

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

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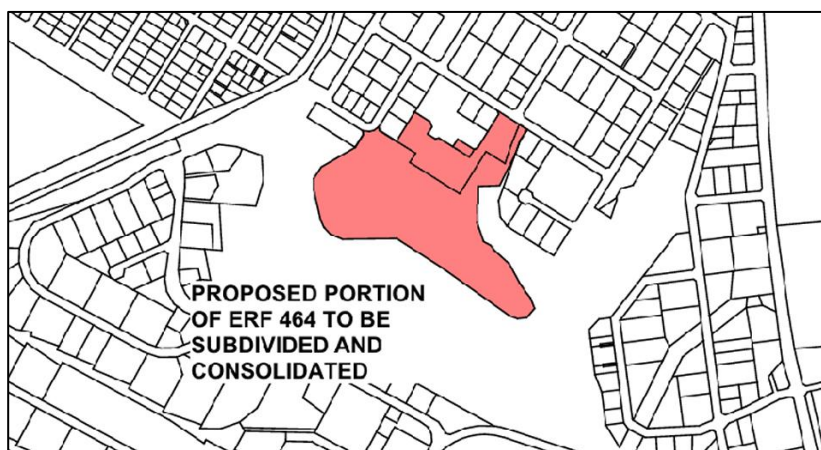
GEORGE MUNICIPALITY WATER DEPOT

on

A portion of Erf 464, George Municipality

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended)
& 2014 Environmental Impact Regulations (as amended)



Prepared for Applicant: George Municipality

Date: 24 April 2026

Appointed EAP: Ms Louise-Mari van Zyl (EAPASA Reg: 2019/1444)

Assisting Candidate EAP: Mr Francois Byleveld (EAPASA Reg: 2023/6770)

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Report Reference: GEO860/06

Department Reference: 14/2/4/1/D2/20/0028/24

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Appointed EAP: **Ms Louise-Mari van Zyl** (MA Geography & Environmental Science [US]; EAPSA Registration Number **2019/1444**). Ms van Zyl has over twenty years' experience as an environmental practitioner.

Assisted By - Candidate EAP: **Mr Francois Byleveld** (MSc Geology [University of the Free State] (Candidate EAPASA Registration Number: **2023/6770**) in assistance to the Appointed EAP.

PURPOSE OF THIS REPORT

Stakeholder Review and Comment

APPLICANT

George Municipality

CAPE EAPRAC REFERENCE

GEO860/06

DEPARTMENT REFERENCE

14/2/4/1/D2/20/0028/24

SUBMISSION DATE

24 April 2026

TO BE CITED AS

Cape EAPrac, 2026. Environmental Management Programme – Revision 1 George Municipality Water Depot on a Portion of Erf 464 located in the George Local Municipality, Garden Route District, Western Cape Province. Report Reference: GEO860/06

DOCUMENT REVISION

Draft EMPr – Revision 1

April 2026

ENVIRONMENTAL MANAGEMENT PROGRAMME REQUIREMENTS

Appendix 4 of Regulation 982 of the 2014 EIA Regulations contains the required contents of an Environmental Management Programme (EMPr). The checklist below serves as a summary of how these requirements were incorporated into this EMPr.

Table 1: Checklist in terms of Appendix 4 of Regulation 982 of 2014 EIA Regulations.

Requirement	Description
Details of – (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae.	Appointed EAP: Ms Louise-Mari van Zyl (Primary EAP 2019/1444) Assisting Candidate EAP: Mr Francois Byleveld (Candidate EAP 2023/6770) Appendix 2.
A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	<u>Section 1</u>
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 must be avoided, including buffers.	Appendix 1
A description of the impact management objectives, 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 the phases of the development including – (i) Planning and design; (ii) Pre-construction activities; (iii) Construction activities; (iv) Rehabilitation of the environment after construction and in the case of closure activity, closure; and (v) Where relevant, operation activities.	<u>Section 6 - 9</u>
A description of the proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated above 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; and (iii) Comply with any applicable provisions of the Act regarding closure in the case of a closure activity.	<u>Section 6 - 9</u>
The method of monitoring the implementation of the impact management actions contemplated above.	<u>Section 4 & 5</u>
The frequency of monitoring the implementation of the impact management actions contemplated above.	<u>Section 4 & 5</u>
An indication of the persons who will be responsible for the implementation of the impact management actions.	<u>Section 3 - 9</u>
The time periods within which the impact management actions must be implemented.	Not Applicable
The mechanism for monitoring compliance with the impact management actions.	<u>Section 3 - 9</u>
A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	<u>Section 5 - 9</u>
An environmental awareness plan describing the manner in which –	<u>Section 6</u>

Requirement	Description
(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.	
Any specific information that may be required by the competent authority.	Not Applicable.

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME

for

GEORGE MUNICIPALITY WATER DEPOT S24G

on

A PORTION OF ERF 464, GEORGE MUNICIPALITY

In terms of the

National Environmental Management Act (Act No. 107 of 1998, as amended) & 2014 Environmental Impact Regulations (as amended)

Submitted for:

Stakeholder Review & Comment

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ORDER OF REPORT

Draft Environmental Management Programme – Main Report

Appendix 1	:	Site Development Plan
Appendix 2	:	EAP Company Profile
Appendix 3	:	Environmental Authorisation (to be attached once issued)

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1. INTRODUCTION

Cape Environmental Assessment Practitioners (Cape EAPrac) was appointed by the Applicant, **George Municipality**, who is following a voluntary Section 24G rectification process to investigate and assess 'listed activities' commenced with without prior Environmental Authorisation, in terms of the National Environmental Management Act (Act No. 107 of 1998) ("NEMA").

This document provides part of a series of documents that is being circulated for public and stakeholder input as part of the Section 24G application, as well as to the competent authority, the provincial Department of Environmental Affairs & Development Planning (DEA&DP).

A detailed description of the proposed project and a description of the affected environment are provided in the **S24G Checklist and Application Form** (Cape EAPrac, 202) which should be referred to where necessary.

1.1 APPROACH TO THE EMPr

This EMPr addresses the environmental management of the four key phases of the project, namely:

- Design and pre-construction phase;
- Construction phase;
- Operational / Maintenance phase; and
- Closure and decommissioning phase.

1.1.1 Design and Pre-Construction Phase

The pre-construction phase refers to the design phase of the project. This will ensure that any requirements and best practise mechanisms are built into the planning / design phase to be developed in the construction and operational phase. In terms of this application, the pre-construction can be considered as the site selection as well as engineering designs and mitigations.

1.1.2 Construction Phase

The construction phase refers to the actual construction of the development on the property and includes all earthworks and installation of bulk services (water, sewerage, roads, stormwater, electricity etc.). In terms of this application, this phase relates to the construction of the civil engineering services and infrastructure.

1.1.3 Operational / Maintenance Phase

The Operation Phase of this project relates to the ongoing management and maintenance required to ensure sustainable development. In terms of this application, this refers to all activities that are undertaken once construction is completed.

All future maintenance of the structures (i.e., after flooding, erosion etc) must be implemented in accordance with this EMPr (procedures for construction activities to be followed).

The Applicant must ensure that the Operational Phase maintains the underpinning principles 'Duty-of-Care-to-the-Environment' and ideals of sustainable development.

Maintenance of the structures, once installed, must be undertaken in accordance with this management plan.

1.1.4 Closure and Decommissioning Phase

Decommissioning refers to the process of removing the operating assets of any development after completion of the operating life cycle.

The decommissioning phase is not foreseen in the near future at the moment.

In the event of decommissioning, the main aim would be to return the land to its original, pre-construction condition. Should the unlikely need for decommissioning arise (i.e., the land needs to be used for other purposes), the decommissioning procedures will be undertaken in line with the EMPr and any legislation or guidelines relevant at the time and the site will be rehabilitated and returned to its pre-construction state and the holder of the EA must consult with the Competent Authority to ensure compliance with legislation applicable at the time. Possible decommissioning activities will include removing the infrastructure, and mechanisms to promote the re-growth of natural vegetation.

1.2 PURPOSE OF THE EMPR

The key purpose of this EMPr is to ensure that the remedial and mitigation requirements identified during the Environmental Assessment and decision making processes are implemented during the lifespan of the project (design to decommissioning). The EMPr is thus a management tool used to minimise and mitigate the potential environmental impacts, while maximising the benefits.

This EMPr is aimed to ensure that the environmental impacts and management of the various phases, of the proposed activity on the receiving environment are managed, mitigated and kept to a minimum (i.e., the **outcome** of implementing the EMPr). The EMPr must provide easily understood and clearly defined **actions** that must be implemented during each phase of the proposed activity. The EMPr is a dynamic document that is flexible and responsive to new and changing circumstances.

This EMPr contains **management requirements** and **recommendations** made by *Cape EAPrac*, the appointed specialist as well as in terms of the regulations contained in the **National Environmental Management Act** (NEMA, Act 107 of 1998) and National Water Act (NWA, 1998) and environmental best practice principles.

The document is binding on the Applicant (George Municipality), all contractors and sub-contractors to the site and must be updated to include any conditions of the **Environmental Authorisation** (EA) as issued.

The EMPr must be included as part of any documents / agreements, as well as contractual documents between the Applicant and any contractors.

Copies of this EMPr must be kept on site and all **senior personnel** are expected to familiarise themselves with the content of this EMPr.

1.3 OBJECTIVE OF THE EMPR

The objective of this EMPr is to prescribe project specific and generally accepted impact management outcomes and impact management actions associated with the development project and associated infrastructure.

To ensure compliance with the general duty of care and recommendations of participating specialists, the following overarching outcomes are applicable:

- To ensure the least possible damage to:

- Existing infrastructure on and adjacent to the site;
- Indigenous flora and fauna (biophysical environment); and
- Water quality of surface and groundwater surrounding the site. Particularly the water quality exiting the site.
- To ensure that construction and development are undertaken with due consideration to all environmental factors; and
- Where such damage occurs, provision is made for re-instatement and rehabilitation.

1.4 STATUS OF THE EMPR

It is of utmost importance that this EMPr be read in conjunction with any legally obtained authorisations such as an Environmental Authorisation (EA). This EMPr is viewed as a dynamic document that must be reviewed and updated on a continual basis.

The EMPr is valid for the duration of the project (both for construction as well as future maintenance) with each applicable phase corresponding to the identified requirements.

1.5 SCOPE OF THE EMPR

The scope of this EMPr applies to all construction, operation and decommissioning requirements for the project. This EMPr applies to all listed and specified activities authorised in the EA and amendments thereto that are necessary for the realisation of this project (once authorised, the EA must be appended to this EMPr).

1.6 EMPR APPROVALS AND REVISIONS

This EMPr, once approved, is a legally binding document and contravention with this document constitutes a contravention with the Environmental Authorisation.

The supplementary plans annexed to this EMPr must be read in conjunction with this EMPr.

The EMPr may however require amendment at certain stages through the lifespan of the project. The incidences which may require the amendment of this document include:

- Changes in environmental legislation;
- Results of post-construction monitoring and audit;
- Per instruction from the competent authority; and
- Changes in technology and best practice principles.

It must be noted that any amendments to the EMPr actions that do not change the impact management outcomes or objectives may be immediately affected by the holder of the EA and submitted in the next environmental audit report submitted in terms of the regulations. Any amendments to the impact management outcomes need to be formally approved by the competent authority before they can be effected.

1.7 CONTRACTUAL OBLIGATIONS

This EMPr must be included in ALL tender and contract documentation for all phases of the Development. It must be noted that this EMPr is relevant and binding not only on the activities associated with the construction of the PV project, but also for all associated infrastructure authorised as part of the EA and any amendments thereto (A copy of the EA must be attached to this EMPr; Any

amendments to the EA that occur during the lifecycle of the project must also be attached to this EMPr).

1.8 PROPOSED ACTIVITY

George Municipality is following a voluntary Section 24G rectification process to investigate and assess 'listed activities' commenced with without prior Environmental Authorisation, in terms of the National Environmental Management Act (Act No. 107 of 1998) ("NEMA").

The George Municipality is in the process of improving the existing George Municipality Civil Engineering Services Depot on a portion of Erf 464. The improvements of the existing services depot is aimed to cater for future development needs and to ensure effective essential service delivery within the George Municipal District.

Existing buildings on the subject portion amounts to a total coverage of 6067m² with an additional 1809m² currently under construction. The buildings that are under construction consist of an office building (375m²) and a water depot (1434m²).

2. LEGISLATIVE REQUIREMENTS

The project Applicant is required to comply with all necessary legislation and policies applicable to development and management of the development. These include but are not limited to:

2.1 NATIONAL ENVIRONMENTAL MANAGEMENT ACT (NEMA, ACT 107 OF 1998)

The National Environmental Management Act (**NEMA**, Act 107 of 1998, as amended), makes provision for the identification and assessment of **activities** that are potentially detrimental to the environment and which require authorisation from the competent authority (in this case, the provincial Department of Environmental Affairs & Development Planning (DEA&DP)) based on the findings of an Environmental Impact Assessment (EIA).

NEMA embraces the notion of sustainable development as contained in the Constitution of South Africa (Act 106 of 1996) in that everyone has the right:

- to an environment that is not harmful to their health or wellbeing; and
- to have the environment protected for the benefit of present and future generations through reasonable legislative and other measures.

NEMA aims to provide for cooperative environmental governance by establishing principles for decision-making on all matters relating to the environment and by means of Environmental Implementation Plans (EIP) and Environmental Management Plans/Programmes (EMPr), of which this EMPr is one.

Principles contained in Section 2 of the NEMA, amongst other things, prescribe that environmental management must:

- In order of priority aim to: avoid, minimise or remedy disturbance of ecosystems and loss of biodiversity;
- Avoid degradation of the environment and avoid jeopardising ecosystem integrity;
- Pursue the best practicable environmental option by means of integrated environmental management;

- Protect the environment as the people's common heritage;
- Control and minimise environmental damage; and
- Pay specific attention to management and planning procedures pertaining to sensitive, vulnerable, highly dynamic or stressed ecosystems.

It is incumbent upon the landowner, to ensure that the abovementioned principles, entrenched in this EMPr are upheld and complied with.

2.2 ENVIRONMENT CONSERVATION ACT, 1989 (ECA)

The EIA regulations contained in the Environmental Conservation Act (ECA) have been replaced by NEMA. However, property owners must comply with the draft regulations pertaining to noise as published in the province of Western Cape Provincial Extraordinary Gazette as provision made in section 25 of the ECA), as well as Section 24 of the ECA regarding waste management and Section 20 of the ECA dealing with waste management under Part IV, Control of Environmental Pollution.

2.3 NATIONAL ENVIRONMENTAL MANAGEMENT: BIODIVERSITY ACT (NEM:BA, ACT 10 OF 2004)

This Act controls the management and conservation of South African biodiversity within the framework of NEMA. Amongst others, it deals with the protection of species and ecosystems that warrant national protection, as well as the sustainable use of indigenous biological resources. Sections 52 & 53 of this Act specifically make provision for the protection of critically endangered, endangered, vulnerable and protected ecosystems that have undergone, or have a risk of undergoing, significant degradation of ecological structure, function or composition as a result of human intervention through threatening processes.

The National List of Threatened Ecosystems (Notice 1477 of 2009, Government Gazette No. 32689, 6 November 2009) was gazetted in 2014. The list of threatened terrestrial ecosystems supersedes the information regarding terrestrial ecosystem status in the National Spatial Biodiversity Assessment (NSBA) 2004 & 2011.

A Revised National List Of Ecosystems That Are Threatened And In Need Of Protection (Notice 2747 of 2022, Government Gazette No. 47526, 18 November 2022) was published in 2022 (known as the Red List of Terrestrial Ecosystems 2021).

In addition to the management of ecosystems, this Act makes provision for the management and control of alien invasive vegetation. This includes the listing of invasive species that are a threat to natural ecosystems. These species must be strictly controlled and / or eradicated.

2.4 NATIONAL ENVIRONMENTAL MANAGEMENT WASTE ACT (NEM:WA, ACT 59 OF 2008)

The National Environmental Management Waste Act (NEM:WA, Act 59 of 2008) is aimed:

- To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development;
- To provide for institutional arrangements and planning matters;

- To provide for national norms and standards for regulating the management of waste by all spheres of government;
- To provide for specific waste management measures; to provide for the licensing and control of waste management activities;
- To provide for the remediation of contaminated land; to provide for the national waste information system;
- To provide for compliance and enforcement; and
- To provide for matters connected therewith.

It is advisable that an integrated waste management system be adopted, which includes waste minimisation, waste recycling and the proper storage and disposal of waste, which does not impact on environmental and human health.

2.5 NATIONAL WATER ACT (NWA, ACT 36 OF 1998)

The National Water Act (NWA) gives effect to the constitutional right of access to water. The Act's overall purpose is to ensure that South Africa's water resources are protected, used and managed in ways which take into account a number of factors, including inter-generational equity, equitable access, redressing the results of past racial and gender discrimination, promoting sustainable and beneficial use, facilitating social and economic development, and providing for water quality and environmental protection.

The NWA makes persons who own, control, occupy or use land responsible for taking measures to prevent pollution of water resources, and empowers Government authorities to take measures to enforce this obligation.

2.6 NATIONAL FOREST ACT (NFA, ACT 84 OF 1998)

The NFA provides for the **protection of forests**, as well as **specific tree species**, quoting directly from the Act: "no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree or any forest product derived from a protected tree, except under a licence or exemption granted by the Minister to an applicant and subject to such period and conditions as may be stipulated".

The Department of Forestry, Fisheries and the Environment (DFFE) is responsible for the implementation and enforcement of the NFA, which includes **prohibition of destruction of indigenous trees in any natural forest without a licence** (Section 7 of the NFA), as well as the prohibition of the cutting, disturbing, damaging destroying or removing **protected trees** without a licence (Section 15 of the NFA).

2.7 NATIONAL VELD AND FOREST FIRE ACT (ACT 101 OF 1998)

The purpose of the National Veld and Forest Fire Act is to **prevent and combat veld, forest and mountain fires** throughout the RSA and to provide institutions, methods and practices for achieving this purpose. Institutions include the formations of such bodies as **Fire Protection Associations** (FPA's) and **Working on Fire**. The Act provides the guidelines and constitution for the implementation of these institutions as well as their functions and requirements.

2.8 NATIONAL HERITAGE RESOURCES ACT (ACT 25 OF 1999)

The purpose of the National Heritage Resources Act is to:

- Introduce an integrated and interactive system for the management of the national heritage resources;
- Promote good government at all levels,
- Empower civil society to nurture and conserve their heritage resources so that they may be bequeathed to future generations;
- To lay down general principles for governing heritage resources management throughout South Africa;
- To introduce an integrated system for the identification, assessment and management of the heritage resources of South Africa;
- To establish the South African Heritage Resources Agency together with its Council to co-ordinate and promote the management of heritage resources at national level;
- To set norms and maintain essential national standards for the management of heritage resources in South Africa and to protect heritage resources of national significance;
- To control the export of nationally significant heritage objects and the import into South Africa of cultural property illegally exported from foreign countries;
- To enable the provinces to establish heritage authorities which must adopt powers to protect and manage certain categories of heritage resources;
- To provide for the protection and management of conservation-worthy places and areas by local authorities; and
- To provide for matters connected therewith.

2.9 OCCUPATIONAL HEALTH AND SAFETY ACT (ACT 85 OF 1993)

The Act provides for the health and safety of persons at work and for the health and safety of persons in connection with the use of plant and machinery as well the protection of persons other than persons at work against hazards to health and safety arising out of or in connection with the activities of persons at work.

In terms of this Act, a Health and Safety Officer (HSO) and Protocol must be implemented on any sites. The appointment of a Health and Safety Officer is the responsibility of the proponent and contractor and is included in this report to ensure due diligence on construction sites. It is the responsibility of the appointed HSO to conduct any required audits and as such only the appointment of an HSO will be auditable in terms of this document.

3. ORGANISATIONAL STRUCTURE AND RESPONSIBILITIES

In order to ensure effective implementation of the EMP_r, it is necessary to identify and define the organisational structure for the implementation of this document. The proposed organisational structure during construction is as follows:

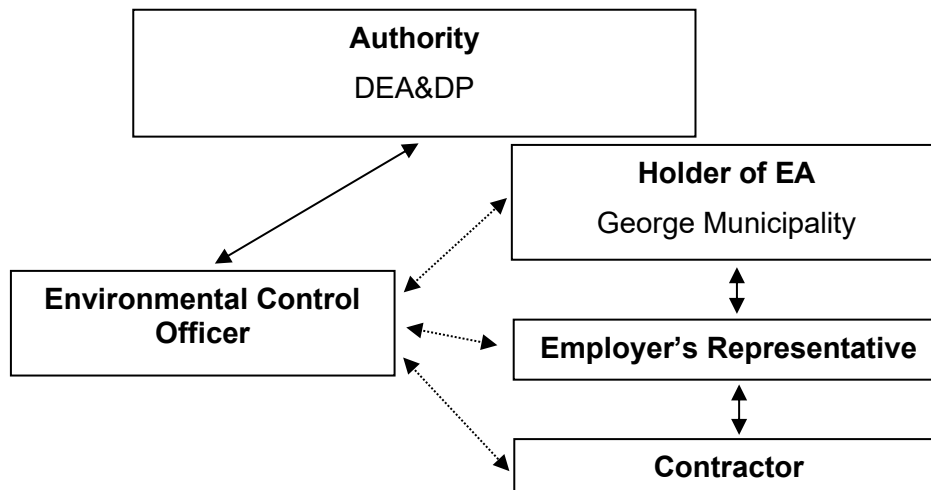


Table 2: Guide to toles and responsibilities for implementation of an EMP_r.

Responsible Person(s)	Role and Responsibilities
Holder of the EA	<u>Role</u> The holder of the EA / property owner is ultimately accountable for ensuring compliance with the EMP_r and any conditions of approval from the competent authority (as well as any other approval / licence / permit). An environmental control officer (ECO) must be contracted by the Project Developer to objectively monitor the implementation of the EMP_r according to relevant environmental legislation, and the conditions of the EA. The holder of the EA is further responsible for providing and giving mandate to enable the ECO to perform responsibilities and must ensure that the ECO is integrated as part of the project team while remaining independent. <u>Responsibilities</u> • Be conversant with, and ensure that all Contractors, Sub-contractors, Engineers (and future senior site managers / personnel) are made aware of, and understand the conditions and recommendations, contained in the approval from the competent authority as well as the EMP_r; • Ensure that all tender documentation include reference to, and the need for compliance with, the EA and EMP_r as well as any other legally binding documentation, which include and are not limited to Approval/s. • Ensure that all stipulations within the EMP_r are communicated and adhered to by the contractors / sub-contractors; • Issuing of site instructions to the Contractor for corrective actions required;

	• Monitor the implementation of the EMPr throughout the project by means of site inspections and meetings. Overall management of the project and EMPr implementation; and • Ensure that periodic environmental audits are undertaken on the project implementation. • Ensure that all Contractors, Sub-contractors and Engineers (during construction activities) are made aware of their 'Duty of Care to the Environment' and that any damage or degradation of the natural environment within the bounds of the property will not be tolerated and must be dealt with / remedied at the cost of the perpetrator; and • Take remedial and/or disciplinary action in circumstances where persons are found to be in contravention of the abovementioned legally binding documentation.
Environmental Control Officer (ECO)	<u>Role</u> The Holder of the EA must appoint an ECO. The ECO must be independent of the holder of the EA and the Contractor and have appropriate training and experience in the implementation of environmental management specifications. The primary role of the ECO is to act as an independent quality controller and monitoring agent regarding all environmental concerns and associated environmental impacts. In this respect, the ECO is to conduct site inspections, attend regular site meetings, pre-empt problems and suggest mitigation and be available to advise on incidental issues that arise. The ECO is also required to prepare internal compliance audits (in the form of the monthly Environmental Control Reports (ECR)). The ECO provides feedback to the Holder of the EA and the competent authority regarding all environmental matters. The Contractor and the holder of the EA are answerable to the Environmental Control Officer for non-compliance with the specifications as set out in the EA and EMPr. The ECO provides feedback to the holder of the EA, who in turn reports back to the Contractor, as required. Issues of non-compliance raised by the ECO must be taken up by the holder of the EA and resolved with the Contractor as per the conditions of their contract. Decisions regarding environmental procedures, specifications and requirements which have a cost implication (i.e., those that are deemed to be a variation, not allowed for in the EMPr specification) must be endorsed by the Holder of the EA. <u>Responsibilities</u> • Be aware of the findings and conclusions of all EA conditions related to the development; • Be familiar with the recommendations and mitigation measures of this EMPr; • Be conversant with relevant environmental legislation, policies and procedures, and ensure compliance with them; • Provide environmental induction training to Contractors on site prior to construction activities commencing; • Undertake regular and comprehensive site inspections / audits of the construction site according to the EMPr and applicable licenses / permits in order to monitor compliance as required;

	• Compilation and administration of Environmental Control Reports to ensure that the environmental management measures are implemented and are effective as well as highlighting any non-compliance issues as well as satisfactory or exceptional compliance with the EMPr; • Monitoring the performance of the Contractors and ensuring compliance with the EMPr and associated Method Statements; • In consultation with the holder of the EA order the removal of person(s) and/or equipment which are in contravention of the specifications of the EMPr and/or environmental licenses / permits; • Liaison between the Holder of the EA, Contractor, authorities and other lead stakeholders on all environmental concerns; • Checking the EPC's public complaints register in which all complaints are recorded, as well as action taken; • Assisting in the resolution of conflicts; • In case of non-compliances, the ECO must first communicate this to the Senior Site personal, who has the power to ensure this matter is addressed. Should no action or insufficient action be taken, the ECO may report this matter to the authorities as non-compliance; • Maintenance, update and review of the EMPr; - Communication of all modifications to the EMPr to the relevant stakeholders; • Review and approval of contractors method statements; • Compilation of the Environmental Completion Statement after completion of construction (or as otherwise defined in the Environmental Authorisation), where necessary. • Facilitating consultation with relevant environmental authorities (e.g. DEA&DP, DFFE, CapeNature or Municipality). • Facilitating the application for any required amendment of the EA/EMPr. • Provide guidance and interpretation of the EA and EMPr where necessary. • The duration and frequency of these visits may be increased or decreased at the discretion of the ECO. • Attendance of site meetings if required. • Maintain a record of environmental incidents (e.g. spills, impacts, legal transgressions etc.) as well as corrective and preventative measures taken. This information must also be included in the ECR; and • Maintain a public complaints register in which all complaints and action taken must be recorded. This information must also be included in the ECR.
Engineers and Contractors	<u>Role</u> The Contractor or any relevant subcontractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract are in line with the EA, EMPr and that Method Statements are implemented as described. External contractors must ensure compliance with this EA and EMPr while performing the onsite activities as per their contract with the Project Developer. The contractors are required, where specified, to provide Method Statements setting out in detail how the impact management actions contained in the EMPr will be implemented during development. <u>Responsibilities</u>

	• Be conversant and compliant with the EA, the EMPr, and any relevant License, Permit or any legally binding documentation relevant to their operations; • Employ a suitably qualified person to monitor and report to the Project Developer's appointed person on the daily activities on-site during the construction period; • Ensure that safe, environmentally acceptable working methods and practices are implemented, and that equipment is properly operated and maintained, to facilitate proper access and enable any operation to be carried out safely; • Attend on site meeting(s) prior to the commencement of activities to confirm the procedure and designated activity zones; • Ensure that contractors' staff repair, at their own cost, any environmental damage as a result of a contravention of the specifications contained in EMPr, to the satisfaction of the ECO.
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4. MONITORING, MAINTENANCE & VALIDITY OF EMPR

Monitoring is an important tool in determining the effectiveness of management actions by measuring changes in the environment. These could be in the form of fixed-point photography where an area is photographed on a regular/seasonal basis to ascertain changes, monitoring of a particular aspect such as landscape integrity parameters, recordings of animal movement from fixed point etc. The most important aspect of any monitoring programme is **consistency and continuity**. This will ensure a level of scientific accuracy to determine baselines/thresholds and measure changes/deviations, which then drive management reactions.

Any required monitoring reports must be made available to the competent authority as required.

4.1 ECO SITE VISIT FREQUENCY

The following site frequency for ECO site visits has been determined:

- Bi-weekly during all bulk earthwork and civil work activities.
- Monthly during all top structure activities.
- Maintenance activities must be monitored on an ad hoc basis depending on the type of maintenance.

Ad hoc site visits may be undertaken in the event of any incidents or specific requests from the project holder of the EA or project team. The duration and frequency of these visits may be increased or decreased at the discretion of the ECO.

4.2 ENVIRONMENTAL INDUCTION & TRAINING

The holder of the EA in consultation with the Contractor shall ensure that adequate environmental awareness training of senior site personnel takes place and that all construction workers receive an induction presentation on the importance and implications of the EA and EMPr. The presentation shall be conducted, as far as is possible, in the employees' language of choice. The Contractor must provide a translator from their staff for the purpose of translating, if this is deemed necessary.

As a minimum, training must include:

- Explanation of the importance of complying with the EA and EMPr and the employees accountability.
- Discussion of the potential environmental impacts of construction activities.
- Employees' roles and responsibilities, including emergency preparedness.
- Explanation of the mitigation measures that must be implemented when carrying out their activities.
- Explanation of the specifics of this EMPr and its specification ("No-Go" areas, etc.).
- Explanation of the management structure of individuals responsible for matters pertaining to the EMPr.

Where staff turnover is high and with additional appointment of sub-contractors, it may be necessary to undertake additional induction training sessions. The Contractor must keep records of all environmental training sessions, including names, dates and the information presented.

4.3 ENVIRONMENTAL REPORTING AND EXTERNAL AUDITING

Internal environmental audits of the activity and implementation of the EMPr must be undertaken in the form of the monthly Environmental Control Reports. The findings and outcomes must be included in the EMPr file and submitted to the competent authority on a monthly basis.

At a minimum the monthly Environmental Control Report is to cover the following:

- Monthly Environmental Checklists;
- Deviations and non-compliances with the checklists;
- Non-compliances issued;
- Completed and reported corrective actions;
- Environmental Monitoring;
- General environmental findings and actions; and
- Minutes of the Environmental Site Meetings¹.

In addition to the internal environmental audit (which takes place as part of the monthly environmental control report), an external audit must be undertaken one (1) year after construction concluded. This external audit cannot be undertaken by the ECO and must be undertaken by an external audit consultant in compliance with Appendix 7 of the 2014 EIA regulations. External Audit Report must be submitted to all registered Interested & Affected Parties within 7 days of submission to the competent authority.

The table below provides a summary of the timeframes for the ECO site inspections as well as various Environmental Control and Audit Reports.

¹ Or minutes of general site meetings, should environmental actions form part of the site meetings.

Table 3: Monitoring timeframe summary.

MONITORING TIMEFRAMES		
Type	Frequency	Criteria
ECO Site Visits	As per section 4.1.	Compliance with the EA & EMPr
Environmental Control Report	Monthly	Compliance with the EA & EMPr
Environmental Completion Statement	3-month post construction	Compliance with the EA & EMPr
Auditing	One year post construction	Compliance with the EA & EMPr
Future Audits	Competent Authority to confirm	Compliance with the EA & EMPr

Appendix 7 of Regulation 326 of the 2014 EIA Regulations, as amended contains the required contents of an Environmental Audit Report. The checklist below serves as a summary of how these objectives & requirements were incorporated into this Audit Report:

Table 4: Environmental Audit Requirements.

CONTENTS OF ENVIRONMENTAL AUDIT REPORT
(a) details of the – (i) Independent person who prepared the environmental audit report; and (ii) Expertise of the independent person that compiled the environmental audit report.
(b) a declaration that the independent auditor is independent in a form as may be specified by the competent authority.
(c) an indication of the scope of, and the purpose for which, the environmental audit report was prepared.
(d) a description of the methodology adopted in preparing the environmental audit report.
(e) an indication of the ability of the EMPr, and the closure plan in the case of a closure activity to – (i) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity on an ongoing basis; (ii) Sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the closure of the facility in the case of a closure activity; and (iii) Ensure compliance with the provisions of environmental authorisation, EMPr, and the closure plan in the case of closure activity.
(f) a description of any assumptions made, and any uncertainties or gaps in knowledge.
(g) a description of any consultation process that was undertaken during the course of carrying out the environmental audit report.
(h) a summary and copies of any comments that were received during any consultation process.
(I) any other information requested by the competent authority.

5. DOCUMENT CONTROL, REPORTING AND COMPLIANCE

To ensure accountability and effective implementation of the EMPr, a number of reporting systems⁸, documentation controls and compliance mechanisms must be in place for all project infrastructure as a minimum requirement.

5.1 DOCUMENT CONTROL AND FILING

The holder of the EA is solely responsible for the upkeep and management of the official EMPr file. As a minimum, all documentation detailed below will be stored in the EMPr file. A hard copy of all documentation shall be filed, while an electronic copy may be kept where relevant. A duplicate file will be maintained by the ECO. The EMPr file must be on site and available at all times on request by the Competent Authority or other relevant authorities. The EMPr file will form part of any environmental audits undertaken as prescribed in the EIA Regulations.

5.2 DOCUMENTATION TO BE AVAILABLE

At the commencement of the project the following preliminary list of documents shall be placed in the EMPr file and be accessible at all times:

- Full copy of the signed EA from the Competent Authority in terms of NEMA, granting approval for the development;
- Any Amendments of the EA from the competent Authority;
- Copy of the EMPr as well as any amendments thereof;
- All method statements prepared by the Contractor and submitted to the ECO for approval;
- All monthly ECO reports prepared by the ECO;
- Minutes and attendance register of environmental site meetings²;
- Attendance registers of all environmental inductions;
- An up-to-date environmental incident log;
- A copy of all instructions or directives issued;
- A copy of all corrective actions signed off. The corrective actions must be filed in such a way that a clear reference is made to the non-compliance record; and
- Complaints register.

5.3 MONTHLY ENVIRONMENTAL CONTROL REPORT

The ECO is responsible for compilation of the monthly ECO Report. The monthly Environmental Control Reports must be submitted to the following parties:

- The Competent Authority;
- The holder of the EA;
- The Contractor; and
- All attendees of Environmental Site Meetings.

Copies of all completed Environmental Control reports must be attached as Annexures to the Environmental Audit Report.

² The Environmental Site Meeting must form part of the project team meetings that take place on site.

5.4 ENVIRONMENTAL SITE MEETINGS

Minutes of the environmental site meetings shall be kept. The minutes must include an attendance register and will be attached to the Monthly Environmental Control Report that is distributed to attendees. Each set of minutes must clearly record “Matters for Attention” that will be reviewed at the next meeting.

5.5 METHOD STATEMENTS

The method statements will be done in such detail that the ECO is able to assess whether the contractor's proposal is in accordance with the EMP. Commencement of any specific activity may not commence until such time as the method statement for that activity is approved by both the ECO and the project manager. The method statement must cover applicable details with regard to:

- Development procedures;
- Materials and equipment to be used;
- Getting the equipment to and from site;
- How the equipment/ material will be moved while on site;
- How and where material will be stored; •
- The containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur;
- Timing and location of activities;
- Compliance/ non-compliance with the EMP; and
- Any other information deemed necessary by the ECOs.

Unless indicated otherwise by the ECO, the Contractor shall provide the following method statements to the Project Manager no less than 14 calendar days prior to the commencement date of each activity:

- Site establishment – Site Camps, Lay-down or storage areas, satellite camps, infrastructure;
- Workshop or plant emergency maintenance;
- Handling, transport and storage of Hazardous Chemical Substances;
- Vegetation management – Protected species relocation, site clearing, alien vegetation;
- Access management – Roads, gates, crossings etc.;
- Fire plan;
- Waste management – transport, storage, segregation, classification, disposal (all waste streams);
- Social interaction – complaints management, compensation claims, access to properties etc.;
- Water – use (source, abstraction and disposal), access and all related information, crossings and mitigation;
- Emergency preparedness – Spills, training, other environmental emergencies;
- Dust and noise management methodologies;
- Fauna interaction and risk management; and
- Heritage, Archaeology and Palaeontology management.

It is the prerogative of the ECO to request additional method statements for any other aspect of the proposed development. The ECO shall monitor and ensure that the contractors perform in accordance with these method statements. A copy of all method statements must be kept on the EMP file and appended to the Monthly ECO report on the month following their approval.

5.6 ENVIRONMENTAL INCIDENT LOG

The ECO is required to maintain an up-to-date and current Environmental Incident Log (environmental diary). The Environmental Incident Log is a means to record all environmental incidents and/or all non-compliance events. An environmental incident is defined as:

- Any deviation from the listed impact management actions (listed in this EMPr) that is identified by the ECO (for example, a contractor's staff member littering or a drip tray that has not been emptied);
- Any environmental impact resulting from an action or activity by a contractor in contravention of the environmental stipulations and guidelines listed in the EMPr which as a single event would have a minor impact but which if cumulative and continuous would have a significant effect (for example no toilet paper available in the ablutions); and
- General environmental information such as road kills or injured wildlife.

The ECO must record all environmental incidents in the Environmental Incident Log. All incidents regardless of severity must be reported to the Contractor and holder of the EA. The Log is to be kept in the EMPr file (and appended to the monthly environmental control reports) and at a minimum the following will be recorded for each environmental incident:

- The date and time of the incident;
- Description of the incident;
- The name of the Contractor / subcontractor responsible;
- The significance of the incident must be noted;
- If the incident is listed as significant, a non-compliance notice must be issued, and recorded in the log;
- Remedial or corrective action taken to mitigate the incident; and
- Record of repeat minor offences by the same contractor or staff member.

5.7 NON-COMPLIANCE

In response to a significant incident, re-occurring incidents or unattended incidents, a non-compliance notice will be issued to the responsible contractor by the ECO via the holder of the EA or Project Manager. The non-compliance notice will be issued in writing; a copy filed in the EMPr file and will at a minimum include the following:

- Time and date of the non-compliance;
- Name of the contractor responsible;
- Nature and description of the non-compliance;
- Recommended / required corrective action; and
- Date by which the corrective action to be completed.

The contractors shall act immediately when a notice of non-compliance is received and correct whatever is the cause for the issuing of the notice. Complaints received regarding activities on the development site pertaining to the environment shall be recorded in a dedicated register and the response noted with the date and action taken. The ECO should be made aware of any complaints. Any non-compliance with the agreed procedures of the EMPr is a transgression of the various statutes and laws that define the manner by which the environment is managed.

Failure to redress the cause shall be reported by the ECO to the Competent Authority for them to deal with the transgression, as it deems fit, including the issue of penalties as detailed in Section 10 of this EMP. The contractor is deemed not to have complied with the EMP if, inter alia, there is a deviation from the environmental conditions, impact management outcomes and impact management actions as approved in the EMP.

5.8 CORRECTIVE ACTION RECORDS

For each non-compliance notice issued, a documented corrective action must be recorded. On receiving a non-compliance notice from the ECO, the contractor's environmental officer will ensure that the corrective actions required take place within the stipulated timeframe. On completion of the corrective action the contractor / contractors Environmental Officer is to issue a Corrective Action Report in writing to the ECO. If satisfied that the corrective action has been completed, the ECO are to sign-off on the Corrective Action Report and attach the report to the non-compliance notice in the EMP file. A corrective action is considered complete once the report has been signed off by the ECO.

5.9 PHOTOGRAPHIC RECORD

A digital photographic record will be kept by the ECO. The photographic record will be used to show before, during and post rehabilitation evidence of the site as well as in cases of damages claims if they arise. Each image must be dated, include a co-ordinate and a brief description note attached. The ECO's photographic record must form part of the monthly Environmental Control Reports.

The Contractor shall:

- Allow the ECO access to take photographs of all areas, activities and actions.

The ECO shall keep an electronic database of photographic records which will include:

- Pictures of all areas designated as work areas, site camp, development sites and storage areas taken before these areas are set up;
- All bunding and fencing;
- Road conditions and road verges;
- Topsoil storage areas;
- All areas to be cordoned off during construction;
- Waste management sites;
- Ablution facilities (inside and out);
- All completed corrective actions for non-compliances;
- All required signage;
- Photographic recordings of incidents; and
- All areas before, during and post rehabilitation.

5.10 COMPLAINTS REGISTER

The Contractor and ECO shall keep a current and up-to-date complaints register. The complaints register is to be a record of all complaints received from communities, stakeholders and individuals. The Complaints Record shall:

- Record the name and contact details of the complainant;
- Record the time and date of the complaint;

- Contain a detailed description of the complaint;
- Where relevant and appropriate, contain photographic evidence of the complaint or damage (ECO to take relevant photographs); and
- Contain a copy of the ECO's written response to each complaint received and keep a record of any further correspondence with the complainant. The ECO's written response will include a description of any corrective action to be taken and must be signed by the Contractor, ECO and affected party. Where a damage claim is issued by the complainant, the ECO shall respond as described in below.

5.11 CLAIMS FOR DAMAGES

In the event that a Claim for Damages is submitted by a community, landowner or individual, the ECO shall:

- Record the full detail of the complaint as described in above;
- The Contractor will evaluate the claim and associated damage and submit the evaluation to the holder of the EA / project manager for approval; and
- Following consideration by the holder of the EA / project manager, the claim is to be resolved and settled immediately, or the reason for not accepting the claim communicated in writing to the claimant.

5.12 INTERACTIONS WITH AFFECTED PARTIES

Open, transparent and good relations with affected landowners, communities and regional staff are an essential aspect to the successful management and mitigation of environmental impacts. The ECO shall:

- Ensure that all queries, complaints and claims are dealt within an agreed timeframe³;
- Ensure that any or all agreements are documented, signed by all parties and a record of the agreement kept in the EMP file;
- Ensure that telephone numbers to register complaints are made available to all landowners and affected parties; and
- Ensure that contact with affected parties is courteous at all times.

³ This relates to complaints and claims of an environmental nature only and does not pertain to complaints and claims of any other nature.

6. PRE-CONSTRUCTION PHASE – IMPACT MANAGEMENT OUTCOMES & ACTIONS

This section provides details on the pre-construction phase impact management outcomes and actions⁴ that are applicable to development and any associated infrastructure as well as management actions outlined by participating specialists, preceding environmental process and those contained in the EA for the development. Each subsection includes an aspect identified for the development, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. The holder of the EA is ultimately responsible to ensure the implementation of these outcomes and actions.

6.1 PRE-CONSTRUCTION EA CONDITIONS

Once the EA for the development is granted, any pre construction EA conditions as well as the EMPr actions necessary to achieve these conditions needs to be reflected in this section of the EMPr.

6.2 APPOINTMENT OF ENVIRONMENTAL CONTROL OFFICER

The holder of the EA must appoint an independent Environmental Control Officer (ECO) for the construction phase of the Development.

Impact Management Outcome: Independent party to ensure that the mitigation/rehabilitation measures and recommendations referred to in the EA are implemented and to ensure compliance with the provisions of the approved EMPr.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- The ECO must be appointed prior to the commencement of any physical activities. - The ECO will be responsible for monitoring, reviewing and verifying compliance by the Contractor with the environmental specifications of this EMPr and the conditions of the EA. - The appointed ECO must be independent of the Contractor and must be suitably qualified and have experience of environmental monitoring.	Holder of the EA	The holder of the EA to appoint independent ECO and ensure that ECO is suitably qualified and experienced.	ECO to be appointed prior to construction.	ECO will undertake physical monitoring.	Monthly	The name and contact details of the appointed ECO to be submitted to the competent authority.

⁴ All Environmental Management Actions allocated to the contractor will apply equally to all sub-contractors responsible for any specific task.

Impact Management Outcome: Independent party to ensure that the mitigation/rehabilitation measures and recommendations referred to in the EA are implemented and to ensure compliance with the provisions of the approved EMPr.

Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
						ECO to submit monthly Environmental Control Report to the competent authority.

6.3 PRE-CONSTRUCTION ENVIRONMENTAL COMPLIANCE WORKSHOP

It is a required action that a pre-construction environmental compliance workshop be undertaken before any construction commences on site.

Impact Management Outcome: To ensure that all senior contract staff members have an in-depth knowledge of the environmental requirements for the site in terms of the EA and EMPr.

Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- It is a required action that a pre-construction environmental compliance workshop be undertaken before any construction commences on site. This workshop can be combined with a site handover meeting but must take place before any activities take place on site and before any plant is moved onto site. - The purpose of this workshop is to ensure that all relevant senior personnel are familiar with the provisions of the EMPr, as well as the conditions of the EA. - The following people must be present at this Environmental Compliance Workshop: - The holder of the EA; - The ECO; - The main Contractor (including contract manager, site agent and foreman); and	Holder of the EA	The holder of the EA must arrange the invites to the workshop. ECO to present the workshop.	Prior to commencement of construction.	ECO	Once-off	ECO to issue minutes of the workshop, to be included in first monthly Environmental Control Report.

Impact Management Outcome: To ensure that all senior contract staff members have an in-depth knowledge of the environmental requirements for the site in terms of the EA and EMPr.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
The Consulting Engineers (electrical, civil and structural, whichever applicable).						

6.4 PRE-CONSTRUCTION ECOLOGICAL REQUIREMENTS

No clearing of vegetation may take place until such time as all required permits in terms of both the provincial and national legislation are in place. Once these relevant permits are obtained, copies thereof must be submitted to the competent authority.

The Contractor will be responsible for complying with any conditions contained in these permits, and a method statement must be provided to the ECO for approval. The ECO should be present for the site preparation and initial clearing activities to ensure the correct demarcation of no-go areas and supervise any flora relocation and faunal rescue activities that may need to take place during the site clearing.

- Prior to construction: A plant search and rescue must be conducted in the entire fynbos patch (with a botanist/ ecologist on the site to provide guidance on best practice).
 - Plants with a high likelihood of survival must be rescued (geophytes, graminoids, and succulents), and specific important sections in the heavy disturbance footprint must be identified and added to the rescue operation prior to the commencement of construction.
 - Stands of plants could be removed carefully with an excavator to preserve as much as possible of the soil around the roots of the plants. These could then be temporarily planted elsewhere for the duration of the construction phase.
 - The rescued plants must be kept in a nursery that should preferably be set up on the site in an existing disturbed area. Alternatively, arrangements with a suitable nursery/ available receptor site should be made to keep and care for removed plants during the construction phase of the project.
 - Topsoil (excluding topsoil under dense stands of invasive plants) must be stripped to a depth of 30cm and banded with sandbags to use for replanting of vegetation to preserve the possible soil bank held therein. This topsoil must be maintained (i.e. it must be ensured that no invasive and disturbance-loving species take root in piled topsoil). If the SDP of the proposed development does not have enough space for the storage and protection of topsoil within the disturbance envelope, then the Contractor must identify an alternative temporary stockpile area. Additionally, topsoil must be clearly labelled so that it does not mix with subsoils excavated or any other construction material for the site.

- The rescued plants must be planted back with the aid of botanists and/ or horticultural specialists within the area of max disturbance when construction concludes. This will promote the regeneration of natural fynbos and reduce the possibility of negative edge effects on the site.
- Any additional SCC and plants with a high survival likelihood that are observed during construction within a development footprint must be rescued (soil intact) and added to the rescued plants.
- Prior to construction, the disturbance footprint of the development should be clearly defined and demarcated to prevent unnecessary additional damage to the surrounding environment:
 - Construction netting must be used to clearly indicate construction areas. Access roads must be clearly marked so there is no confusion as to where the tracks are or how wide the road is.
 - Clear signs for “no-go” areas for vehicles and personnel should be placed strategically on the site and along access roads. No-go areas are anywhere outside of the direct area of influence of the construction phase.
 - A turning area for construction vehicles should be demarcated within the existing footprint of proposed hard surfaces.
- Prior to construction: Schedule vegetation clearance during the winter (if planning allows) to minimize impact on plant life cycles & pollination. This not compulsory but rather a preference to preserve ecological function at the site.

Where vegetation will be cleared to make way for construction, filled sandbags, silt socks, or a silt fence must be used to reduce the intensity of water runoff and flow over the site and thereby reduce erosion potential. This should be placed around the perimeter of the downslope disturbance footprint and needs regular inspection and adaptive management to ensure the integrity of the system for reducing erosion.

6.5 WATER CONSERVATION

It is important that the proposed water conservation infrastructure for both the construction as well as operational phases is considered at the pre-construction phase.

Impact Management Outcome: To ensure design criteria promotes sustainable resource use.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
All buildings should be fitted with rainwater collection and storage systems to supply water to the taps and toilets in these buildings, as well as any outdoor requirements (landscaping, washing etc).	Holder of the EA	The design engineers must consider all relevant resource	Prior to commencement of construction.	ECO	During and on completion of all associated building	Monthly ECO Report.

Impact Management Outcome: To ensure design criteria promotes sustainable resource use.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
All toilets (excluding temporary toilets) should be fitted with dual flush systems. All taps to be installed in the buildings must be fitted with low-flow faucets. The design of any temporary water reservoirs for construction water should have the smallest practically possible surface area to reduce evaporation. Under no circumstances will the discharge of treated water, wastewater or effluent be allowed. All materials used during construction must follow the best practice guidelines set out for each product. Check weather reports ahead and prepare the site when rainfall is predicted. Discontinue any on the site during rainfall. Install temporary drainage controls such as swales or berms to manage runoff where necessary. Construct check dams or sediment basins for flooded construction areas to be drained into if need be, to trap sediment, and facilitate sediment settlement before runoff reaches the non-perennial drainage line. • Energy dissipation and erosion protection at stormwater headwall outlets: ○ Stormwater headwall outlets must not be located at the top of steep slopes; ○ Stormwater headwater outlets must include stilling basins and baffles for energy dissipation; ○ Installation of reno mattress below headwall outlets to prevent scour of the bed and banks; • Implementation SuDS to attenuate stormwater onsite and reduce volumes of stormwater input in watercourses: ○ Rainwater harvesting tanks must be installed at all buildings where possible; ○ Swales and detention ponds must be incorporated into the open space network to attenuate stormwater runoff, encourage infiltration and reduce the speed,		conservation measures in the design phase of the development			infrastructure on site.	

Impact Management Outcome: To ensure design criteria promotes sustainable resource use.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- energy and volumes at which stormwater is discharged from the site; ○ Use of retention ponds and artificial wetlands to capture stormwater runoff and prevent its discharge from the site. • Maintain good vegetation cover around all development areas where possible. • Maintain all buffers around the watercourses. • Control of alien invasive plant species must be carried out within buffer areas to encourage recolonisation by indigenous vegetation and improve the structural integrity of the buffer.						

7. CONSTRUCTION PHASE – IMPACT MANAGEMENT OUTCOMES AND ACTIONS

This section provides details on the pre-construction phase impact management outcomes and actions⁵ that are applicable to development and any associated infrastructure as well as management actions outlined by participating specialists, preceding environmental process and those contained in the EA for the development. Each subsection includes an aspect identified for the development, and for each aspect a set of prescribed impact management outcomes and associated impact management actions have been identified. The holder of the EA is ultimately responsible to ensure the implementation of these outcomes and actions.

7.1 CONSTRUCTION PHASING

There are a number of important aspects of the construction phasing that must be implemented to ensure that the potential impact on the environment is kept to a minimum. The Contractor must consider the following requirements regarding phasing, when developing the construction programme. This construction programme must be approved by the holder of the EA with input from the ECO.

⁵ All Environmental Management Actions allocated to the contractor will apply equally to all sub-contractors responsible for any specific task.

- The perimeter fence and internal road network should be established first to restrict all vehicular movement to within this road network - This will minimise the impact of construction traffic on the undeveloped portion of the property. The only vehicles allowed to move off this road network are those needed to install external services (i.e., sewerage, water and electrical infrastructure);
- Sites that will be temporarily disturbed by the construction activities (i.e., material loading, temporary storage, turning circles, etc.) must also be included in the road access network.

7.2 ENVIRONMENTAL AWARENESS AND TRAINING

It is a required action that the ECO, in consultation with the Contractor, shall ensure that all construction workers receive an induction presentation, as well as on going environmental education and awareness, on the importance and implications of the EMP, EA and the environmental requirements they prescribe. The ECO must keep records of all environmental training sessions, including names, dates and the information presented. Details of the environmental induction are also to be included in the monthly Environmental Control Reports.

Impact Management Outcome: All onsite staff are aware and understand the individual responsibilities in terms of this EMP.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
• All staff must receive environmental induction training prior to undertaking any activities on site; • The Contractor must provide 24h notice to the ECO to arrange a suitable time for the ECO to present the induction training; • Refresher environmental awareness training is available as and when required; • All staff are aware of the conditions and controls linked to the EA and within the EMP and made aware of their individual roles and responsibilities in achieving compliance with the EA and EMP; • The Contractor must erect and maintain information posters at key locations on site, and the posters must include the following information as a minimum: ○ Safety notifications; ○ Faunal Occurrences and risks; ○ Photographic plates of all listed and protected flora; ○ Hydrocarbon Spill management and correction; and	Contractor and ECO	ECO to present a pre-prepared environmental induction to all staff prior to them undertaking any activities on site. Contractor to ensure that all environmental awareness posters are in place on site and that these posters are maintained.	Throughout construction period	ECO	Monthly as part of the Environmental Control Report.	Signed environmental induction attendance registers to be appended to the monthly Environmental Control Report.

Impact Management Outcome: All onsite staff are aware and understand the individual responsibilities in terms of this EMPr.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
○ Waste Management. • Environmental awareness training must include as a minimum the following: ○ Description of significant environmental impacts, actual or potential, related to their work activities; ○ Mitigation measures to be implemented when carrying out specific activities; ○ Environmental emergency preparedness and response procedures; ○ No Go Areas; ○ Procedures to be followed when working near or within sensitive areas; ○ Wastewater management procedures; ○ Water usage and conservation; ○ Solid waste management procedures; ○ Sanitation procedures; ○ Fire prevention; ○ Faunal conflicts; and ○ Vegetation management and protected & listed flora. • The EPC contractor must provide translation services to ensure that the environmental induction be translated into the relevant languages.						

7.3 DEMARCATIION OF NO-GO AREAS

All areas outside of the physical development footprint are to be demarcated as no-no go areas and access to these areas restricted. All construction activities must be restricted to demarcated areas to restrict the impact on sensitive environmental features. The impact management actions detailed below will help in achieving this end.

Impact Management Outcome: To ensure the protection of all the natural areas, sensitive features and buffer areas outside of the physical development footprint.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- The exact footprint of the construction area and all roads (including access, haul and internal roads which must make use of the final road layout) and infrastructure are to be surveyed and pegged before any physical construction commences on site; - In order to ensure effective demarcation of no-go areas, the construction of the perimeter fence should be the first activity that takes place on site; - All sensitive features as identified by specialists or ECO within the footprint must be demarcated for exclusion; - Appropriate signage is to be placed at all no-go areas; - The contractor, in conjunction with the ECO, must walk the areas determined and mark the full extent of the area to be disturbed (allowing sufficient space for the construction activity); - All areas beyond these demarcated areas are considered as “no-go” areas; - Construction staff must be briefed as part of the environmental induction on the requirements regarding the no-go areas; and - Any protected trees or plants that are to remain within the development footprint are to be physically demarcated. - A 22-meter buffer for the CVB and a 26-meter buffer for HGM1 must be established and demarcated as a no-go zone for dumping, construction activities, or vehicle access. - Maintain buffer areas around HGM1, HGM2, CVB and the Skaapkop River. Buffers will remove sediment, organic matter, and other pollutants (nutrients, toxins and pathogens) from sheet flow and any runoff water before they reach water bodies. - The laydown areas must be constructed on flat surfaces with a minimum distance of 20 m from the buffer.	Contractor	The Contractor to ensure that all no-go demarcations are in place and maintained for the duration of the contract. The ECO to ensure that compliance with the no-go policy forms part of the environmental induction. ECO to monitor compliance with no-go areas.	Survey and pegging to commencement of construction. Formal perimeter fence to be constructed in parallel to site establishment.	ECO	During each ECO site inspection.	Monthly Environmental Control Reports.

7.4 ESTABLISHMENT OF CONTRACTORS SITE CAMP AND TEMPORARY LAYDOWN AREA

The position of the contractors site camp and temporary laydown area must as shown in a Method Statement to be approved by the ECO. It must be noted that the contractors site camp and laydown area are temporary areas for use during the duration of construction. These areas must be rehabilitated on completion of construction as detailed in this EMPr.

Impact Management Outcome: To ensure that the high impact activities that typically take place in a contractor's site camp / laydown area are restricted to a predefined area that does not contain any sensitive features and is rehabilitated on completion of construction.

Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- The Contractors Site Camp and Temporary Laydown must be situated within the development area in the position identified in the approved Method Statement; - No temporary site camps will be allowed outside of the development footprint; - Any necessary plant rescue within the site camp and laydown area must be undertaken prior to the stripping of topsoil; - Topsoil from the site camp and laydown area must be stripped and stockpiled for re-use during rehabilitation. This must be done prior to levelling and placement of gravel; - The site camp must be suitably fenced off; - All construction material must be stored in the site camp and laydown area unless otherwise approved by the ECO; - No personnel may overnight in the site camp, except in the case of security personnel; - Fires for cooking and/or heating are only allowed within the site camp after consultation with the Health and Safety Representative; - Fuel and other chemicals may only be stored in the camp site; - Storage of waste and waste management must take place within the site camp and must be removed on a regular basis; - Temporary waste pick up points on the development site must be moved to the site camp and/or a designated area agreed upon by the Contractor and ECO on a daily basis;	Contractor	The Contractor to provide method statement for site camp and temporary laydown establishment. The ECO to monitor compliance with site camp and laydown requirements. ECO to sign off on final rehabilitation of the site camp and temporary laydown area.	Site camp to be established prior to delivery of materials and plant (with the exception of plant and material required for the establishment of the perimeter fence)	ECO	During each ECO site inspection.	Monthly Environmental Control Reports.

Impact Management Outcome: To ensure that the high impact activities that typically take place in a contractor's site camp / laydown area are restricted to a predefined area that does not contain any sensitive features and is rehabilitated on completion of construction.

Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- The site camp must be provided with sufficient ablution facilities (chemical toilets and potable water) of which the content must be disposed of regularly and at the suitable facilities; and - On completion of construction, the site camp and temporary laydown area must be rehabilitated as directed.						

7.5 MANAGEMENT OF TOPSOIL

Topsoil from all excavations and construction activities must be salvaged and reapplied in areas of rehabilitation (i.e., open space areas, around housing units and landscaped areas). In terms of best practice and for rehabilitation purposes, it is essential that at least 200mm layer of topsoil from the building and road footprints (including temporary site camp and laydown areas) be stripped and stockpiled prior to the commencement of construction activities in each area.

Impact Management Outcome: To ensure that the handling of topsoil does not result in the pollution or loss of the resource.

Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- A minimum 200mm layer of topsoil must be stripped from building and road footprints; - The topsoil stockpile sites must be situated in the areas designated for this purpose in the Method Statement; - Any topsoil stockpiles outside of these designated areas must be approved by the ECO and may not be within any sensitive areas as defined in the original environmental assessment; - The topsoil stockpiles must be protected from erosion and dust as indicated by the ECO and this EMP; - The topsoil stockpiles must be clearly demarcated to avoid contamination; - No topsoil may be mixed with subsoil; - No topsoil may be used as bedding material for cable trenches;	Contractor	Contractor to provide method statement for topsoil management. The ECO to advise on the placement of topsoil stockpiles. The ECO to monitor compliance. ECO to sign off on final rehabilitation of the site camp and	Prior to construction activities in each specific area.	ECO	During each site inspection.	Monthly Environmental Control Reports.

Impact Management Outcome: To ensure that the handling of topsoil does not result in the pollution or loss of the resource.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- The topsoil stockpiles must not exceed 2m in height and stockpiles older than 6 months must be enriched before they are re-used; and - The topsoil must be replaced into disturbed areas (road verges, cable trenches temporary laydown area and contractors site camp) on completion of construction.		temporary laydown area.				

7.6 WATER SUPPLY

This section is specific to water supply during the construction phase.

Impact Management Outcome: To ensure water used during construction is lawfully and sustainably utilised.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- The Contractor must ensure that all water sources utilised are lawful; - The Contractor must ensure a supply of water is available on site for sanitation, drinking, dust suppression and all construction activities; - The Contractor must ensure that water supplied for drinking water is of potable standards; - Water used for dust suppression on gravel roads must be of a quality compliant with the General Special Effluent Standards (31/03/2009): Temperature: max.25°C, pH: between 5.5 & 7.5 and conductivity: not be increased more than 15% above the intake water & not exceed 250 milli-Siemens per metre (determined at 25°C); - No chemically treated or wastewater may be used for dust suppression; - Should any temporary water storage reservoirs need to be constructed for the purposes of construction, these must be positioned within the footprint of the development in a position agreed to with the ECO;	Contractor	The Contractor to provide method statement for Water Supply. Should a borehole be utilised for potable water usage, the Contractor must supply records of tests undertaken on drinking water to show that it is within potable standards (these tests should be done on a three monthly basis or	Lawfulness and quality testing need to take place prior to construction. Remaining actions applicable for the duration of the construction phase.	Contractor to provide initial and 3 monthly quality test results to ECO. Water usage records to be provided by Contractor on a monthly basis. ECO to review results and provide recommendations.	3 Monthly for Potability tests.	Monthly Environmental Control Reports.

Impact Management Outcome: To ensure water used during construction is lawfully and sustainably utilised.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Sufficient mechanisms to prevent fauna entrapment must be implemented to the satisfaction of the ECO; - Carry out Environmental Awareness Training with a discussion on water usage and conservation – This should form part of the Environmental Induction of all construction staff; and - The Contractor must maintain records of all water usage (via metering and / or water truck logs) for the duration of the construction phase.		anytime the water source changes)				

7.7 VEGETATION CLEARING

The objective of mitigation for any development is to firstly avoid and minimise impacts on vegetation where possible and where these cannot be completely avoided, to compensate for the negative impacts of the development on vegetation and animal habitats, and to maximise re-vegetation and rehabilitation of disturbed areas. This section deals with the management of impacts associated with the clearing of vegetation. Please refer to the sections below for details regarding the rehabilitation and restoration of affected areas after completion of the construction activities.

Some loss of vegetation is an inevitable consequence of construction, and vegetation clearing required for the development of buildings, roads and services infrastructure etc. could impact listed plant species, as well as high-biodiversity plant communities. Vegetation clearing will also lead to habitat loss for fauna and potentially the loss of sensitive faunal species, habitats and ecosystems.

The environmental impact management actions detailed in this section as well as those in the previous section on demarcation of no-go areas will help achieve this end. It must be noted that no vegetation clearing may occur until such time as permits for the removal of provincially protected species as well as species protected in terms of the National Forest Act are in place. The Contractor must submit a method statement outlining how they intend to comply with these permits once issued.

Impact Management Outcome: To ensure that vegetation is lawful, minimised and restricted to the development footprint.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Vegetation clearing can only commence once: - All necessary permits are in place; - Plant Rescue has been undertaken; and - Development footprint has been demarcated. - Vegetation clearing must be kept to a minimum and restricted to the following areas: - Internal road network; - Site camp and laydown area; and - Building footprints. - All areas to be cleared should be clearly demarcated, prior to the commencement of clearing activities; - Vegetation cleared / removed as part of the site clearing activities must be stockpiled for use during the re-vegetation and rehabilitation stage for brush packing. The location of the vegetation stockpile can be in the same area as the topsoil stockpile, as designated in consultation with the ECO; - Only those individuals of protected plant species directly within the development footprint should be cleared. Those which can be safely left intact must not be disturbed; and - Any vegetation clearing that needs to take place as part of maintenance activities (during construction and operation phases) should be done in an environmentally friendly manner, using the most effective methodology suited to the target species (herbicides and/or manual clearing). - Implement phased construction to minimise the area of exposed soil at any given time and reduce the potential for erosion. - Do not clear vegetation outside the development area.	Contractor	The Contractor to provide method statement for vegetation clearing activities.	Throughout the duration of construction.	ECO	During each site inspection.	Monthly Environmental Control Reports.

7.8 TRENCHING AND CABLING

Trenching for services installation required to connect the development with the municipal / national system within the boundaries of the development must be installed underground. Trench excavations, pipeline / sleeve laying and backfill must be carried out in a systematic and continuous operation, minimising the length of trench open at any one time in order to reduce the risk of runoff or faunal entrapment.

Trenches must be backfilled in such a manner as to prevent the trench from acting as a ditch or a conduit for water flow. Foundations and trenches must be backfilled with originally excavated materials as much as possible. Excess excavation materials must be lawfully disposed of, or if suitable, stockpiled for use in rehabilitation activities.

Impact Management Outcome: To ensure that trenching activities are spatially restricted and do not result in loss or contamination of topsoil resources.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Trenching shall be kept to a minimum through the use of single trenches for multiple service provision; - Open trenches to be closed as quickly as possible to prevent faunal entrapment and erosion; - The planning and selection should be done in approximation to the SDP and cognisance shall be given to minimising the potential for soil erosion; - Trench routes within permitted working areas shall be clearly defined and marked with prior to excavation; - The stripping and separation of topsoil and subsoil shall occur on separate sides of the excavated trench and replaced in the same order (i.e., topsoil on top); - Trench lengths shall be kept as short as practically possible before backfilling and compacting; - The ECO may require the planting of additional indigenous vegetation along trench routes in order to speed up rehabilitation (particularly in areas that may be prone to erosion); - Open trenches must be inspected daily for faunal entrapment (small mammals and reptiles), which are to be removed before backfilling of the trenches; - Trenches shall be backfilled to the same level as (or slightly higher to allow for settlement) the surrounding land surface to minimise	Contractor	The Contractor to provide method statement for trenching activities.	Throughout the duration of construction.	ECO	During each site inspection.	Monthly Environmental Control Reports.

Impact Management Outcome: To ensure that trenching activities are spatially restricted and do not result in loss or contamination of topsoil resources.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
erosion. Excess soil shall be stockpiled in an area designated by the ECO; and • Topsoil may not be used for bedding or blanket material in trenches.						

7.9 FENCING / BOUNDARY WALL

During construction it will be necessary to fence and/or construct a boundary wall on the perimeter of the development area, site camp and temporary laydown area (to avoid theft of construction equipment and materials). Should electric fencing be utilised, it should not have any strands within 30cm of the ground (to allow for the movement of small mammals and reptiles).

Impact Management Outcome: To ensure that fencing protects project assets and the environment while limiting impact on faunal passages.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- The establishment of the perimeter fence should be the first activity that takes place on site, as this serves to demarcate the total disturbance footprint; - Any sensitive features within the project footprint should be temporarily fenced prior to commencement of construction (refer to above section on the demarcation of no-go areas). This temporary fencing must be replaced with permanent fencing prior to the completion of the construction phase; - Temporary storage ponds and topsoil stockpile should be temporarily fenced; - The perimeter security fencing should be constructed in a manner which allows for the passage of small and medium sized mammals, at strategic places, such as areas of dense vegetation; and - The final fencing plan should be submitted to the ECO for comments and approval.	Contractor	The Contractor to provide method statement for fencing activities.	Throughout the duration of construction.	ECO	During each site inspection.	Monthly Environmental Control Reports.

7.10 CONSTRUCTION WASTE

An integrated waste management approach must be implemented that is based on waste minimisation and must incorporate reduction, recycling and re-use options where appropriate. Where solid waste is disposed of, such disposal shall only occur at a landfill licenced in terms of section 20(b) of the National Environmental Management Waste Act, 2008 (Act 59 of 2008). It is proposed that the local municipality will provide services in terms of waste removal and sewage for the construction phase of the proposed project. However, should the municipality not have adequate capacity available for the handling of waste and sewage, then the Contractor must make use of private contractors to ensure that the services are provided. The Contractor must also ensure that adequate waste disposal measures are implemented by obtaining waste disposal dockets / slips of all waste and sewage that is removed from site.

Impact Management Outcome: To promote an integrated waste ⁶ management approach and ensure the management of waste during the construction phase is both lawful and sustainable.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- A dedicated waste management area should be set up in the contractors site camp. This waste management area must as a minimum: - Be clearly demarcated and sign posted; - Be wind and scavenger proof; - Include separation of waste streams (Recyclable waste, General Waste, Construction Rubble and Hazardous Waste); and - Be maintained in a neat and tidy state with waste regularly removed. - The Contractor must provide the ECO with a Waste Management register / report on a monthly basis. This register / report must include as a minimum: - Records of all waste volumes for waste stream; - Proof of all volumes of recycling; - Disposal slips for all waste transported to a landfill; and - Disposal slips for all hazardous waste. - All hazardous waste (including chemicals, bitumen, fuel, lubricants, oils, contaminated soil from hydrocarbon spills, paints etc.) shall be	Contractor	The Contractor to provide method statement for waste management.	Throughout the duration of construction.	ECO. Contractor to provide records of all waste volumes and disposal slips on a monthly basis.	During each ECO site inspection.	Monthly Environmental Control Reports.

⁶ Waste in this instance excludes excess overburden from excavations.

Impact Management Outcome: To promote an integrated waste ⁶ management approach and ensure the management of waste during the construction phase is both lawful and sustainable.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
disposed of at an approved / registered hazardous-waste landfill site. The Contractor shall provide disposal certificates to the ECO; • All Hazardous waste must be temporary stored in sealed waterproof containers and may not be stored on site for longest than 30 days; • Used oil and grease must be removed from site to an approved used oil recycling company; • Under NO circumstances may any waste be spoiled on the site. Where possible, the routine maintenance of construction plant should take place off-site. Where such maintenance must occur, it must be done in the site camp on an impermeable surface with a sump to collect any oil spills; • Temporary waste receptacles in the field must be removed to the dedicated waste management area before the end of each working day; • Ensure that the site is clean of any package material, food containers, plastic bottles or any other solid spoil/stockpile material products. An integrated spoil/stockpile material management system must be followed during construction (e.g. recycling). All spoil/stockpile material as a result of construction activities at the Civil Engineering Services Department must be placed in skips on-site and around the construction sites and regularly removed from site. • Ensure that no waste materials or sediments are left in the surrounding drainage lines (as a result of the construction); and • Wastewater must be collected and disposed of at a suitable licenced disposal facility. Proof of disposal (i.e., waste disposal slips or waybills) should be retained on file for auditing purposes.						

7.11 FUEL AND CHEMICAL STORAGE

The above ground storage of fuel is subject to authorisation in terms of the National Environmental Management Act (NEMA EIA regulations) if more than 30m³ is stored on site at any one time. The temporary storage of hazardous or toxic materials / liquids (chemicals, fuels, lubricants and oils) must comply with legislation and the actions in the table below must be implemented.

Impact Management Outcome: To ensure lawful fuel storage that does not cause soil and water pollution.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Temporary fuel storage must take place within the contractors site camp and laydown area in an area approved by the ECO; - No storage of fuel may take place on any other portion of the site; - All hazardous materials should be stored in the appropriate manner to prevent contamination of the site. Any accidental chemical, fuel and oil spills that occur at the site should be cleaned up immediately in the appropriate manner, as related to the nature of the spill; - Mobile fuel units used to refuel plant on site must make use of drip trays when refuelling; - Fuel storage facilities should be located on flat ground. No cut and fill should take place immediately on or adjacent to fuel storage areas; - All storage tanks should be double lined and be ISO 9001 certified; - All storage tanks must be enclosed by bund walls; - Bund walls must be constructed to contain at least 110% of the total capacity of the storage tanks; - Bund walls must be constructed of impermeable material or lined to ensure that petroleum products cannot escape; - A suitable material should be placed in the base of the bund walls to soak up any accidental spillages; - The tanks should be locked and secured when not in use; - Automatic shut-off nozzles are required on all dispensing units; - Storage tanks should be drained within one week of completion of activities (only unused fuel can be used by the contractor on other work sites or returned to the supplier). If the construction program extends over the builder's shutdown, the contractor must ensure that storage tanks are emptied prior to this period;	Contractor	The Contractor to provide method statement for chemical and fuel storage.	Throughout the duration of construction.	ECO. Contractor maintain a fuel and chemical register and provide this to the ECO on a monthly basis.	During each ECO site inspection.	Monthly Environmental Control Reports.

Impact Management Outcome: To ensure lawful fuel storage that does not cause soil and water pollution.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- All storage tanks, containers and related equipment should be regularly maintained to ensure safe storage and dispensing of material. The engineer is to sign off on the condition and integrity of the storage tanks; - Defective hoses, valves and containment structures should be promptly repaired; - Vehicle and equipment fuelling should be undertaken on a hard impermeable surface, over drip pans or bund walls to ensure spilled fuel or toxic liquids is captured and cleaned up; - Implement a preventative maintenance system to ensure that work vehicles are maintained in an acceptable condition. This would involve routinely checking vehicles for leaks before construction begins; and not allowing vehicles with significant leaks to operate or be repaired within the construction site. Ideally, vehicle maintenance and washing occurs in garages and wash facilities, not on active construction site; - The area must be totally rehabilitated on completion of the contract and all contaminated material must be carefully removed and disposed of at a licensed dumping site for that purpose; and - Spill kits must be made available on-site for the clean-up of spills. A minimum of 2 spill kits must be in the contractors site camp.						

7.12 NOISE MANAGEMENT

The Contractor shall be responsible for compliance with the relevant legislation with respect to noise inter alia Section 25 of ECA (73 of 1989) and standards applicable to noise nuisances in the Occupational Health and Safety Act (No. 85 of 1993).

Impact Management Outcome: To ensure nuisance from noise and vibration does not occur.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- It is recommended that noise generation be kept to a minimum and that construction activities be confined to normal working hours (07:00 - 17:00 on Monday to Saturday). Should the Contractor wish to deviate from these work hours, approval must be granted by the Holder of the EA; - The following noise reduction actions in respect of plant should be implemented: - Provide baffle and noise screens on noisy machines as necessary; - Provide absorptive linings to the interior of engine compartments; - Ensure machinery is properly maintained (fasten loose panels, replace defective silencers); - Switch off machinery immediately when not in use; and - Reduce impact noise by careful handling.	Contractor	As per the stated actions.	Throughout the duration of construction.	ECO	During each site inspection.	Monthly Environmental Control Reports.

7.13 DUST MANAGEMENT

Impact Management Outcome: To ensure there is no health risk or loss of amenity due to emission of dust to the environment.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Noise and dust nuisances shall comply with the applicable standards according to the Occupational Health and Safety (Act No. 85 of 1993) as well as the dust control regulations; - Trucks bringing in materials must be covered to prevent dust and small particles escaping and potentially causing damage to people and property; - Contractor to implement speed limits on internal access roads to minimise dust on site.	Contractor	As per the stated actions.	Throughout the duration of construction.	ECO	During each site inspection.	Monthly Environmental Control Reports.

Impact Management Outcome: To ensure there is no health risk or loss of amenity due to emission of dust to the environment.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- During dry, dusty periods, haul roads should be kept dampened to prevent excess dust. No potable water or seawater may be used for damping haul roads; and - Exposed stockpile materials must be adequately protected against wind (covered) and should be sited taking into consideration the prevailing wind conditions.						

7.14 CONCRETE MANAGEMENT

Cement powder has a high alkaline pH that may contaminate and adversely affect both soil pH and water pH negatively. A rapid change in pH can have consequences on the functioning of soil and water organisms, as well as on the botanical component. The use of ready-mix trucks delivering concrete directly to site is recommended and mass batching of concrete on site should be limited as far as possible.

Impact Management Outcome: To ensure that the handling of concrete does not result in pollution of soil or water resources.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Trucks should deliver pre-mixed concrete to the site and pour the concrete directly into the prepared excavations; - When concrete trucks have unloaded, there is a requirement to wash out the inside of the concrete drum. Water can be provided to the trucks for this purpose (at the discretion of the contractor). Concrete suppliers may NOT dispose of this wash water anywhere on site. Trucks should return to their depot for this purpose. Any spillages of concrete outside of the excavations (including haulage routes) must be cleaned up immediately by the supplier; - Where small batching of concrete or plaster takes place on site, the following actions must be implemented: - Concrete batching may only take place in areas approved by the ECO (preferably in the Site Camp);	Contractor	The Contractor to provide method statement for all on-site concrete batching.	Throughout the duration of construction.	ECO	During each ECO site inspection.	Monthly Environmental Control Reports.

Impact Management Outcome: To ensure that the handling of concrete does not result in pollution of soil or water resources.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Concrete mixing must take place on batching plates unless it is on an area that is to be hard surfaced as part of the development; - Equipment (wheelbarrows, shovels etc.) must be washed into a lined settling pond; and - Once the settling ponds dry out, the concrete must be removed and dispatched to a suitable disposal site. Ideally, all concrete batching should take place on an area that is to be hard surfaced as part of the development (building floor, road or paved area). - In order to avoid resource contamination, concrete batching should not be located within 60m of any stormwater management structure; - If an area outside of the site camp is identified for batching it must first be approved by the ECO and all topsoil must be stripped and stockpiled for re-use; - Batching at satellite sites must be done on a batching plate to prevent soil contamination; - Empty cement bags must be treated as hazardous waste and must be disposed of accordingly; and - Cement wash water may not be discharged into the environment.						

7.15 FIRE MANAGEMENT AND PROTECTION

As required in the veld and fire management act, it is the landowner's responsibility to develop and maintain firebreaks as well as be sufficiently prepared to combat veld fires. Therefore, management of plant biomass within the site should be part of the management of the development. Grazing by livestock is the simplest and most ecologically sound way to manage plant biomass and is recommended the preferred method to manage plant biomass. Alternative management practices can include brush cutting. Utilisation of non-selective herbicides for the management of biomass is prohibited on site.

Impact Management Outcome: To reduce the risk of fire to infrastructure and environment.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Fires should only be allowed within fire-safe demarcated areas (and only within the site camp); - No fuelwood collection is allowed on-site; - The total removal of all invasive alien vegetation should take place in order to decrease the fire risk – This must be done in accordance with the Alien Vegetation Management Plan; - Cigarette butts may not be thrown in the veld but must be disposed of correctly. The contractor, must designate smoking areas (in compliance with the Tobacco Products Control Amendment Act 63 of 2008) with suitable receptacles for disposal; - In case of an emergency, the contact details of the local fire and emergency services must be readily available; - Contractors must ensure that basic firefighting equipment and suitably qualified/experienced personnel are available on site at all times, as per the specifications defined by the health and safety representative / consultant; - The fire risk on site is a point of discussion that must take place as part of the pre construction compliance workshop and the environmental induction training prior to commencement of construction; and - The contractor must also comply with the requirements of the Occupational Health and Safety Act with regards to fire protection.	Contractor	In compliance with the actions defined as well as requirements detailed in the health and safety plan.	Throughout the duration of construction.	ECO	During each ECO site inspection.	Monthly Environmental Control Reports.

7.16 SANITATION

The holder of the EA / Contractor must provide sanitation facilities within the construction area so that workers do not pollute the surrounding environment. These facilities must be removed from the site when the construction phase is completed. Associated waste must be disposed of at a registered waste disposal site.

Impact Management Outcome: To ensure safe and healthy sanitation for construction staff without increasing pollution risk.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
Portable chemical ablution facilities must be made available for the use by construction staff for the duration of the construction period. The following actions must be implemented in this regard: • Toilet and washing facilities must be available to the site personnel at all times (at the site camp and throughout the construction site); • These facilities must be situated away from freshwater resources; • One toilet for every 15 personnel is required; • The facilities must be serviced on a regular basis to prevent any overflow or spillage; • The servicing contractor must dispose of the waste in an approved manner (i.e., via the municipal wastewater treatment system); • The ECO must be provided with the service providers' details and the service schedule for the site; • The toilets should be secured to ensure that they do not blow over in windy conditions; • All toilet facilities must be removed from site on completion of the contract period; and • Should the construction period be interrupted by a builder's break, the toilets should be emptied prior to the break.	Contractor	As per the stated actions.	Throughout the duration of construction.	ECO. The Contractor to supply chemical toilet service records to the ECO on a monthly basis.	During each site inspection.	Monthly Environmental Control Reports.

7.17 THEFT AND ENVIRONMENTAL CRIME

An increase in crime during the construction phase is often a concern. Theft and other crime associated with construction sites is not only a concern for surrounding residents, but also the developer and the contractor. Considering this, contractors need to be proactive in order to curtail theft and crime on and resulting from the construction site. It is recommended that the contractor develop a jobsite security plan prior to commencement of construction. This jobsite security plan should take into account protection of the construction site from both internal and external crime elements, as well as the protection of surrounding communities from internal crime elements. All incidents of theft or other crime should be reported to the South African Police Service, no matter how seemingly insignificant. A copy of the jobsite security plan should be included in the first environmental control report to be submitted to the competent authority.

Impact Management Outcome: To ensure that activities on site do not increase the criminal activity of the area.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
The following actions are relevant in this regard (refer to the section above for details of the development permanent security fencing): - The Contractor must develop a Jobsite Security Plan for the project; - All portable construction equipment and material must be locked away within the Contractor's Site Camp overnight and during holiday periods; - Fuel storages tanks must be locked when not in use; - All unassembled / un-installed PV materials must be locked within the fenced Laydown areas overnight and during holiday periods; and - The minimum amount of lighting should be used at night and this should be of the low-UV emitting kind that attracts less insects.	Contractor	Implementation of a Jobsite Security Plan to be compiled by the Contractor.	Jobsite Security Plan to prepared prior to site establishment. Throughout the construction phase.	ECO	During each site inspection.	Monthly Environmental Control Reports.

7.18 REHABILITATION AND HABITAT RESTORATION

All areas not forming part of the development's hard surfaces must be rehabilitated and restored on completion of construction. These include:

- The temporary laydown area;
- The construction site camp;
- Temporary water storage ponds;
- Overburden spoil sites;
- Temporary internal access roads;
- Cement batching areas; and
- All other areas within the development adjacent to buildings that have been compacted or impacted by any of the construction activities.

One of the primary objectives of all the previously listed impact management outcomes are to avoid and reduce impact on the receiving environment, thus minimising the rehabilitation and restoration requirements on completion of construction. The Contractor must be mindful of this primary objective as part of all activities taking place on site.

Impact Management Outcome: To restore habitat disturbed during construction activities.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
Topsoil Management - Effective topsoil management is a critical element of rehabilitation, particularly in arid and semi-arid areas where soil properties are a fundamental determinant of vegetation composition and abundance. Where any excavation or topsoil clearing is required, the topsoil should be stockpiled and later used to cover cleared and disturbed areas once construction activity has ceased; - Excess inert material and other disturbed areas should be reshaped to blend in with the natural contours of the area; - The contractor must be mindful that should insufficient topsoil be available for rehabilitation purposes, additional topsoil will need to be sourced from a commercial source at a cost to the contractor; - Topsoil is the top-most layer (0-30cm) of the soil in undisturbed areas. This soil layer is important as it contains nutrients, organic matter, seeds, micro-organisms fungi and soil fauna. All these elements are necessary for soil processes such as nutrient cycling and the growth of new plants. The biologically active upper layer of the soil is fundamental in the maintenance of the entire ecosystem; - Topsoil should be retained on site in order to be used for site rehabilitation. The correct handling of the topsoil (as detailed earlier in the report) is a key element to rehabilitation success. Firstly, it is important that the correct depth of topsoil is excavated. If the excavation is too deep, the topsoil will be mixed with sterile deeper soil, leading to reduction in nutrient levels and a decline in plant performance on the soil; - Wherever possible, stripped topsoil should be placed directly onto an area being rehabilitated. This avoids stockpiling and double handling of the soil. Topsoil placed directly onto rehabilitation areas contains viable seed, nutrients and microbes that allow it to revegetate more rapidly than topsoil that has been in stockpile for long periods; - If direct transfer is not possible, the topsoil should be stored separately from other soil heaps until construction in an area is complete. The soil should not be stored for a long time and should be	Contractor	As per the stated actions. Provision of a sufficient budget to undertake rehabilitation activities.	Throughout the construction phase. Physical rehabilitation activities to be completed prior to contractual operations date.	ECO	During each site inspection.	Monthly Environmental Control Reports.

Impact Management Outcome: To restore habitat disturbed during construction activities.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
used as soon as possible. The longer the topsoil is stored, the more seeds, micro-organisms and soil biota are killed; and - Ideally stored topsoil should be used within a month and should not be stored for longer than three months. In addition, topsoil stores should not be too deep, a maximum depth of 1m is recommended to avoid compaction and the development of anaerobic conditions within the soil. Ripping & Substrate Preparation - Before commencement with restoration activities detailed below, all identified rehabilitation areas that are compacted as a result of construction activities must be mechanically ripped; and - Imported gravel layers (such as in the laydown area and site camp) must be removed prior to ripping and commencing with rehabilitation. Mulching - Mulching is the covering of the soil with a layer of organic matter of leaves, twigs bark or wood chips, usually chopped quite finely. The main purpose of mulching is to protect and cover the soil surface as well as serve as a source of seed for revegetation purposes; - The cleared vegetation should be stockpiled and used whole or shredded by hand or machine to protect the soil in disturbed areas and promote the return of indigenous species. Where there is a low shrub or grass layer, this material can be cleared and mixed as part of the topsoil (or applied as a top mulch) as this will aid revegetation and recovery when it is reapplied; - All mulch should be harvested from areas that are to be denuded of vegetation during construction activities, provided that they are free of seed-bearing alien invasive plants; - No harvesting of vegetation may be done outside the area to be disturbed by construction activities; and - Brush-cut mulch should be stored for as short a period as possible, and seed released from stockpiles can also be collected for use in the rehabilitation process.						

Impact Management Outcome: To restore habitat disturbed during construction activities.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
Seeding - In some areas the natural regeneration of the vegetation may be poor and the application of seed to enhance vegetation recovery may be required as directed by the ECO; - Seed should be collected from plants present at the site and should be used immediately or stored appropriately and used at the start of the following wet season. Seed can be broadcast onto the soil but should preferably be applied in conjunction with measures to improve seedling survival such as scarification of the soil surface or simultaneous application of mulch; - Indigenous seeds may be harvested⁷ for purposes of re-vegetation in areas that are free of alien or invasive vegetation, either at the site prior to clearance or from suitable neighbouring sites; - Seed may be harvested by hand and if necessary dried or treated appropriately; and - No seed of alien or foreign species should be used or brought onto the site. - Control of alien & invasive plant species according to a management control plan. This is a requirement by law and must be submitted to the NEMBA Directorate separately. - The rehabilitation of the disturbance footprint with topsoil and plants rescued on the site must occur as soon as possible after the conclusion of construction. - Select locally indigenous plants for gardens, making use of as many of the rescued plant species as possible. Avoid plants that are hybrids and cultivars - Planting during the rainy season (early winter May/June) is preferable, if planning allows. If this is not possible however, appropriate maintenance of plants (such as irrigation) must take						

⁷ Any seed harvesting required must be done with the appropriate permits in place.

Impact Management Outcome: To restore habitat disturbed during construction activities.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
place. A 10cm thick layer of wood chip must be added to retain soil moisture. - Ensure soft landscaping is used as opposed to hard landscaping. Soft landscaping refers to natural spaces around constructed buildings that contain plants. The plants used are often trees, shrubs, and herbs that perform valuable ecosystem functions and services. Soft landscapes support biodiversity if local indigenous species are planted, or better yet, if the natural vegetation is left to recover and grow with minimal to no planting of man-made gardens. This is contrary to what has been observed at the site Transplants - Where succulent plants are available or other species which may survive translocation are present, individual plants can be dug out from areas about to be cleared and planted into areas which require revegetation. This can be an effective means of establishing indigenous species quickly, this is however unlikely to be a viable option at the current site as there are few suitable species present, but if the conditions are wet then most species have some probability of surviving; - Plants for transplant should only be removed from areas that are going to be cleared; - Perennial grasses, shrubs, succulents and geophytes are all potentially suitable candidates for transplant.; - Transplants should be placed within a similar environment from where they came in terms of aspect, slope and soil depth; - Transplants must remain within the site and may not be transported off the site; and - Some species can also grow from cuttings and branches of many succulent species can be rooted in the field. Use of Soil Savers - On steep slopes and areas where seed and organic matter retention is low, it is recommended that soil savers are used to stabilise the						

Impact Management Outcome: To restore habitat disturbed during construction activities.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
soil surface. Soil savers are man-made materials, usually constructed of organic material such as hemp or jute and are usually applied in areas where traditional rehabilitation techniques are not likely to succeed; • In areas where soil saver is used, it should be pegged down to ensure that it captures soil and organic matter flowing over the surface; and • Soil saver may be seeded directly once applied as the holes in the material catch seeds and provide suitable microsites for germination. Alternatively, fresh mulch containing seed can be applied to the soil saver. General Recommendations Progressive rehabilitation is an important element of the rehabilitation strategy and should be implemented where feasible. • Once re-vegetated, areas should be protected to prevent trampling and erosion; • No construction equipment, vehicles or unauthorised personnel should be allowed onto areas that have been vegetated; • Where rehabilitation sites are located within actively grazed areas, they should be fenced; and • Fencing should be removed once a sound vegetative cover has been achieved. Any runnels, erosion channels or washaways developing after revegetation should be backfilled and consolidated and the areas restored to a proper stable condition. • Remove all rubble from the HGM1 valley bottom by hand and make sure not to disturb the slope or vegetation further. Ensure rubble is disposed of at an authorised landfill site. • Rehabilitate the portion of the dump falling within the buffer zone by vegetating the top and the steep slopes of the dump and removing alien plants following an authorised alien management plan. • Install silt fences or sediment traps along the toe of the dump to reduce the amount of sediment and spoil/stockpile material from entering the watercourses while the slope is revegetating.						

Impact Management Outcome: To restore habitat disturbed during construction activities.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Install silt fences or sediment barriers around the perimeter of the construction site to trap sediment-laden runoff and prevent it from entering the estuary. - Install a barrier along the edge of the buffer zone (on top of the dump) to prevent vehicle access and dumping in the buffer zone. - The slope of the dump must be routinely inspected for erosion. Any signs of erosion must be rehabilitated immediately. - Existing erosion gulleys caused by leaking sewage infrastructure must be backfilled, reprofiled to natural contours, and revegetated.						

7.19 FAUNAL MANAGEMENT

Impact Management Outcome: To reduce the direct impact on animals affected by the construction activities.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Any animals (including snakes, tortoises and lizards) directly threatened by the clearing or construction activities should be removed to a safe location outside of the construction area by the ECO or other suitably qualified/experienced person; - All trenches, open excavations and fence lines should be inspected on a daily basis (first thing in the morning) for any trapped fauna (particularly small mammals and reptiles). These should be removed to a safe location outside of the construction area by the ECO or other suitably qualified / experienced person; - Faunal ladders to be installed in all temporary water storage areas; - The development footprint may need to be flushed prior to completion of the perimeter fence to ensure that no large mammals become trapped within the development site. All faunal mortalities are to be reported to the ECO, who must maintain a register of faunal mortalities; and	Contractor	As per the stated actions.	Throughout the duration of construction.	ECO	During each site inspection.	Monthly Environmental Control Reports.

Impact Management Outcome: To reduce the direct impact on animals affected by the construction activities.

Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
The ECO must maintain a register of all faunal observations within the development site.						

7.20 HERITAGE MANAGEMENT

Impact Management Outcome: Impact to heritage resources is minimised.

Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Identify, demarcate and prevent impact to all known sensitive heritage features on site in accordance with the No-Go procedure detailed above; - Carry out general monitoring of excavations for potential fossils, artefacts and material of heritage importance; and - All work in a specific area must cease immediately, if any human remains and/or other archaeological, palaeontological and historical material are uncovered. Such material, if exposed, must be reported to the nearest museum, archaeologist/ palaeontologist (or the South African Police Services), so that a systematic and professional investigation can be undertaken. Sufficient time must be allowed to remove/collect such material before development recommences in that area.	Contractor	As per the stated actions. Implementation of chance find procedures.	Throughout the duration of construction.	ECO	During each site inspection.	Monthly Environmental Control Reports.

8. OPERATIONAL PHASE – IMPACT MANAGEMENT OUTCOMES AND ACTIONS

The Operational/Maintenance Phase of this EMPr refers to the day to day management activities that are required to ensure sustainability and the achievement of the principles and objectives of the development. The requirements are applicable to the proponent, all employees and all visitors to the property.

8.1 LANDSCAPING AND MANAGEMENT OF INVASIVE ALIEN VEGETATION

Within urban environments, one of the greatest impacts on adjoining/surrounding open space areas is the spread of exotic / alien invader vegetation indiscriminately planted in gardens and landscaping of recreational open space areas. Plants do not adhere to boundaries such as fences or cadastral units, and may be blown, carried (by fauna) or creep outside of designated areas (gardens) and establish themselves in natural areas. This results in the so called “garden escapees”, which can negatively affect the biodiversity and ecological functioning of natural areas. The most effective method of preventing this is simply to landscape with only locally occurring, indigenous plant species. The other benefits to using this approach is that local indigenous plants are adapted to local conditions and use less water and/or fertilisers i.e. require less maintenance.

Impact Management Outcome: To ensure that indigenous vegetation is encouraged and prevention of the spread of invasive alien vegetation.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Only indigenous species typically occurring in Dune Thicket and Fynbos may be selected for landscaping of gardens and recreational open spaces; - Plant list for landscaping of individual erven to be submitted to the ECO for approval prior to operational phase. - No invasive alien plant species may be used for any gardening landscaping purposes; - All listed alien plant species must be removed from the property and may not be reintroduced through rehabilitation or landscaping; and - The use of water-wise landscaping is recommended, not only in the interests of water conservation, but because excessive watering can create changes in the nutrient levels and hydrological capabilities of the soil.	Holder of the EA	As per the stated actions.	Throughout the operational life cycle of the project.	Holder of the EA	As determined by operational environmental audit requirements.	Operational Environmental Audit Report

8.2 WASTE MANAGEMENT

During the operational phase of the development, waste will be limited to normal domestic waste. It is proposed that the local municipality will provide services in terms of waste removal and sewage for the operational phase (excluding Hazardous Waste) of the proposed project. However, should the municipality not have adequate capacity available for the handling of waste and sewage, then the holder of the EA must make use of private contractors to ensure that the services are provided. The holder of the EA must also ensure that adequate waste disposal measures are implemented by obtaining waste disposal dockets / slips of all waste and sewage that is removed from site.

Impact Management Outcome: To promote an integrated waste management approach and ensure the management of waste during the construction phase is both lawful and sustainable.						
Impact Management Actions	Responsible Person	Method of Implementation	Timeframe for Implementation	Responsible Party for Monitoring	Frequency of Monitoring	Evidence of Compliance
- Wind and scavenger proof bins must be installed at the maintenance / security / communal buildings and must be emptied on a weekly basis; - All hazardous waste (including bitumen, fuel, oils, paints etc.) used during the operation and maintenance of the development shall be disposed of at an approved/registered hazardous-waste landfill site; - The contractor responsible for the disposal shall provide disposal certificates to the holder of the EA /; - Used oil and grease must be removed from site to an approved used oil recycling company; - Under NO circumstances may any hazardous waste be spoiled on the site; - The servicing of operation/maintenance vehicles may not take place on site. - Biomass from vegetation management activities must not be disposed of off-site but must be utilised as mulch as part of the ongoing rehabilitation⁸; and - Wastewater must be collected and disposed of at a suitable licenced disposal facility. Proof of disposal (i.e., waste disposal slips or waybills) should be retained on file for auditing purposes.	Holder of the EA	As per the stated actions.	Throughout the operational life cycle of the project.	Holder of the EA	As determined by operational environmental audit requirements.	Operational Environmental Audit Report

⁸ This Biomass can be chipped should the volumes be high enough as to pose a fire risk.

9. DECOMMISSIONING PHASE ENVIRONMENTAL MANAGEMENT REQUIREMENTS

It is not likely that decommissioning of this facility will take place in the near future. However, in the event that decommissioning does occur, all relevant legislation and policies must be complied with for the given period.

In general, in the future event that the facility be decommissioned, the following must be undertaken:

- Demolition of buildings and removal of rubble must be undertaken without impacting on areas outside of the development area.
- Rubble must be disposed of correctly and to a registered site if not reused on site.
- Decommissioning must comply with any relevant legislation valid at that time.

Appendix 5 of Regulation 982 of the 2014 EIA Regulations contains the required contents of a Closure Plan.

10. NON-COMPLIANCE

Should any person commit an action of non-compliance he/she may be convicted of an offence, in terms of Sub-regulation (1) of the National Environmental Management Act, to imprisonment for a period not exceeding ten years or to a fine not exceeding R10 Million as prescribed in terms of the Adjustment of Fines Act, 1991 (Act No. 101 of 1991).

Apart from a fine resulting from any legal mechanism, the ECO may advise the Employers Representative (ER) to impose a penalty for non-compliance in terms of this Environmental Management Programme (EMPr). The procedure detailed below is for a spot fine in terms of this EMPr and does not detail the procedure for fining in terms of any other legal mechanism.

10.1 PROCEDURES

The contractor shall comply with the environmental specifications and requirements of this EMPr, the EA and Section 28 of NEMA, on an on-going basis and any failure to do so will entitle the ER to impose a penalty.

In the event of non-compliance, the following recommended process shall be followed:

- The ECO shall issue a notice of non-compliance to the Engineer, stating the nature and magnitude of the contravention. A copy shall be provided to the Project Developer / Proponent.
- The Engineer will issue this notice to the Contractor.
- The Contractor shall act to correct the transgression within the period specified by the Engineer.
- The Contractor shall provide the ER with a written statement describing the actions to be taken to discontinue the non-compliance, the actions taken to mitigate its effects and the expected results of the actions. A copy shall be provided to the Project Developer / Proponent.
- In the case of the Contractor failing to remedy the situation within the predetermined time frame, the ER shall impose a monetary penalty (spot fine) based on the conditions of contract.
- Should the transgression be a blatant disregard of conditions of the EMPr or EA, the ER (on advice from the ECO) can at their discretion immediately issue a fine and require the remediation (without first giving the contractor a chance to remediate).

- In the case of non-compliance giving rise to physical environmental damage or destruction, the ER shall be entitled to undertake or to cause to be undertaken such remedial works as may be required to make good such damage and to recover from the Contractor the full costs incurred in doing so.
- In the event of a dispute, difference of opinion, etc. between any parties in regard to or arising out of interpretation of the conditions of the EMP, disagreement regarding the implementation or method of implementation of conditions of the EMP or EA etc. any party shall be entitled to require that the issue be referred to specialists for determination.
- The ER on advice from the ECO shall at all times have the right to stop work and/or certain activities on site in the case of non-compliance or failure to implement remediation measures.

10.2 OFFENCES AND PENEALTIES

Any avoidable non-compliance with the conditions of the EMP shall be considered sufficient ground for the imposition of a monetary penalty by the ER. Possible offences, which should result in the issuing of a contractual penalty, include, but are not limited to:

- Unauthorised entrance into no-go areas;
- Catching and killing of wild animals, and removal or damage to conservation-worthy plant species;
- Open fires outside of the contractor camp site and insufficient fire control;
- Unauthorised damage to natural vegetation;
- Unauthorised camp establishment (including stockpiling, storage, etc.);
- Hydrocarbons / hazardous material: negligent spills / leaks and insufficient storage;
- Ablution facilities: non-use, insufficient facilities, insufficient maintenance;
- Insufficient solid waste management (including clean-up of litter, unauthorised dumping etc.);
- Erosion due to negligence / non-performance;
- Excessive cement / concrete spillage / contamination;
- Non-induction of staff.

ABBREVIATIONS AND ACRONYMS

BSP	Biodiversity Sector Plan - to inform land use planning, environmental assessments, land and water use authorisations, as well as natural resource management, undertaken by a range of sectors whose policies and decisions impact on biodiversity.
CARA	Conservation of Agricultural Resources Act (Act 43 of 1983) - provides for control over the utilization of the natural agricultural resources of the Republic in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants; and for matters connected therewith.
CBA	Critical Biodiversity Area - areas required to meet biodiversity targets for ecosystems, species and ecological processes, as identified in a systematic biodiversity plan.
DFFE	National Department of Forestry, Fisheries & the Environment – the national authority responsible for the sustainable environmental management and integrated planning.
DEA&DP	Department of Environmental Affairs and Development Planning – the provincial authority for sustainable environmental management and integrated development planning. The competent authority in this case.
DWS	Department of Water & Sanitation Affairs – National authority mandated to enforce the National Water Act (NWA).
EA	Environmental Authorisation – Authorisation obtained on completion of an Environmental Impact Assessment in terms of the National Environmental Management Act (NEMA).
ECA	Environment Conservation Act, 1989 - To provide for the effective protection and controlled utilization of the environment and for matters incidental thereto.
ECO	Ecological Control Officer – independent site agent appointed to observe and enforce the implementation of environmental policies and principles on a development site.
EIA	Environmental Impact Assessment - a process of evaluating the likely environmental impacts of a proposed project or development, taking into account inter-related socio-economic, cultural and human-health impacts, both beneficial and adverse.
EMPr	Environmental Management Programme – an environmental management tool used to ensure that undue or reasonably avoidable adverse impacts of the construction, operation and decommissioning of a project are prevented and that positive benefits of the projects are enhanced.
GIS	Geographic Information System - system designed to capture, store, manipulate, analyse, manage, and present all types of geographical data.
GPS	Global Positioning System - a radio navigation system that allows land, sea, and airborne users to determine their exact location, velocity, and time 24 hours a day, in all weather conditions, anywhere in the world.
NEMA	National Environmental Management Act (Act 107 of 1998, as amended) – national legislation that provides principles for decision-making on matters that affect the environment.

NEM:BA	National Environmental Management: Biodiversity Act (Act No.10 of 2004) – provides for the management and conservation of South African biodiversity within the framework of NEMA.
NFA	National Forestry Act (Act No.84 of 1998) - provides for the protection of forests, as well as specific tree species within South Africa.
NSBA	National Spatial Biodiversity Assessment – aims to assess the state of South Africa's biodiversity based on best available science, with a view to understanding trends over time and informing policy and decision-making across a range of sectors.
NWA	National Water Act (Act No.36 of 1998) - ensures that South Africa's water resources are protected, used and managed.

LANDSCAPING

LANDSCAPING

All landscaping to comply with the specifications of an approved **Environmental Authorisation and Environmental Management Programme** requirements.

CIVIL

All civil work e.g. site levels, shaping, retaining walls/structures/paving layouts/substrates and storm water run-off/distribution as per Civil Engineers design and specifications.

STRUCTURE

All structural work strictly as per Structural Engineers design and specifications. Any discrepancies between Architectural and Structural drawings to be reported immediately.

FIRE PLAN

All fire protection and installation requirements as per the Fire Engineers specifications and layouts. Architectural plans to be read in conjunction with the Fire Engineers layouts and any discrepancies reported to the architect before any work is carried on site.

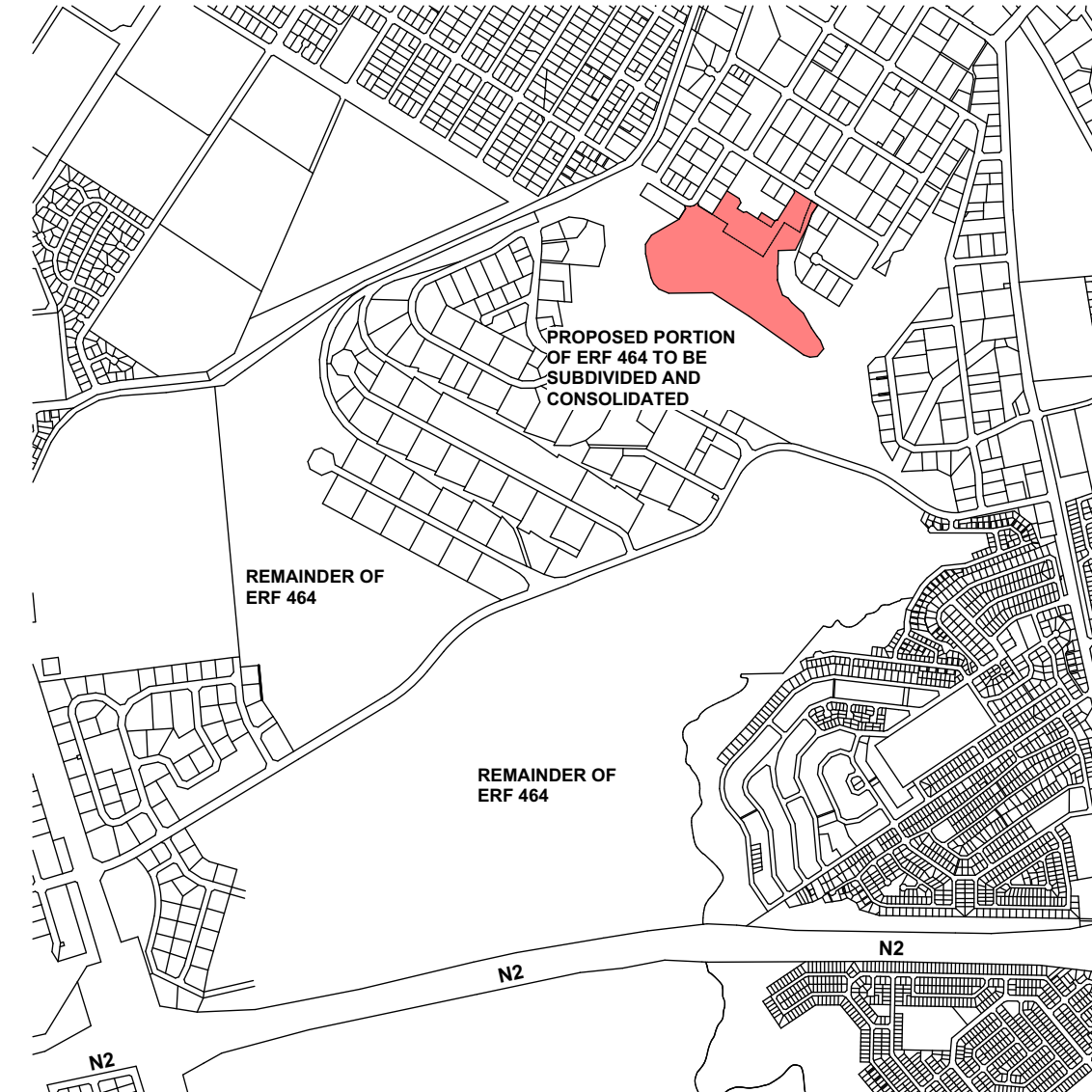
PAVING

Substrate and stormwater run-off as per Civil Engineers specification.

Paver specification as per Civil Engineers specifications.

SEWER

Indicated sewer lines are diagrammatical only for information purposes and does not represent



AREA SCHEDULE

REV 03

PORTION OF ERF 484 - TO BE CONSOLIDATED AND SUBDIVIDED

10-03-2026

PROPOSED NEW SUBDIVIDED AND CONSOLIDATED ERF AREA

Portion A of Erf 484

89600

Portion B of Erf 9057

175

Remainder Erf 13448

20100

Erf 20674

867

TOTAL ERF AREA

110742

EXISTING TOTAL COVERAGE

6067

5.48%

PROPOSED NEW TOTAL COVERAGE

7939

7.17%

STRUCTURE	LEVEL	COVERAGE	GBA	GLA	PARKING	LAND USE
Ex. BUILDING 1		208	208		8	19 Office
Ex. BUILDING 2		280	280		11	27 Office
Ex. BUILDING 3		468	468		19	26 Office
Ex. BUILDING 3 Covered Storage area		263	263			
Ex. BUILDING 4		670	670		27	41 Office
Ex. BUILDING 4 Covered parking		127	127			
Ex. BUILDING 5		637	637		25	72 Office
Ex. BUILDING 5 Covered parking		127	127			
Ex. BUILDING 5 Covered parking + storage		383	383			
BUILDING 6 - Proposed new office		412	412	365	15	15 Office
BUILDING 7 - Proposed new water depot	GL	1456	154.25	145	6	38 Office
			1137	1095	22	Industry
	FL		200.5	179.5	8	Office
Ex. BUILDING 8		2052	2052		41	47 Industry
Ex. BUILDING 8 Covered parking + storage		709	709			
Ex. BUILDING 8 Covered parking		143	143			
BUILDING 9 - Proposed new Guardhouse		4	4	4	0	0 N/A
		7939	7974.75		182	276

NOTES:

1. Parking requirements are calculated on GBA info only where available and the actual parking requirements may be less based on the GLA parking requirements as set out in the GM Integrated Zoning Scheme.

2. Where no formal parking is provided at existing buildings the maximum informal parking available is indicated.

GENERAL NOTES

All building work to comply with SANS 1040 regulations.
The contractor shall ensure that all drawings are drawn from
the original drawings and that all drawings are carried out on
composites.

The architect/the contractor is to check on site the size of the
components to be manufactured prior to installation.
The contractor is responsible for correct setting out of the building
all external and internal dimensions with particular reference to set
boundaries, building lines, etc.

The contractor is to provide levels, heights and dimensions on
site and to check the same against the drawings before any work is
commenced. The contractor is to report to the architect and/or
architectural and structural engineering engineer.

The contractor is to locate and identify existing services on the site
before commencing work.

If errors, omissions or discrepancies are reported immediately.
The contractor is to build in drawings of a D.P.C. beam or liner
these are shown on approvals, to all walls at floor level, whether or
not there is a basement. This is to be done in addition to the
external works.

The contractor is to ensure that all above mentioned works are
carried out on site.

This drawing is to be in conjunction engineers with all
ground surveying/geotechnical or any other drawing/information
applicable.

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The client accepts the responsibility of materials, content and
statement.

The elements shown on this drawing are prototypical design only,
they do not constitute a contract. The final design will be
notification and written approval being issued by Schenk Architects.



Cape EAPrac Company Profile

Cape Environmental Assessment Practitioners (Pty) Ltd was established in March 2008 by Directors **Doug Jeffery** (EAPASA Reg. No 2019/1746) and **Louise-Mari van Zyl** (EAPASA Reg. No. 2019/1444). The full time professional team includes: **Dale Holder** - Senior Environmental Practitioner (EAPASA Reg.No 2019/301), **Siân Holder** (Practitioner/ECO/Environmental Education), **Mariska Byleveld** - Candidate Environmental Practitioner (EAPASA Reg. No 2023/6593), **Francois Byleveld** - Candidate Environmental Practitioner (EAPASA Reg.No 2023/6700), **Oswald van Straten** - Full time On-Site ECO and **Carin Naudé** - Business Administrator.

The firm implements legislation under the National Environmental Management Act (NEMA), National Environmental Management: Waste Act (NEM:WA) and the National Environmental Management: Air Quality Act (NEM:AQA).

Our main services include:

- Environmental Impact Assessments (EIA's & Basic Assessments)
- Environmental Management Policies & Plans (EMMP's)
- Environmental Control & Monitoring (ECO)
- Environmental Audits
- Environmental Education & Interpretation
- Environmental Constraints Analysis
- Public Participation & Stakeholder Engagement
- Outeniqua Sensitive Coastal Area Permits (OSCA)
- Forestry Applications (for removal/pruning of protected species)
- GIS & Mapping
- Retrospective Damage Assessment (Section 24G)
- Rehabilitation Plans
- Coastal Water Discharge Permits
- Air Quality Licence Applications (AEL's)
- Waste Management Licence Applications (Waste Licence)

PROJECT EXPERIENCE INCLUDES

Reverse Osmosis Desalination; Sensitive Environmental Management including National Parks/Conservation Areas & World Heritage Sites; Renewable Energy Projects (Solar & Wind); Waste Management License Applications for Waste Disposal Sites, Sewerage Plants & Abattoirs; Waste-to-Energy Projects including Biogas Facilities; Marine Aquaculture; Filling Stations; Air Emission Processes for Sawmills, Brick Works & Processing Plants; ECO responsibilities on Private & State Housing Developments, Provincial & Municipal Roads and Infrastructure, Private, Provincial & Municipal applications for development of infrastructure, housing & commercial components

LIST OF ONGOING **CAPE EAPRAC**
PROJECTS IS AVAILABLE

PLEASE VISIT OUR
WEBSITE FOR MORE DETAILS

The Team

Doug Jeffery - Director

Doug Jeffery obtained a BSc with majors in Botany and Zoology at the University of Cape Town (UCT) and went on to obtain his MSc in Botany also at UCT. He has worked extensively in the Western-, Southern- and Eastern Cape both as a professional Botanist and co-ordinating EIA processes for over 20 years. He is registered with the South African Council for Natural Scientific Professions since 1990. He is also registered with the Environmental Assessment Practitioners Association of South Africa.

email: doug@dougjeff.co.za



Dale Holder

Senior Environmental Practitioner

Dale graduated from the Technicon Pretoria in 1999 with a National Diploma in Nature Conservation. He worked as a Socio-Ecologist for SANParks and as Project Manager for the Department of Marine and Coastal Management. He started working as an environmental practitioner in 2002. His focus is currently on Renewable Energy Infrastructure Assessment, but is also involved with assessments in various other industries.

Registered as a Professional Environmental Assessment Practitioner with the Environmental Assessment Practitioners Association of South Africa (EAPASA). (Reg. No. 2019/301)

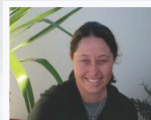
email: dale@cape-eaprac.co.za



Siân Holder - Consultant / ECO

Siân completed a National Diploma Nature Conservation (Pta Tech), B-tech Nature Con. (NMMU) and a Masters Degree in Environmental Education (Rhodes University). She joined our team in 2008. She worked as Environmental Assessment Practitioner for many years, but her current focus is on Environmental Control and Monitoring, Rehabilitation and Alien Invasive Management.

email: sian@cape-eaprac.co.za



Carin Naudé

Business Administrator

Carin obtained a BBA degree through UNISA. She gained extensive experience in business management and administration since 1988. She joined Cape EAPrac in June 2008 and is responsible for the day to day administrative functions of the business. Her acquired knowledge and leadership skills enables the rest of the team to function efficiently in their respective fields.

email: carin@cape-eaprac.co.za



Louise-Mari van Zyl

Director / Principal Environmental Practitioner

Louise-Mari van Zyl holds a Masters degree in Geography & Environmental Sciences from the University of Stellenbosch. She worked as an Environmental Assessment Practitioner (EAP) since 2002 on projects in the Eastern, Southern, Western & Northern Cape provinces. She is registered as an EAP with the Environmental Assessment Practitioners Association of South Africa.

email: louise@cape-eaprac.co.za



Mariska Byleveld

Candidate Environmental Practitioner

Mariska joined Cape EAPrac in April 2022. She completed her BSc in Geology in 2016, BSc Honours in 2017 and holds a MSc in Geology from the University of the Free State (2020). She worked as a Geologist for two years before joining our team. She is registered as a Candidate Environmental Practitioner.

email: mariska@cape-eaprac.co.za

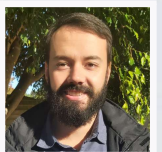


Francois Byleveld

Candidate Environmental Practitioner

Francois graduated from the University of the Free State in 2020 with a MSc in Geology. After working in the petroleum industry, he joined our team in May 2023 to train as an Environmental Assessment Practitioner. He is registered as a Candidate EAP.

email: francois@cape-eaprac.co.za



Oswald van Straten

On-Site ECO

Ozzie is a full-time, on-site ECO, working on PV Solar construction sites in the Northern Cape. He holds a MSc. degree in Nature Conservation. His knowledge and understanding of environmental management make him a valuable asset on site.

email: ozzie@cape-eaprac.co.za

