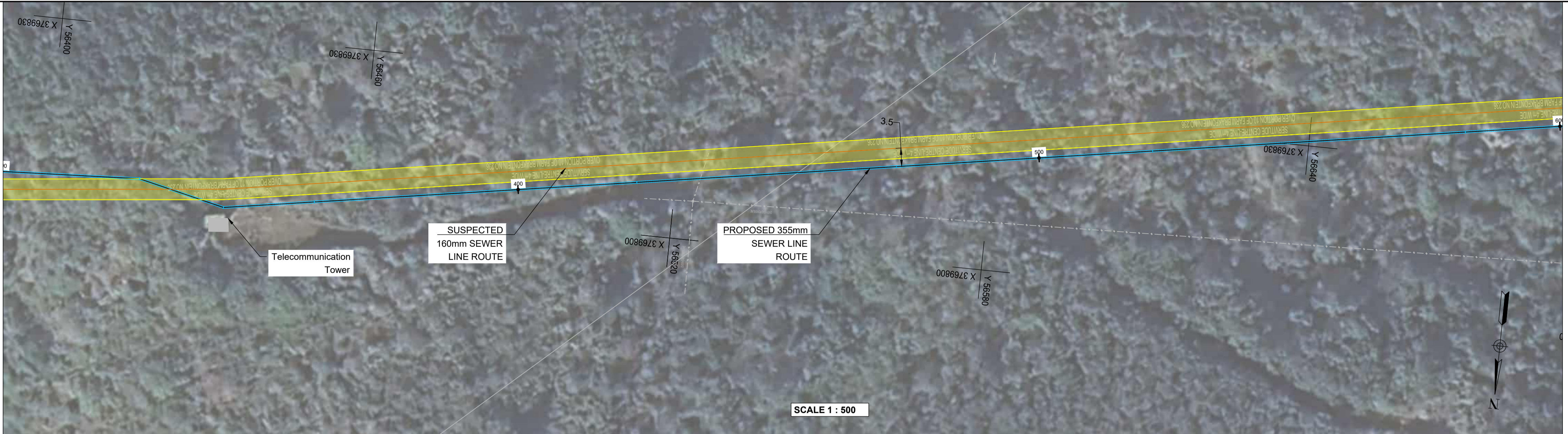
Upgrading of Herolds Bay Pumpstation

Sewer Rising Main from Herolds Bay PS No. 4 to Existing WWTW SV 0 to SV 300

SIZE	A1	SCALE	AS SHOWN
PROJECT DRAWING NUMBER			
C1936 - 520 - 002			
REV	OB	SHEET No.	02 OF 05

NOTE:
1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.

SEWER RISING MAIN PIPE TABLE				
NAME	SIZE	LENGTH	SLOPE	MATERIAL
P(13)	355 mm	27.3 m	40.48%	uPVC
P(14)	355 mm	17.0 m	29.23%	uPVC
P(15)	355 mm	17.4 m	4.57%	uPVC
P(16)	355 mm	61.9 m	0.00%	uPVC
P(17)	355 mm	49.9 m	0.00%	uPVC
P(18)	355 mm	49.2 m	12.17%	uPVC
P(19)	355 mm	60.0 m	4.40%	uPVC
P(20)	355 mm	23.5 m	5.00%	uPVC



NGL ---
PIPE ---
SCALES:
Horizontal 1:500
Vertical 1:250
DATUM 55.000

LEGEND:	
	FIRE HYDRANT MARKER
	TREE
	GATE
	LAMP POLE
	WATER METER/WATER VALVES
	TELEPHONE POLE
	ROCK OUTCROP
	BENCHMARK
	ELECTRICITY BOX
	EXISTING SEWERLINE
	EXISTING MANHOLE
	STORMWATER
	PROPOSED RISING PIPELINE
	SERVITUDE 4m WIDE

REFERENCE	P(13) 355# CLASS	P(14) 355# CLASS	P(15) 355# CLASS	P(16) 355# CLASS	P(17) 355# CLASS	P(18) 355# CLASS	P(19) 355# CLASS	P(20) 355# CLASS
DISTANCE (m)	298.106	326.453	343.446	360.888	422.797	472.653	521.825	605.350
GROUND LEVEL		72.173	77.036		77.977	78.354	84.314	86.469
PIPE INVERT LEVEL	59.506	70.576	75.543	76.341	76.341	76.341	82.324	84.965
DEPTH TO INVERT	1.602	1.597	1.493	1.385	1.536	2.013	1.990	1.504
SLOPE / LENGTH	40.48% 1:2.5 27.35m	29.23% 1:3.4 16.99m	4.57% 1:21.9 17.44m	0.00% Horizontal 61.91m	0.00% 1:110311.6 49.86m	12.17% 1:8.2 49.17m	4.40% 1:22.7 60.01m	5.00% 1:20.0 23.52m

LONGSECTION PROPOSED RISING MAIN 2
FROM 300.000 TO 600.000

FOR DISCUSSION

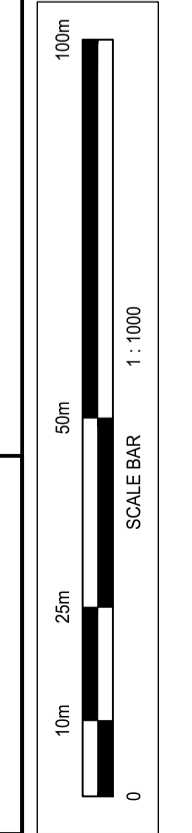
REVISIONS	NO.	DATE	DESCRIPTION	INITIAL
	0B	07-07-2023	FOR DISCUSSION	WA

DESIGNED T CRONJE	SIGNED SMEC South Africa	 PO Box 10633 George 6530 13 Progress St George 6529 PO Box 19 George 6530 c/o York & Market Street George 6530 e-mail: george@smec.com Tel (044) 873-5029 website: www.smec.com e-mail: cvlinfo@george.org.za Tel (044) 801 9496 website: www.george.org.za e-mail: cvlinfo@george.org.za Tel (044) 801 9496 website: www.george.org.za Fax (044) 873-5086 Fax (086) 529 9872
CHECKED J HOUGH		
DRAWN M GQWETHA		
CHECKED W ANNANDALE		
DATE	DATE	DATE

Upgrading of Herolds Bay Pumpstation

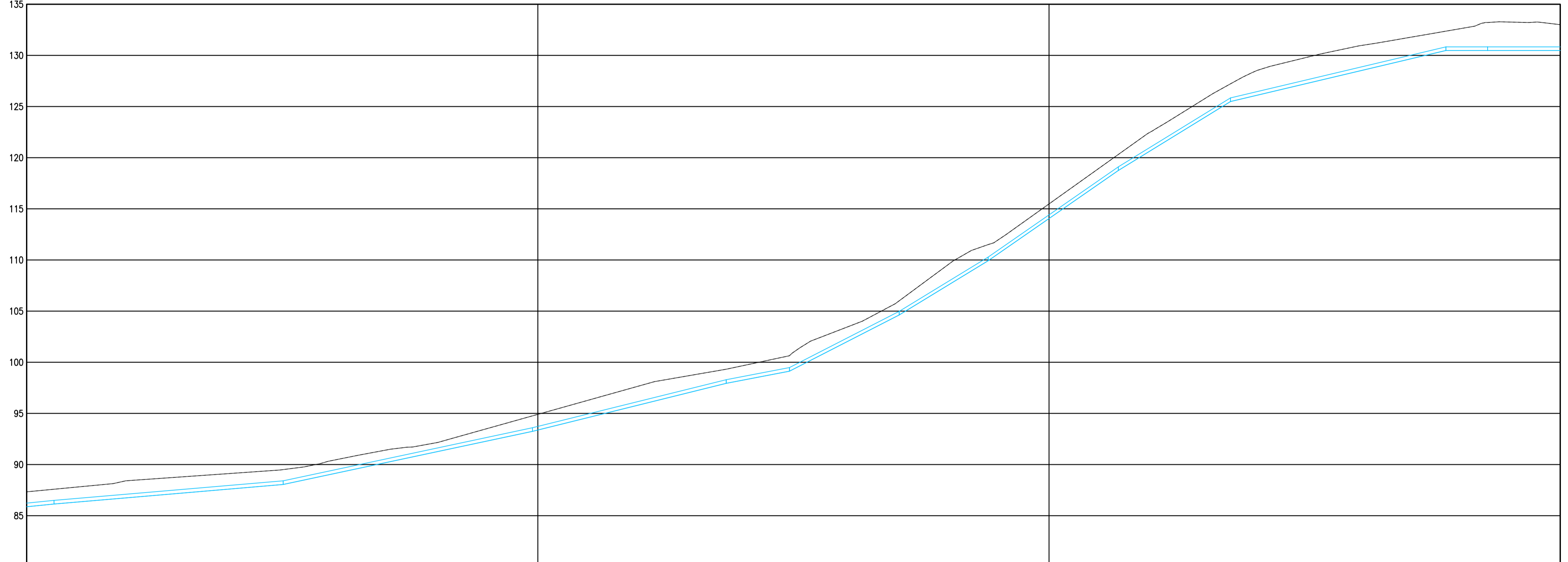
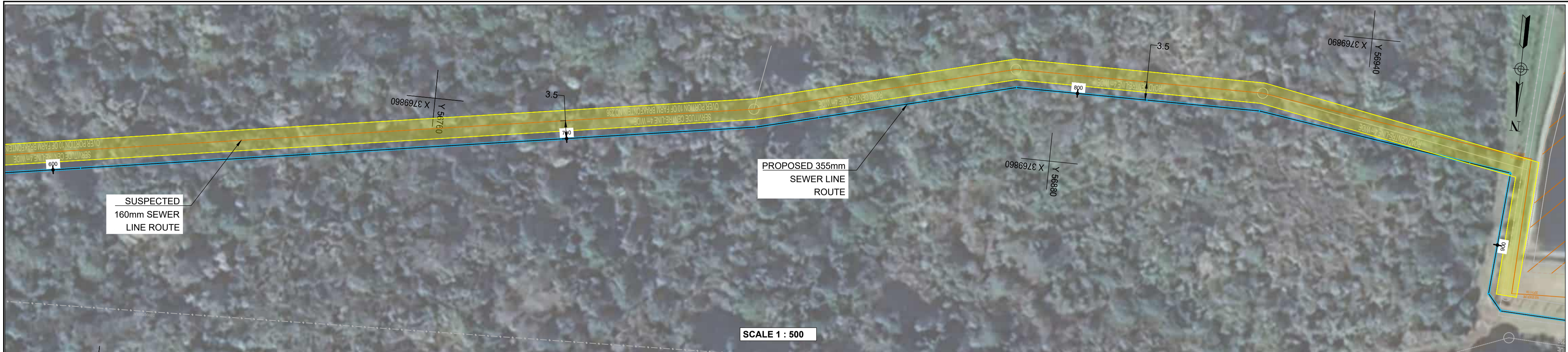
Sewer Rising Main from Herolds Bay PS No. 4 to Existing WWTW SV 300 to SV 600

SIZE A1	SCALE AS SHOWN
PROJECT DRAWING NUMBER C1936 - 520 - 003	
REV 0B	SHEET No. 03 OF 05



SEWER RISING MAIN PIPE TABLE

NAME	SIZE	LENGTH	SLOPE	MATERIAL
P(20)	355 mm	23.5 m	5.00%	uPVC
P(21)	355 mm	44.8 m	4.26%	uPVC
P(22)	355 mm	48.8 m	10.64%	uPVC
P(23)	355 mm	37.9 m	12.39%	uPVC
P(24)	355 mm	12.4 m	9.60%	uPVC
P(25)	355 mm	21.5 m	25.61%	uPVC
P(26)	355 mm	17.4 m	30.48%	uPVC
P(27)	355 mm	25.5 m	34.64%	uPVC
P(28)	355 mm	21.9 m	30.71%	uPVC
P(29)	355 mm	42.1 m	11.84%	uPVC
P(30)	355 mm	8.2 m	0.00%	uPVC



NGL ---
 PIPE ———
 SCALES:
 Horizontal 1:500
 Vertical 1:250
 DATUM 80.000

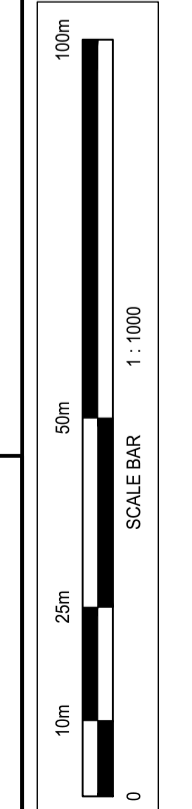
REFERENCE	P(20) 355# CLASS	P(21) 355# CLASS	P(22) 355# CLASS	P(23) 355# CLASS	P(24) 355# CLASS	P(25) 355# CLASS	P(26) 355# CLASS	P(27) 355# CLASS	P(28) 355# CLASS	P(29) 355# CLASS	P(30) 355# CLASS	P(31) 355# CLASS	
DISTANCE (m)	591.835	605.350	650.183	698.946	736.852	749.225	770.691	788.088	813.560	835.501	877.637	885.797	909.576
GROUND LEVEL	87.655	87.655	94.759	99.319	100.648	111.502	125.489	125.489	132.369	133.216	130.479	130.479	
PIPE INVERT LEVEL	84.965 86.14	86.141	88.053 88.053	93.244 93.244	97.939 97.939	99.126 99.126	104.624 104.624	108.926 108.926	118.750 118.750	125.489 125.489	130.479 130.479	130.479 130.479	130.479
DEPTH TO INVERT	1.459	1.445	1.454	1.516	1.381	1.521	1.384	1.576	1.565	1.733	1.890	2.737	2.525
SLOPE / LENGTH	5.00% 1:20.0 23.52m	4.26% 1:23.4 44.83m	10.64% 1:9.4 48.76m	12.39% 1:8.1 37.91m	9.60% 1:10.4 12.37m	25.61% 1:3.9 21.47m	30.48% 1:3.3 17.40m	34.64% 1:2.9 25.47m	30.71% 1:3.3 21.94m	11.84% 1:8.4 42.14m	0.00% Horizontal 8.16m	0.00% Horizontal 23.78m	

LONGSECTION PROPOSED RISING MAIN 2
 FROM 600.000 TO 900.000

NOTE:
 1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.

LEGEND:

- FIRE HYDRANT MARKER
- TREE
- GATE
- LAMP POLE
- WATER METER/WATER VALVES
- TELEPHONE POLE
- ROCK OUTCROP
- BENCH MARKS
- ELECTRICITY BOX
- EXISTING SEWERLINE
- EXISTING MANHOLE
- EXISTING MANHOLE
- STORMWATER
- PROPOSED RISING PIPELINE
- SERVITUDE 4m WIDE
- EMERGENCY STORAGE TANK



FOR DISCUSSION

NO.	DATE	DESCRIPTION	INITIAL
OB	07-07-2023	FOR DISCUSSION	WA

DESIGNED	T CRONJE
CHECKED	J HOUGH
DRAWN	M GQWETHA
CHECKED	W ANNANDALE

SIGNED _____
 SMEC South Africa

DATE _____

PO Box 10633
George 6530

e-mail: george@smec.com
website: www.smec.com

13 Progress St
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Tel (044) 873-5029
Fax (044) 873-5066

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George 6530

c/o York & Market Street
George 6530

e-mail: cvllinfo@george.org.za
website: www.george.org.za

SIGNED _____
 George Municipality

DATE _____

Upgrading of Herolds Bay Pumpstation

Sewer Rising Main from Herolds Bay PS No. 4 to Existing WWTW SV 600 to SV 900

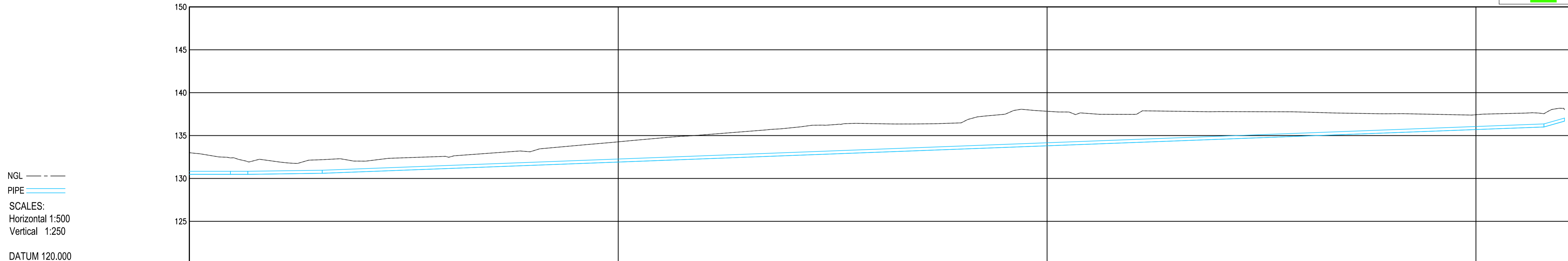
SIZE	A1	SCALE	AS SHOWN
PROJECT DRAWING NUMBER			
C1936 - 520 - 004			
REV	OB	SHEET No.	04 OF 05

SEWER RISING MAIN PIPE TABLE

NAME	SIZE	LENGTH	SLOPE	MATERIAL
P(31)	355 mm	23.8 m	0.00%	uPVC
P(32)	355 mm	4.1 m	-0.01%	uPVC
P(33)	355 mm	17.3 m	0.71%	uPVC
P(34)	355 mm	284.9 m	1.90%	uPVC
P(37)	355 mm	4.8 m	14.25%	uPVC

LEGEND:

- FIRE HYDRANT MARKER
- TREE
- GATE
- LAMP POLE
- WATER METER/WATER VALVES
- TELEPHONE POLE
- ROCK OUTCROP
- BENCH MARK
- ELECTRICITY BOX
- EXISTING SEWERLINE
- EXISTING MANHOLE
- EXISTING MANHOLE
- STORMWATER
- PROPOSED RISING PIPELINE
- SERVITUDE 4m WIDE
- EMERGENCY STORAGE TANK



NGL ---
 PIPE ———
 SCALES:
 Horizontal 1:500
 Vertical 1:250
 DATUM 120.000

REFERENCE	P(31) 355# CLASS	P(32) 355# CLASS	P(33) 355# CLASS	P(34) 355# CLASS	P(37) 355# CLASS
DISTANCE (m)	885.797	909.576	913.631	930.977	1215.858 1220.646
GROUND LEVEL	132.394	131.941	132.186		137.548 138.017
PIPE INVERT LEVEL	130.479	130.479 130.479 130.479	130.601	130.601	136.001 136.684
DEPTH TO INVERT	2.525	1.915	1.470	1.585	1.547 1.343
SLOPE / LENGTH	0.00% Horizontal 23.78m	-0.01% Horizontal 4.06m	0.71% 1:141.1 17.31m	1.90% 1:52.8 284.88m	4.25% 1:7.0 4.79m

LONGSECTION PROPOSED RISING MAIN 2
 FROM 900.000 TO 1221.608

NOTE:
 1. ALL DIMENSIONS TO BE CHECKED ON SITE BEFORE ANY WORK IS PUT IN HAND. REFER ANY DISCREPANCIES TO THE ENGINEER.

FOR DISCUSSION

REVISIONS	NO.	DATE	DESCRIPTION	INITIAL
	0B	07-07-2023	FOR DISCUSSION	WA

DESIGNED	B BARTLETT
CHECKED	J HOUGH
DRAWN	M GQWETHA
CHECKED	W ANNANDALE

SIGNED _____
 SMEC South Africa
 DATE _____

PO Box 10633
 George 6530
 e-mail: george@smec.com
 website: www.smec.com

13 Progress St
 George 6529
 Tel (044) 873-5029
 Fax (044) 873-5086

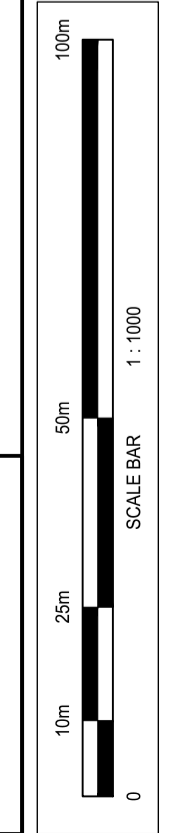
PO Box 19
 George 6530
 e-mail: cvlinfo@george.org.za
 website: www.george.org.za

SIGNED _____
 George Municipality
 DATE _____

Upgrading of Herolds Bay Pumpstation

Sewer Rising Main From Herolds Bay PS No. 4 to Existing WWTW SV 900 to SV 1227

SIZE	A1	SCALE	AS SHOWN
PROJECT DRAWING NUMBER			
C1936 - 520 - 005			
REV	AB	SHEET No.	05 OF 05



CURRICULUM VITAE

MICHAEL JON BENNETT

PERSONAL

Profession: Principle Environmental Assessment Practitioner and Senior Environmental Control Officer, Sharples Environmental Services cc, George

Nationality: South African

Date of Birth: 22 October 1985

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

Marital Status: Single

Drivers License: Code B

Health: Excellent

EAPASA Reg: 2021/3163

IAIASA Membership: 7334

WORK EXPERIENCE

2014 – Present: Sharples Environmental Services cc, George, WC
Environmental Assessment Practitioner

I have gained extensive experience in assessments and monitoring and have worked on a variety of multidisciplinary projects and am proficient in:

- Basic Assessments Reports
- Water Use Authorisation Applications
- Environmental Monitoring and Reporting
- Environmental Management Programmes
- Environmental Control Officer Training
- Conducting Outeniqua Sensitive Coastal Area licensing applications

2016 – 2017: Sharples Environmental Services cc, Cape Town, WC
Intrim Office Manager, Environmental Assessment Practitioner

2011 – 2014: Peninsula Permits & NCC Group, Cape Town, WC
Environmental Control Officer

- Environmental Monitoring

TERTIARY EDUCATION

2010 University of Cape Town

- I hold a Bachelor of Science Degree specialising in Environmental and Geographic Science & Ocean and Atmospheric Science

PROJECTS

- 2023** George Urban Country Estate (Pty) Ltd
- Basic Assessment Report for the proposed residential development on erf 19374 (remainder erf 6182, erven 6179 and 6156), George, Western Cape
- 2023** George George Municipality
- Basic Assessment Report for the Upgrading of the Eden Pumpstation, George, Western Cape
- 2023** Mossel Bay Paprenax Trading 6 cc
- Amendment of Environmental Authorisation (Part 2, Substantive amendment) for the proposed establishment of a filling station and associated business infrastructure on a portion of erf 13996, Kwanonqaba, Mossel Bay, Western Cape
- 2023** George George Municipality
- Basic Assessment Report for proposed upgrade of the Schaapkop Pumpstation rising main on remainder of erf 464 and erf 13486, George, Western Cape
- 2023** George Garden Route Gateway Plaza
- Basic Assessment Report for proposed mixed-use development on portions 278 and 282 of farm Kraaibosch no. 195, George, Western Cape
- 2023** George George Municipality
- Basic Assessment Report for proposed development of a Photovoltaic Solar Plant on erf 2819, George, Western Cape
- 2023** George EARP Construction
- Basic Assessment Report for the proposed commercial development on portion 49 of Farm Hansmoeskraal 202, George, Western Cape
- 2022** George Pieterkoen Trust
- Basic Assessment Report for the proposed residential development on Portion 21 of the Farm Kraaibosch No. 195 (Pieter Koen), George, Western Cape
- 2022** Mossel Bay Dalmar
- Amendment of Environmental Authorisation (Part 2, Substantive amendment) for the Proposed Residential Development On A Portion Of The Farm Vaale Valley 219, Mossel Bay (Hartenbos Landgoed II), Western Cape

- 2022** George Dalmar
- Amendment of Environmental Authorisation Proposed Development of Herold's Bay Country Estate on A Portion of Portion 7 of The Farm Buffelsfontein No. 204, Herold's Bay, Western Cape
- 2022** George Pieterkoen Trust
- Basic Assessment Report for the proposed residential development on Portion 21 of the Farm Kraaibosch No. 195 (Pieter Koen), George, Western Cape
- 2022** Still Bay W. Nel & Irma Oosthuizen Trust IT 1596/2008
- Basic Assessment Report for the development of 5 residential units on erven 4139, 4140, 4141, 4142, 4143, 4144, 4145 (Erf 3997), Still Bay West, Western Cape
- 2022** George Octo Trading 377 cc
- Section 24 G Retrospective Environmental Authorisation for the alleged unlawful construction of a road clearance of vegetation to establish a house on remainder of Farm Holle Kloof 91 and Portion 1 of the Farm Plattekloof 131, Waboomskraal, George, Western Cape
- 2022** Knysna CapeNature
- Basic Assessment Report for the Proposed development on Portions 38 and 39 of Farm 205 and Remainder of Farm 211, Goukamma Nature Reserve, Knysna, Western Cape
- 2021** Prince Albert Jurie Klue
- Section 24 G Retrospective Environmental Authorisation for the alleged unlawful clearance of vegetation on Farm Angliers Bosch (Fernkloof), Remainder of Farm 157, Klarstroom, Prince Albert, Western Cape
- 2021** Mossel Bay Mossel Bay Municipality
- Basic Assessment Report for the proposed Dana Bay Emergency Access Road on Remainder of Portion 7 of the Farm 225, Dana Bay, Mossel Bay, Western Cape
- 2021** Willowmore LEZMIN 2087cc
- Basic Assessment Report for the proposed development of Portion 1 of the Farm Matjiesfontein No. 206, Baviaanskloof, Division Willowmore, Eastern Cape
- 2020** Sedgefield Knysna Municipality
- Basic Assessment Report for the proposed housing development on erven 3861, 3865, 3866, 3917, 3918 and 5010 in Sedgefield, Knysna, Western Cape

- 2020** Mossel Bay Paprenax Trading 6 cc
- Basic Assessment Report for the proposed establishment of a filling station and associated business infrastructure on a portion of erf 13996, Kwanonqaba, Mossel Bay, Western Cape
- 2020** Ladismith Department of Transport and Public Works
- Maintenance Management Plan for the periodic maintenance of Trunk Road 31, section 4, km 30.8 to km 76.06, Barrydale to Ladismith, Western Cape
- 2020** Knysna Knysna Municipality
- Maintenance Management Plan for the Maintenance of the potable water pipeline system on Erven 4197, RE/1352, RE/1351, RE/1146 and 1316 in Knysna, Western Cape
- 2020** Humansdorp Kouga Municipality
- Environmental Control Officer for the Phase 1A of New municipal 66kV double circuit overhead line between the Melkhout substation at Humansdorp and the main intake substation at Jefferys Bay, Eastern Cape
- 2020** Humansdorp Kouga Municipality
- Environmental Control Officer for the Construction of a new 22kv overhead powerline between Melkhout substation and Allison Street, Humansdorp, Eastern Cape
- 2020** Knysna Knysna Municipality
- Environmental Control Officer for the Charlesford raw water pumping scheme: Upgrade and refurbishment of pumpstation: Mechanical and electrical, Knysna, Western Cape
- 2020** Seweweekspoort, Department of Transport & Public Works
- Amendment of Environmental Authorisation (Part 2, Substantive amendment) for the flood damage repairs to road structures on MR309 in Seweweekspoort, Western Cape
- 2019 – 2021** Seweweekspoort, Department of Transport & Public Works
- Environmental Control Officer for the flood damage repairs to road structures on MR309 in Seweweekspoort, Western Cape
- 2019** George George Municipality
- Environmental Control Officer for the Raising of the Garden Route Dam Spillway on Portion 3/352, Remainder of 536 of Erf 221, Erf 3055 and Erf 3056, George, Western Cape
- 2019** Laingsburg Department of Agriculture
- Environmental Control Officer for the Construction Of Erosion Prevention Structures Within The One In Ten Year Flood Line Of The Buffels River, Laingsburg, Western Cape

- 2019** Williston Williston Municipality
- Environmental Control Officer for the Upgrading of bulk water network in Williston – Phase 3, Williston, Northern Cape
- 2019** George George Municipality
- Environmental Control Officer for the construction of new 66kV overhead line between Ballots Bay and Glanwood substations, George, Western Cape
- 2019** Oudtshoorn Department of Transport & Public Works
- Environmental Control Officer for the Periodic maintenance of Trunk Road 31, Section 6, km 23.3 to km 47.8 Calitzdorp to Oudtshoorn, Western Cape
- 2019** Kleinbrak Mossel Bay Municipality
- Environmental Control Officer for the Upgrading of Beyers Street, Kleinbrak River, Western Cape
- 2019** George Outeniqua Eye Clinic Body Corporate
- Environmental Control Officer for the proposed expansion of parking area on erf 5950 and part of remainder erf 464, George, Western Cape
- 2019** Mossel Bay Hey Innovations
- Basic Assessment Report for the proposed establishment of a residential development on Erf 2839, Great Brak River, Western Cape
- 2019** Oudtshoorn Oudtshoorn Municipality
- Environmental Management Programme for the Blossoms Emergency Supply Scheme, Oudtshoorn, Western Cape
- 2019** Humansdorp Clinkscapes Maughan-Brown
- Environmental Management Programme for the proposed construction of a new 22kV overhead powerline between Melkhout Substation and Allison Street, Humansdorp, Eastern Cape
- 2019** George PN&MR Lotter Family Trust
- Addendum to the Environmental Management Programme for the Establishment of a Township (Rivendale) on Portions 5, 15, 16 and 31 of the Farm Hansmoeskraal 202, Western Cape
- 2019** Oudtshoorn Department of Transport and Public Works
- Basic Assessment Report for the Proposed Maintenance Activities of Trunk Road 33/4 between km 4.6 and km 14.4, Meiringspoort, Western Cape
- 2019** George Dynarc Capital
- Substantive amendment of environmental authorisation for the proposed Development of Portion 130, 131 and 132 of the Farm Gwayang 208

- 2018** Mossel Bay Element Consulting Engineers
- Environmental Control Officer for the construction of a new 22kV overhead power line between the Midbrak and Kleinbrak Substations
- 2018** Mossel Bay Element Consulting Engineers
- Environmental Control Officer for the Upgrade of Amy Searle Canal – Phase 5, Great Brak River
- 2018** Gouritsmond Hessequa Consulting Engineers
- Environmental Control Officer for the Upgrade and expansion of the Gouritsmond Water Treatment Works on remainder of erf 140, Gouritsmond
- 2018** George Biprops 14
- Environmental Control Officer for the residential development on portion 5 of the farm Kraaibosch No. 195, Groenkloof Woods: Phase C & D
- 2018** Knynsa Knysna Municipality
- Environmental Control Officer for upgrading of Knysna bulk water supply scheme: phase 2B
- 2018** Plettenberg Bay Bitou Municipality
- Environmental Control Officer for the upgrade of the Kranshoek Bulk Water Supply Scheme: Construction of Pipelines, reservoirs and associated infrastructure near Plettenberg Bay.
- 2018** Mossel Bay SMEC
- Environmental Control Officer for the Upgrade of Kusweg and associated infrastructure in Rheeboek
- 2017** George EARP Construction
- Invasive Alien Management Plan for the proposed residential development on portions 21, 23, 24 & 48 of Farm Hansmoeskraal 202 near George
- 2017** Mossel Bay Mossel Bay Municipality
- Environmental Control Officer for the development of the new Mossel Bay municipal cemetery on erf 2001/0
- 2017** Knynsa Knysna Municipality
- Environmental Control Officer for the remedial work to prevent further settlement of the low-lift pump sump and retaining wall at Gouna River Pump Station
- 2017** Knynsa Knysna Municipality
- Environmental Control Officer for upgrading of Knysna bulk water supply scheme: phase 1

- 2017** George Biprops 14 (Pty) Ltd
- Environmental Control Officer for the residential development on portion 5 of the farm Kraaibosch No. 195
- 2017** Still Bay Hessequa Municipality
- Environmental Control Officer for the construction of a reservoir, booster pump station and associated infrastructure in Melkhoutfontein near Still Bay
- 2016 - 2017** Heidelberg Department of Transport & Public Works
- Environmental Control Officer for the flood damage repairs to structures in the Central Eden District Municipality Region, Heidelberg North
- 2016 - 2017** Riversdale Department of Transport & Public Works
- Environmental Control Officer for the flood damage repairs to structures in the Central Eden District Municipality Region, Riversdale East area
- 2016 - 2017** Still Bay Department of Transport & Public Works
- Environmental Control Officer for the upgrade of main road 332 near Still Bay
- 2016 - 2017** Mossel Bay The South Cape College
- Environmental Control Officer for the extension of the South Cape College: Phase 3, Mossel Bay Campus
- 2016 - 2017** Klein Brak Mossel Bay Municipality
- Environmental Control Officer for the removal of obstructions in the lower floodplain of the Klein Brak River Estuary
- 2016** Prince Albert Milway Trade and Invest 1014cc
- Basic Assessment for the proposed guest lodge on remainder of Farm Rietpoort 13
- 2016** Plettenberg Bay Bitou Municipality
- Basic Assessment for the proposed Qolweni phase 5 development near Plettenberg Bay
- 2016** Mossel Bay Element Consulting Engineers
- Environmental Management Programme for the replacement of 22kV overhead powerline between Power Town and Hartenbos and between Hartenbos and the Hartenbos sewage substation
- 2016** George SMEC
- Environmental Policy for the resurfacing of York Street, George

- 2016** Mossel Bay Department of Transport & Public Works
- Maintenance Management Plan for proposed upgrade of Louis Fourie Road.
- 2016** George Oaklands Bridge Country Estate HOA
- Maintenance Management Plan for proposed repair and maintenance of the riverbank at Oaklands Bridge Country Estate in Heather Park
- 2016** Gouritz Department of Transport & Public Works
- Update of the Maintenance Management Plan for proposed repair and maintenance of the Gouritz River Bridge bank protection along the R325 near Gouritzmond
- 2016** George Ivorybell Investment (Pty) Ltd
- Outeniqua Sensitive Coastal Area Environmental Impact Report for the proposed new house on erf 379 in Heralds Bay
- 2016** George George Municipality
- Environmental Assessment Report for the substantive amendment of environmental authorisation of the proposed upgrade and extension of the overhead power lines and associated substations
- 2016** Oudtshoorn SA Army Infantry School
- Environmental Control Officer for the construction of a fighting in built up areas (FIBUA) range on portion 10 of the farm Blaauwtjies Drift 110 in Oudtshoorn
- 2015 - 2016** Gouritz Department of Transport & Public Works
- Environmental Control Officer for the repair and maintenance of the Gouritz River Bridge bank protection along the R325 near Gouritzmond
- 2015 - 2016** Albertinia Garden Route Game Lodge (Pty) Ltd
- Environmental Control Officer for the five new units at the Garden Route Game Lodge
- 2015 - 2016** Mossel Bay Element Consulting Engineers
- Environmental Control Officer for the replacement of 22kV overhead powerline between Power Town and Hartenbos and between Hartenbos and the Hartenbos sewage substation
- 2014 - 2016** Plettenberg Bay Chauke Quantity Surveyers
- Environmental Control Officer for the Qolweni and Kwanokuthula High Density Units and engineering services
- 2016** Plettenberg Bay Bitou Municipality
- Environmental Control Officer for the civil engineering works for Kwanokuthula Phase 4 and the extension of Sishuba Street

- 2014 - 2016** Mossel Bay The South Cape College
- Environmental Control Officer for the extension of the South Cape College, Mossel Bay Campus
- 2016** George SMEC
- Environmental Control Officer for the resurfacing of York Street
- 2014 - 2015** Mossel bay The Muller Murray Trust
- Environmental Control Officer for the construction of gravity pipeline from the Nautilus take-off to the Boggomsbaai Reservoir phase 2
- 2015** Swellendam Casidra SOC Ltd
- Environmental Control Officer for the Grootvaderbos Groynes in the Buffeljags River
- 2015** George Element Consulting Engineers
- Environmental Control Officer for the upgrading and extension of overhead power lines and substations: construction of a new 66kV overhead line between Protea and Ballots Bay substation
- 2014 - 2015** George Department of Transport & Public Works
- Environmental Control Officer for the flood damage repair projects in the George and Knysna local municipal areas
- 2015** George BDE Consulting Engineers (Pty) Ltd
- Environmental Control Officer for the photovoltaic solar plant for the ACSA George Airport
- 2015** Heidelberg Bergstan South Africa
- Environmental Control Officer for the Duiwenhoks River stabilization works: Sites B31, B38 and B39
- 2015** Krakeel Element Consulting Engineers
- Environmental Control Officer for the construction of filling station at SSK Tuinrote Agri on portion 5 of the farm no. 320
- 2014 - 2015** Herbertsdale SMEC
- Environmental Control Officer for the flood damage repairs to structures in the Eden region: Herbertsdale area
- 2014 - 2015** George Department of Transport & Public Works
- Environmental Control Officer for the flood damage repair projects in the George and Knysna local municipal areas
- 2015** George SMEC
- Environmental Control Officer for the improvements to the Pacaltdorp interchange and new pedestrian bridge

2014 - 2015 Still Bay De Villiers & Moore Consulting Engineers

- Environmental Control Officer for the Still Bay 66kV substation and overhead powerline

2014 Beaufort West Worley Parsons Consulting Engineers

- Environmental Control Officer for the Nelspoort bulk water supply scheme northeast of Nelspoort

CURRICULUM VITAE

LU - ANNE BEETS

PERSONAL

Profession: Candidate Environmental Assessment Practitioner, Sharples Environmental Services cc, George

Nationality: South African

Date of Birth: 28 October 2000

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

Marital Status: Single

Drivers License: Code B

Health: Excellent

EAPASA Reg: 2024/7962

WORK EXPERIENCE

2023 – Present: Sharples Environmental Services cc, George, WC
Candidate Environmental Assessment Practitioner

- Basic Assessments Report
- Environmental Monitoring
- Environmental Management Programmes

2023 – March 2024: Sharples Environmental Services cc, George, WC

Environmental Consultant

- Environmental Monitoring

TERTIARY EDUCATION

2023 University of South-Africa
Bachelor of Science Honours – Environmental Management

2022 North-West University
Bachelor of Science – Zoology & Botany

PROJECTS

- 2024** Herold's Bay George Municipality
- Basic Assessment Report for the proposed upgrading of the Herold's Bay Pump station and associated rising main and development of new associated infrastructure

- 2023-2024** **George** Potgieter Familie Trust (TMP3113)
- Amendment of Environmental Management Programme for the proposed development of Pansy Villas
- 2023** **George** Lukhozi Consulting Engineers
- Environmental Control Officer for repair and rehabilitation of flood damages along Camphersdrift River, Van Riebeeck Gardens
- 2023-2024** **George** SNA Consulting Engineers
- Environmental Control Officer for the upgrade of Bridge No. 2221 on Trunk Road 2/9 at KM 15.1 over Maalgate River
- 2023-2024** **Mossel Bay** Western Cape Provincial
Government: Department of Transport and Public Works
- Environmental Control Officer for the upgrade of Louis Fourie Road
- 2023-2024** **Herold's Bay** Long Island Trading 44 (Pty) Ltd
- Environmental Control Officer for the proposed development of Herold's Bay Country Estate.
- 2023** **George** George Municipality
- Applicability Checklist for the proposed new steel monopole structures for the 66kV overhead line between Proefplaas and Herold's Bay
- 2023** **George** The Board of Trustees Biprops 14
(Pty) Ltd
- Application for amendment of environmental authorisation for the residential development on the Farm Kraaibosch
- 2023** **Mossel Bay** Confuel (PTY) Ltd
- Environmental Control Officer for the proposed truck stop and associated infrastructure



GEORGE
TEL: +27 (0) 44 873 4923 **FAX:** +27 (0) 44 874 5953
EMAIL: info@sesc.net **WEBSITE:** www.sesc.net
ADDRESS: Unit 17 Cathedral Square,
Cathedral Street, George, 6530
PO BOX: 9087, George, 6530

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

ENVIRONMENTAL AWARENESS TRAINING BOOKLET

APPENDIX D

-
- Environmental Impact Assessments • Basic Assessments • Environmental Management Planning
 - Environmental Control & Monitoring • Public Participation • Broad scale Environmental Planning



Environmental Monitor's Foreword

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

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

Notes:

- Workers working on this project must undergo environmental training.
- The information contained in this document should be used during day-to-day activities.

HOW IS THIS PROJECT IMPLEMENTING ENVIRONMENTAL MANAGEMENT?

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

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

WASTE TREATMENT

Refuse:

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

Construction Waste:

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

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

Liquid waste:

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

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

SPECIFIC ENVIRONMENTAL ISSUES
SPESIFIEKE OMGEWINGSKWESSIES
IMIBA ETHILE YEZOBUME BEMEKO YENDALO

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

Die basiese Moets en Moenies van omgewingsbesinning is as volg:

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

Toilet Facilities:
Toilet Fasiliteite:
Izindlu Zangase:

DO:

USE THE TOILET FACILITIES PROVIDED - REPORT FULL FACILITIES

MOET:

*GEBRUIK MAAK VAN TOILET FASILITEITE WAT VOORSIEN WORD
– RAPPORTEER AS FASILITEITE VOL IS*

OMAWUKWENZE: SEBENZISA IZINDLU ZANGASESE
EZIBONELELWEYO- NIKA INGXELO NGAMALUNGISELELO
AGCWELEYO.

DO NOT:

USE THE BUSH

MOENIE:

DIE BOS GEBRUIK NIE

OMAWUNGAKWENZI: UKUSEBENZISA ITYHOLO.



Vehicles operation and maintenance:

Voertuig werking en onderhoud:

Ulawulo nophatho lezithuthi:

DO:

ENSURE THAT VEHICLES AND MACHINERY DO NOT LEAK FUEL OR OILS. REFUELLING, MAINTENANCE, SERVICING OR WASHING MUST BE DONE WITHIN THE DESIGNATED AREA IN THE CONSTRUCTION CAMP AREA ONLY.

MOET:

VERSEKER DAT VOERTUIG EN MASJINERIE NIE OLIES OF BRANDSTOF LEK NIE. VOLMAAK, ONDERHOUD, DIENS OF SKOONMAAK VAN VOERTUIG MOET SLEGS IN AANGEWYSTE AREAS IN DIE KONSTRUKSIE KAMP GESKIED.

OMAWUKWENZE: QINISEKISA IZITHUTHI NOMATSHINI ABAVUZI MAFUTHA OKANYE I OYILE, UKUGALELA, UKUPHATHA, UKULUNGISA OKANYE UKUHLAMBA KUFUNEKA KWENZIWE KUMMANDLA OTYUNJIWEYO KWINKAMPI YOLWAKHIWO KUPHELA NGOKUKHAWULEZILEYO.

DO:

REPORT ALL FUEL OR OIL SPILLS IMMEDIATELY & STOP THE SPILL CONTINUING.

MOET:

RAPPORTEER ENIGE BRANDSTOF OF OLIE STORTE & VERHOED DAT DIE STORT AANHOU.

OMAWUKWENZE: NIKA INGXELO NGE OLI NAMAFAUTHA ACHITHEKILEYO, UZE UNQANDE UCHITHEKO LUNGAQHUBEKI.

DO:

PREVENT CONTAMINATION OR POLLUTION OF STREAMS AND WATER CHANNELS.

MOET:

VERHOED DIE KONTAMINASIE EN BESOEDELING VAN STROME & WATERKANALE.

OMAWUKWENZE : NQANDA USULELEKO OKANYE UNGCOLISEKO LWEMILAMBO NEMISELE YAMANZI.

DO NOT:

ALLOW WASTE, LITTER, OILS OR FOREIGN MATERIALS INTO THE STREAM

MOENIE:

TOELAAT DAT AFVALPRODUKTE, GEMORS, OLIES OF VREEMDE MATERIALE IN STROME BELAND NIE.

OMAWUNGAKWENZI: MUSA UKUVUMELA INCITHO, ULAHLO, IOYILE OKANYE EZINYE IZINTO EMILANJENI.



Fire Control:
Vuur Beheer:
Ulawulo Lemililo:

DO:

DISPOSE OF CIGARETTES AND MATCHES CAREFULLY. (Littering is an offence.)

MOET:

GOOI SIGARETTE & VUURHOUTJIES OP GEPASTE MANIER WEG WEG (rommelstrooi is 'n oortreding)

OMAWUKWENZE: LAHLA ISIGARETE NOOMATSHISI
NGONONOPHELO (ukulahla lityala).

DO:

ENSURE A WORKING FIRE EXTINGUISHER IS IMMEDIATELY AT HAND IF ANY "HOT WORK" IS UNDERTAKEN e.g. welding, grinding, gas cutting etc.

MOET:

VERSEKER DAT 'N WERKENDE BRANDBLUSSER BYDERHAND IS INDIEN "WARM WERK" GEDOEN WORD bv. Sweiswerk.

OMAWUKWENZE: QINISEKISA ISICIMA-MLILO ESISEBENZAYO SISESANDLENI UKUBA KUKHO UMSEBENZI "OTSHISAYO" OWENZIWAYO, umz. ukuwelda, ugubo, ukuqhawula ugesi, njl.

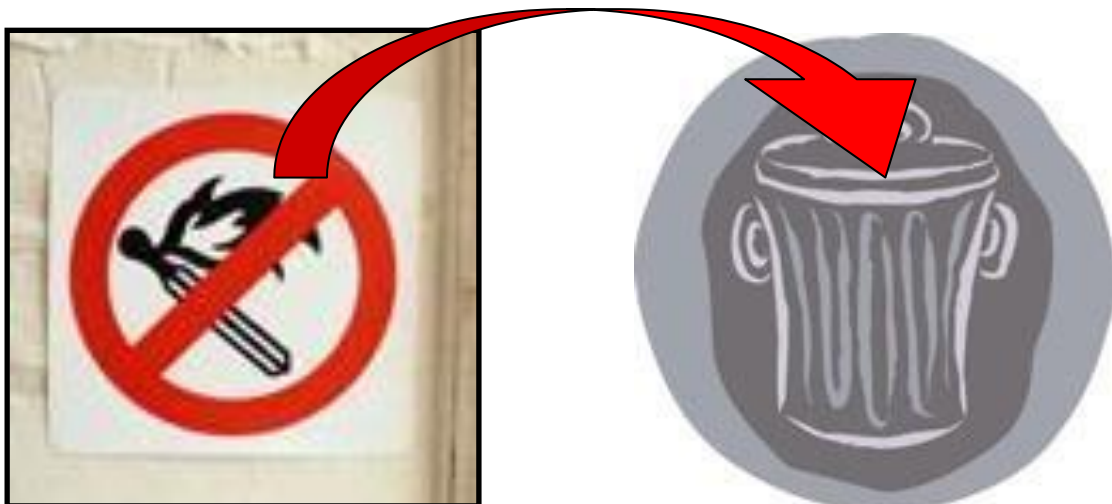
DO NOT:

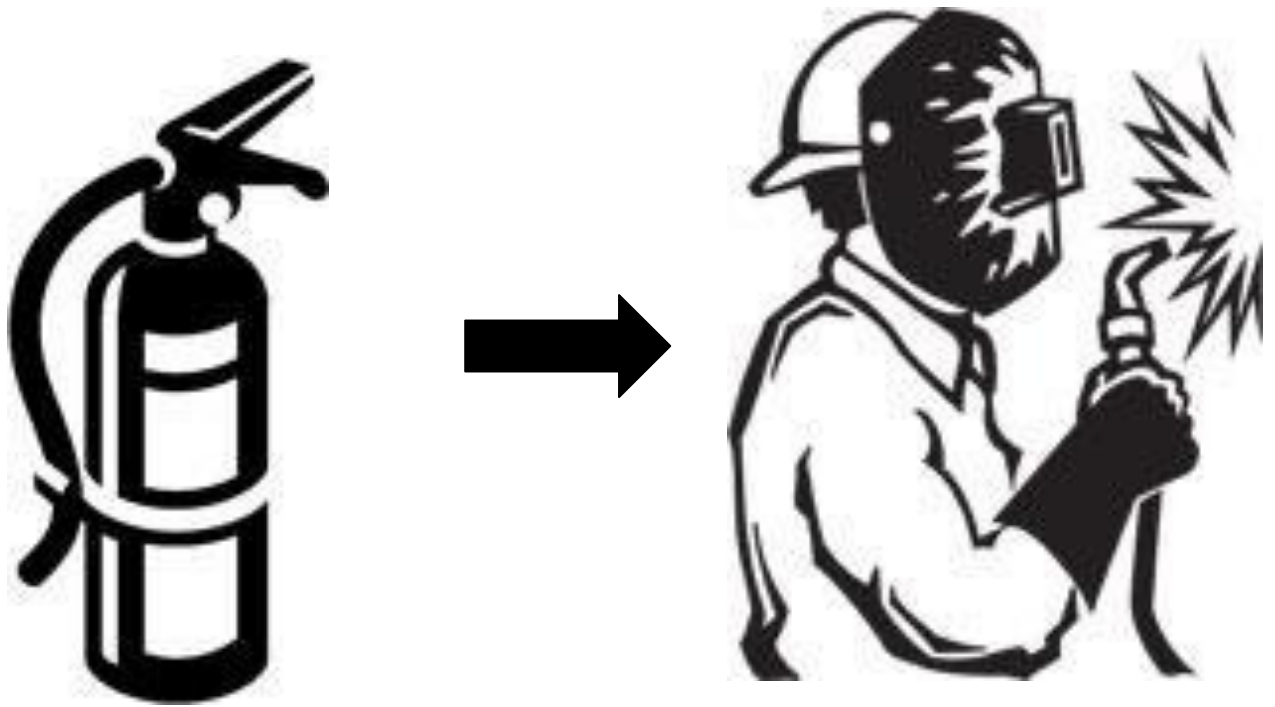
MAKE ANY FIRES

MOENIE:

ENIGE VURE MAAK OF ENIGEIETS VERBRAND NIE

OMAWUNGAKWENZI: UKWENZA IMILILO OKANYE UTSHISE NOKUBA YINTONI.





**Fencing and Restricted Areas:
Omheining en Beperkte Areas:
Ubiyelo Nemimandla Engavumelekanga:**

DO:

CONFINE WORK AND STORAGE OF EQUIPMENT TO WITHIN THE IMMEDIATE WORK AREA.

MOET:

BEPERK ALLE WERK EN STOOR VAN GEREEDSKAP TOT IN DIE GEGEWE WERKAREA.

OMAWUKWENZE: GCINA UMSEBENZI NEZIXHOBHO ZOKUSEBENZA NGAKUMMANDLA OKUSETYENZELWA KUWO.

DO NOT:

ENTER ANY FENCED OFF OR MARKED AREA. SUCH AREAS HAVE BEEN MARKED WITH “NO-GO AREA” SIGNS AND SHOULD BE ADHERED TO.

MOENIE:

ENIGE OMHEINDE OF GEMERKTE AREAS BINNEGAAN NIE. SULKE AREAS IS MET “NO-GO AREA” TEKENS GEMERK EN MOET GEHOORSAAM WORD.

OMAWUNGAKWENZI: MUSA UKUNGENA KWI NDAWO EBIIWEYO OKANYE EPHAWULWEYO. IMIMANDLA ENJALO IPHAWULWE NGAMAGAMA ATHI “ **NO-GO AREA**”.



**NO-GO
AREA**

Safety:
Veiligheid:
Ukhuseleko:

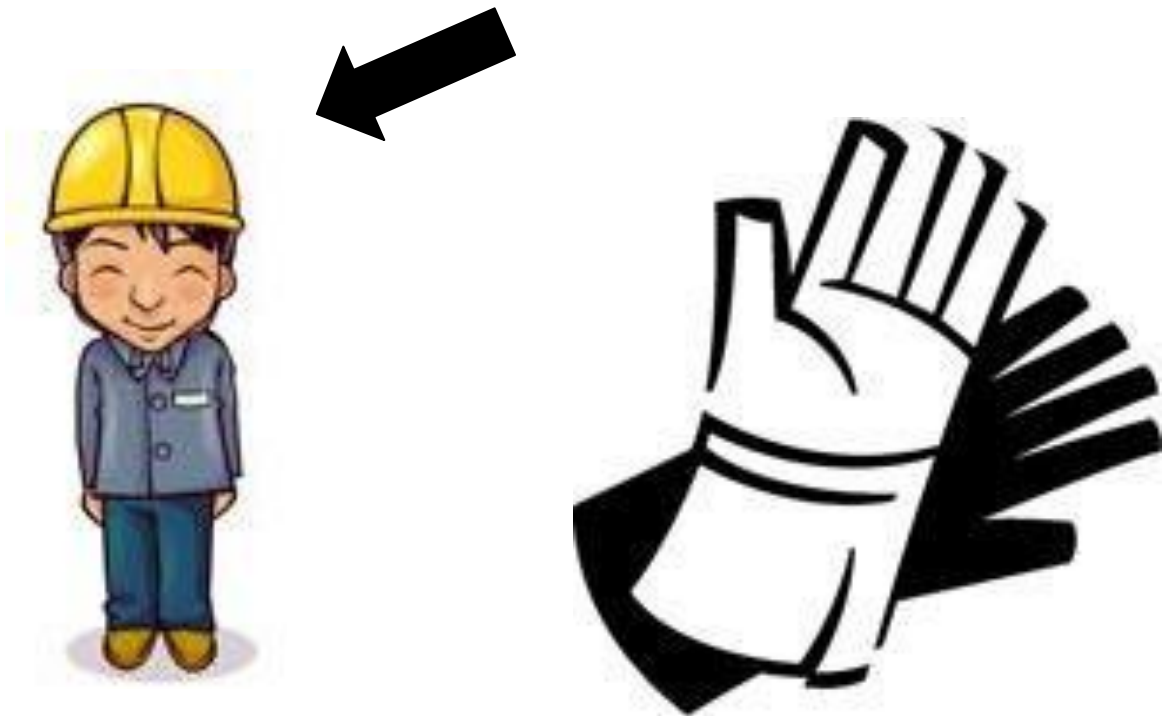
DO:

USE ALL SAFETY EQUIPMENT AND COMPLY WITH ALL SAFETY PROCEDURES.

MOET:

GEBRUIK ALLE VEILIGHEIDSGEREEDSKAP EN VOLDOEN AAN ALLE VEILIGHEIDS PROSEDURES.

OMAWUKWENZE: SEBENZISA ZONKE IZIXHOBO ZOKHUSELEKO, UZE UTHOBELE YONKE IMIGAQO YOKHUSELO.



Driving and Dust:
Bestuur en Stof:
Uqhubo Nothuli:

DO:

DRIVE ON DESIGNATED ROUTES ONLY.

MOET:

NET OP AANGEWYSTE ROETES BESTUUR.

OMAWUKWENZE: QHUBA KWIMIMANDLA EPHAWULWEYO
KUPHELA.

DO NOT:

SPEED OR DRIVE RECKLESSLY

MOENIE:

JAAG OF ROEKELOOS BESTUUR NIE.

OMAWUNGAKWENZI: SUKUQHUBA NGESANTYA ESIPHEZULU
OKANYE NGOKUNGAKHATHALI.

DO NOT:

ALLOW CEMENT TO BLOW AROUND.

MOENIE;

TOELAAT DAT SEMENT WEGWAAI NIE.

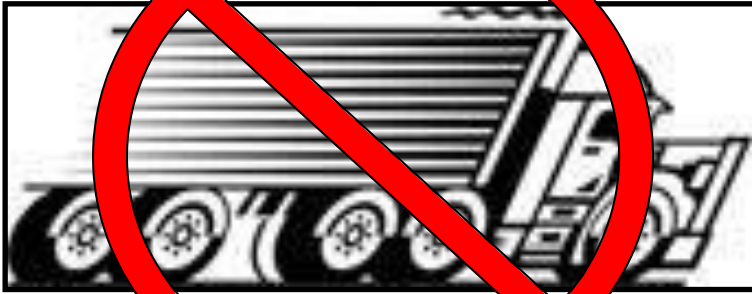
OMAWUNGAKWENZI: MUSUKUVUMELA ISAMENTE ISASAZWE.

DO NOT:

CAUSE EXCESSIVE DUST

MOENIE:

OORDREWE STOF VEROORSAAK NIE.



Vegetation protection:
Plantegroei Beskerming:
Ukhuselo Lwezityalo:

DO NOT:

DAMAGE OR REMOVE ANY VEGETATION WITHOUT DIRECT INSTRUCTION.

MOENIE:

ENIGE PLANTEGROEI SONDER DIREKTE INSTRUKSIE BESKADIG OF VERWYDER NIE.

OMAWUNGAKWENZI: MUSA UKUTSHABALALISA OKANYE USUSE NASIPHINA ISITYALO NGAPHANDLE KOMYALELO.



Animals:
Diere:
Izilwanyana:

DO NOT:

INJURE, CAPTURE/SNARE, FEED OR CHASE ANIMALS – this includes birds, frogs, snakes, lizards, tortoises, etc.

MOENIE:

ENIGE DIERE BESEER, VANG, VOER OF JAAG NIE – dit sluit in: voëls, paddas, slange akkedisse, skilpaaie ens.

OMAWUNGAKWENZI: MUSA UKWENZAKALISA, UKUBAMBA, UKONDLA OKANYE UKULEQA IZILWANYANA- okuquka iintaka, amasele, iinyoka, amacilikishe, izikolopati.

DO:

REPORT ANY INJURY OF AN ANIMAL.

MOET:

DIE BESERING VAN 'N DIER RAPPORTEER.

OMAWUKWENZE: XELA NASIPHI ISENZAKALO SESILWANYANA.



**Preventing Pollution:
Voorkoming van Besoedeling:
Ukhuselo Longcoliseko:**

DO:

CLEAR YOUR WORK AREAS OF LITTER AND BUILDING RUBBLE AT THE END OF EACH DAY – use the waste bins provided and ensure that litter will not blow away.

MOET:

RUIM NA ELKE DAG DIE WERK AREA OP EN GOOI ENIGE ROMMEL WEG IN DIE GEGEWE HOUERS – maak seker dat rommel nie kan wegwaai nie.

OMAWUKWENZE: COCA INDAWO OSEBENZA KUYO, IZINTO EZILAHLIWEYO NENKUNKUMA YOKWAKHA QHO EKUPHELENI KWEMINI-sebenzisa imigqomo yenkunkuma uze uqiniseke ukuba inkunkuma ayivuthuzwa ngumoya.

DO NOT:

ALLOW WASTE BINS TO OVERFLOW OR WASTE TO BLOW AROUND.

MOENIE:

TOELAAT DAT ROMMELHOUERS OORVLOEI OF DAT ROMMEL ROND WAAI NIE.

OMAWUNGAKWENZI: MUSA UKUVUMELA IMIGQOMO YENKUNKUMA IGCWALE KAKHULU OKANYE INKUNKUMA ISASAZEKE.

DO NOT:

LITTER OR LEAVE FOOD LAYING AROUND

MOENIE:

ROMMEL OF KOS LAAT RONDLÊ NIE.

OMAWUNGAKWENZI: MUSA UKUNGCOLISA OKANYE USHIYE UKUTYA KULELE INDAWO YONKE.

DO NOT:

BURY ANY LITTER OR WASTE IN THE GROUND.

MOENIE:

ENIGE ROMMEL OF GEMORS IN DIE GROND BEGRAWE NIE.

OMAWUNGAKWENZI: MUSA UKUNGCWABA INKUNKUMA EMHLABENI.



APPENDIX E



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Private Bag X3055, WORCESTER, 6850, Street Address Corner Mountain Mill Drive & East Lake Way,
WORCESTER, 6850, www.dws.gov.za

**LICENCE IN TERMS OF CHAPTER 4 OF THE
NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998) (THE ACT)**

I, **Mrs NM Bila-Mupariwa** in my capacity as Provincial Head: Western Cape in the Department of Water and Sanitation and acting under the powers delegated to me by the Minister of Water and Sanitation, hereby authorises the following water use in respect of this licence.

Serial Number : 5118718696977915819
Provincial Head: Western Cape
Date: Sep 5 2025 5:09PM



LICENCE NO: 01/K30B/II/16508
FILE NO: 27/2/2/K230/28/5

Licensee: George Local Municipality (Herold's Bay Pumpstation)

Postal Address: PO Box 19
George
6530

1. Water Uses authorised by this licence

Table 1: Summary of water uses authorised

1.1	Section 21(i) of the Act:	Altering the bed, banks, course or characteristics of a watercourse; subject to the conditions set out in Appendices I and II.
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2. Property (ies) in respect of which the water use licence is issued

Table 2: Property details where the water use(s) will take place

Provincial Head

Activity	Farm Name	Farm Portion	Owner's Name	Title Deed Number
Section 21(i)				
Construction of New Rising Main	Brakfontein 236	0	Summer Sixteen (Pty) Ltd	T5208/2017
Construction of Pump Station 4	Erf 116	0	George Municipality	T4329/1929

3. Licence and Review Period

- 3.1 This licence is valid for a period of twenty (20) years from the date of issuance and it may be reviewed at intervals of not more than five (5) years.
- 3.2 On review of the licence, a Responsible Authority may amend any condition of the licence, other than the period of validity thereof.

4. Definitions

Any terms, words and expressions as defined in the National Water Act, 1998 (Act 36 of 1998) shall bear the same meaning when used in this licence."

4.1 The following definitions are of relevance, but not exclusive, to this licence

Act	National Water Act, 1998 (Act 36 of 1998)
Buffer zone	Buffer zone: a strip of land surrounding a wetland or riparian area in which activities are controlled or restricted, in order to reduce the impact of adjacent land uses on the wetland or riparian area. The buffer zone is measured from the edge of the delineated watercourse determined according to the Departmental guideline - "A practical field procedure for identification and delineation of wetlands and riparian areas."
CEO	The Chief Executive Officer of Catchment Management Agency: Breede-Olifants Catchment Management Agency Private Bag X3055, Worcester, 6850, Street Address: Corner Mountain Mill Drive & East Lake Way, Worcester
CMA	Catchment Management Agency.
Commencement date	The date on which water use starts.
Days	Calendar days.
Delegated Authority	The person that has been delegated certain functions of the Act.
Department	The Department of Water and Sanitation.
Minister	The Minister of the Department of Water and Sanitation.
Provincial Head	Head of Provincial Operations: Western Cape, Department of Water and Sanitation Private Bag X16, Sanlamhof, 7532, 53 Spectrum Building, Voortrekker Road, Bellville
Extent of the watercourse	(a) the outer edge of the 1:100 year floodline or the delineated



	<p>riparian habitat, whichever is the greatest, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam; and</p> <p>(b) Wetlands and pans: the delineated boundary (outer temporary zone) of any wetland or pan.</p>
Regulated area of a watercourse	<p>(a) The outer edge of the 1 in 100 year flood line and /or delineated riparian habitat, whichever is the greatest distance, measured from the middle of the watercourse of a river, spring, natural channel, lake or dam;</p> <p>(b) In the absence of a determined 1 in 100 year flood line or riparian area the area within 100m from the edge of a watercourse where the edge of the watercourse is the first identifiable annual bank fill flood bench (subject to compliance to section 144 of the Act); or</p> <p>(c) A 500 m radius from the delineated boundary (extent) of any wetland or pan.</p>
Sensitive riffle habitats	<p>A pool riffle rapid sequences that occur where a mixture of flows and depth provide a variety of habitats to support fish and invertebrate life. Pools are deep with slow water. Riffles are shallow with fast, turbulent water running over rocks. Runs are deep with fast water and little or no turbulence.</p>

5 Description of activity and affected water resource(s)

George Local Municipality is licensed for section 21(i) water uses for the construction of the sewer infrastructure i.e. pump station and new rising main that will improve the sewage reticulation network and minimise the risk of sewage leaks in the future in the area of Herold's Bay. This is part of the implementation of the project to improve the water and sanitation services provided to the community and to prevent spillage and surcharge into the ocean due to an over loaded system. The properties on which the pump station and rising main will be constructed fall within the regulated area of the watercourse. The proposed project is located on Portion 0 of Farm Brakfontein 236 and Portion 0 of Erf 116, George RD. The water use activity is geographically located at -34° 3' 9.79" S and 22° 23' 30.21" E within quaternary catchment K30B of the Breede-Olifants Water Management Area.



APPENDIX I

GENERAL PROVISIONS AND CONDITIONS OF THE LICENCE

1. GENERAL PROVISIONS

Legal Framework

- 1.1 This licence is subject to all applicable provisions of the National Water Act, 1998 (Act No. 36 of 1998) as amended from time to time.
- 1.2 The licence shall not be construed as exempting the Licensee from compliance with the provisions of any other applicable Act, Ordinance, Regulation or By-law.

Administrative Duties/Obligations/Responsibilities of the Licensee

- 1.3 The responsibility for complying with the provisions of the licence is vested in the licensee and not any other person or body.
- 1.4 The licensee will be responsible for any water use charges or levies imposed by a Responsible Authority according to the pricing strategy. The levies/charges will be charged from the date of the issuance of this licence.
- 1.5 No water taken may be pumped, stored, diverted, or alienated for any other purpose other than as intended in this licence without the written approval of the Delegated Authority.
- 1.6 It is the responsibility of the licensee to request an amendment of this licence to reflect the registered volume should the requirements change. All requests must be made to the Provincial Head/CEO.
- 1.7 If the water use licence is not exercised or fully exercised within the 5 (five) year period and the extended 2 (two) year period, as referred to in condition 2.4 and condition 2.5 in appendix I, the licence may be amended to reflect the extent of the water use that is being exercised, or the licence may be withdrawn

Change of Property Details

- 1.8 Amendment of the licence to reflect the name of the new owner will not be approved if there are any outstanding charges or levies imposed by the Responsible Authority to the previous owner.

Issue of Licence No Guarantee of Supply

- 1.9 This licence does not imply any guarantee that the said quantities and qualities of water will be available at present or at any time in the future.

Monitoring



- 1.10 The quantity of water authorised to be taken in this licence may not be exceeded.
- 1.11 The quality of water authorised to be disposed and discharged in this licence may not be exceeded.
- 1.12 The licensee must adhere to the monitoring programmes submitted with the application.
- 1.13 Any changes to the monitoring programmes should be approved by the Provincial Head/CEO.

Reviewal of Licences

- 1.14 The volume authorised in this licence may be reduced when the licence is reviewed.
- 1.15 No water taken may be pumped, stored, diverted, or alienated for any other purpose other than as intended in this licence without the written approval of the Delegated Authority.

Effecting of the Reserve

- 1.16 While effect must be given to the Reserve as determined in terms of the Act, where a desktop determination of the Reserve has been used in issuance of a licence, when a comprehensive determination of the Reserve has finally been made, it shall be given effect to.

Liabilities and Rights

- 1.17 The Department accepts no liability for any damage, loss or inconvenience, of whatever nature, suffered as a result of, shortage of water; inundations or flood; siltation of the resource; and required Reserve releases.
- 1.18 The Minister reserves the right to construct water storage works at any time in any watercourse and to store all surplus water reaching the storage works, as well as to control the allocation of such water.

Dam Safety Requirements

- 1.19 The licensee is not indemnified from any detrimental effect that the dam(s) may have on other properties.
- 1.20 The Department does not accept any responsibility or liability for any damages or losses that may be suffered by any other party because of the construction and utilisation of the dams.
- 1.21 The licensee is not exempted from compliance with the provisions of the Dam Safety Regulations published under Government Gazette Notice R.139 of 24 February 2012 or any amendment thereof read with Chapter 12 of the Act, which are applicable to all dams with a safety risk.



Restrictions

- 1.22 The licensee must adhere to any restrictions that are gazetted and imposed on the respective water resource.

Water Measurement and Reporting

- 1.23 The Provincial Head/CEO may at any time direct a licensee, at the licensee's expense, to have the accuracy of the licensee's water measuring device/s verified, in addition to the requirements of their inspection and calibration schedule by a person or an institution accredited to verify the accuracy.

Pump Stations

- 1.24 The licensee must design all new pump stations in such a manner that environmental and health risks due to the discharge of untreated sewage into the water resource are avoided.
- 1.25 The designs of all new pump stations and the refurbishment of existing ones must be approved by the responsible authority.
- 1.26 No new pump stations will be allowed within the 1:100 year flood line or riparian habitat, whichever is the greatest and / or within the temporary zone of a wetland unless authorised.

Manholes

- 1.27 The licensee must ensure that:
- 1.27.1 Manholes are covered at all times with a suitable cover that is not prone to theft and cannot be removed by unauthorised persons;
- 1.27.2 No new manholes are constructed in the 1:100 year flood line or riparian habitat, whichever is the greatest and / or within the temporary zone of a wetland. Existing manholes situated within the 1:100 year flood lines must be sealed adequately to ensure no ingress of water during any rainfall event.

Operations

- 1.28 Suitably qualified and experienced mechanical and electrical artisans must be available to be called in for inspection and maintenance of the works.
- 1.29 Prior to the approval of any new development, the licensee must check and verify the capacity and adequacy of available wastewater infrastructure to ensure that the systems can handle the additional load arising from the new development and notify the Regional Head/CEO within six (6) months prior to approval of any new development.



Stormwater Management

- 1.30 Stormwater leaving the licensee's premises shall in no way be contaminated by any substance, whether such substance is a solid, liquid, vapour or gas or a combination thereof which is produced, used, stored, dumped, spilled on the premises.

Amendments

- 1.31 The licensee may apply for amendment of this licence in terms of the Act at any time during the period of validity of this licence. Applications must be submitted to the Provincial Head/CEO.

Appeals

- 1.32 If this licence is appealed, it is automatically suspended and the water use activities must cease upon receipt of a notification of the appeal from the Department, alternatively the licensee may request the Minister to lift the suspension pending conclusion of the appeal via the Chief Director Legal Services at the address below:

Private Bag X313,
Pretoria,
0001



2. GENERAL CONDITIONS

Administrative Duties/Obligations/Responsibilities of the Licensee

- 2.1 The licensee must avail an original copy of the water use licence and the supporting reports upon request by the Department.
- 2.2 The conditions of the authorisation must be brought to the attention of all persons (employees, sub-consultants, contractors etc.) associated with the undertaking of these activities and the licensee must take such measures that are necessary to bind such persons to the conditions of this licence.

Commencement of a Water Use Licence.

- 2.3 The licensee must inform the Provincial Head/CEO in writing within seven (07) days after the licensee commences with water use licence and again within thirty (30) days upon completion of the activity/ies.
- 2.4 The water uses authorised in this licence must be fully exercised within five (5) years from the date of issuance of this licence.
- 2.5 If the licensee cannot exercise or fully exercise the water use licence within 5 (five) years, the licensee may request from the Provincial Head/CEO, with reasons, an extension of time to fully utilise the said water use licence, at least three months, before the expiry of the 5 (five) years. Only one request for extension of time, with maximum of 2 (two) years for commencement or of fully exercising of water use licence will be considered.

Change of Details of Licensee or Property

- 2.6 The licensee must inform the Provincial Head/CEO of any change of ownership, name, address, premises and/or legal status within sixty (60) days of such change taking place.
- 2.7 If the properties in respect of this licence is/are subdivided or consolidated, the licensee must provide full details of any change(s) in respect of the properties to the Provincial Head/CEO within sixty (60) days after the registration of title deed(s).
- 2.8 If the licensee is not the end user/beneficiary of the water user related infrastructure and will not be responsible for long term maintenance and management of the infrastructure, the licensee must provide a hand over report to the successor in title including a brief management/maintenance plan and the agreement for infrastructure along with allocation of responsibilities, within sixty (60) days after the date of change of end user or beneficiary.

Early Renewal for the Licence

- 2.9 The licensee must, if needed, apply for early renewal of this licence in terms of the Act within one (1) year before the expiry date of a licence. The application must be submitted to the Provincial Head/CEO.



Malfunctions, Incidences, Contingencies and Pollution Prevention

- 2.10 The licensee must service all vehicles and other machinery outside the extent of the watercourse/s.
- 2.11 Oils and other potential pollutants must be disposed of at a licensed site, with the necessary agreement from the owner of such a site.
- 2.12 The licensee must handle, transport, store and use any hazardous substances according to the relevant legislation or South African National Standards (SANS).
- 2.13 Accurate and up-to-date records must be kept of all system malfunctions resulting in non-compliance with the requirements of this licence. The records must be available for inspection by the Provincial Head/CEO upon request. Such malfunctions must be tabulated under the following headings with a full explanation of all the contributory circumstances:
- 2.13.1 operating errors;
 - 2.13.2 mechanical failures (including design, installation or maintenance);
 - 2.13.3 environmental factors (e.g. flood);
 - 2.13.4 loss of supply services (e.g. power failure); and
 - 2.13.5 other causes.
- 2.14 The licensee must, within 24 hours, notify the Regional Head/CEO of the occurrence or potential occurrence of any incident which has the potential to cause, or has caused water pollution, pollution of the environment, health risks or which is a contravention of the licence conditions.
- 2.15 The licensee must, within 14 days, or a shorter period of time, as specified by the Provincial Head/CEO, from the occurrence or detection of any incident referred above, submit an action plan which must include a detailed time schedule to the satisfaction of the Provincial Head/CEO of measures to be taken to:
- 2.15.1 correct the impacts resulting from the incident;
 - 2.15.2 prevent the incident from causing any further impacts; and
 - 2.15.3 prevent a recurrence of a similar incident
- 2.16 The licensee must adhere to the Wastewater Incident Management Protocol.



- 2.17 The licensee must compile/develop an environmental call and reporting centre protocol, which must ensure the investigation of every complaint within 24 hours.
- 2.18 The licensee must implement and promote an environmental call and reporting centre.
- 2.19 The licensee must rectify all valid issues reported within seven (7) days of the issue being reported to the licensee. All valid complaints must be recorded in complaints register which will include reasons for non-rectification of issues raised.

Water Conservation and Water Demand Management (WCWDM)

- 2.20 The licensee must establish and implement a continual process of raising awareness among itself, its workers and stakeholders with respect to water conservation and water Demand Management initiatives.
- 2.21 The licensee shall use water efficiently to minimise total water intake, avoid usage of water where possible, implement best management and operating practices, and maximise the reuse /recycle of contaminated water.
- 2.22 The licensee must continually investigate new and emerging technologies and put into practice water efficient devices and /or apply technique for the efficient use of water, in an endeavour to conserve water at all times.
- 2.23 The licensee must report annually on the implementation of WC/WDM plan including retrofitting with water efficient technologies and devices, reduction of total water demand, improvement in water use efficiency benchmarks and target.
- 2.24 The licensee must update the WC/WDM plan every five (5) years and submit to the Provincial Head/CEO for approval.

Water Measurement and Reporting

- 2.25 The licensee shall install appropriate water measuring devices to measure the amount of water abstracted prior use of water.
- 2.26 The licensee shall ensure that all measuring, recording and monitoring devices are properly maintained and in good working order as per design specification and must be easily accessible. This shall include a programme of checking, calibration, and/or renewal of measuring devices.
- 2.27 Calibration/verification certificates of the flow measuring, recording and integrating devices must be available for inspection by the Provincial Head/CEO or the representative upon request.

Membership to a Water Users Association



- 2.28 If a water user association exists or is established in the area to manage the resource, it is compulsory for the licensee to be a member of the water user association. The licensee must adhere to the rules, regulations and water management stipulations of the water user association.

Monitoring, Methods of Analysis and Reporting

- 2.29 Sample analysis must be conducted by a recognized analytical laboratory, accredited by the South African National Accreditation System (SANAS), or that participates in a recognised Proficiency Testing Scheme to analyze the relevant constituents in wastewater.
- 2.30 The monitoring points must not be changed without prior notification to and written approval by the Provincial Head/CEO.
- 2.31 The date, time and monitoring point in respect of each sample taken shall be recorded together with the results of the analysis.

Stormwater Management

- 2.32 Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to erosion and excessive levels of silt entering the stream.
- 2.33 Storm water management facilities must be constructed, operated and maintained in a sustainable manner throughout the project as detailed in the Storm Water Management Plan.
- 2.34 Increased runoff due to vegetation clearance and/or soil compaction must be managed, and steps must be taken to ensure that storm water does not lead to bank instability and excessive levels of silt entering the stream.
- 2.35 All storm-water that would naturally run across the dirty areas shall be diverted via lined channels and drains designed to contain the 1:50 year flood.
- 2.36 The dirty storm water system shall be designed and implemented to provide suitable routing and pumping capacity for contaminated storm water from the individual facilities to the respective storm water dams in accordance with the design specifications.
- 2.37 Clean storm water must be diverted from construction works and must be managed in such a manner as to disperse runoff and to prevent the concentration of storm water flow.
- 2.38 The licensee must ensure that no storm water should ingress into the wastewater system and that there is no wastewater ingress into the storm water system.



- 2.39 Wastewater impoundments must be designed, constructed and managed to ensure that there is sufficient capacity to contain the 1:50 year flood event, with a minimum of 0.8 m freeboard. Freeboard will be defined as the difference between the water level and the crest of the overflow.
- 2.40 Cut-off drains must be provided around the WWTW to prevent storm-water ingress into the surrounding of the works. These drains shall be designed to contain the maximum runoff, which could be expected over a period of 24 hours with a frequency of once in every twenty (20) years.

Restrictions on Access

- 2.41 Strict access procedures must be developed and followed in order to control access to the property. Access to the facility/ies must be limited to authorised persons and animals.
- 2.42 Notices prohibiting unauthorised persons from entering the areas as well as internationally acceptable signs indicating the risks involved in case of an unauthorised entry must be displayed along the boundary fence of these areas.

Pipelines

- 2.43 Pipelines used for the conveyance of effluent must be painted in a conspicuous colour or manufactured of a coloured material distinctly different from the colour of the pipelines in which drinking water is flowing to avoid the possibility of any cross-connections of different pipelines.
- 2.44 All stop-valves and taps on the pipelines conveying water containing waste must be of a type that can be opened and closed by means of a loose wrench. This wrench must be in the safekeeping of a responsible member of the staff to prevent unauthorised use thereof.
- 2.45 Pollution caused by spills from the pipelines used for conveyance of effluent must be prevented.
- 2.46 The pipelines containing waste must withstand the 1:100 year flood where they cross a water resource and must not affect the 1:100 year flood or flow regime.
- 2.47 The licensee must have the full length of the collector and the outfall sewer lines inspected on an annual basis. The results of the inspection must be reported in writing within one month of finalisation to the Provincial Head/CEO.
- 2.48 Notices manufactured of a durable weather-proof material warning against the use of water containing waste for drinking and washing purposes must be displayed at prominent places



where the waste is being reused and at all taps. Such notices shall be worded in the official languages applicable in the area.

Pump Stations

- 2.49 The licensee must comply with the approved scheduled monitoring and maintenance plan for all wastewater pump stations and manholes under its control. Evidence of the implementation of the plan must be made available upon request.
- 2.50 All pump stations must be operated in such a manner that they have an emergency containment facility with sufficient capacity to ensure untreated effluent retention up to a 24-hour period.

Operations

- 2.51 The licensee must classify the WWTW and register the process controllers on the Green Drop System or Integrated Regulatory Information System. The WWTW must be supervised and controlled by a suitably qualified and experienced employee of the licensee who must have under his/her control an adequate number of process controllers who have been registered in terms of regulation 2834 of 27 December 1985 or any update thereto; to ensure proper functioning of the works and processes at all times.
- 2.52 The licensee must develop and implement an Operation and Maintenance Manual including maintenance schedules and logbooks for recording maintenance work conducted on mechanical, electrical, instrumentation and civil within the wastewater treatment works including all pump stations. These must be available for site inspection by the Provincial Head/CEO or his/her representative upon request.

Auditing and Reporting

- 2.53 The licensee must conduct annual internal audits on compliance with the conditions of this licence. The first audit must be conducted within ninety (90) calendar days from the date of commencement of water use entitlement. A report on internal audits must be submitted to the Provincial Head/CEO within sixty (60) calendar days of the finalisation of the audits.
- 2.54 The licensee must appoint an independent external auditor to conduct biennial (every two (2) years) external audits on compliance with the conditions of this licence. The first audit must be conducted and finalised within one (1) year after commencement of a water use. A report on the audit must be submitted to the Provincial Head/CEO within sixty (60) calendar days of the finalisation of each audit.

Compensative Measures

- 2.55 The licensee must prevent adverse effects on other water users. All complaints must be recorded in complaints register and be investigated by a suitable qualified person, accredited by an institution/ registration body, appointed by the licensee, and if investigations prove that



the licensee has impaired the rights of other water users, the licensee must implement appropriate compensative measures as determined by the Minister.

Closure Plan

- 2.56 A closure plan of any of the water use activities must be submitted one (1) year before commencing with closure to the Provincial Head/CEO for written approval.



Provincial Head

APPENDIX II

Section 21(i) water use: Altering the bed, banks, course or characteristics of a watercourse/s

1. Section 21(i) activities

- 1.1 This licence authorises the Section 21(i) water use activities as set out in Table 3 and in the water use licence application reports submitted to the Department or the Regional Head (refer condition 1.2)

Table 3: Water Uses Authorised

Water use(s) activities	Purpose	Capacity/ Volume (m ³ , tonnes and/or m ³ /annum)/ dimension	Property Description	Co-ordinates
Section 21(i)				
Construction of Pump Station 4	Sewage pump station for conveyance of sewage to WWTW	52 L/s	Portion 0 of Erf 116	-34° 3' 9.8" S 22° 23' 29.24" E
Construction of New Rising Main	Rising main for conveyance of sewage to WWTW	52 L/s	Portion 0 of Farm Brakfontein 236	-34° 3' 9.79" S 22° 23' 30.21" E

- 1.2 The licensee must carry out and complete all the activities listed under condition 1.1 according to the following:
- 1.2.1 Specialist Aquatic Assessment: Construction of a New Sewage Pumpstation and Rising Main in Herolds Bay, Western Cape dated May 2024.
- 1.2.2 Design Report: Upgrading of Herold's Bay Sewer Pump Station No. 1 and Associated Rising Main dated December 2024.
- 1.3 No activity must take place within the extent of a watercourse/s, unless authorised by this licence.
- 1.4 No fundamental alterations of the work method statement, site plan/s and drawings are allowed, unless a modification is requested and granted by the responsible authority in writing; and



2. Further Requirements

2.1 For all the activities listed under condition 1.1, Table 3, "as-built" plans and engineering drawings prepared by a registered professional engineer, must be submitted to the responsible authority within six (6) months of completion of new activities. These plans and drawings must indicate the watercourse/s including wetland boundaries and layout and structure location/s of all infrastructure impeding and/or diverting flow of water in the watercourse/s as well as alternations to watercourse/s on the property/ies.

2.2 Structures, Construction Plant and Materials

2.2.1 Structures must withstand a 1:100 year flood.

2.2.2 Structures must be non-erosive, structurally stable and must not induce any flooding or safety hazard.

2.2.3 Structures must be inspected for a minimum of once a quarter for accumulation of debris, blockage, erosion of abutments and overflow areas - debris must be removed and damages must be repaired and reinforced within a reasonable time.

2.3 Water Quality

2.3.1 In-stream water quality must be analysed on a two-weekly basis during construction otherwise monthly at monitoring points both upstream and downstream of the activities for the following variables until pre-construction water quality levels have been reached;

2.3.1.1 pH;

2.3.1.2 Electrical conductivity (mS/M);

2.3.1.3 Suspended solids (mg/l);

2.3.1.4 Turbidity;

2.3.1.5 Total dissolved solids (mg/l)

2.3.2 Monitoring must be undertaken as set out in condition 3.

2.3.3 Activities must be scheduled to take place during the dry seasons when flows are lowest where reasonably possible.

2.3.4 The licensee must ensure that the quality of the water to downstream water users does not decrease because of the water use activities listed under condition 1.1.

2.4 Flow

2.4.1 The diversion activities must be conducted in a manner that does not negatively affect the yield of the water course where the activity will take place. The licensee must ensure that the

overall magnitude and frequency of flow in the watercourse/s does not decrease, other than for natural evaporative losses and authorised attenuation volumes.

2.4.2 Where flow in watercourse/s is permanent, the trench must be staged across part of the channel to maintain flows. Flows must not be stopped unless essential, if necessary to stop flows it must be for a minimal time only.

2.5 Riparian and Instream Habitat (Vegetation and Physical Structure)

2.5.1 Activities must start up-stream and proceed into a down-stream direction where feasible, so that the recovery processes can start immediately, without further disturbance from upstream works.

2.5.2 Operation and storage of equipment within the riparian habitat must only take place within the approved limits of disturbance indicated in the site plans and work method statements.

2.5.3 Activities must not occur in sensitive riffle habitats unless authorised by this licence.

2.5.4 Indigenous riparian vegetation, including dead trees, outside the limits of disturbance indicated in the site plans must not be removed from the area.

2.5.5 Alien and invader vegetation must not be allowed to further colonise the area, and all new alien vegetation recruitment must be sustainably eradicated or controlled.

2.5.6 Soils that have become compacted through the water use activities must be loosened to an appropriate depth to allow seed germination.

2.5.7 Stockpiling of removed soil and sand must be stored outside the extent of the watercourse/s, to prevent being washed into the watercourse/s and must be covered to prevent wind and rain erosion.

2.5.8 The use of machinery within the instream and riparian habitat will lead to compaction of soils and vegetation and must be restricted to demarcated areas only.

2.6 Directional Drilling

2.6.1 The licensee must submit an as-drilled report within three (3) months of completion of the drilling to the Provincial Head/CEO;

2.6.2 Drilling entry and exit locations must be located outside the following designated riparian corridors:

2.7 Biota

2.7.1 The licensee must allow movement of aquatic species, including migratory species where applicable.

2.7.2 Ensure implementation of all mitigation measures not to disturb the breeding, nesting and/or feeding habitats and natural movement patterns of aquatic biota.

2.8 Rehabilitation and Management

2.8.1 The licensee must implement the rehabilitation programme to restore the watercourse/s to environmentally acceptable and sustainable conditions after completion of the activities as outlined in the rehabilitation plan.

2.8.2 The rehabilitation must be implemented according to the approved Rehabilitation Plan.

2.8.3 A photographic record must be kept as follows and submitted with reports as set out in condition 3.

2.8.4 Dated photographs of all the sites to be impacted before construction commences.

2.8.5 Dated photographs of all the sites during construction on a monthly basis; and

2.8.6 Dated photographs of all the sites after completion of construction, seasonally.

2.8.7 All disturbed areas must be re-vegetated with indigenous plants in consultation with an indigenous plant expert, ensuring that during rehabilitation only indigenous shrubs, trees and grasses are used in restoring the biodiversity.

3. Monitoring and Reporting

3.1 The monitoring plan must be implemented and reporting done to the Provincial Head/CEO as stipulated under condition 3.2.

3.2 Six (6) monthly monitoring reports must be submitted to the Provincial Head/CEO for the duration of the construction phase and yearly thereafter or until otherwise agreed in writing with the Regional Head/CEO.

4. Construction and Operational Phase

4.1 At least two water quality monitoring points, one upstream and one downstream of the affected length of the watercourse/s.

4.2 A bio-monitoring programme (SASS) must be implemented along the affected length of the watercourse/s and must include a habitat assessment.

4.3 Exact positions of monitoring points must be indicated on the master layout plan (including their co-ordinates).

5. Site Specific Conditions

5.1 Areas where instream access is required must be confined to clearly demarcated areas to prevent unnecessary disturbance of instream habitat outside of these areas.

- 5.2 The watercourse should be inspected regularly (at least weekly) by an appropriately qualified Environmental Control Officer (ECO) for signs of disturbance, sedimentation and pollution during the construction phase. If signs of disturbance, sedimentation or pollution are noted, immediate action should be taken to remedy the situation and, if necessary, a freshwater ecologist should be consulted for advice on the most suitable remediation measures.
- 5.3 Areas where instream access is required must be confined to clearly demarcated areas to prevent unnecessary disturbance of instream habitat outside of these areas.
- 5.4 No machinery or vehicles with leaks are permitted to work in the watercourse.
- 5.5 Refuelling and fuel storage areas, and areas used for the servicing or parking of vehicles and machinery, must be located on impervious bases and should have bunds around them to contain any possible spills.
- 5.6 Works must be scheduled for the dry season to reduce the likelihood of flooding and or stormwater flows through construction areas.
- 5.7 No construction materials to be stockpiled in the watercourse.
- 5.8 Surface runoff from the originating from the road surface upslope of the construction area, must be diverted (by means of a barrier – e.g. sandbags) to avoid stormwater flows through any excavated section of the road surface.
- 5.9 Any diversion of surface runoff must not cause erosion to the bed and banks of the watercourse.
- 5.10 Pump stations will need to be placed within a suitably lined, impermeable concrete bunded area with the capacity to hold untreated wastewater in an emergency and provide for sufficient time for maintenance staff to address any faults/ problems. This is to limit the risk of untreated sewage overflowing in the event of any leakage or accidental spillage at the pump station.
- 5.11 Measures to contain sewage spillages and/overflows must be put in place to ensure that no sewage enters the watercourses. Under no circumstances should raw sewage be discharged into the stream.

END OF LICENCE

