

Appendix 9: Updated Construction Environmental Management Programme



CEN INTEGRATED ENVIRONMENTAL MANAGEMENT UNIT

Environmental and Rural Development Specialist

**Updated Construction Environmental Management Program:
Development of a light industrial development zone, filling
station, and supporting roads and infrastructure on Portion 4
of Farm Gwayang No. 208, George**

18 October 2023

Contents

Glossary of Terms	3
Chapter 1: Introduction and Project Overview	6
1.1 Introduction to the Environmental Management Program	6
1.1.1 Approach to environmental management	6
1.1.2 For Whom is the EMPr Intended?	6
1.2 Details of the Environmental Assessment Practitioner that prepared the EMPr	8
1.3 Locality and Environmentally Sensitive Areas	8
1.4 Project Description	12
1.5 Construction Activities	15
1.6 Potential Risks/Impacts	15
1.7 Compliance with Relevant Legislation and Regulatory Requirements	16
Chapter 2: Environmental Management Program Requirements	18
2.1 Roles and Responsibilities	18
2.1.1 Project Company/Holder of the Environmental Authorisation – Sanwill Investments (Pty) Ltd	18
2.1.2 Site/Contract Manager	19
2.1.3 Contractor	19
2.1.4 Environmental Control Officer	20
2.1.5 Environmental Site Officer	21
2.1.6 Environmental Auditor	22
2.2 Management Requirements	23
2.3 Conditions relevant to Pre-Construction Phase	23
2.3.1 Construction Planning and Compliance	23
2.3.2 Developing a Code of Conduct for Contractors	30
2.3.3 Environmental Awareness Plan	31
2.4 Conditions Relevant to Construction Phase	32
2.4.1 Conditions of the Environmental Authorisation	32
2.4.2 Dealing with Emergencies, Environmental Incidents and Public Complaints	36
2.4.3 Restriction of Working Areas	39
2.4.4 Biodiversity	40
2.4.5 Importing and Storage of Materials/Substances	45
2.4.6 Air Quality	47
2.4.7 Noise and Vibrations	49
2.4.8 Water Consumption	50
2.4.9 Water Quality	51
2.4.10 Waste Management	55
2.4.11 Materials handling, use, and stockpiles	58
2.4.12 Fuel Storage and Re-Fuelling	61
2.4.13 Cement	63
2.4.14 Erosion Control Measures	64
2.4.15 Social Issues	66
2.4.16 Decommissioning and Site Rehabilitation	67
2.4.17 Organisational Structure	72
2.4.18 Monitoring and Management Meetings	72
2.4.19 Auditing	73
2.4.20 Response to Public Complaints	74
2.4.21 Documentation	74

Glossary of Terms

Term	Explanation
Ambient (air)	Current surrounding atmospheric condition
Archaeology	The study of the study of the ancient and recent human past through material remains.
Biodiversity	Refers to the diversity of genes, species and ecosystems on Earth, and the ecological and evolutionary processes that maintain this diversity
Biodiversity Plan	Map of biodiversity priority areas (critical biodiversity areas and ecological support areas) accompanied by contextual information, land-use guidelines and supporting GIS information.
Critical Biodiversity Areas	Are areas required to meet biodiversity targets for ecosystems, species and ecological processes, determined by a systematic biodiversity plan. They may be terrestrial or aquatic, and are mostly (but not always) in a good ecological state. These areas need to be maintained in a natural or near-natural state, and loss or degradation must be avoided. If these areas were to be modified, biodiversity targets could not be met
dB(A) (decibels A-scale)	A frequency-weighted noise unit used for traffic and industrial noise measurement
Ecological Support Area	An area that must be maintained in at least fair ecological condition (semi-natural/moderately modified state) in order to support the ecological functioning of a CBA or protected area, or to generate or deliver ecosystem services, or to meet remaining biodiversity targets for ecosystem types or species when it is not possible or no necessary to meet them in natural or near-natural areas. One of five broad categories on a CBA map, and a subset of biodiversity priority areas.
Ecosystem	An assemblage of living organisms, the interactions between them and their physical environment
Environment	The surroundings in which an organisation operates, including air, water, land, natural resources, flora, fauna, humans, and their interrelation
Environmental Aspect	An element of an organisation's activities, products or services that can interact with the environment
Environmental Control Officer	An Environmental Control Officer (ECO) is a person (professional with relevant skills and qualifications to undertake the role) appointed by the developer to monitor all activities on the development site during construction, and ensure that all contractors comply with the requirements of the conditions as stipulated in the Environmental Authorisation as well as the requirements as outlined in the Environmental Management Programme.

Term	Explanation
Environmental Site Officer	An Environmental Site Officer (ESO) is a person (professional with relevant skills and qualifications to undertake the role) appointed by the contractor who is responsible for day-to-day environmental management at the construction site in line with the Conditions of the Environmental Authorisation as well as the requirements as outlined in the Environmental Management Programme and the contractor's method statements.
Environmental Impact	Any change to the environment, whether adverse or beneficial, wholly or partially resulting from an organisation's activities, products or services
Environmental Impact Assessment (EIA) / Basic Assessment (BA)	A study of the environmental consequences of a proposed course of action. An environmental evaluation or assessment is a study of the environmental effects of a decision, activity or undertaking. It is most often used within an IEM Planning process as a decision support tool to compare different options
Environmental Management File	A file that contains all relevant documentation for environmental management during construction. To be maintained by the ESO and ECO for the duration of the project.
Environmental Management System	The part of the overall management system that includes organisational structure, project activities, responsibilities, practices, procedures, processes and resources for developing, implementing, achieving, reviewing and maintaining the environmental policy
Exotic	Any plant species not falling under the definition of 'indigenous'.
Integrated Environmental Management (IEM)	A process that involves the authorities and public, and integrates environmental issues with all aspects of Planning
Invasive vegetation	Tending to displace, or increase in cover relative to surrounding vegetation.
Mitigation	Measures to reduce negative impacts on the environment from land-use activities; in terms of climate change, measures to reduce greenhouse gas emissions into the atmosphere, and enhance greenhouse gas sinks
Palaeontology	(study of) life in geological past
Protected Area	An area of land or sea that is protected in terms of the Protected Areas Act and managed mainly for biodiversity conservation
Strategic water source area	An area that supplies a disproportionate amount of mean annual runoff to a geographical region of interest. In South Africa, SWSAs are the 10% of the land area that delivers 50% of mean annual run-off

Requirements of an Environmental Management Programme (EMPr) as detailed in Appendix 4 of the NEMA EIA Regulations 2014 (as amended).

	Requirement	Reference
1(a)	(i) details of the EAP who prepared the EMPr; and	Section 1.2 and Appendix A
	(ii) details of the expertise of that EAP to prepare an EMPr, including a curriculum vitae	Section 1.2 and Appendix A
1(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description;	Section 1.4
1(c)	a map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitives of the preferred site, indicating any areas that should be avoided, including buffers;	Chapter 1
1(d)	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 phases of the development including -	
	(i) planning and design;	Section 2.3
	(ii) pre-construction activities;	Section 2.3
	(iii) construction activities;	Section 2.4
	(iv) rehabilitation of the environment after construction and where applicable post closure;	Section 2.4.16
(v) where relevant, operational activities;	A separate EMP is available for operational phase activities.	
1(e)	a description and identification of impact management outcomes required for the aspects contemplated in paragraph (d)	Throughout Chapter 2:
1(f)	a description of proposed impact management actions, identifying the manner in which the impact management objectives and outcomes contemplated in paragraphs (d) and (e) 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;	Throughout Chapter 2:
	(ii) comply with any prescribed environmental management standards or practices;	Throughout Chapter 2:
	(iii) comply with any applicable provisions of the Act regarding closure, where applicable; and	Throughout Chapter 2:
(iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable;	Not applicable	
1(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Throughout Chapter 2
1(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f)	Throughout Chapter 2
1(i)	an indication of the persons who will be responsible for the implementation of the impact management actions;	Section 2.1
1(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented;	Preconstruction – Section 2.3 Construction – Section 2.4
1(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 2.4
1(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations;	Section 2.4
1(m)	an environmental awareness plan describing the manner in which -	
	(i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and	Section 2.3.3
	(ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 2.3.3
1(n)	any specific information that may be required by the competent authority.	None

Chapter 1: Introduction and Project Overview

1.1 Introduction to the Environmental Management Program

1.1.1 Approach to environmental management

A number of steps are essential to ensure that environmental damage will be minimised or eliminated during construction and operational phase activities:

1. The scope of works must be outlined, and potential impacts / risks identified.
2. Suitable management outcomes and actions/mitigation measures need to be defined.
3. A system to ensure that the necessary mitigation is being implemented must be established – this EMPr provides a framework for an environmental management system, where desired outcomes and targets are set for various activities and their related impacts. Roles and responsibilities of the various role players responsible for implementing the EMPr (and mitigation measures) are defined.
4. The effectiveness of the management must be monitored.
5. The Project Manager, the contractor(s), the Environmental Control Officer (ECO), the Environmental Site Officer (ESO), and the representatives of the developer must be in a position to verify the work undertaken and to monitor the environmental management process.

1.1.2 For Whom is the EMPr Intended?

The EMPr is a management tool and will be used to guide environmental best practice during construction phase when developing Ptn 4 of Farm Gwayang No 208. This Construction EMPr is an updated version of the EMPr submitted with the approved Basic Assessment application for development of a light industrial zone and filling station on the property. The Environmental Authorisation (EA) issued by the Department of Economic Development, Environmental Affairs and Development Planning (DEA&DP) (reference number 16/3/3/1/D2/19/0024/19) included a Condition that the EMPr must be updated and submitted to the Department for approval prior to construction commencing. This EMPr has been updated to:

1. Include Conditions of the EA
2. Reflect details of the current landowner (and developer), who will be the holder of the EA¹

¹ A Part 2 Amendment Application has been submitted to the DEA&DP to update the details of the holder of the EA, and to change the Site Development Plan. This updated CEMPr reflects the details applied for in the Amendment Application, and is submitted therewith. Should the DEA&DP not approve the application, the CEMPr will need to be amended accordingly prior to construction commencing.

3. Outline the most recent proposed Site Development Plan (as applied for in the Part 2 Amendment Application referred to in Footnote 1).

Sanwill Investments (Pty) Ltd (the landowner, developer and holder of the Environmental Authorisation (EA)) is ultimately responsible for implementing the Conditions of the EA relevant to this specific application. The development on Ptn 4/208 is planned in collaboration with other developments on 4 other properties that collectively form the George Airport Support Zone. Hark Properties owns Ptn 139/208, and George Aerotropolis owns Ptns 130, 131 and 132/208. All areas within the ASZ will share services and stormwater infrastructure. While each property/development is subject to its own EA and EMPr, environmental management across the ASZ needs to be co-ordinated and integrated. A Property Owners Association (POA) will be formed that represents all developers within the ASZ, and will be responsible for operational phase environmental management that relates to the full ASZ and all shared services and stormwater management infrastructure. The POA will hold the different owners within the ASZ responsible to comply with any specific condition in the EA and/or EMPr that pertains specifically to the land of a specific owner.

This EMPr deals with construction activities, and has been developed to take cognisance of specific management requirements associated with the light industrial development and filling station with supporting infrastructure on Ptn 4/208, but it also adopts a holistic management approach and considers the project specifics in relation to the full ASZ area. Irrigation with treated effluent from the WWTW, and discharge of treated effluent to the Aquatic Zone is also addressed in this EMPr.

The document will be used by contractors, the ECO and ESO in construction phase. A separate OEMP is available, and will be used by the holder of each EA (relevant to development on their respective properties) and the POA and the 'environmental management team' in operational phase. It is important that the contents of the EMPr is communicated to all people working in the project area through an environmental awareness training system.

This EMPr must be kept on site at all times, and should be made available to the public upon request.

1.2 Details of the Environmental Assessment Practitioner that prepared the EMPr

EAP	CEN Integrated Environmental Management Unit
Contact person	Belinda Clark
Postal Address	43 Rhodes Street, Mount Pleasant, Gqeberha (Port Elizabeth)
Cellular	072 725 6400
Email address	bclark@telkomsa.net
Qualification	PhD Botany
Years of Experience	18
Professional Registration	Registered Environmental Assessment Practitioner Number 2019/1336

A copy of the EAP's *Curriculum Vitae* is attached as Appendix A.

1.3 Locality and Environmentally Sensitive Areas

Details of Ptn 4 of Gwayang No 208, including ownership, is presented in Table 1. The property is within the George Airport Support Zone. Figure 1 is a locality map of the land uses and cadastral boundaries.

Table 1: Property Details

Owner and Contact person	SANWILL INVESTMENTS PTY LTD – Mr De Bruyn Joubert
Municipality	George Local Municipality
Property	Ptn 4 of Farm Gwayang No. 208
SG Code	C02700000000020800004
Position (central)	33°59'52.02"S 22°23'9.56"E



Figure 1: Locality Map.

Environmentally sensitive aspects of the project area and surrounding landscape includes:

- ❖ The site is within a Strategic Water Source Area – Outeniqua Surface Water area.
- ❖ The drainage corridors that run through the site are tributaries of the Gwayang River. While the drainage areas through the site are highly modified and of low ecological importance, they do provide a corridor for the movement of water through the landscape (Belcher, 2022). This functionality of the watercourses is recognised within the biodiversity conservation mapping of the area where the watercourses are mapped as aquatic ecological support areas (ESA 2). The corridors and their associated functionality must therefore be maintained. The Aquatic Zone identified in the Stormwater Management Plan provides this function, and the 20 m corridor must be maintained.
- ❖ The wetland and Gwayang River to the south of Ptn 4/208 are described as a 'valley bottom wetland' and are part of the Western Cape Biodiversity Plan Critical Biodiversity Area network. Activities on the site must be managed to prevent impacts on these important downstream aquatic areas (for example through hydrological flow modification, erosion and sedimentation, and pollution).
- ❖ While the vegetation type (Garden Route Granite Fynbos) is endangered, the terrestrial ecologist confirmed it is transformed and of little ecological value.
- ❖ Surrounding land uses include the George Airport, a quarry, a nursery, agricultural land, and roads and infrastructure. The area is considered 'visually sensitive' and measures must be implemented to avoid visual impacts to surrounding sensitive receptors.

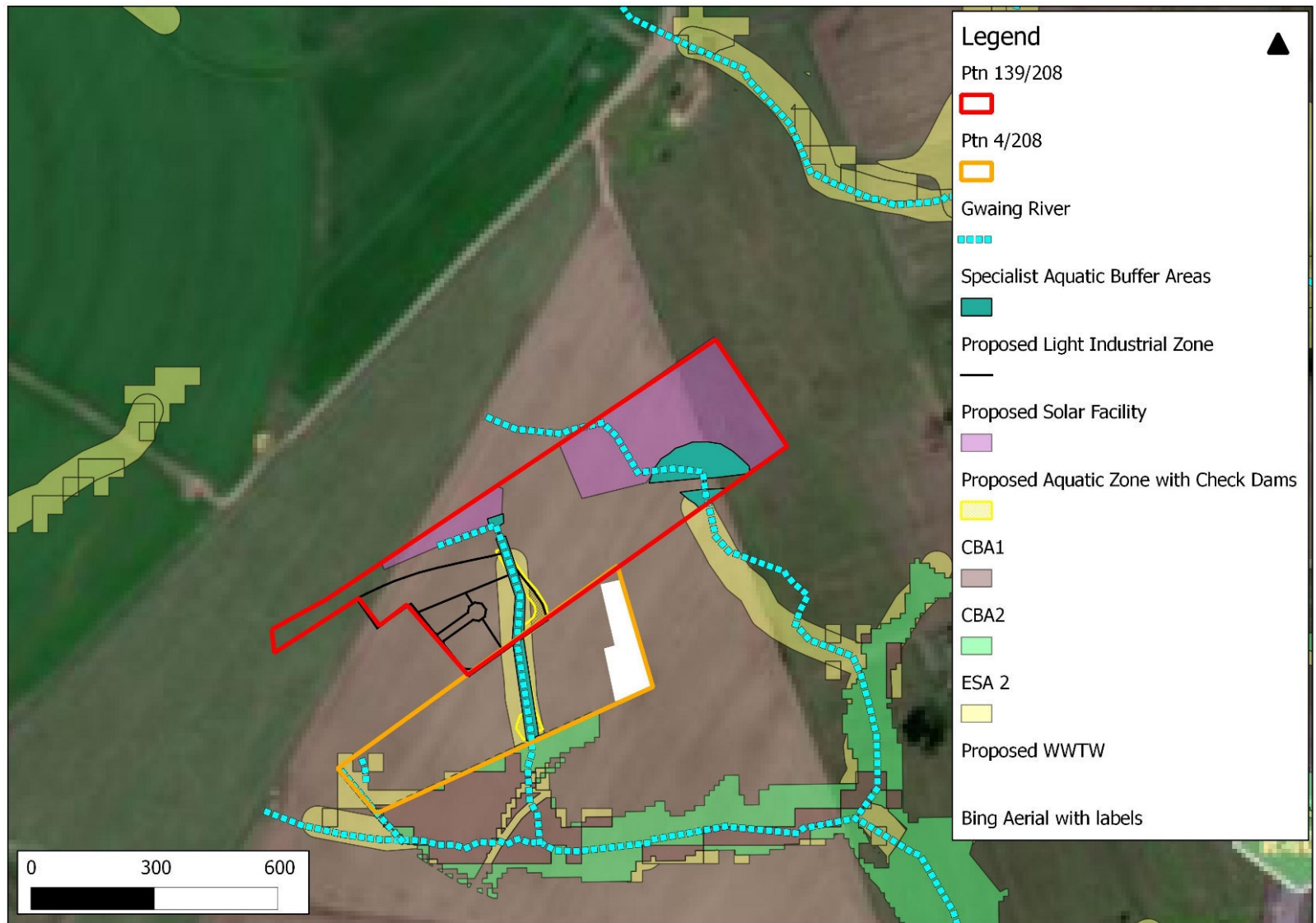


Figure 2: Environmentally Sensitive Features on Ptn 4 and Ptn 139 of Farm Gwayang No 208. This CEMPr is relevant to Ptn 4, and the WWTW on the Remainder of Ptn 4/208 is the subject of a separate Environmental Authorisation issued to Hark Properties (Pty) Ltd.

1.4 Project Description

An Environmental Authorisation was issued by the DEA&DP on 31 January 2022 (Reference number 16/3/3/1/D2/19/0024/19). The development is for a filling station, warehousing and airport support services, with service and stormwater infrastructure and internal roads on Portion 4 of the Farm Gwayang No. 208 in George. The property is located in the 'George Airport Support Zone' as described in the Gwayang LSDF (2015).

The approved development entails a change in land use from Agriculture 1 to Subdivisional Area, and subsequent subdivision into 13 erven to accommodate the following land uses:

- 5 x Industrial Zone I portions;
- 1 x Business Zone VI portion;
- 1 x Transport Zone II portion;
- 3 x Open Space Zone II portions &
- 1 x Agriculture Zone I portion (the Remainder))

Services and stormwater management are planned collaboratively with development on properties in the George ASZ, including the integrated stormwater management system by means of an Aquatic Zone that drains through the property. A Waste Water Treatment Works has been approved on the Remainder of Ptn 4/208 (i.e. on the eastern side of the Western Bypass Arterial). Sewage from the development on Ptn 4/208 will be pumped to the WWTW for treatment. This is in line with the EA issued to Hark Properties (Pty) Ltd (reference 16/3/3/1/D2/19/0031/22). Access to the development will be via the George Municipality's Road Master Plan with an access spine on the western border of Ptn4/208. The road provides access to all properties in the ASZ. Development details applied for in the Part 2 Amendment Application of September 2023 are as follows:

Zoning	Quantity	Ha	%
Open Space Zone II	3	0.7846	7.10
Business Zone VI	1	0.9930	8.99
Industrial Zone I	5	4.7634	43.13
Transport Zone II (Public Road)	1	0.1645	1.49
Transport Zone III (Private Road)	4	0.6488	5.88
Agriculture Zone I ²	1	3.6889	33.40
TOTAL	15	11.0433	100

² Note that this is where the WWTW has been approved for development and operation (i.e. on the Remainder of Ptn 4/208)

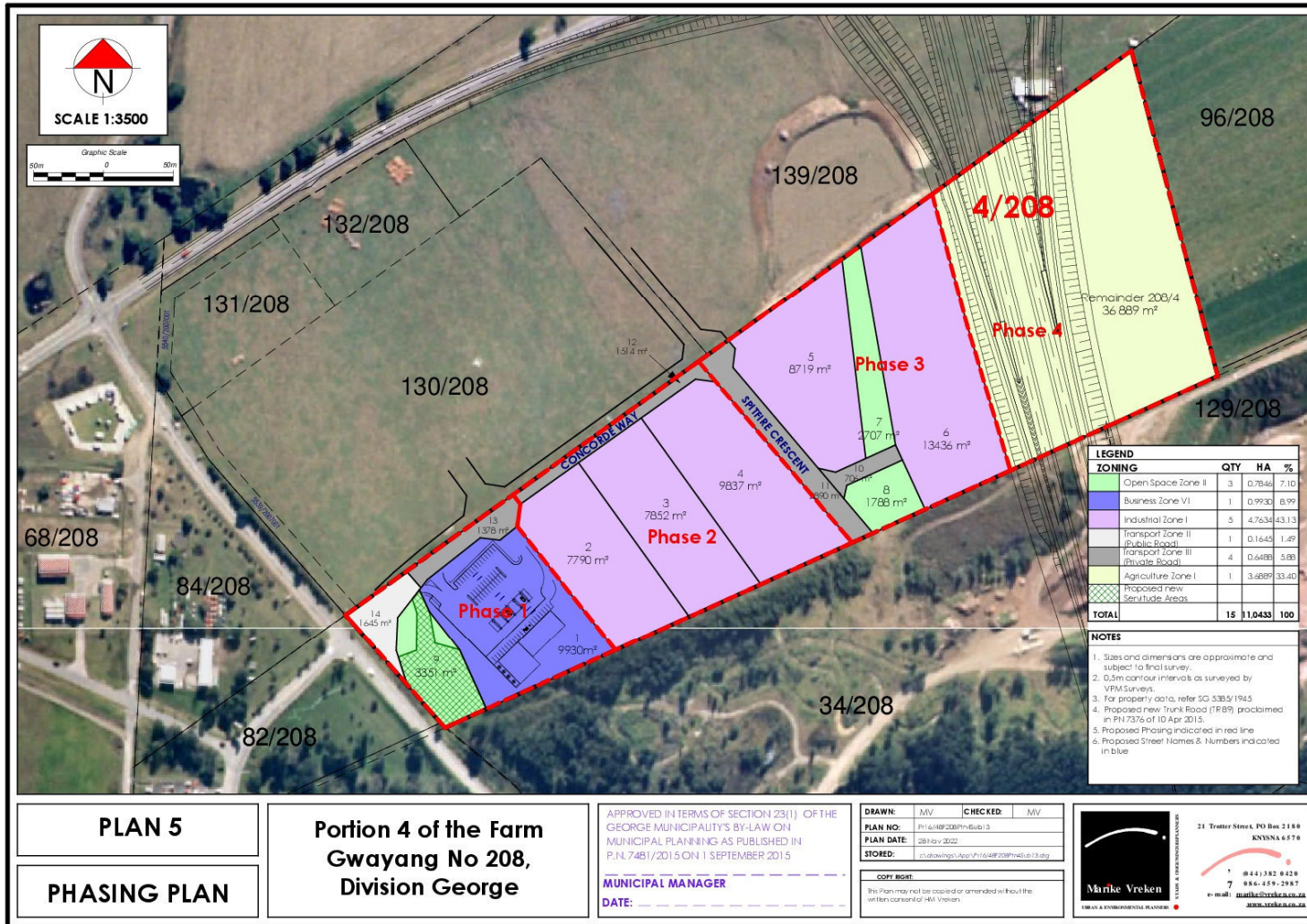


Figure 3: Site Development Plan (as per the Amendment Application of September 2023).

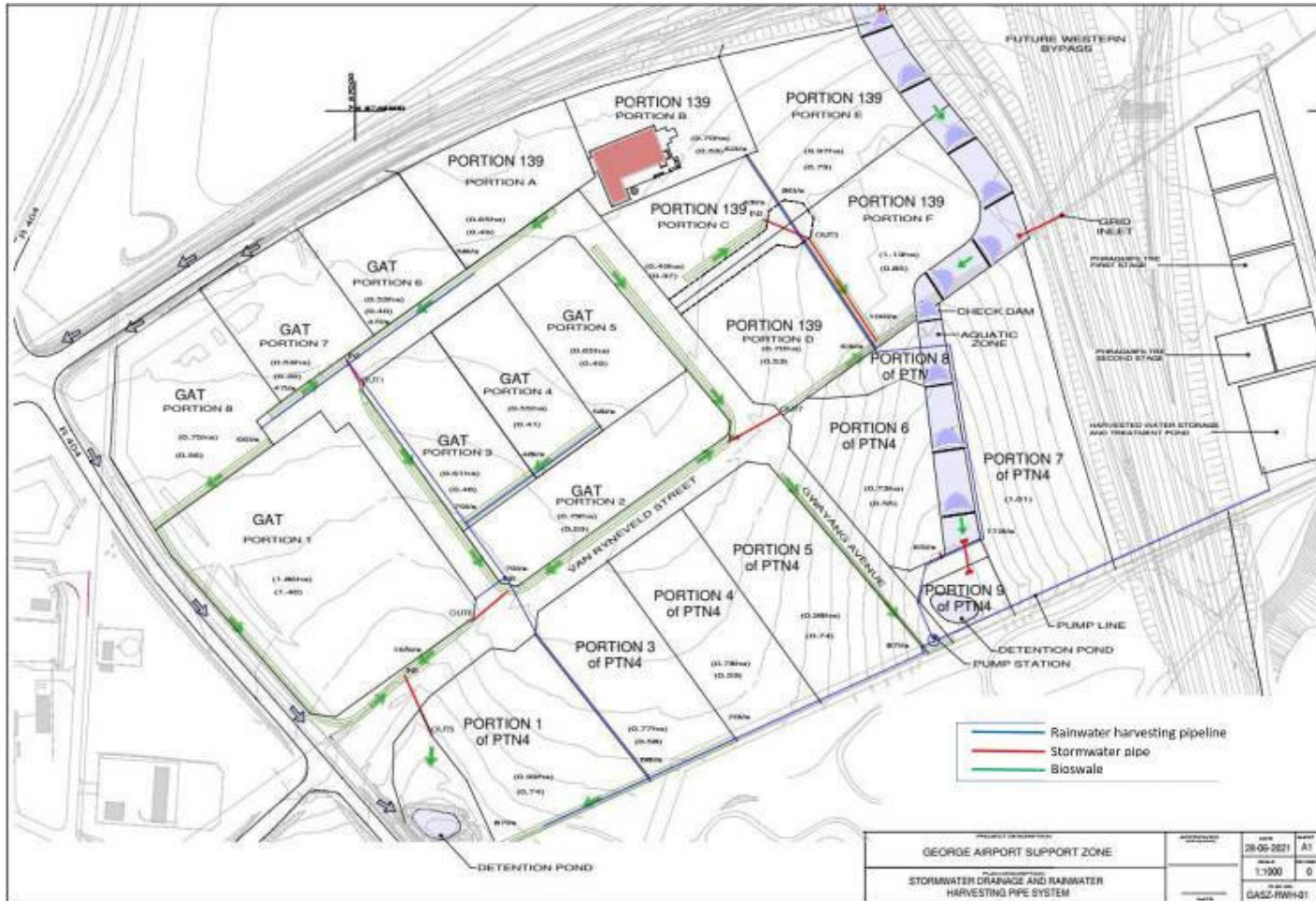


Figure 4: Plan showing the Aquatic Zone that is part of the integrated stormwater management plan for all developments in the George ASZ, and the Waste Water Treatment infrastructure on the Remainder of Ptn4 of Farm Gwayang No 208.

1.5 Construction Activities

The following construction activities will be undertaken and have relevance to management recommendations to be covered in this CEMPr to avoid / mitigate environmental impacts:

- Site planning: i.e. construction site layout, site camp position, stockpile areas, access and turning circles etc.
- Site preparation
- Site demarcation/pegging
- Site establishment, fencing, signage
- Importing, use, and storage of materials, vehicles and equipment
- Site clearing and grubbing
- Excavation, trenching
- Installation of services (internal and bulks)
- Creating access and internal road network, with parking
- Filling and compaction
- Levelling
- Construction of top structures structures
- Establishment of public open spaces
- Fencing
- Waste storage and removal
- Fuel storage and re-fuelling
- Handling and storage of hazardous substances
- Concrete/cement mixing
- Landscaping and rehabilitation

Construction is planned in 2 phases – Phase 1 is the establishment of the filling station, and Phase 2 the remainder of the development. It is expected that Phase 1 will take ~1 year, and Phase 2 ~5 years.

1.6 Potential Risks/Impacts

Due to the nature of the activities, and the location of the site in relation to important downstream aquatic areas, a visually sensitive landscape and an area used by tourists; the following potential risks/impacts are anticipated in construction phase:

- ❖ Solid waste: e.g. cement bags, packaging, food waste from construction staff, building rubble etc. Waste can be unsightly, pollute natural areas, and present a safety hazard.

- ❖ Fuel storage and re-fuelling, cement mixing and effluent runoff, delivery, transfer and storage of other hazardous substances, use of portable toilets: surface and groundwater pollution.
- ❖ Noise and disturbance from construction staff, vehicle movement, and construction activities (e.g. offloading materials, excavations, compacting etc.).
- ❖ Air emissions: dust from stockpiles, exposed surfaces, transporting fine materials; exhaust emissions from vehicles and equipment.
- ❖ Public safety and traffic disruption: construction vehicles on public roads.
- ❖ Visual impact: dust, construction machinery, exposed surfaces, waste.
- ❖ Damage to public roads and infrastructure.
- ❖ Terrestrial biodiversity: alien vegetation invasion, disturbance to / death of fauna, fires.
- ❖ Aquatic biodiversity: runoff of contaminated surface flow to downstream aquatic areas, erosion and sedimentation, alien vegetation spread in riparian areas, change to the hydrological flow as a result of increased runoff.

1.7 Compliance with Relevant Legislation and Regulatory Requirements

Compliance with applicable environmental legislation is listed as one of the Environmental Management Requirements in the EMPr. However, the list provided is not exhaustive and it is the responsibility of the developer or his/her representative and the contractors in construction phase to ensure compliance with all environmental (and other) legislation. An ESO and ECO must be employed during construction phase to provide advice on this matter as and when required.

Table 2: Applicable legislation.

Issue	Legislation	Authority
Water Use and Water Quality	National Water Act (Act 36 of 1998)	Department of Water and Sanitation (DWS) Breede-Gouritz Catchment Management Agency
Air quality and dust generation	Air Quality Act (Act 39 of 2004)	George Local Municipality
Worker health and safety	Occupational Health and Safety Act, 1993 (Act 85 of 1993)	Dept Labour
A socially responsible workforce	Labour Relations Act, 1995 (Act 66 of 1995)	Dept Labour
Community health and safety	Occupational Health and Safety Act 85 of 1993	George Local Municipality
Preservation of archaeological and cultural artefacts	National Heritage Act, (Act 25 of 1999)	Western Cape Heritage Resources Agency
Waste disposal	National Environmental Management: Waste Act (Act 59 of 2008) and SRVM By-Laws	DEADP George Local Municipality
Noise	Environment Conservation Act 1989 (Act 73 of 1989) Sec 25 and SRVM By-Laws	George Local Municipality
Protected Animals and Plants	National Environmental Management: Biodiversity Act (Act No 10 of 2004)	DEADP
Toxic and hazardous substances	Hazardous Substances Act (Act 15 of 1973) National Environmental Management: Waste Act (Act 59 of 2008) National Water Act	DFFE, DWS
Alien Vegetation	Conservation of Agricultural Resources Act, NEM: Biodiversity Act (list of alien and invasive species)	DFFE DEADP and Cape Nature

Chapter 2: Environmental Management Program Requirements

2.1 Roles and Responsibilities

2.1.1 Project Company/Holder of the Environmental Authorisation – Sanwill Investments (Pty) Ltd

The Project Company refers to the holder of the EA who will assume overall responsibility for the administration and implementation of the EA and EMPr. This is Sanwill Investments (Pty) Ltd. The Project Company will be responsible for the following tasks amongst others:

- Ensure that all conditions of approval as contained in the EA are adhered to;
- Ensure that the requirements as set out in this EMPr are adhered to and implemented;
- Ensure all authorisations, permits, consents are in place and any other legal requirements are settled before any action is undertaken that requires these to be in place;
- Ensuring compliance with the conditions by any person acting on his/her behalf, including an agent, sub-contractor, employee or any person rendering a service to the Project Company;
- Notifying the Competent Authority where any detail with respect to the Environmental Authorisation must be amended, added, substituted, corrected, removed or updated;
- Appoint a suitably experienced Environmental Control Officer for the duration of the construction and rehabilitation phases of implementation contained herein. The ECO must be appointed prior to commencement of any works (i.e. removal and movement of soil and / or rubble or construction activities commencing);
- Provide resources and appoint external contractors/specialists/professionals as required for the implementation of this EMPr;
- Review, update and amend the EMPr to include relevant conditions of approval contained in the EA and other approvals (if applicable) or when site specific circumstances necessitate a change in an approach to site management;
- Provide all principal contractors working on the project with a copy of this EMPr as part of tender contract documentation to allow the contractors to cost for its requirements within their respective construction contracts; and
- Ensure close liaison with the local municipality and ward councillors, and other stakeholders in the surrounding area.

2.1.2 Site/Contract Manager

The function of the site/contract manager is to administer the Contract as an agent to the Project Company. He/she will oversee the execution of the works, examine and test materials and workmanship, and deliver and receive communications to/from the Contractor(s).

The role of the Site / Contract Manager, pertaining to environmental matters, may include:

- Act as an agent to the Project Company on matters relating to the environment, and compliance with the EMPr;
- Ensure compliance and monitoring of all Health, Safety and Environmental aspects as it relates to the project and in accordance with the relevant legislation;
- Receive and review Environmental Control Officer (ECO) reports, ensure that any issues contained therein are addressed and report to the Project Company as required;
- Approve, in consultation with the ECO, the Contractor's Method Statements required in terms of the EMPr;
- Ensure that the Contractor is well-versed in the contents of the EMPr and that their conduct is proactive and effective in terms of environmental management and protection measures;
- Ensure the Contractor is aware of its responsibilities in terms of the EMPr, including (but not limited to):
 - Appointing an environmental site officer/s to assist with the EMPr implementation on a daily basis;
 - Maintaining a register of public complaints and environmental incidents, and a record of how these are responded to and the timeframe provided for this;
 - Supporting the ECO in their roles and responsibilities; and
 - Issue instruction to cease work where such an instruction is warranted and issuing of any relevant fines or disciplinary action that may be applicable.

2.1.3 Contractor

The Contractor must:

- Ensure that all of its sub-contractors, employees, etc., are fully aware of the environmental issues detailed in this EMPr.
- Liaise closely with the Site/Contract Manager and the ECO;
- Ensure that the works on site are conducted in an environmentally sensitive and safe manner and in accordance with the requirements of the EMPr;
- Prevent actions that may cause environmental / social harm; and
- Ensure compliance of all site personnel/visitors with the EMPr and other conditions of approval where relevant.

2.1.4 Environmental Control Officer

The Project Company shall appoint a suitably qualified independent ECO³ to monitor the Contractors' compliance in terms of this EMPr and the conditions contained in the EA, as well as address environmental site issues. The ECO will be an external person, and will work closely with the Contractor's appointed Environmental Site Officer (ESO).

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

- Ensure compliance with the EMPr and the conditions contained herein.
- Keep record of all activities on the site; problems identified; transgressions noted and a task schedule of tasks undertaken.
- Liaise with the DEADP, BGCMA, Project Company, Site / Contract Manager and ESO;
- Assist with pre-construction compliance and construction planning relevant to environmental management;
- Conduct environmental induction training (with ESO) with all workers prior to commencement of work;
- Ensure the proactive and effective implementation and management of environmental protection measures;
- Monitor the Contractors' activities for compliance with the various environmental requirements contained in the EMPr and any specific conditions of authorisation contained in the EA regularly, including:
 - Undertaking monthly compliance inspections;
 - Compiling monthly ECO Reports on the findings of the inspections and audits, as well as on any emergency or unforeseen situations and incidents in which the expertise of the ECO has been consulted;
- Submit monthly ECO Reports to the project team, DEADP, BGCMA, and Project Company (or any other authority/body deemed necessary by the project team);
- Monitor the implementation of requisite remedial action in the event of non-compliance and record proof of such in the subsequent ECO Report;
- Consult with the Site/Contract Manager, Contractor and ESO should any non-compliances merit a potential 'stop-work' instruction;
- Attend relevant site meetings with the engineer, contractor and other relevant project team members at least once a month or as may be required depending on circumstances or any issues that need to be discussed;

³ The designation is reserved for a suitably qualified (National Diploma / Degree in Natural Science or an equivalent qualification), independent, environmental manager, with adequate environmental knowledge to understand and monitor the implementation of the EMPr. The ECO cannot be the EAP.

- Review the Contractor's Method Statements (from an environmental perspective) required in terms of this EMPr, prior to the proposed activities taking place;
- Keep an Environmental Management File, inclusive of this EMPr, all authorisations, method statements, and registers (e.g. public comments or issues, environmental incidents, faunal incidents, environmental induction, waste management, water truck activities, etc.).
- Ensure that any and all public comments or issues are appropriately and timeously reported and addressed by the Contractor; and
- Provide ad-hoc environmental advice, including opinion on environmental legal requirements, to the Project Company and the Contractor regarding issues that may arise during the Contract.

The ECO must remain employed until all development activities are concluded, and the post construction rehabilitation and monitoring requirements are finalised.

2.1.4.1 Post-Construction Rehabilitation Monitoring

The ECO will need to be appointed for a 6 month period after construction is completed to monitor rehabilitation of disturbed areas and alien vegetation control. A close-out audit report must be compiled after 6 months and submitted to the DEADP and BGCMA. The ECO will need to evaluate whether the development area is in a suitable and stable state, and if rehabilitation has been successful. Alternatively, recommendations must be made for additional measures to address any issues.

2.1.5 Environmental Site Officer

The ESO refers to the nominated staff member of the Contractor who will fulfil the role of the Contractor's environmental representative to monitor, review and verify compliance with the EMPr. An ESO must be appointed by the Contractor for the duration of the contract.

The ESO shall liaise closely with the Site/Contract Manager and the ECO and shall ensure that the works on site are conducted in an environmentally responsible manner and in compliance with the requirements of the EMPr.

The role of the ESO will include, but are not limited to:

- Liaise between the Contractor and ECO on matters relating to the environmental considerations on site;
- Assist with the compilation of environmental components of Method Statements on behalf of the Contractor;
- Undertake daily inspections of the various work areas to ensure all activities are being undertaken in accordance with the EMPr;
- Maintain all site documentation and records pertaining to the EMPr and environmental matters and approvals;

- Provide a regular and routine account on environmental matters to the ECO, including any environmental incidents, events or accidents;
- Report environmental incidents and maintain Registers;
- Maintain a photographic record of the construction activities;
- Oversee that corrective action is implemented within the stipulated timeframes where non-compliances are registered; and
- Respond to and report on environmental accidents, incidents and events immediately, and ensure that all works requiring remediation are undertaken in accordance with the ECO or Site/Contract Manager's instructions.

2.1.6 Environmental Auditor

The Project Company must, for the period during which the environmental authorisation and EMPr remain valid ensure the compliance with the conditions of the environmental authorisation and the EMPr, is audited The Project Company shall appoint a suitably qualified independent Environmental Auditor⁴ to do annual environmental audits. The audit reports must be submitted to the DEA&DP. This must be done from the date of commencement of construction until completion. A Final Audit Report must be submitted to the DEA&DP within 3 months of completion of construction and post construction rehabilitation and monitoring. This applies to both services and the filling station.

The Auditor must provide verifiable findings in a structured and systematic manner in an Audit Report. The following must be reported on:

- the level of compliance with the conditions of the environmental authorisation and the EMPr and whether this is sufficient or not
- the ability of the measures contained in the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity
- identify and assess any new impacts and risks as a result of undertaking the activity
- evaluate the effectiveness of the EMPr
- identify shortcomings in the EMPr
- identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr
- indicate the date on which the construction work was commenced with and completed or in the case where the development is incomplete, the progress of the development and rehabilitation
- include a photographic record of the site applicable to the audit; and

⁴ The Environmental Auditor cannot be the EAP who compiled the Basic Assessment Report or the ECO. He or she must be an independent person with relevant auditing expertise.

- the Audit Report must be informed by the ECO reports.

The Project Company must, within 7 calendar days of the submission of the audit report to the DEA&DP, notify all potential and registered I&APs of the submission and make the report available to anyone on request and on a publicly accessible website (if applicable).

2.2 Management Requirements

A set of Environmental Management Requirements are included in the section that follows, to address regulatory conditions as well as possible risks/ impacts that may occur from construction activities. Each of the Environmental Management Requirements is presented as follows:

Impact Management Outcome (Objective): the desired management outcome(s) for a particular risk/impact.

Aspects: anticipated activities likely to cause significant impacts - this list is not exhaustive and other unspecified activities might also cause the respective significant impacts (to be monitored and addressed where required)

Actions/Procedures: steps and/or actions required to manage and minimise/prevent impacts that may result from the various aspects/activities.

Target: the level of performance, sometimes determined by legislation, which must be met.

Monitoring and reporting: where relevant, aspects that must be monitored to determine compliance, and to evaluate where corrective action is required.

2.3 Conditions relevant to Pre-Construction Phase

The following section identifies the management actions that must be completed prior to construction commencing.

2.3.1 Construction Planning and Compliance

Management Outcome:

- Environmental management systems in place to comply with the EA, WULA, EMPr, and any other Condition of Approval; as well as general environmental best practice for construction phase.
 - Any Permits and/or approvals required are timeously obtained.
 - Sensitive environments avoided and specific management incorporated in detailed design planning.
 - DEADP approved final plan, updated EMPr, and a pre-construction compliance audit.
 - An ECO must be appointed.
-

- The Services Level Agreement between the POA and George Municipality must be finalised.
- The Urban Design Guidelines must be considered in detailed design planning.
- Method statements developed by contractors, and approved by the Resident Engineer, ECO and ESO.

Aspect

- Actions to be completed by the developer prior to the commencement of construction.
- Construction planning.
- Preparing and reviewing method statements.
- Detailed designs.
- Obtaining all required approvals.
- Consultations with other relevant parties.

Procedure

- The developer must appoint an external ECO to assist with pre-construction compliance, and environmental management planning for construction phase.
 - Review the Environmental Authorisation, WULA and EMPr and convey all Conditions / Actions to the project team, for compliance before construction starts.
 - Determine if any other permits and approvals are required and ensure these are timeously applied for, and in place ahead of construction commencing. While no threatened or protected plant and animal species were recorded during the ecological survey done as part of the Basic Assessment process, the ECO must do a final survey of the development area and check for any species that may need permits before removal.
 - Include the CEMPr in the contract documentation for tenders so that Contractors are aware of the requirements, and price accordingly.
 - Demarcate 20 m drainage 'no-go' area as specified by the aquatic specialist on site.
 - A stormwater management plan must be developed in the pre-construction phase, detailing the stormwater structures and management interventions that must be installed to manage increased surface flows that may take place during construction phase, and while the Aquatic Zone is under construction.
 - Consult with the George Local Municipality and surrounding landowners and ensure all systems are in place, and communication strategies set up. This is especially important for any aspects that will result in road closure or traffic diversion.
 - All staff must receive environmental induction training.
-

- An Environmental Management File (EMF) must be set up.
- The site manager in consultation with the contractor's Environmental Site Officer (ESO) and the external Environmental Control Officer (ECO) must compile a "detailed" construction site plan. Items to be covered in the site plan are listed in Table 3.
- The ECO must develop a draft audit check list that reflects the recommendations of this EMP, and discuss the requirements with the site manager and ESO so that the full team is aware of the environmental management requirements upfront.
- Contractors must develop method statements that outline the scope of work and how environmental risks will be avoided in undertaking activities. Method Statements must be submitted and approved before any work on the project is undertaken. The various method statements must be approved by the Resident Engineer, the ESO and ECO. The ECO/ESO must keep copies of these Method Statements and letters of approval (including conditions attached) in a Method Statements file. The Resident Engineer and the ESO/ECO must approve any deviations from the approved Method Statements. All amendments must be in writing and must be submitted to the Resident Engineer. The following method statements (at a minimum) should be submitted:
 - Vegetation Clearing
 - Stripping of top and sub-soil
 - Excavation/trenching
 - Stockpiling: topsoil, subsoil, excavation material, spoil material, imported material
 - Solid waste management: expected solid waste types, quantities, methods and frequency of collection and disposal as well as location of disposal sites
 - Stormwater management: methods to be put in place to control runoff to prevent erosion and / ponding on site. Also address possible contamination of stormwater from site activities, and methods to minimise, control and dispose of contaminated water
 - Site planning: the location, layout and method of establishment of the site camp, work area, stockpiles, equipment etc.
 - Emergency procedures: procedures to deal with fire, leaks and spills. Include details of risk reduction measures to be implemented including firefighting equipment, fire prevention procedures and spill kits.
 - Importing of material: detail the source and nature of all imported materials, anticipated quantities, stockpile areas, vehicle routes
 - Hazardous substances: details of any hazardous substances to be used on site, including storage, transport, handling and disposal procedures.

- Control of alien vegetation that establishes as a result of disturbance during construction: identification, removal
- Cement and concrete batching/mixing: location, layout and preparation of cement and concrete batching areas. Include methods for the mixing of materials, and how runoff will be contained. Washing of equipment used in cement mixing
- Fuel storage and use: design, location and construction of fuel storage areas. Filling and dispensing from storage areas
- Workshop and drip trays: location, layout and design of areas, including pollution control in the workshop and the management of drip trays under the plant
- Air quality: details on methods that will be used to prevent and control dust on site and from vehicles transporting fine materials, and prevent emissions from equipment and vehicles
- Environmental awareness training: number, dates, trainer, logistics for the initial awareness courses for the contractors employees and management staff
- Access routes: details, including a drawing, of where access routes will be and how they will be managed
- Rehabilitation: vegetation storage, site cleaning, site preparation, topsoil application, planting, stabilisation measures, maintenance

Table 3: Items to be covered in site planning

Issue	Nature / Description
Sequence of events	Briefly describe the sequence of events that will take place from the time that the contractor moves onto site to the time when the site is handed over to the developer
Site camp and office, Laydown Areas	<p>Location of a site camp/office – in transformed areas, outside sensitive environments; easily accessible, does not present a nuisance/risk to surrounding land users and motorists, out of visually sensitive areas.</p> <p>Security required for site camp.</p> <p>Site camp and laydown areas to provide for:</p> <ul style="list-style-type: none"> • Access and visitor / staff parking facilities. • Site office facilities and a structure to shelter security staff. • Ablution facilities and a potable water source. • Staff rest and eating areas. • Hazardous material / chemical storage and fuel storage. • Equipment cleaning areas. • Waste storage and wastewater management. • Plant parking facilities and a vehicle refuelling/maintenance area/s. • Emergency equipment storage areas including fire extinguishers and first aid kits. • Laydown areas, batching plant (if required) and materials storage. • Security fencing. • Signs and Contractor's Name Boards.
Site demarcation	Mark out work area. Demarcation of activity zone with barricading. Signs demarcating various zones. Barricading trenches and excavations. No-go areas with signs.
Ablutions	Portable toilets to be provided at a ratio of 1:15. Select appropriate area – flat, disturbed, accessible (for workers and for cleaning vehicles), outside aquatic buffers. Enter into service agreement for cleaning in advance of commencement.
Workforce	<p>All staff to receive environmental induction before commencing work.</p> <p>Staff to be aware of the requirements of the Code of Conduct signed between the developer and the contractor (see draft in the Appendices).</p> <p>There is a designated person who is responsible for overall environmental management on a daily basis (referred to as the contractor's Environmental Site Officer). The ESO contacts the site manager and the external ECO should problems arise. The ECO is external and does monthly audits and reporting to the project team and the DEA&DP.</p>

Issue	Nature / Description
Transport and traffic	<p>Plan traffic routes, parking areas.</p> <p>Establish baseline road surface condition</p> <p>Implement stormwater measures if required</p> <p>Upgrade any drainage crossings if needed</p> <p>Erect traffic signs on public roads, and enforce speed limits.</p> <p>Discuss any potential road closures or traffic diversion with the Traffic Department and request their assistance.</p>
Construction equipment	<p>Establish dedicated storage area for equipment. If risk of leaks/spills (e.g. generators), place over drip trays. Inspect in the morning for any leaks or emissions before starting work. Maintain regularly.</p>
Drinking water	<p>Establish potable water source.</p>
Life of project	<p>Working hours: Monday to Friday (07:00 to 17:00), Saturday (08:00 to 14:00) If working hours are to be deviated, this must be communicated timeously to stakeholders.</p>
Surface runoff/stormwater management	<p>Develop construction stormwater management plan. Determine runoff direction. Prevent contaminated runoff and accelerated flow leaving the site. Plan for a washbay for equipment used in cement mixing – collect runoff water in a lined pit or drum and do not allow any contaminated runoff to leave the site or infiltrate the groundwater zone.</p>
Environmentally sensitive areas	<p>See Item 1.3. A training program on possible environmental risks that may result from construction activities and how to deal with these (including a reporting structure) must be made available prior to construction commencing by means of environmental induction.</p>
Waste management	<p>Waste types and volumes</p> <p>Waste storage areas and receptacles – make provision for recyclable, general and hazardous waste</p> <p>Waste storage: covered, secure, scavenger-proof.</p> <p>Waste records (including disposal if applicable)</p> <p>Waste recycling</p> <p>Licensed disposal site</p>
Air quality	<p>Dust and emissions from vehicles and construction equipment. Make provision for a water truck. Include specifications in tender documents that trucks transporting fine materials must be covered with a tarp or similar to prevent dust and spillage on public roads. Consider the position of soil stockpiles to reduce the potential for nuisance dust to surrounding land owners and motorists on public roads.</p>

Issue	Nature / Description
Pollution prevention and control	<p>Possible sources of pollution and polluting incidents (e.g. concrete/cement mixing and transfer, hazardous substances, fuel storage, oil leaks from vehicles and equipment, litter etc.)</p> <p>Prevention at source through good work practice.</p> <p>No polluted runoff to leave the site.</p> <p>Control mechanisms and response to polluting incidents – clean-up, reporting, equipment and materials needed, waste management, training</p> <p>Provision for a sealed area for washwater (equipment, vehicles etc.)</p> <p>Penalties if required</p>
Communications	<p>A communication strategy must be set up for reporting, discussions, responding to incidences and complaints etc.</p> <p>Suggested: a WhatsApp group be set up for discussions between the site manager, the ESO, a representative from each of the surrounding landowners, and the external ECO. This Group can be used to inform the community of any issues or events, and for the community to raise queries and concerns.</p> <p>Sign boards to be erected at the sites with contact details.</p>

Targets

- All conditions and requirements of the Basic Assessment Report, EMPr, Environmental Authorisation, and Water Use Licence, stipulated as pre-requisites for construction are met.
- Management systems in place for environmental best practice, and to implement the provisions of the CEMPr.
- Detailed design and final site development plan complete, avoiding sensitive environments.
- Construction planning process done, and the construction team is aware of environmental management requirements through induction training.
- ECO completed a pre-construction compliance audit report and submitted to DEA&DP. DEA&DP approved report.

Monitoring and Reporting

- ECO to prepare a pre-construction compliance audit report and submit to DEA&DP.
- DEA&DP to approve pre-construction compliance audit report.

2.3.2 Developing a Code of Conduct for Contractors

Management Outcome

- A socially and environmentally conscious workforce.

Aspect

- Development of a Code of Conduct.
- General conduct of the workforce.

Procedure

- Develop a Code of Conduct and share with the construction team for signature at the start of construction.
- Include the Code of Conduct in signed contracts with the appointed contractor(s) and all construction personnel.
- Code of Conduct to include:
 - All staff must wear the appropriate safety gear, utilize the appropriate safety equipment, and adhere to the appropriate safety laws & standards (including the Occupational Health and Safety Act, Act No 85 of 1993 (OHSA).
 - No firearms or weapons of any description are to be allowed on site, unless required by security personnel.
 - Private property access is only permitted on previous agreement with the affected landowner or will be considered trespassing.
 - No swimming, bathing, or washing activities may occur in any water source / body on or adjacent to the development sites other than those supplied specifically for such use.
 - Ablution activities may only occur in designated facilities.
 - All staff are to make use of the facilities provided for them, as opposed to ad-hoc alternatives (e.g. fires for cooking, use of the surrounding areas / bush as a toilet).
 - Any unauthorised disturbance or damage to agricultural land, open space areas or flora and fauna outside of the development sites (including the contractor's camp/s) is prohibited and may be subject to reinstatement or rehabilitation to the culprit's cost.
 - Hunting or snaring any animal (mammal, reptile, amphibian, bird, insect or fish) is prohibited. Capturing any animal is prohibited, unless on instruction from the ECO where the animal is at risk from the development activities. No animal may be wilfully harmed.
 - Collecting, cutting, clearing, burning or otherwise disturbing plant material not designated for clearing or rescue is prohibited.
 - Any person found to be deliberately or negligently polluting any part of the development site (including the contractor's camp/s), or adjacent areas will face disciplinary action.

- The unauthorised abstraction / use of water from any water sources / bodies on the site is prohibited.
- The harvesting of firewood or any other natural resources from the development site (including the contractor's camp/s) or adjacent areas is prohibited.
- The removal of boulders, rocks, pebbles, gravel, sand or any other material not designated for removal is prohibited.
- Any persons found to be deliberately or negligently defacing, damaging, painting or marking natural features will face disciplinary action, and restoration or compensation as determined by the heritage authority may apply.
- Any persons found to be deliberately or negligently defacing, damaging, destroying or altering a heritage resource will be subject to disciplinary action, and restoration or compensation as determined by the heritage authority may apply.

Target

- Code of Conduct signed by all relevant construction personnel.
- All construction personnel aware of the requirements of the Code of Conduct, and conduct themselves accordingly for the duration of construction phase.

Monitoring and Reporting

- ECO to check Code of Conduct and report on finalization in the pre-construction compliance audit report.

2.3.3 Environmental Awareness Plan

The Contractor shall ensure that all staff receive site environmental awareness and staff induction training in appropriate languages, as well as any refresher courses, pertaining to their role on the project, including that:

- All personnel (including sub-contractors) shall receive induction training on the Code of Conduct and project specific environmental awareness relating to the conditions of the EA and EMPr prior to commencing with any site activities.
- All personnel shall receive induction training on the emergency procedures to be followed in the event of an emergency (e.g. staff assembly and site evacuation, medical emergencies, the locations and basic use of fire extinguishers, first aid kits and spills kits, and the use of safety equipment (where relevant)).
- All staff shall receive training on responding to environmental incidents, and reporting procedures.
- Relevant staff (including sub-contractors) shall receive induction training on the need to prevent nuisance impacts to surrounding landowners.

- All personnel (including sub-contractors) shall receive regular toolbox talks and refresher courses on the induction material, and project specific environmental awareness for the duration of the contract, including “lessons learnt” to prevent recurring issues.

The ECO and ESO will conduct environmental induction training with personnel and must address, amongst others:

- Explanation of the environmental process that preceded the EA and why it was important to conduct the environmental process;
- Explanation of the conditions of authorisation contained in the EA;
- The sensitive environmental features located within and around the site;
- The reasons why mitigation measures are required and the benefits of implementing these measures;
- The EMPr and its contents (e.g. no-go areas, animals, littering etc.); and
- The role of the ECO and ESO.

2.4 Conditions Relevant to Construction Phase

This section presents the environmental requirements for activities that will take place during construction, including decommissioning and site hand-over, of the development. The requirements are worded in broad terms and details of the actions to be undertaken must be presented in the Method Statement for each aspect. Method statements are compiled by the contractors or their sub-contractors and approved by the project manager and the ESO and ECO.

2.4.1 Conditions of the Environmental Authorisation

The Environmental Authorisation issued by the DEA&DP for the development includes Conditions that must be implemented during construction phase. Adherence to these Conditions will be monitored by the ESO, and audited on a monthly basis by the external ECO. The table below lists the Conditions that pertain to construction phase:

Table 4: Conditions of the Environmental Authorisation relevant to Construction Phase.

<p><u>Scope and Validity of the EA</u></p>

<p><i>Condition E1:</i></p>

<p>The Environmental Authorisation is granted for the period from date of issue (i.e. 31 January 2022) until 31 January 2042, the date on which all the listed activities, including post construction rehabilitation and monitoring requirements and operation, will be deemed to be concluded at the site.</p>

- 1.1. Installation **of services and top structures** but excluding the construction of the filling station is subject to the following:
- a. The holder must start with the physical implementation and exceed the threshold of all the authorised listed activities on the site by **31 January 2027**
 - b. Rehabilitation and monitoring must be finalised at the site within a period of 3-months from the date the construction activities (construction phase) are concluded; but by no later than 31 October 2031
- 1.2. The construction of the facility for the storage and handling of dangerous goods (i.e. the filling station must **commence by the 31 January 2027** and conclude within five (5) years

Condition F2:

If the Holder wishes to extend a validity period specified in the Environmental Authorisation, an application for amendment in this regard must be made to the relevant Competent Authority, prior to the expiry date of such a period. Failure to lodge an application for amendment prior to the expiry of the validity period of the Environmental Authorisation will result in the lapsing of the Environmental Authorisation.

Responsibility

Condition E4:

The Holder shall be responsible for ensuring compliance with the conditions by any person acting on his/her behalf, including an agent, sub-contractor, employee or any person rendering a service to the Holder.

Notifications and Administration

Condition E8:

Seven calendar days' notice, in writing, must be given to the Competent Authority on completion of the construction activities.

Condition F3:

The Holder is required to notify the Competent Authority where any detail with respect to the Environmental Authorisation must be amended, added, substituted, corrected, removed or updated.

Management

Condition E10:

The EMPr must be included in all contract documentation for all phases of implementation.

Monitoring

Condition E11 and E12:

The Holder must appoint a suitably experienced Environmental Control Officer ("ECO"), for the duration of the construction and rehabilitation phases of implementation contained herein.

The ECO must –

12.1. be appointed prior to commencement of any works (i.e., removal and movement of soil and / or rubble or construction activities commencing.

12.2. ensure compliance with the EMPr and the conditions contained herein.

12.3. keep record of all activities on the site; problems identified; transgressions noted and a task schedule of tasks undertaken by the ECO.

12.4. remain employed until all development activities are concluded, and the post construction rehabilitation and monitoring requirements are finalised.

Condition E 15:

A copy of the Environmental Authorisation, EMPr, any independent assessments of financial provision for rehabilitation and environmental liability, closure plans, audit reports and compliance monitoring reports must be kept at the site of the authorised activities and be made available to anyone on request, and where the Holder has website, such documents must be made available on such publicly accessible website.

Condition E16:

Access to the site (referred to in Section C) must be granted, and the environmental reports mentioned above must be produced, to any authorised official representing the Competent Authority who requests to see it for the purposes of assessing and/or monitoring compliance with the conditions contained herein.

Auditing

Condition E17:

The Holder must, for the period during which the environmental authorisation and EMPr remain valid ensure the compliance with the conditions of the environmental authorisation and the EMPr, is audited.

Condition E18:

The frequency of auditing of compliance with the conditions of the environmental authorisation and of compliance with the EMPr, must adhere to the following programme -

18.1. During the period which the activities have been commenced with on site until the construction of the internal service infrastructure (has been completed on site, the Holder must undertake annual environmental audit(s) and submit the Environmental Audit Report(s) to the Competent Authority

*A final Environmental Audit Report must be submitted to the Competent Authority within **three (3)** months of completion of the construction of internal services and the post construction rehabilitation and monitoring requirements thereof.*

18.2. During the period the development of the facility or infrastructure for the storage and handling of a dangerous good (i.e., construction of the filling station) is undertaken, the Holder must ensure that environmental audit(s) are performed annually and submit these Environmental Audit Report(s) to the Competent Authority.

*A final Environmental Audit Report must be submitted to the Competent Authority within **three (3)** months of completion of the filling station component of the development and the post construction rehabilitation and monitoring requirements thereof, but by no later than 31 October 2031.*

Condition E19:

The Environmental Audit Report(s), must -

19.1. be prepared and submitted to the Competent Authority, by an independent person with the relevant environmental auditing expertise. Such person may not be the ECO or EAP who conducted the EIA process.

- 19.2. provide verifiable findings, in a structured and systematic manner, on –
- (a) the level of compliance with the conditions of the environmental authorisation and the EMPr and whether this is sufficient or not; and
 - (b) the ability of the measures contained in the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity
- 19.3. identify and assess any new impacts and risks as a result of undertaking the activity
- 19.4. evaluate the effectiveness of the EMPr
- 19.5. identify shortcomings in the EMPr
- 19.6. identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr
- 19.7. indicate the date on which the construction work was commenced with and completed or in the case where the development is incomplete, the progress of the development and rehabilitation
- 19.9. include a photographic record of the site applicable to the audit; and
- 19.10. be informed by the ECO reports.

Condition E20:

The Holder must, within 7 calendar days of the submission of the audit report to the Competent Authority, notify all potential and registered I&APs of the submission and make the report available to anyone on request and on a publicly accessible website (if applicable).

Specific Conditions

21. The no-go areas must be clearly demarcated with orange snow-netting/mesh so that construction workers limit their impact to approved areas only.
22. No stormwater may be discharged from the development directly into the nearby watercourse.
23. A buffer of approximately 20m for the larger watercourse and 10m for the smaller watercourse must be maintained to accommodate stormwater flow within the site. These buffers must be clearly depicted in the amended site development plan to be submitted to this Directorate with the amended EMPr.
24. The watercourses must be shaped as open swales that are planted with wetland vegetation such as *Juncus effusus*, *Carex gloerabilis*, *C. clavata*, *Isolepis prolifera*, *Pycreus polystachyos*, *Zantedeschia aethiopica* within the wetter bed together with buffalo grass *Stenotaphrum secundatum* along the banks.
26. Active alien invasive plant control measures must be implemented to prevent the invasion of exotic and alien invasive vegetation within the disturbed areas (including culvert areas).
27. An integrated waste management approach, which is based on waste minimisation and incorporates reduction, recycling, re-use and disposal, where appropriate, must be employed. Any solid waste generated on the development site must be disposed of at a landfill licensed in terms of the applicable legislation.
28. Should any heritage remains be exposed during excavations or any other actions on the site, these must immediately be reported to the Provincial Heritage Resources Authority of the Western Cape, Heritage Western Cape. Heritage remains uncovered or disturbed during earthworks must not be further disturbed until the necessary

approval has been obtained from Heritage Western Cape. Heritage remains may only be disturbed by a suitably qualified heritage specialist working under a directive from the relevant Heritage Resources Authority. Heritage remains include: meteorites, archaeological and/or paleontological remains (including fossil shells and trace fossils); coins; indigenous and/or colonial ceramics; any articles of value or antiquity; marine shell heaps; stone artefacts and bone remains; structures and other built features with heritage significance; rock art and rock engravings; shipwrecks; and/or graves or unmarked human burials including grave goods and/or associated burial material.

General Matters

Condition F6:

Non-compliance with a condition of the environmental authorisation or EMP is an offence in terms of Section 49A(1)(c) of the National Environmental Management Act, 1998 (Act no. 107 of 1998, as amended).

2.4.2 Dealing with Emergencies, Environmental Incidents and Public Complaints

Management Outcome

- Emergencies and/or incidents prevented and/or dealt with in a manner that does not cause harm to surrounding environments and people.
- Surrounding landowners/businesses/industries have no grievances.

Aspect

- Issues that may impact on surrounding landowners, workers, and tourists (e.g. noise, dust, traffic, pollution).
- Emergencies at the site.
- Issues that may impact on the environment in the surrounding area (e.g. aquatic areas).

Procedure

- The Contractor and ESO shall keep an Environmental Incident Report File (EIRF) on site to document any environmental incidents, emergencies or accidents occurring as a result of the construction activities, and any resulting action taken to remedy the harm, and/or prevent repeat occurrences.
- Incidents recorded in the file must be checked by the ECO in monthly audits, and discussed at monthly site meetings.
- The EIRF shall be made available to the Site/Contract Manager, the ECO, the Development Company, and/or any authority at any time if requested.
- The EIRF is to make provision for the documentation of:
 - The exact nature of the environmental incident.
 - The management team or contractor responsible for the activity.

- The timing and duration of the event.
 - Witnesses to the event.
 - The exact response action applied, including a list of those notified of the problem
 - An assessment of the extent of damage, and whether this has been remedied.
 - The Contractor shall ensure that the environmental incidents and resulting action are recorded in the EIRF, and that these are brought to the attention of the ECO as soon as practically possible. The procedure for dealing with an environmental incident shall include that:
 - The EIRF is to be filled in by the ESO in the event of an environmental incident or emergency.
 - The ESO is to immediately inform the Contractor and ECO of any environmental emergency for a decision on remedial action.
 - The ECO is to document any incidents / emergencies in the monthly compliance report, together with the remedial action taken, as described in the EIRF.
 - The ECO shall monitor that the necessary procedures and responses are followed by the Contractor to close out any entries in the EIRF within the specified timeframe.
 - Once an incident or emergency has been adequately addressed to the satisfaction of the ECO, the ESO is to close out the entry in the EIRF.
 - The Contractor shall keep a Complaints Register on site to allow the general public to document any comments on or complaints regarding the activities of the site:
 - Entries made shall be tabled during monthly site meetings.
 - The Complaint Register shall be made available to the Contract Manager, the ECO, the Development Company, and/or any authority at any time if requested.
 - The Complaints Register shall include a section for the documentation of the action taken to address the complaint. The procedure for dealing with public complaints shall include that:
 - All complaints shall be investigated, and a response shall be given to the complainant within 28 calendar days (or sooner if possible).
 - The ESO shall document the action taken to investigate, and address (if required) the complaint, as well as the response given (including timeframes).
 - The ECO shall monitor that the complaints have been responded to.
 - The ECO shall ensure that any public issues have been brought to the attention of the relevant authorities by the Contractor if so required, and appropriately addressed.
 - The procedures for dealing with an environmental incident or public complaint as listed above shall be communicated to relevant staff. Emergency preparedness shall form part of the Environmental Awareness and Induction Training.
 - The Contractor shall determine appropriate procedures in the event of an emergency (e.g. medical emergencies, runaway fires, environmental incidents, spills, site evacuation and staff assembly), and shall submit a Method Statement to the Contract Manager and ECO for approval of the proposed procedures.
-

- Emergency plans shall include for spillages onto road surfaces and water courses
- The following contact details shall be clearly displayed at the contractor's camp near a telephone, and provided to relevant staff:
 - Emergency contact details for the local hospital, fire brigade, and police department.
 - A list of contact details for the ECO, Contract Manager and relevant authorities.
 - Contact details for the heritage authority (WCHRA) (in the event that a heritage discovery is made).
 - Contact details for a spill response team should external assistance be needed.
- Material Safety Data Sheets (MSDSs) shall be readily available on site for all chemicals and hazardous substances housed or used on site. Where possible and available, MSDSs should additionally include information on ecological impacts and measures to minimise negative environmental impacts during accidental releases or escapes.
- Fire extinguishers and fire-fighting equipment (in terms of the OHSA) are to be strategically placed at the site office / camp, laydown areas, and on site where required. All staff are to be made aware of their locations and purposes and trained in their basic use.
- Smoking shall not be permitted in those areas where it is a fire hazard. Such areas shall include fuel storage and refuelling areas, vegetation stockpile areas and any other areas where the vegetation (e.g. fynbos and areas with alien vegetation) or other materials are susceptible to the start and rapid spread of fire.
- A Fire Officer shall be nominated (the ESO may fulfil this role, if suitably qualified) to be responsible for developing immediate and appropriate actions in the event of a fire and shall ensure that employees are aware of the procedure to be followed. In the event of a fire, site staff shall first try to contain the fire without posing unnecessary risks to themselves. As soon as it looks as if the fire may get out of control, appropriate emergency personnel shall be dispatched.

Target

- Construction team able to respond to an emergency situation
- Emergencies prevented, but should they occur, they are timeously responded to in a manner that prevents impacts beyond the immediate area.
- Any damage caused from an incident is remediated.
- Any emergencies are recorded and reported.
- Public complaints timeously dealt with and reported.

Monitoring and Reporting

- ESO to be on site daily and check for incidences and complaints, and record these.
- ESO to report to the ECO and Site Manager any incidents or complaints
- ECO to check all registers on a monthly basis and report in the monthly audit report on how matters have been rectified.

2.4.3 Restriction of Working Areas

Management Outcome

- To control access to the site to reduce the potential for accidents, dust generation, water pollution, fires, and damage to sensitive environments.
- To keep the demarcated and /or fenced off work area as small as possible.
- To restrict access to environmentally sensitive areas in the surrounding environment.
- To prevent disturbance to surrounding land users.

Aspects

- The effective demarcation of the construction site and any 'no-go' areas (i.e. the 20 m buffer for the Aquatic Zone) must be demarcated as a No-Go area (except for approved work that must take place in the area to create the Aquatic Zone).
- The restriction/control of construction vehicles on designated and approved roads.
- The control of vehicles and public entering the site.

Procedure

- The demarcated construction area must cover as small an area as possible and must be within the area specified in the site development plan only.
- Access and driving must be limited to designated roads only.
- The no-go areas must be clearly demarcated with orange snow-netting/mesh so that construction workers limit their impact to approved areas only.
- The activity zone must be demarcated with mesh or other suitable material. Demarcations must be maintained for the duration of activities. The integrity of demarcation materials must be regularly inspected, especially after strong winds or rain.
- Signs must be erected with the contractor's name and contact details at the construction sites and along public roads to warn motorists and pedestrians that construction vehicles are operating in the area.
- A comprehensive set of photographs should be taken of the site prior to commencing any construction. This must include all access roads to establish baseline condition. At the end of construction phase, a final inspection must be

done of access roads to determine if any damage has taken place, and if remedial action is needed. The contractor will be responsible for fixing any damage that may have been caused by construction activities.

- At the end of construction activities all components of the marking system must be removed.
- Materials, vehicles, equipment and waste must be stored in the demarcated area only.
- Vehicles must be instructed to remain on designated tracks and deviations from the approved track must not be permitted. In exceptional circumstances where a vehicle is forced to deviate from an approved track the deviation must be rehabilitated immediately after such an event. All deviations must be reported to the Resident Engineer or his representative
- Construction vehicles to be parked in designated area overnight with drip trays.

Targets

- Demarcated work area not exceeded.
- Vehicles adhere to designated roads.
- Road condition left in same condition as prior to construction commencing.
- Controlled access to the site for the contractors, work crews, sub-contractors.
- Prohibited access to the public, with adequate sign posting.

Monitoring and Reporting

- ESO to check aspects in daily inspections
- ECO to check aspects in monthly site inspections and reflect findings in monthly audit reports.

2.4.4 Biodiversity

Management Outcome

- Prevent habitat loss in areas outside of the approved work area.
- Minimise degradation of terrestrial and aquatic environments in the surrounding area.
- Prevent impacts on faunal species that use the site and surrounding areas.
- Prevent the spread of alien vegetation.
- Prevent pollution of surface and groundwater environments.

Aspects

Site camp and laydown areas, vehicle movement and parking, workforce, importing and storage of materials, waste management, pollution control, erosion control, fires, alien vegetation, activities in the drainage area and dam for stormwater management.

Procedure

- A 20m for the larger watercourse and 10m for the smaller watercourse must be maintained to accommodate stormwater flow within the site and facilitate ecological connectivity with the Gwayang River and CBA.
 - The no-go areas must be clearly demarcated with orange snow-netting/mesh so that construction workers limit their impact to approved areas only.
 - No stormwater may be discharged from the development directly into the nearby watercourse. This will be achieved by discharging runoff from each Erf into bioswales alongside roads and pavements, and by discharge into the Aquatic Zone through the check dams.
 - The drainage areas and Aquatic Zone must be planted with wetland vegetation such as *Juncus effusus*, *Carex gloerabilis*, *C. clavata*, *Isolepis prolifera*, *Pycreus polystachyos*, *Zantedeschia aethiopica* within the wetter bed together with buffalo grass *Stenotaphrum secundatum* along the banks. This will help create a functional drainage corridor. Measures must be used to prevent erosion and siltation until the system stabilises and vegetation is established. The area must be continuously monitored for alien vegetation establishment.
 - There is no mitigation required to avoid habitat loss within the development footprint since this has been achieved through the incorporation of the drainage corridors and their buffers as open space. However, disturbance to habitats outside of the footprint must be avoided by:
 - Restrict activities to the approved area and designated access roads. Before construction takes place, demarcate all activity zones so that construction personnel are aware of the boundaries.
 - Damage shall not be caused to any areas outside of the demarcated construction areas, including sensitive environments, structures and infrastructure.
 - A temporary fence/barricade shall be erected and maintained around the perimeter (including any specified buffers) of No-Go areas. Barricading must be maintained for the duration of construction phase and must not be allowed to disintegrate.
 - Vegetation clearing shall be kept to that which is absolutely essential, within the approved development footprint.
-

- Prior to site clearing, the necessary permits must be obtained from DEA&DP and/or DFFE for threatened and protected species (if required – unlikely considering findings of the Terrestrial Biodiversity specialist study).
 - Prior to construction commencing, vegetation that can be successfully translocated must be removed and stored in a nursery for rehabilitation and landscaping. Vegetation that cannot be used for site planting must be made available to conservation organisations, the public and/or nurseries.
 - Environmental awareness training must include aspects related to preventing harm to flora and fauna
 - The site must be monitored for signs of poaching
 - Access points to the construction site must be strictly controlled. The contractor must erect signs, with contact details.
 - Vehicles must be restricted to designated roads/tracks. Any deviations from approved access roads must be immediately remediated.
 - Speeding must be strictly controlled to avoid collisions with fauna and/or people– speed limits shall be enforced, and where a speed limit is not specified then speed shall depend on the type of vehicle, status of the road, and other traffic, but speeds between 20 and 40 km/h within the development site, and adherence to speed limits on public roads, are typically regarded as acceptable.
 - The Contractor shall determine a suitable location for the contractor’s camp/s and laydown areas for the portion of work in progress and shall submit a Method Statement to the Contract Manager and ECO for approval of the proposed locations and layouts.
 - The location and layout shall be such that visual, dust and noise impacts on sensitive receptors such as adjacent residents / businesses / activities are minimized as far as possible.
 - These shall be located within approved development footprints only, and may not be situated within the 20 m wide drainage corridor
 - Control of alien vegetation:
 - Active alien invasive plant control measures must be implemented to prevent the invasion of exotic and alien invasive vegetation within the disturbed areas (including culvert areas).
 - Alien invasive plant species shall be controlled for the duration of the site activities, and for a stipulated period following rehabilitation (suggest 6 months).
-

- Care must be taken to avoid the introduction of alien plant species to the site and surrounding areas for example when importing materials.
- All alien plant re-growth shall be monitored and should it occur, these plants should be eradicated within the project footprint before forming seeds and flowers.
- The use of herbicides should be avoided as far as possible, except where absolutely necessary to control alien plant species. Herbicides must be applied by trained and licenced professionals. Herbicides must be carefully selected considering environmental sensitivity (e.g. in proximity to watercourses).
Secondary/unintended impacts of incorrect herbicide selection and application must be prevented.
- Cleared vegetation that is not appropriate for shredding/mulching/chipping, and/or reuse on site shall be disposed of at licensed municipal garden refuse sites. No burning of vegetation is permitted.
- Any animal (mammal, reptile, amphibian, bird, insect or fish) found to be trapped within the site or in distress as a result of the site activities shall be appropriately relocated to a suitable site under the guidance of the ECO, relevant specialist if required or relevant authorities. The removal of dangerous fauna such as snakes must be done by a suitably qualified person.
- Open trenches, excavations and earthworks pose a hazard to people, domestic livestock and wild animals:
 - Trenches shall be regularly inspected if they can be accessed by the public or animals.
 - Domestic animals or livestock belonging to surrounding communities or landowners shall be kept away from the works, and in this regard appropriate barricading must be used around excavations and earthworks.
 - Trenches must be excavated and backfilled in sections where possible, to reduce the amount of open trenches at any time
- Where possible, areas of phased construction shall be cleared, developed and rehabilitated prior to moving to the next. Soil should be exposed for the minimum time possible to prevent wind and water erosion.
- Mitigation measures to deal with pollution from hydrocarbons, hazardous substances, cement batching and mixing, stockpiling, and waste management are included in the sections that follow.
- No fires to be allowed on site, and measures must be in place to respond to and control fires timeously should they occur.

Mitigation measures specified by specialist studies:

- No-Go areas must be clearly demarcated on site, and construction activities must avoid these areas. This excludes areas where road and infrastructure crossings are required, as well as stormwater management upgrades.
- The number of watercourse crossings for infrastructure (roads, powerlines, water and sewer pipelines) should be minimised and limited to one position as far as possible (e.g. align at a road crossing).
- A corridor of approximately 20 m is recommended to accommodate stormwater flow within the site. The Aquatic Zone must be planted with wetland vegetation such as *Juncus effusus*, *Carex gloerabilis*, *C. clavata*, *Isolepis prolifera*, *Cyperus polystachyos* and *Zantedeschia aethiopica* within the wetter bed together with buffalo grass *Stenotaphrum secundatum* or *Cynodon dactylon* along the banks. The incorporation should as far as possible lead to the longer-term improvement of the aquatic habitat within the watercourses on site and more importantly adequately mitigate any potential downstream impacts on the valley bottom wetland and watercourse downstream (south) of the site.
- Runoff into the downstream watercourse and wetland area must be done in a dispersed manner. This is achieved by means of the check dams in the aquatic zone..

Targets

- No damage to and/or degradation of natural environments.
- No fires.
- No disturbance outside the demarcated work area.
- No disturbance to fauna. No faunal kills reported for the site and traffic routes.
- No disturbance to down-gradient aquatic areas.
- No polluting incidents. Alternatively, polluting incidents are timeously dealt with and remediated should they occur.
- No haphazard driving in open areas or agricultural fields.
- Alien invasive vegetation controlled.

Monitoring and Reporting

- ESO / contractor to check trenches daily
- ESO to record any faunal incidents and/or polluting incidents / exceeding work areas in the EMF.
- ESO to do weekly site inspections and check for disturbance to surrounding areas, impacts on aquatic systems, and alien vegetation encroachment. A weekly site inspection report must be done and checked by the ECO in monthly inspections.

- ECO to check all registers monthly.
- ECO to inspect aquatic areas to check for any signs of erosion and sedimentation.
- ECO to inspect the full site and surrounding areas to check for alien vegetation and impacts on natural areas beyond the work area.
- ECO to check the Aquatic Zone monthly, and report on establishment of the area.
- Report on the above in the ECO monthly audit report.

2.4.5 Importing and Storage of Materials/Substances

Management Outcome

To ensure appropriate storage of materials to prevent dust and nuisance, leaks and spills, polluted runoff, and exceedance of designated work areas.

Aspects

Storage of materials for construction (e.g. gravel, sand, bricks, pipes, sheeting etc), handling and storage of hazardous substances.

Procedure

- Construction materials must only be stockpiled within the designated activity zone.
- Materials must be stockpiled in areas approved by the resident engineer and ESO/ECO within the defined working area.
- Materials must not be allowed to wash or blow away. If this is a risk, materials should be sprayed with Dustex or cover the stockpile with a suitable material (e.g. hessian). If necessary, silt fences should be erected around stockpiles to prevent material washing downslope. Stormwater runoff towards stockpile areas must be diverted away from the stockpiles
- Materials must not be stored within 50 m of the drainage corridors/Aquatic Zone, or any wetlands or watercourses in the surrounding area
- Any material that has the ability to leach (and impact on soil and ground water quality) must be stored on an impervious and bunded surface
- The Contractor shall submit a Method Statement to the Contract Manager and ECO detailing the Hazardous Chemical Substances (as defined in the Regulations for Hazardous Chemical Substances in GN 1179 (25 August 1995)),

hydrocarbon substances or dangerous goods to be used, together with the storage, handling and disposal procedures of the materials.

- The relevant Material Safety Data Sheets (MSDSs) for all Hazardous Chemical Substances on site shall be readily available. Procedures detailed in the MSDSs shall be followed in the event of an emergency situation.
- Hazardous Chemical Substance containers shall be situated on a smooth impermeable surface (concrete or 250 micrometre (μm) plastic (plastic must have a minimum of a 5 cm layer of sand on top to prevent damage and perishing)) within an earth bund. The impermeable lining shall extend to the crest of the bund and the volume inside the bund shall be 120% of the total capacity of all the storage tanks/bowsers (110% statutory requirement plus allowance for rainfall).
- The facilities that require slabbed or banded surfaces are to be designed to engineering standards of sufficient capacity.
- Access to Hazardous Chemical Substance storage areas shall be restricted, and the areas secured with requisite warning/safety signage conforming to the requirement of SANS 1186 on display.
- The responsible management of hazardous chemicals should be practiced at all times and storage or handling of chemicals must not take place within close proximity of the drainage corridors/Aquatic Zone.
- The storage of hazardous substances (i.e. petrol, diesel, and lubricants etc.) should be located on impervious bases within bunds (to accommodate 110% of the volume) to contain any fugitive spillages and/or leakages.
- Rainwater that collects in banded areas shall be promptly removed and dealt with as water containing waste.
- All staff working with Hazardous Chemical Substances shall be trained in the safe use of the substance in accordance with the MSDS.
- No nuisance, inconvenience or health and safety risk shall be caused to any workers or surrounding community members.

Targets

- Approved materials stockpile area.
- Restriction of materials storage to designated stockpile area.
- No nuisance or health and safety risk to surrounding facilities/communities.
- Suitable cover of material stockpiles.

- No contaminated runoff and/or leachate from stockpiles or other hazardous materials stores/transfer areas.
- Safe handling and storage of hazardous substances to prevent overflow, leachate and contamination.

Monitoring and Reporting

- ESO and site manager to inspect stockpile areas and materials stores daily.
- ECO to check monthly.

2.4.6 Air Quality

Management Outcome

To minimise nuisance and potential health problems, and impacts on visual quality, associated with dust and/or emissions from vehicles and equipment.

Aspects

Vehicle movement, transportation of fine materials, stockpiling of materials, grinding and crushing, offloading materials, exhaust fumes.

Procedure

- Staff should be trained to report dust-generating activities as soon as they detect them and implement the appropriate measures to control dust.
- If the stockpiles start to erode significantly or cause dust problems, they shall be covered with suitable erosion protection materials (e.g. hessian or geo-fabric). If stockpiles will be stored for long periods, they should be vegetated.
- Halting dust generating activities when wind speed exceeds 35 km/h.
- Loads, including but not limited to, sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit (if the material being carted may cause dust or may easily fall out of the vehicles and pose a hazard to other road users).
- Where road dust becomes a hazard to traffic safety or a nuisance to landowners or communities neighbouring the site, effective dust suppression options such as mulching or wetting shall be applied:

- Non-potable water (of suitable quality and from a legal source) used for this purpose shall be used in quantities that will not result in runoff and erosion, or muddy areas (this would, however, need to be balanced against the wasteful use of water).
- Reasonable speeds shall be maintained on the access roads in order to prevent unnecessary dust.
- Any complaints about dust recorded in the complaints register must be immediately investigated by the site manager.
- No waste, vegetation or any other material shall be burnt.
- In terms of the National Environment Management: Air Quality Act, 39 of 2004, burning is not permitted as a disposal method.
- Trucks bringing in materials must be covered to prevent dust and small particles escaping and potentially causing damage to people and property.
- All vehicles should be correctly maintained and serviced to minimise unnecessary exhaust emissions.
- Any vehicles with smoking exhausts should be tested for emissions and repaired immediately.
- Vehicles and other machinery should be switched off when not in use

Targets

- Nuisance dust levels not experienced
- No complaints of dust by surrounding facilities or residents, especially from vehicles transporting fine materials along public roads
- No emissions (visual observation) reported by the ESO from vehicles and equipment. Alternatively, reported emissions are appropriately dealt with.

Monitoring and Reporting

- ESO and Site Manager to inspect daily using qualitative assessments. Should dust be a repetitive issue, consideration will need to be given to dust bucket monitoring.
- ESO to maintain registers of a water truck and/or other measures on site used to control dust.
- ECO to check complaints registers on a monthly basis.

2.4.7 Noise and Vibrations

Management Outcome

To avoid noise disturbance to surrounding land users/residents.

Aspects

Operation of construction equipment, vehicle movement, construction staff, material offloading.

Procedure

- Equipment which limits noise generation must be used.
- Any complaints pertaining to noise and vibrations as recorded in the complaint register must be immediately investigated by the site manager or his representative and addressed.
- Construction times must be limited to be between 07:00 and 17:00 on weekdays, and between 08:00 and 13:00 on Saturdays. Should a particular construction activity require that these timeframes be exceeded, stakeholders must be timeously contacted and the matter communicated.
- Noisy vehicles must be fitted with appropriate silencers and the drivers must be trained to drive in a manner that limits noise disturbance. No excessive hooting must be allowed
- All vehicle / plant shall be maintained in good working order, shall adhere to the relevant lighting & noise requirements of the Road Traffic Act (93 of 1996) and SANS 1200A Clause 4.1, and vehicle service histories are to be kept up to date to reduce potential noise and air pollution from vehicle emissions:
 - All vehicles shall be equipped with an appropriate silencer on their exhaust systems.
 - Mechanical equipment with lower sound power levels shall be selected wherever possible.
 - Safety measures that generate noise, such as reverse gear alarms on large vehicles, shall be appropriately calibrated or adjusted to minimise noise.
 - Appropriate directional and intensity settings shall be applied on all hooters and sirens
- Reasonable speeds shall be maintained on the access roads in order to prevent excessive noise.
- Attempts must be made to schedule noisy activities so that they occur simultaneously and over as short a period as possible. These must be communicated to surrounding stakeholders ahead of time.

- Vibration inducing activities must also be simultaneously scheduled wherever possible.
- Ensure machinery is properly maintained (fasten loose panels, replace defective silencers).
- Switch off machinery immediately when not in use.
- The Contractor shall be responsible for compliance regulations for Noise Control in terms of Section 25 of the Environmental Conservation Act.

Targets

- In terms of Section 25 of the Environment Conservation Act 73 of 1989, ambient noise levels in surrounding areas may not increase by more than 7 dB (A).
- The Occupational Health and Safety Act 85 of 1993 stipulates that noise levels in excess of 85 dB (A) at 1 metre from equipment are not permitted.
- Excessive noise as determined subjectively by the site manager or his representative is not created.
- No complaints of noise by surrounding land users.

Monitoring and Reporting

- ESO and Site Manager to monitor on a daily basis.
- ESO to record any complaints in the register and ensure they are reported to the ECO and dealt with timeously.
- ECO to check registers in monthly audits.

2.4.8 Water Consumption

Management Outcome

To minimise the consumption (and wastage) of water

Aspects

Equipment servicing areas, domestic water use, water required for construction and related activities.

Procedure

- Opportunities to reduce consumption and rather re-use water must be adopted wherever possible.

- Measures must be put in place to capture rainwater for use at the site to reduce demand on the potable water supply. If possible and appropriate for the site, treated effluent should be used for dust control. This must be decided on in consultation with the BGCMA as a Water Use Authorisation would be needed for irrigation with treated effluent in terms of the National Water Act.
- Any abstraction from natural water sources such as a stream or groundwater will require a licence from the BGCMA.
- Methods must be employed to ensure that water is not wasted. Environmental awareness training must ensure that staff is aware of the need to conserve water and to minimise the pollution of water.
- The Contractor shall provide water for drinking and construction purposes. Water must be used carefully and sparingly with the view of not wasting water.
- Taps are to be attached to secure supports and leaking taps and hosepipes are to be repaired immediately.

Targets

- No wasting of water.

Monitoring and Reporting

- ESO to check for any signs of water wastage.
- ESO / Site Manager to maintain a record of monthly water use (if possible)

2.4.9 Water Quality

Management Outcome

- Avoid degradation of aquatic habitats.
- Prevent surface and groundwater contamination.
- Prevent erosion and sedimentation of aquatic areas.

Aspects

Poorly maintained equipment and vehicles, vehicle parking areas and movement, materials storage, washing equipment, cement mixing, contaminated run-off from active work and storage areas, fuel storage and re-fuelling, storage of hazardous substances, erosion and sedimentation from stockpiles and disturbed areas.

Procedure

- The ECO, ESO, and Site Manager shall ensure that all precautions are taken to ensure that no surface or ground water becomes polluted. Any deliberate or unplanned pollution of water is an offence in terms of the National Water Act (Act 36 of 1998) and is punishable with a fine to be determined by the authorities.
- Environmental awareness training must ensure that staff is aware of the need to prevent pollution at source. The aim is to prevent pollution at source by good work practice, thereby limiting the chance of contaminants being carried offsite.
- No contaminated runoff must be allowed to leave the site.
- All construction camps, lay down areas, batching plants or areas and any stores shall be more than 50 m from the aquatic corridors.
- Measures (such as placing of hay bales or a temporary silt trap) should be in place to prevent siltation of downstream watercourses while work is being done to establish the Aquatic Zone.
- No stockpiling should take place within aquatic areas or their buffer areas.
- Care shall be exercised during all phases of the work to prevent sediment, debris or pollutants from entering any watercourses or waterbodies
- A stormwater management plan must be developed for construction that considers the movement of runoff towards and from active work areas, the site camp, and stockpile areas. Care should be taken at all times to ensure that dirty water does not leave the site.
- Temporary storm-water runoff basins and drainage ditches may have to be constructed in order to capture storm-water.
- Transport of sediment in surface water runoff must be minimised e.g. by using silt traps, silt curtains, geo-textiles, diversionary berms, soil stabilisation and temporary settling ponds
- All heavy earth-moving and transport vehicles must be in good working condition with no leaking hydrocarbon fuel, fluids or lubricant emanating from these vehicles.
- All vehicles and plant shall be provided with a suitably sized service pan/drip tray to be used to effectively trap fuel leaks in the event of a breakdown.
- Drip trays shall be provided for all plant including stationary plant (such as compressors) and for “parked” plant (such as scrapers, loaders or any vehicle).

- At the start of each day, vehicles and equipment must be inspected for any signs of leaks.
- The maintenance of all vehicles and equipment and refuelling shall take place in a designated bunded area of the contractor's camp on a hardened surface with a suitable collection sump or suitable oil/water separator.
 - The vicinity of such areas shall be monitored for fuel and oil spills, and these shall be promptly addressed.
 - Rainwater that collects in bunded areas shall be promptly removed and dealt with as water containing waste
 - This must not be situated within 50 m of the drainage corridors.
- The facilities that require slabbed or bunded surfaces are to be designed to engineering standards of sufficient capacity
- Contaminated soil (e.g. in vehicle parking areas, under generators) must be removed to an appropriate permitted solid waste disposal facility (as hazardous waste).
- A spill kit must be housed on site.
- All staff must be trained on how to respond to spills and polluting incidents. This includes measures to capture/control the spill, clean up procedures, remedial action required, and reporting mechanisms.
- ❖ The Contractor shall be responsible for providing all sanitary arrangements for construction and supervisory staff on the site. A minimum of one chemical toilet shall be provided per 15 persons. Toilets provided by the Contractor must be easily accessible and within a practical distance from the workers. Performing ablutions in any other area is strictly prohibited
- Should portable/chemical toilets be used then these shall be used and maintained in such a way that they do not cause water or other pollution:
 - No toilet facilities shall be located closer than 50 m to the aquatic corridor
 - Toilets shall be adequately secured to the ground to prevent them from toppling due to wind or any other cause.
 - Adequate toilet paper, and hand sanitiser or soap shall be provided.
 - Toilets shall be serviced regularly (as per the service providers recommendations) and care shall be taken to ensure no spillage occurs when the toilets are cleaned or emptied and that the waste contents and grey water are properly stored before removal from site.

- Certificates of service/disposal by appropriate service providers or at appropriately licensed facilities shall be retained for submission to the ECO.
- Discharge of waste from toilets into the environment (e.g. burial of ablution waste from toilets) is strictly prohibited
- The Contractor must inform the ESO/ECO of any polluting incident immediately.
- The contractor will be responsible for any clean-up costs involved should pollution, erosion or sedimentation have taken place
- All polluting incidents must be recorded in a register in the Environmental Management File, and reported to the ECO.
- Management actions relevant to pollution from cement mixing, hydrocarbons, and hazardous substances; and how to respond to an emergency/incident are included in the relevant sections in this Chapter.
- Erosion and sedimentation must be minimised through effective stabilisation and re-vegetation/rehabilitation measures.
- Erosion control measures must be implemented to reduce erosion and sediment into downstream watercourses and wetlands. If required, silt curtains should be used to trap sediment and prevent it from entering aquatic habitats until the disturbed area has stabilised.

Targets

- No contamination of groundwater or surface water.
- No polluting incidents. Alternatively, polluting incidents adequately contained and remedied to avoid water quality impacts on surface and groundwater in surrounding areas.
- No erosion and sedimentation of downstream aquatic areas.

Monitoring and Reporting

- ESO / Site Manager to visually inspect aquatic areas and the general site to check for signs of pollution and erosion/sedimentation.
- If any incidents are detected, report these immediately to the ECO and record in the Incidents Register.
- Baseline monitoring of groundwater and surface water must be done before construction starts. Three monitoring points are recommended for groundwater wells in the geohydrological report which covers properties in the Airport Support Zone. Surface water monitoring should be done in the existing dam on Ptn 139 on the northern side of the R102, in the dam at the bottom of the Aquatic Zone on Ptn 4 (which will be at the lowest point of the planned

Aquatic Zone), and in the dam in the bottom corner of Ptn 4. Suggested water quality variables to be monitored are as per those listed in the General limit – faecal coliforms, pH, electrical conductivity, orthophosphates, ammonia, suspended solids and chemical oxygen demand.

2.4.10 Waste Management

Management Outcome

To limit the potential for groundwater and surface water pollution as well as the visible and malodorous accumulation of waste materials. To prevent littering and associated environmental impacts.

Aspects

General construction and decommissioning activities

Procedure

- An integrated waste management approach, which is based on waste minimisation and incorporates reduction, recycling, re-use and disposal, where appropriate, must be employed.
- The Contractor shall submit a Method Statement to the Contract Manager and ECO detailing the type of waste anticipated; the storage, handling, reuse, recycling and/or disposal procedures proposed, together with the facilities proposed to receive such waste.
- A system for identifying, classifying and disposing of solid waste must be devised. Waste should be classified as domestic (including litter), hazardous, toxic or recyclable.
- Designated facilities for builder's rubble, hazardous waste, and general waste as provided for in the Contractor's camp/s are to be used for the storage of the appropriate waste products that is weather proof and scavenger proof
- Recycling/re-use of waste must be promoted as far as practically possible.
- The quantities of general waste generated on-site shall be minimised wherever possible by reducing, reusing and/or recycling it.
 - The nearest municipal/private recycling facilities are to be identified as possible options for receiving recyclable materials
 - Separate receptacles for different types of recyclable/reusable materials are to be provided wherever possible

- No littering is permitted on site; litterbins must be provided throughout the site. Waste storage containers shall be covered, tip-proof, weatherproof and scavenger proof. The waste storage area shall be fenced off to prevent wind-blown litter.
 - Appropriate general waste (e.g. construction debris, rubble, timber, tins, drums and domestic waste) collection, storage and removal from site shall be implemented.
 - Waste shall be removed daily from areas remote from camp and transferred to the appropriate waste storage facility.
 - All non-recyclable litter and refuse shall be disposed of off-site at a licensed landfill facility approved by the Contract Manager and ECO
 - Precautions shall be taken to avoid any waste from spreading on, or from, the site.
 - Scavenger and weatherproof bins with lids shall be provided at the contractor's camp, of sufficient number and capacity to store the general domestic waste produced on a daily basis.
 - Bins shall not be allowed to become overfull and shall be emptied regularly at the waste storages areas in the Contractor's camp, or directly transferred to an approved landfill.
 - Builder's rubble shall be neatly stockpiled in designated stockpile areas, and shall regularly be removed from site to an appropriately licensed waste disposal facility or reuse/recycling facility approved by the Contract manager or ECO.
 - Should the generation of hazardous waste be anticipated during the site activities, then suitable collection and storage facilities shall be planned, and an area of the Contractor's camp designated for this purpose in accordance with the relevant legislation.
 - Hazardous waste shall be stored in sealed and labelled drums, which shall be situated on a smooth impermeable surface (concrete or 250 micrometre (μm) plastic (plastic must have at least a 5 cm layer of sand on top to prevent damage and perishing)) within an earth bund. The impermeable lining shall extend to the crest of the bund and the volume inside the bund shall be 120% of the total capacity of all the storage tanks/bowsers (110% statutory requirement plus allowance for rainfall).
 - Access to waste storage areas shall be restricted, and the areas secured with requisite warning signage.
 - Rainwater that collects in bunded areas shall be promptly removed and dealt with as water containing waste
 - Any hazardous waste or contaminated soil shall be disposed of (in accordance with legislation) at a licensed hazardous waste disposal facility, as approved by the Contract Manager and ECO.
-

- Hazardous waste is to be contained and transported as required by the relevant legislation
- Paint products, chemical additives and cleaners, such as thinners and turpentine, or water containing waste may not be disposed of into the stormwater system or elsewhere on site
- Should any liquid waste (e.g. spent oils, fuels and hazardous chemicals; cement-laden water or contaminated water from wash slab and repair areas, batching areas, Hazardous Chemical Substance and hydrocarbon storage areas; water containing waste and domestic liquid waste) be generated then the liquid waste shall be stored in sealed and labelled drums or approved containers for such purposes in the designated hazardous waste area of the site until it is disposed of at appropriately licensed wastewater or hazardous waste disposal facilities as approved by the Contract Manager and ECO
- Cement bags are to be regarded as hazardous waste.
- A dedicated smoking area must be established at the site camp, where provision is made for disposal of cigarette butts.
- No waste may be buried or burnt on site
- Centralised eating facilities with bins must be provided for workers to facilitate litter control.
- All solid waste must be disposed of off-site at permitted waste facilities. No dumping in unpermitted sites must take place. The contractor must keep certificates of disposal. A waste register must be maintained in the Environmental Management File.
- All certificates of disposal or records of handover to appropriately licensed facilities shall be retained, together with records of tonnages per month, and these shall be made available for monthly progress reporting if so required by the ECO, Contract or Contract Manager
- Used oil, lubricants, grease and cleaning materials, etc. from the maintenance of vehicles and machinery shall be collected in storage vessels/tanks and sent back to the supplier or removed from site by a specialist oil recycling company for disposal at an approved hazardous waste site.

Targets

- Waste appropriately stored on site as per the norms and standards published in terms of the NEM: Waste Act.
- Waste that cannot be re-used or recycled is removed to a registered waste disposal site.
- No dumping and litter on site or in surrounding areas.

- No burning of waste.
- No pollution of areas outside the site from liquid or solid waste.

Monitoring and Reporting

- ESO to do daily inspections of the site and waste area
- ESO to maintain waste registers and disposal receipts
- ECO to check waste areas and registers during monthly audits

2.4.11 Materials handling, use, and stockpiles

Management Outcome

To ensure that materials are appropriately handled, stored and used.

Aspects

Storage of materials, transport of materials to the site, importing materials for use in construction.

Procedure

- The contractor must ensure that delivery drivers are informed of all procedures and restrictions (including 'no-go' areas) required to comply with the specifications.
- Delivery drivers shall be informed of all delivery procedures and restrictions (including "no go" areas) and shall be supervised during offloading by someone with an adequate understanding of the relevant requirements of the EMPr.
- Materials in transit shall be appropriately secured to ensure safe passage between destinations:
 - Loads, including but not limited to, sand, stone chip, fine vegetation, refuse, paper and cement, shall have appropriate cover to prevent them spilling from the vehicle during transit.
 - The Contractor shall be responsible for any clean up resulting from the failure by employees or suppliers to properly secure transported materials.
- All manufactured and or imported materials shall, where reasonably possible, be stored within the contractor's camp and designated laydown areas and, where required, out of the rain.

- The contractor must ensure that delivery drivers are supervised during off-loading by someone with an adequate understanding of the specifications.
- All material shall be stored within the designated activity zones only.
- Imported gravel, soil, fill and sand shall be free of weeds, alien invasive seed material, plant material, litter and contaminants; and shall be obtained from sources approved by the site manager.
- Stockpiling areas shall be located close to the working area(s) and outside of the drainage corridors, and outside of visually sensitive areas.
 - Method Statements are required for the location and method of protection of stockpiled materials stored outside of the contractor's camp or designated laydown areas, together with the proposed method of rehabilitating these areas.
- Care shall be taken to ensure that the location of stockpiling areas will not cause damming of water or runoff, nor expose the stockpiled material to extreme erosive elements.
- Stockpiles shall not be placed in a manner that obstructs vehicle visibility or drivers' line of site, especially when working near traffic intersections and sharp corners.
- Stockpiled material (e.g. topsoil, soil, subsoil, and rocky material) shall be stable and well secured to avoid collapse and possible injury to site workers. Where required, appropriate precautions shall be taken to limit the erosion and compaction of stockpiles:
 - Stockpiled material shall not exceed 2 m in height (note: stockpiled topsoil shall be restricted to 1.5 m in height to prevent compaction).
 - Stockpiled material shall be placed to occupy the minimum width compatible with the natural angle of repose of the material (simple dimensions to be provided by the ECO), and measures shall be taken to prevent the material from being spread over too wide a surface.
 - The stockpiles and stockpile areas shall be carefully managed to prevent cross-contamination of stockpile material and to guard against "stockpile creep" (topsoil stockpiles shall be clearly demarcated and be distinguishable from other material stockpiles).
 - Stockpiled material shall be kept clear of weeds and alien invasive vegetation growth by regular weeding, or herbicides if permitted (restrictions on herbicide use for topsoil stockpiles is to the discretion of the ECO).

- If the stockpiles start to erode significantly or cause dust problems, they shall be covered with suitable erosion protection materials (e.g. hessian or geo-fabric).
- Every effort shall be made to handle topsoil twice only: once to strip and stockpile, and once to replace, level, shape and scarify.
- Topsoil stripped from different sites of different soil types shall be stockpiled separately and clearly identified as such for return to area of origin, and every effort shall be made to prevent the mixing of topsoil from different sites of different soil types.
- Where practical, stockpiled topsoil shall not be left for more than two to four months before being used for rehabilitation, as longer storage will compromise its fertility. When topsoil must be stored for extended periods of time, topsoil stockpiles shall be protected from erosive forces using a suitable cover:
 - Stockpiled topsoil could be vegetated to reduce the potential for erosion and deterioration in soil quality. Appropriate ground cover could be planted on topsoil stockpiles to prevent surface damage, maintain active populations of beneficial soil microbes, prevent weed infestation and control erosion.
 - Where wind and water erosion are a particular problem, stockpiled topsoil could be covered in erosion protection materials (e.g. hessian or geo-fabric or similar).
 - Stockpiled topsoil shall not be covered with any material (e.g. plastic) that may kill seeds or cause it to compost
- Inert spoil material (material obtained from site that cannot be engineered into the site design as fill or overburden) can be used in the rehabilitation process, either to aid in the final finishing of the site or in providing subsoil cover over which the stockpiled topsoil can be spread.
- To consolidate impacts, all spoil material intended for rehabilitation shall be stockpiled within the designated stockpile areas prior to its spoiling or use in rehabilitation
- Any surplus inert spoil that cannot be used elsewhere on site, or for other third party (private/municipal/provincial) purposes, shall be permanently disposed of as builder's rubble at an appropriately licensed facility.

Targets

- Approved storage areas adhered to.
 - No spills from transported materials.
-

- Appropriate storage of stockpiles to prevent erosion/wash.
- Appropriate separation and storage of topsoil, for use in rehabilitation.

Monitoring and Reporting

- ESO to monitor stockpiles and check for alien vegetation, dust, runoff, and separation of top and sub soil. Report on this in the weekly inspection report.
- ECO to check stockpile areas in the monthly audits.

2.4.12 Fuel Storage and Re-Fuelling

Management Outcome

To ensure that fuel is appropriately stored and dispensed to minimise the potential for pollution and accidents.

Aspects

Storage of fuel, fuelling of equipment (e.g. generators)

Procedure

- Should fuel (petrol and diesel) be stored on-site, then fuel storage areas within the contractor's camp shall be identified and designated to this purpose.
- The designated area shall be located in a portion of the site where it is unlikely to pose a significant risk in terms of water pollution or traffic safety.
- Fuel and hazardous material storage areas must be situated at least 50 m from drainage areas. The location of storage areas must be approved by the resident engineer and ESO/ECO.
- Warning/safety signage conforming to the requirement of SANS 1186 shall be prominently displayed in and around the fuel storage area.
- There must be adequate firefighting equipment surrounding storage areas
- Storage facilities must be regularly maintained.
- Re-fuelling must only take place in a designated area at the site camp, over a fit for purpose drip tray.

- An emergency response plan and reporting procedure must be formulated, including steps taken to manage the capture and treatment of polluted soil and water.
 - The contractor must train all staff on site that are responsible for handling hazardous materials for their proper use, handling and disposal.
 - Drip trays must be used under all plant/machinery/equipment to collect hydrocarbon spills or leaks. Drip trays must be maintained, and the contents emptied as hazardous waste
 - Fuel storage management shall ensure limited risk to the environment:
 - Fuel shall be stored in drums or bowsers situated on a smooth impermeable surface (concrete or 250 micrometre (μm) plastic (plastic must have a minimum of a 5 cm layer of sand on top to prevent damage and perishing)) within an earth bund. The impermeable lining shall extend to the crest of the bund and the volume inside the bund shall be 120% of the total capacity of all the storage tanks/bowsers (110% statutory requirement plus allowance for rainfall).
 - Only empty externally clean drums may be stored on the bare ground. Empty and externally dirty tanks shall be sealed and stored on an area where the ground has been made impermeable
 - Rainwater that collects in bunded areas shall be promptly removed and dealt with as water containing waste
 - The Contractor shall submit a Method Statement to the Contract Manager and ECO for approval of the procedure for dealing with an accidental hydrocarbon spill:
 - Any single spill in excess of 200 ℓ shall be reported to the BGCMA, and the Project Company.
 - The responsible operator shall have the required training to use the spill kit, or to contain the spill.
 - The activity causing the spill is to cease, and the spill is to be contained using a spill kit, sand berms, sandbags, sawdust, absorbent materials or similar.
 - Should any soil become contaminated by oil or fuel spills then the soil shall be removed.
 - Contaminated soil and material shall be stored in bags or sealed and labelled drums in the designated hazardous waste area of the site and disposed of.
 - Any contaminated soil that cannot be removed is to be treated in situ as determined by the ESO/ECO (with specialist input where required).
-

Targets

- No hydrocarbon leaks or spills.
- Alternately, if leaks or spills do occur, these are dealt with timeously, contained, and the impacted area remediated.
- No contamination of soils, surface water or groundwater from hydrocarbon spills or leaks.

Monitoring and Reporting

- ESO to check fuel storage areas and the use of drip trays under plant, and fuel dispensing processes.
- Any spill must be recorded in the Incidents Register.
- ECO to check registers, and look for signs of fuel spills during the audit.

2.4.13 Cement

Management Outcome

To ensure that cement mixing/pouring/transfer is done in a manner that prevents spills and contamination of surrounding areas.

Aspects

Cement mixing and application.

Procedure

- Cement mixing shall be carried out on an impermeable hardened surface (e.g. boards, or a designated bunded area with an impermeable surface).
- Cement powder has a high pH, and spillage of cement powder and concrete slurry can affect soil and water pH. Spillage on permeable surfaces shall be prevented, and cement laden water/runoff shall be collected and disposed of as 'water containing waste'.
- A washout facility shall be provided for washing concrete/cement mixing equipment, should cement mixing be required
- Bagged cement shall be stored at an appropriate facility, and empty cement bags shall be soundly secured with adequate binding material should these be stored on site.
- Hardened concrete from the concrete mixer or washout facility shall be reused or disposed of as builder's rubble at an appropriately licensed spoil facility

- Where 'readymix' concrete is used, the delivery vehicle shall not wash chutes onsite, unless at a designated area where such water can be collected and disposed of as water containing waste. Any spillage from 'readymix' delivery shall be immediately collected and disposed of as builder's waste.
- Wastewater generated by the process must be diverted to a storage area. No washwater / runoff must be allowed to leave the site.
- Accumulated sludge in the storage area must be removed to a licensed landfill site.
- Used cement bags must be disposed of in weather proof bins to prevent windblown cement dust and bags blowing away, and disposed of as hazardous waste.
- All concrete remains and bits of aggregate must be removed from site to a licensed landfill site.

Targets

- No messing of cement or cement residue
- No washwater/effluent with cement residue to leave the site
- Cement mixing to be done over contained and impermeable surfaces only
- Correct disposal of used cement bags and sludge.

Monitoring and Reporting

- The ESO must inspect cement mixing and pouring activities to check that mixing is being done over impervious surfaces.
- The ECO must check the same areas in the monthly audit.

2.4.14 Erosion Control Measures

Management Objective

Preventing erosion and sedimentation of aquatic areas.

Aspects

- Construction phase stormwater management
- Rehabilitation of disturbed areas and attaining a vegetation cover to limit bare soil exposure.
- Management of stockpiles.

Procedure

- A stormwater management plan must be developed in the pre-construction phase, detailing management measures to deal with increased surface flows over exposed soils.
- Stabilisation of exposed soils and the re-vegetation of any disturbed areas must be done in a progressive manner.
- All reasonable measures shall be taken to limit erosion.
 - The most effective way to control erosion is to retain the existing vegetation for as long as possible. Hence, site clearance shall be undertaken in a phased approach wherever possible such that the extent of exposed soils shall be limited to areas of the current construction phase.
 - Special attention shall be given to ensure the protection of topsoil, overburden, spoil and materials stockpiles from the erosive elements.
 - Any erosion channels shall be backfilled and compacted, and the areas restored to a proper condition.
 - Stabilisation of cleared areas to prevent and control erosion shall be pro-actively managed by the Contractor.
 - Stabilisation and rehabilitation at watercourse crossings is important to prevent erosion and sedimentation of drainage areas.
- Aquatic specialist's recommendations regarding erosion and rehabilitation:
 - Runoff into the downstream watercourse and wetland area must be done in a dispersed manner. This is achieved by means of the check dams in the aquatic zone.
 - Measures (such as placing of hay bales or a temporary silt trap) should be in place to prevent siltation of the watercourse downstream of the site while work in the Aquatic Zone and dam is being done. Drainage channels that will form the Aquatic Zone should be shaped and planted with wetland vegetation such as *Juncus effusus*, *Carex gloerabilis*, *C. clavata*, *Isolepis prolifera*, *Cyperus polystachyos* and *Zantedeschia aethiopica* within the wetter bed together with buffalo grass *Stenotaphrum secundatum* or *Cynodon dactylon* along the banks.

Targets

- Runoff attenuated to prevent erosion.
- No siltation of the watercourse.
- Effective stabilisation and rehabilitation of disturbed areas, and especially at watercourse crossings.

Monitoring and Reporting

- An engineer and the site manager must inspect watercourse crossings to check for erosion and stabilisation measures, if required.

- The ESO must inspect stockpile areas, areas near the watercourse and dams, and the general site to check for early signs of erosion.
- The ESO must monitor rehabilitation/stabilisation progress and report in weekly inspection reports.
- The ECO must check watercourse crossings, the Aquatic Zone, and the general site for signs of erosion and to determine the effectiveness of stabilisation measures and rehabilitation success.

2.4.15 Social Issues

Management Objective

- Overall economic and skills development benefit to the local community.
- Construction phase does not result in traffic safety risks and traffic congestion.
- Stimulate of the economy.

Aspects

Labour recruitment, skills development, sourcing of materials, construction vehicles.

Procedure

- The Project Company shall encourage the main contractors to increase the local procurement practices and promote the employment of people from local communities, as far as feasible, to maximise the benefits to the local economies.
- Employment of labour-intensive methods in construction where feasible.
- Sub-contract to local construction companies particularly SMME's and BBBEE compliant and women-owned enterprises where possible.
- Use local suppliers where feasible and arrange with the local SMME's to provide transport, catering and other services to the construction crews.
- Set up apprenticeship programmes to build onto existing skill levels or develop new skills amongst construction workers especially those from local communities.
- Employ a community liaison officer to assist with communication with local communities.
- Construction vehicles must adhere to speed limits on public roads.
- The site manager must liaise with the Traffic Department regarding safety measures and planning for any anticipated road closures or traffic disruptions.
- Construction signage must be placed on public roads to warn motorists and pedestrians.
- Specialist mitigation:
 - Establish an information-sharing link with the Community Safety Directory of the George Municipality

- Comply with relevant health and safety regulations, and applicable legislation, including the Occupational Health and Safety Act (85/1993): 2014 Construction Regulations and the 1996 National Road Traffic Act

Targets

- Empowerment of the local community through skills development and employment.
- Stimulation of the local economy.
- No social issues (e.g. crime, violence).
- No safety incidents
- No traffic congestions or disruption of access and traffic flow
- No safety risks to pedestrians and traffic.

Monitoring and Reporting

- CLO to monitor social issues and report to the ESO and ECO.
- Any traffic incidents must be recorded in the Incidents File.

2.4.16 Decommissioning and Site Rehabilitation

Management outcome

- To rehabilitate areas that have been disturbed during construction, and do not form part of the development area to a stable state.
- To rehabilitate the development site to acceptable state at decommissioning.

Aspects

Dismantling and removal of all construction infrastructure; removing all wastes, site preparation for rehabilitation including tidying, shaping, removing rutts and knobs, re-vegetation and landscaping of disturbed areas on site; removal of alien vegetation; ensuring that adequate erosion control measures are in place, rehabilitating roads that are no longer required, alien vegetation control, 6 month monitoring of vegetation establishment and establishment and functioning of the Aquatic Zone.

Procedure

- All plant, equipment, storage containers, temporary fencing, temporary services, and fixtures shall be completely removed from site (or earlier, in a phased manner, if possible).
- All access roads no longer required shall be returned to a state no worse than prior to construction.

- Inert waste and rubble, including surplus rock, foundations, spoil and batching plant aggregates shall be removed and disposed of.
- All domestic waste shall be removed from site and dispose of.
- All pollution containment structures shall be removed from site.
- All temporary sanitary infrastructure and wastewater disposal systems shall be removed from site. Take care to avoid leaks, overflows and spills and dispose of any waste in the approved manner.
- All disturbed areas must be left in a stable state.
- Disturbed areas must be shaped to approximate contours in the surrounding area.
- Any erosion gullies or dongas must be filled and stabilised.
- Any roads that were deteriorated or damaged by construction vehicles must be re-instated to a similar or better condition that before construction starting.
- Demarcation material must be dismantled and removed
- Signs must be removed
- Alien vegetation must be removed and disposed of.
- All material stockpiles must be removed from site.
- The disturbed area, once the surface is prepared, must be raked and a layer of topsoil added. Vegetation of areas that will not be developed must be done using indigenous species that would naturally occur in the area.
- Reinstatement of disturbed areas
 - Programme the backfill of excavations so that subsoil is deposited first, followed by the topsoil. Compact in layers for best results
 - Monitor backfilled areas for subsidence (as the backfill settles) and fill depressions using available material
 - Ensure that no excavated material or stockpiles are left on site and that all material remaining after backfill is landscaped or removed from site and disposed of at a suitably licensed waste disposal site
 - Execute top soiling activity prior to the rainy season or any expected wet weather conditions

- Execute topsoil placement only after all has activities have ceased
- Replace and redistribute stockpiled topsoil together with herbaceous vegetation, overlying grass and other fine organic matter in all disturbed areas of the construction site, including temporary access routes. Replace topsoil to the original depth.
- Place topsoil in the same area from where it was stripped. If there is insufficient topsoil available from a particular soil zone to produce the minimum specified depth, topsoil of similar quality may be brought from other areas of similar quality. The suitability of substitute material will be determined by means of a soil analysis addressing soil fraction, fertility, pH and drainage
- Do not use topsoil suspected to be contaminated with the seed of alien vegetation (e.g. black wattle). Alternatively, the soil is to be appropriately treated.
- Ensure that stormwater run-off is not channelled alongside the gentle mounding, but that it is taken diagonally across it.
- Shape remaining stockpiled topsoil not utilised elsewhere in an acceptable manner so as to blend in with the local surrounding area.
- After topsoil placement is complete, spread available stripped vegetation randomly by hand over the top soiled area.
- Newly cleared soils will have to be re-vegetated and stabilised as soon as construction has been completed and there must be an on-going monitoring program to control and/or eradicate newly emerging alien invasive plants until site handover.
- Machines must remove the stone material and transport it to another location to be re-used if it is required, removed correctly to a licensed facility, or offered to the landowner.
- If applicable, the geotextile base material, and other foreign material must also then removed during rehabilitation.
- Ripping and scarifying:
 - Rip and / or scarify all areas following the application of topsoil to facilitate mixing of the upper most layers. Whether ripping and/or scarifying is necessary will be determined based on the site conditions immediately before these works begin

- Rip and / or scarify all disturbed (and other specified) areas of the construction site, including temporary access routes and roads, compacted during the execution of the works
 - Rip and / or scarify along the contour to prevent the creation of down-slope channels.
 - Do not rip and / or scarify areas under wet conditions, as the soil will not break up.
 - The area must be ripped to an appropriate depth (at least 300 mm) to remove any minor compaction.
 - Temporary fencing or similar shall be considered on areas where livestock have free access, and choice of plant species could give preference to non-palatable species, if appropriate.
 - Grassing:
 - The areas that have been denuded and disturbed as a result of the construction on site, and that will be revegetated, shall be revegetated as soon as possible, and only with indigenous vegetation
 - Suitably trained personnel shall undertake revegetation. For best results:
 - Sodding may be done at any time of the year.
 - Seeding should be done during a season when the germination rate is better.
 - Hydro seeding is typically done where revegetation is urgent or where slopes are problematic and is more successful during a season when the growth rate is better.
 - Specifications for sods, runners and hand seeding shall be determined by the Landscaping and Rehabilitation Management Plan
 - Maintenance:
 - Monitor the re-growth of vegetative material, and address issues of erosion, trampling, and grazing accordingly
 - Cordon off areas that are under rehabilitation as no-go areas
 - Control invasive plant species and noxious weeds by means of extraction, cutting or other approved methods
 - Control invasive plant species and noxious weeds by means of extraction, cutting or other approved methods
-

- The ECO must monitor rehabilitation success of the general site, landscaped areas, and the Aquatic Zone. The suggested monitoring period is 6 months. The external Environmental Auditor and ECO must issue a close-out report after 6 months if these areas are in a stable and rehabilitated state. Alternatively, recommendations must be made for further management, and a follow-up close-out audit at 12 months.

Targets

- Site successfully rehabilitated and stable, with little to no risk of pollution, erosion, visual impacts, and safety risks.
- Aquatic Zone functional and stable, and shifting towards an ecologically sound aquatic area.

2.4.17 Organisational Structure

The figure below is an Organogram for environmental management and reporting in construction phase:

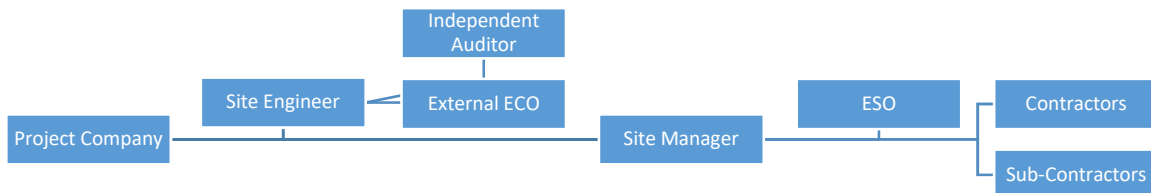


Figure 5: A suggested Organisational Structure for the Environmental Management during Construction Phase.

2.4.18 Monitoring and Management Meetings

Progress meetings are held every 2 weeks. It is recommended that the external ECO does a site audit once a month and prepares an audit report with a photographic record, and reports back at the site meeting. Prior to construction being completed, a pre-closure inspection must be done, and followed by a closing audit report. Monthly audit reports must be submitted to the DEA&DP.

2.4.19 Auditing

The frequency of auditing of compliance with the conditions of the EA and of compliance with the EMPr, must adhere to the following programme -

- During the period which the activities have been commenced with on site until the construction of the internal service infrastructure has been completed on site, the holder of the EA must undertake annual environmental audit(s) and submit the Environmental Audit Report(s) to the Competent Authority. A final Environmental Audit Report must be submitted to the Competent Authority within three months of completion of the construction of internal services and the post construction rehabilitation and monitoring requirements thereof.
- During the period the development of the facility or infrastructure for the storage and handling of a dangerous good (i.e. construction of the filling station) is undertaken, the holder of the EA must ensure that environmental audit(s) are performed annually and submit these Environmental Audit Report(s) to the Competent Authority. A final Environmental Audit Report must be submitted to the Competent Authority within three months of completion of the filling station component of the development and the post construction rehabilitation and monitoring requirements thereof, but by no later than **31 October 2031**.

The Environmental Audit Report(s), must -

- be prepared and submitted to the Competent Authority, by an independent person with the relevant environmental auditing expertise. Such person may not be the ECO or EAP who conducted the EIA process.
- provide verifiable findings, in a structured and systematic manner, on:
 - the level of compliance with the conditions of the EA and the EMPr and whether this is sufficient or not; and
 - the ability of the measures contained in the EMPr to sufficiently provide for the avoidance, management and mitigation of environmental impacts associated with the undertaking of the activity
- identify and assess any new impacts and risks as a result of undertaking the activity
- evaluate the effectiveness of the EMPr
- identify shortcomings in the EMPr
- identify the need for any changes to the avoidance, management and mitigation measures provided for in the EMPr
- indicate the date on which the construction work was commenced with and completed or in the case where the development is incomplete, the progress of the development and rehabilitation

- include a photographic record of the site applicable to the audit; and
- be informed by the ECO reports.

The Holder must, within 7 calendar days of the submission of the audit report to the Competent Authority, notify all potential and registered I&APs of the submission and make the report available to anyone on request and on a publicly accessible website (if applicable).

2.4.20 Response to Public Complaints

The site manager and ESO must respond to queries and complaints from the public regarding construction activities. Complaints must be recorded in a complaints register, including the nature of the complaint, who received the complaint, how the situation was remedied, and a closing statement. A communications strategy must be developed with the community, with a representative from each of the surrounding landowners, the contractor, and the ECO.

2.4.21 Documentation

Forms must be devised for:

- Weekly (by the ESO) and monthly (by the ECO) monitoring of environmental management requirements and targets
- Non-compliances and recommended corrective action
- Logging complaints received in a complaints register
- Spills registers
- Waste registers
- Environmental incident registers
- Evaluating the environmental awareness training program
- Auditing of activities

The ESO and site manager must keep a record of all meetings attended, waste disposal documents, audits undertaken and other environmental issues as appropriate.

The above documentation must be kept on file at the site office, and must be continuously updated. Other documents to be kept on file include:

- EMPr
- Copies of all permits
- Construction site plan
- Map of environmentally sensitive areas
- Roles and Responsibilities chart and reporting structure for environmental incidents
- Registers: waste, complaints, spills and other incidences
- Approved method statements

Appendix 1: EAP Curriculum Vitae and Registration

Curriculum Vitae: Belinda Joan Clark

Summary Biography:

My tertiary qualification is in environmental science, and I completed a PhD in Botany (coastal ecosystems) at the Nelson Mandela University in 2005. I started my career working in the academic field, lecturing Epidemiology to undergraduate students. For the past 18 years, I have worked in the environmental management field on various projects across South Africa, in coastal and terrestrial ecosystems, as well as the industrial and brownfields development sector. I have a keen interest in environmental conservation and community development; and working collaboratively with others to find sustainable development solutions.

Personal Details:

ID Number: 7507170038084

Address: 43 Rhodes Street, Mount Pleasant, Gqeberha

Contact number: 072 725 6400

Email: bclark@telkomsa.net / Tikkapox1@gmail.com

Qualifications

- ✿ B.Sc (Botany, Geology)
- ✿ B. Sc Honours (Botany: terrestrial ecology, environmental management, agriculture)
- ✿ M.Sc (Botany: Marine Eco-physiology)
- ✿ PhD (Botany: Marine Ecology, focusing on marine pollution)

Professional Registration

Environmental Assessment Practitioners Association of South Africa: 2019/1336

Training and Workshops:

- ✿ Light Sport Aircraft Licence: May 2018
- ✿ Private Pilot's Licence: 2020
- ✿ Eastern Cape Tour Guide Course: January 2010
- ✿ Introduction to Wildflower Identification: January 2010
- ✿ National Biodiversity Planning Forum (2018)
- ✿ National Biodiversity Planning Forum (2009)
- ✿ National Biodiversity Planning Forum (2008)
- ✿ Identification workshop on the *Ericaceae* family
- ✿ Advanced International Training in Urban Environment Management (2010 - 2011) – Sweden and Zambia
- ✿ EIA Regulations (2010, 2011, 2014) Workshops – various
- ✿ Climate Change Workshop (2011)
- ✿ Workshop: Integrated Coastal Management Act (Kenton, 2011). Imbewu
- ✿ Workshop: Introduction to the implementation of environmental law (Kenton, October, 2012). Imbewu
- ✿ Workshop: Contaminated Land Register (Port Elizabeth, February 2013). Imbewu
- ✿ Veld Management and Grass Identification course (Pretoria, February 2013). Africa Land Use Training
- ✿ Water Law Workshop (Port Elizabeth, August 2013). Imbewu
- ✿ Wetland Indaba (Cape St Francis, October 2013)
- ✿ Thicket Forum (various – 2009 to current)
- ✿ Water Use Licence Training – Section 21 c and i water use activities (August 2016)
- ✿ Estuary Management Course (December 2016)

Seminars/Presentations delivered:

- ✿ Nelson Mandela University – 2019: Environmental Management in South Africa. Presentation to Masters Students in Development Studies
- ✿ Geography Teachers Conference – 2019: Environmental management issues in the lower Baakens River Valley
- ✿ Thicket Forum – 2018: Ecosystem Guidelines for the Albany Thicket Biome
- ✿ Biodiversity Planning Forum – 2018: Ecosystem Guidelines for the Albany Thicket and Savanna Biomes
- ✿ IMESA Conference – 2018: Environmental management issues in the lower Baakens River Valley
- ✿ Nelson Mandela University – 2017: EIA process and regulations presentation to Development Studies students
- ✿ Masifunde – 2017: Presentation on Climate Change
- ✿ Nelson Mandela Bay Climate Change Conference – 2011: the role of academic institutions (specifically the NMMU Botany Department) in climate change planning
- ✿ Geography Conference – 2011: Environmental Impact Management in South Africa
- ✿ Thicket Forum – August 2008: Case study: Towards implementing environmental planning guidelines (STEP, MOSS, ECBCP) in EIAs
- ✿ Phycological Society of Southern Africa (PSSA) - January 1999: The effect of water-soluble oil extracts and metals on oxygen evolution rates by *Anaulus australis*.
- ✿ PSSA – July 2000: The effect of excess concentrations of nitrate, ammonium, and phosphate on cell division cycles of *Anaulus australis*.
- ✿ PSSA – January 2002: Microalgae as indicators of pollution in surf-zones in Algoa and St Francis Bay
- ✿ PSSA – January 2003: Increases in surf-zone nutrient concentrations as a result of increased septic tank outflow after an Easter weekend
- ✿ PSSA – January 2004: Surf-zone water quality and the associated microalgal species composition
- ✿ SAAB – January 2002: Microalgae as indicators of pollution on the south coast of South Africa

✿ South African Marine Science Symposium (SAMSS) – January 2005 – Factors determining the dominance of dinoflagellate cells versus *Anaulus australis*.

✿ UPE Departmental Seminars - Hydroponics (1997), Aspects of ecophysiology of *A. australis* (1998), Microalgae as indicators of pollution (project proposal) (2000), Microalgae as indicators of pollution (2001)

Career Biography

Current: February 2023 – Sole Proprietor

Type of Work: environmental consulting, research assistant and project management; community development projects.

Current Projects:

- Development of 5 costed business plans for Climate Change Adaptation and Mitigation in the OR Tambo District Municipality, Eastern Cape (with CEN IEM Unit)
- Upgrades to and expansion of the Motherwell Community and Enviro Hub
- Forest Licence Application for a development at Marina Martinique
- Construction auditing:
 - Expansion of Manganese Ore storage areas at Erf 893 in Swartkops
 - Development of the AfriCamps at Addo Resort

CEN IEM Unit: 2006 – February 2023:

Type of work: Environmental Consulting, including management plans, feasibility assessments, construction auditing, strategic environmental assessments, environmental impact assessments, specialist surveys (e.g. forest mapping and description), public participation, training, project management.

Areas worked in: terrestrial and coastal ecosystems (estuaries and nearshore), industry, urban development, infrastructure (e.g. roads, power lines, waste water treatment works, water supply network), alternative energy projects, waste management, agricultural development, sports and recreational areas, landscaping, community projects.

List of projects worked on at CEN IEM Unit:

Note: Belinda Clark has been the primary author of all the reports listed below. She is responsible for field work, research, public participation, report writing, and project management.

Sensitivity Assessments/Feasibility Studies /Specialist Input Studies

Completed Projects:

1. Sensitivity Assessment of Ashmead Resort in Knysna, Western Cape

2. Sensitivity Assessment for the creation of a high intensity mixed-use waterfront development on Erf 577 and a portion of Erf 578, Kings Beach, Port Elizabeth
3. Sensitivity Assessment of the Old Power Station site in Swartkops, Port Elizabeth
4. Environmental Sensitivity Description of Erven 268, 287 and 288 in the vicinity of Coega, Eastern Cape
5. Environmental Comment on the Proposed Port St Johns Master Plan
6. Environmental Input into the Happy Valley Local Spatial Development Framework Plan
7. Environmental Input into the Inner City Local Spatial Development Framework Plan
8. Environmental Input into the proposed development of a Military Health Unit in Forest Hill, Port Elizabeth
9. Specialist investigation of the Kariega River Estuary in response to a proposed housing development on the eastern bank of the estuary.
10. Specialist vegetation assessment for the EIA for a housing development in Motherwell
11. Specialist Ecological Impact Assessment for the NMBM (Coega) Reclaimed Effluent Scheme – Phase 1
12. Scoping Report: A review of available information of operations at the Manganese Ore Terminal and Storage Facility and Tank Farm on Erf 578 at the Port Elizabeth Harbour area with emphasis on environmental transgressions
13. Sampling protocol to determine the extent of potential contamination in the environment surrounding the Manganese Ore Facility and Fuel Storage Tanks in the Port Elizabeth Harbour
14. Sensitivity assessment of Erf 313 in the Coega area to inform possible land use options
15. Environmental input into a feasibility study to determine suitable locations for 8 rural police stations in Transkei
16. Sensitivity assessment of the area proposed for the 'N2 North Housing Project'.
17. Forest survey of Erf 11305 and 1948, Walmer to inform land use planning
18. Forest survey of an area proposed for sand mining on a Ptn of Remainder of Erf 1948, Walmer, Port Elizabeth
19. Forest survey of the Remainder Ptn 220 of Farm Mauritzkraal No. 501 at Gamtoos River Mouth
20. Forest Survey in Seaview for municipal housing projects
21. Forest Survey of plots on the Sardinia Bay Eco-Estate, Nelson Mandela Bay Municipality
22. Forest Survey of Ptn 15 of Farm Seaview No. 28, Nelson Mandela Bay Municipality to place residential units
23. Preliminary Environmental Screening of properties in Lorraine, Walmer, Greenbushes/Kuyga area, and Colchester under consideration for acquisition by the Nelson Mandela Bay Municipality
24. Assessment of the suitability of plants used in landscaping at Marula Game Ranch in Namibia
25. Environmental Input into a feasibility assessment of a small-boat harbour in Port St Johns
26. Forest Survey on Ptn 0 (Remaining Extent) of Erf 382 in Theesecombe, Nelson Mandela Bay Municipality to inform land use planning
27. Strategic Environmental Assessment for the Happy Valley Development area
28. Development of Ecosystem Guidelines for the Savanna Biome
29. Development of Ecosystem Guidelines for the Thicket Biome
30. Assessment of Water Options for Buccara Wildlife Reserve, Graaff-Reinet.
31. Facilitation of the development of the Motherwell Community and Enviro Hub.

Management Plans

Completed Projects:

1. Development of a Coastal Management Programme for the Nelson Mandela Bay Municipality
2. Operational Environmental Management Plan for the storage of manganese ore at the old power station in Swartkops
3. Operational Management Plan for a cementitious grinding facility in the Coega Industrial Development Zone
4. Operational Management Plan for a bunkering licence application in the Port Elizabeth Port
5. Development of a Coastal Management Programme for the Sarah Baartman District Municipality

Current Projects:

1. Facilitation of upgrades to the Motherwell Buy-Back Centre, and expansion to integrate with an Enviro-Edu facility, food gardens and composting areas – ‘Motherwell Community and Enviro Hub’

Project/database management and training

1. Support consultants to the Environmental Management Sub-directorate of the Nelson Mandela Bay Municipality
2. Training facilitator for the Groen Sebenza program in the Environmental Management section of the NMBM

Environmental Auditing

Completed Projects:

1. Environmental Audit for the Upgrading of a Stormwater Channel and Wetland in Blue Water Bay
2. Environmental Audit for the Construction of Kenton Eco-Estate and Associated Infrastructure on the Farm Remainder of Grants Valley 396, Kenton-on-Sea
3. St Francis Bay Marina Extension: Final Audit
4. Environmental auditing for the upgrading of the National Road 2, Section 9 between Witelsbos and Tsitsikamma
5. Environmental auditing of the construction of the Helenvale Thusong Centre in Port Elizabeth
6. Construction auditing of the upgrades to Kings Beach area (Phase 2)
7. Construction auditing of the extension to the industrial area in Graaff-Reinet
8. Construction auditing of the Aberdeen reservoir
9. Review of compliance of an operational sand mine in Theesecombe with conditions of the EMP
10. Environmental audit of the Robberg waste disposal facility in the Bitou Municipality
11. Construction auditing of the cemetery in Graaff-Reinet
12. Construction auditing of Pola Park housing in Uitenhage
13. Construction auditing of Pola Park housing (Extension) in Uitenhage
14. Construction auditing of a cementitious grinding facility in the Coega IDZ
15. Construction auditing of the Graaff-Reinet emergency bulk water scheme
16. Construction auditing for the expansion of the NMU’s internal return effluent scheme
17. Construction auditing for a sludge rising main between Cape Recife and Driftsands Waste Water Treatment Works
18. Construction auditing of the establishment of a petroport along the N2
19. Construction auditing of the installation of a pedestrian bridge across the lower reaches of the Baakens River
20. Construction auditing of the establishment of a family residence and infrastructure on Ptn 0 (Remaining Extent) of Erf 382 in Theesecombe, Nelson Mandela Bay Municipality
21. Audit of structures at Lalibela Game Reserve
22. Pre-construction planning and auditing for the establishment of infrastructure and boreholes in the Camdeboo National Park
23. Construction and operational phase auditing of the Noupoot Wind Farm
24. Construction audit of the buffer yard at the Nxuba Wind Farm
25. Pre-construction compliance audit – Latita Tank Farm (Phase 1), Zone 7, Coega Special Economic Zone.

Basic Assessment Reports

Completed Projects:

1. BAR for the proposed erection of an above-ground 2300 l diesel storage tank for a standby generator in an industrial area (Aberdare Cables)
2. BAR for the proposed rezoning and subdivision of a Portion of Erf 349, New Brighton to develop the Helenvale Community Centre (multi-purpose hall and offices) as part of the Helenvale Urban Renewal Programme.
3. BAR for the proposed augmentation of bulk water supply to Nieu-Bethesda, Camdeboo Municipality, Eastern Cape

4. BAR for the establishment of an oyster nursery on Erf 171, Swartkops (old coal power station site).
5. BAR for the proposed development of an Eco-Estate on Portion 190 of Chelsea 25, comprised of 18 residential units and associated infrastructure
6. BAR for the proposed Development and erection of a prototype 300 KW wind turbine adjacent to the Neptune Substation in the Coega IDZ.
7. BAR for the proposed rezoning and subdivision of Portion 75 of the Farm Kragga Kamma No 23 for rural-residential development.
8. BAR for the proposed rezoning, subdivision and consolidation of portions of Erf 1 and Erf 6, and the entire Erf 15831 in Uitenhage to develop housing (Joe Slovo Housing Project).
9. BAR for a desalination plant at the Old Power Station in Swartkops, Port Elizabeth
10. BAR for the construction of a water pipeline in Graaff-Reinet as part of the Drought Emergency Scheme
11. BAR for the construction of a promenade along a section of the Port Elizabeth beachfront
12. BAR for the upgrade of Kings Beach (Phase 2)
13. BAR for the proposed excavation of a portion of the western channel of the Bushmans Estuary, Eastern Cape
14. BAR for the proposed subdivision of Portion 3 of Farm No 43 in Theesecombe into 3 portions, Eastern Cape
15. BAR for the proposed sinking and pumping of two boreholes and further pumping of an additional 3 existing boreholes to supply water to the proposed Cob Creek Estate on Portion 21 of the Farm Kabeljaauws Rivier No 321 in Jeffreys Bay, Eastern Cape
16. BAR for the proposed establishment of lodges and tented camps, as well as the necessary services infrastructure on sections of the following farms in the divisions of Jansenville and Pearston, Eastern Cape Province: Remainder of the Farm Vlak Nek No 31, Ptn 1 of the Farm Vlak Nek No 31, Farm 30, Farm 101, Ptn 1 of the Farm Groot Kloof No 32, Remainder of Farm Groot Kloof No 32, Ptn 1 of the Farm Jacobsdal No 33, Remainder of Farm Jacobsdal No 33, Ptn 1 of the Farm Hinchinbrook No 92, Farm Oudeberg No 94, Ptn 4 of the Farm Smitskraal No 113, Remainder of the Farm Russouwspoor No 115, Remaining Extent of the Farm Smitskraal No 113, and Ptn 1 of the Remaining Extent of the Farm Smitskraal No 113
17. Basic Assessment and Waste Licence application of the upgrade of Kelvin Jones Waste Water Treatment Works (Phase 1)
18. BAR for the proposed construction and operation of a highway rest and service facility and associated infrastructure, including a Waste Water Treatment Plant on Ptn 147 of Farm Gedults River No 411 in the Division of Uitenhage
19. Basic Assessment for Umnyama Park Housing development in Graaff-Reinet
20. Basic Assessment for the rezoning of a portion of Erf 1226 in Fairview for a residential development
21. Basic Assessment for a lodge at Kwandwe Private Game Reserve
22. Basic Assessment for a sludge pumping main to transfer sludge from the Cape Recife Waste Water Treatment Works (WWTW) to the Driftsands WWTW
23. Basic Assessment for a communal jetty on the eastern bank of the Kromme River estuary
24. BAR for the establishment of a staff village at Kwandwe Game Reserve
25. BAR for the implementation of infrastructure needed for water provision in Graaff-Reinet
26. BAR for the expansion of the Mayfield Waste Water Treatment Works in Grahamstown
27. BAR for the expansion to the St Francis Bay WWTW
28. BAR for a gasification plant in Uitenhage
29. BAR for the proposed upgrades to sections of the lower Baakens River Valley
30. BAR for the establishment of a staff village for Kwandwe Private Nature Reserve, Makana Municipality
31. BAR for the development of a residence on Ptn 0 (Remaining Extent) of Erf 382 in Theesecombe, Nelson Mandela Bay Municipality
32. BAR for the upgrades to and expansion of the Nelson Mandela University Return Effluent reticulation system
33. BAR for a shopping centre and filling station in Mount Fletcher
34. BAR for the Florida Heights housing development and bulk infrastructure, Nelson Mandela Bay
35. BAR for the establishment of the George Airport Support Zone, George
36. BAR for the expansion of Mn ore storage capacity at the Old Power Station in Swartkops

37. BAR for the expansion of the Grid Corridor for Electrical Infrastructure for the Impofu Wind Farms.
38. BAR for demolition of parts of Bayworld
39. BAR for a light industrial development in the Airport Support Zone in George
40. BAR for the establishment of Battery Energy Storage Systems for the Impofu Wind Farms
41. BAR for the 400 kV Gamma Gridline

Current Projects:

1. BAR for the establishment of a resort type development on Erf 168, Colchester

Environmental Impact Reports

Completed Projects:

1. EIA for a Low-Density Golf and Agricultural Estate on the Remainder of the Farm Excelsior No 443, Division Joubertina
2. EIA for the Proposed Development of an Integrated Residential Estate on Erven 5614 and 5616, KwaNobuhle, Uitenhage, Eastern Province
3. EIA for the Proposed Establishment of the Sardinia Bay Golf Estate on Erf 378 Theesecombe, Port Elizabeth
4. EIA for Roll-Out Phase of an Aquaculture Operation for the Grow-Out of *Litopenaeus vannamei* Prawn Larvae for Commercial Purposes and a Process Plant, Zones 1 and 10, Coega Industrial Development Zone, Port Elizabeth, Eastern Cape Province
5. EIA for Proposed Construction of a Link Road between Grahamstown Road and Seyisi Street in Port Elizabeth and the upgrading of stormwater infrastructure
6. EIA for the proposed Rezoning and Subdivision of Farms 36 and 37 in Theesecombe, Port Elizabeth for a Rural-Residential Development, Lodge and Associated Infrastructure
7. EIA for the Proposed Rezoning, Subdivision, and Consolidation of Farm Vrede No. 190, Knysna, Western Cape for a Residential Development (Simola Phase 3)
8. EIA and Waste Licence Application for the Proposed Augmentation of the existing Waste Water Treatment Works in Nieu-Bethesda
9. EIA, Waste Licence and Air Emission Licence applications for a pyrolysis plant on Erf 329 in Zone 6 of the Coega IDZ.
10. EIA for the proposed development of a Leisure Estate (Kadouw Leisure Estate) on Remainder of Farm 201, Ptn 15 of Farm 194, and Farm 627 in the Sundays River Valley area
11. EIA for the Proposed Rezoning and Subdivision of Ptn 1 and 118 of the Farm Chelsea 25 (Kragga Kamma Game Park), Port Elizabeth, Eastern Cape
12. EIA for the Proposed Rezoning of Portions 55, 56, 62 and 81 of the Farm Maitland Mines No 478, Uitenhage, Eastern Cape to Establish Lodge Developments and a Nature Reserve
13. EIA for the proposed operation of a 55 MW photovoltaic solar farm on Ptn 2 of the Farm Kraan Vogel Kuil in Pearston.
14. EIA for a landing strip and lodge at Kwandwe Private Game Reserve near Grahamstown.
15. EIA for a proposed housing development and associated infrastructure in Mount Fletcher.
16. EIA for a proposed cement grinding facility in the Coega IDZ
17. EIA for the proposed N2 north housing development.
18. EIA for the Proposed Rezoning and Subdivision of Portion 1 of the Farm Seaview No 28 in Port Elizabeth for a Residential Development and Associated Infrastructure
19. EIA and Coastal Waters Discharge Permit application of the expansion of the Cape Recife Waste Water Treatment Works and new marine outfall sewer (Scoping Report)
20. EIA and Coastal Waters Discharge Permit application for a proposed marine pipeline servitude in the Coega IDZ (Scoping Report)

21. EIA for the establishment of the Bloemendal Arterial and Link Road in the Bethelsdorp area, NMBM.

Water Use Applications

Completed Projects

1. Water Use Application for the proposed construction of a pipeline across a stream in Graaff-Reinet
2. Water Use Application for the upgrading of stormwater infrastructure that crosses a portion of the Klein Vis Rivier in Somerset East.
3. General Authorisation Application for clearing alien trees and establishment of a temporary mobile gasification plant outside Uitenhage
4. Water Use Application for the establishment of the Bloemendal Arterial and Link Road
5. Water Use Application for irrigating with treated effluent from a package plant at a staff village in Kwandwe
6. Water Use Application for the installation of litter booms in 3 rivers in Nelson Mandela Bay.
7. Water Use Application for borehole abstraction for dust suppression at the Mn ore storage facility in Swartkops.

Nelson Mandela Metropolitan University (North Campus) (January 2004 – December 2006)

Lecturer in Epidemiology II, III and IV (Department of Environmental Health)

Supervising and participating in various post-graduate research projects, dealing largely with community health and environmental pollution

IECM (January 2000 – December 2003)

Coega Harbour Environmental Monitoring and Cerebos Saltworks contracts – water and sediment quality analyses, microalgal counts, invertebrate sorting

University
of
Port Elizabeth



Universiteit
van
Port Elizabeth

This is to certify that, the requirements having been satisfied, the degree of

Hiermee word verklaar dat, nadat aan die vereistes voldoen is, die graad

Baccalaureus Scientiae

has been conferred upon

toegeken is aan

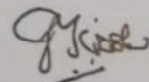
DUID AFRIKAANSE POLIS
COMMUNITY SERVICE CENTRAL
2018 -02- 02
CSC

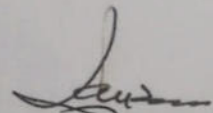
BRING IS NIE.
WYSKING OF VERANDERING OP DIE OORSEKTRALE DOKUMENT JANGE-
BRING IS NIE.
WYSKING OF VERANDERING OP DIE OORSEKTRALE DOKUMENT JANGE-
BRING IS NIE.

I CERTIFY THAT THIS DOCUMENT IS A TRUE COPY OF THE ORIGINAL DOCUMENT WHICH WAS HANDLED BY ME. FURTHER CERTIFY THAT FROM MY OBSERVATIONS, AN AMENDMENT OR A CHANGE WAS NOT MADE TO THE ORIGINAL DOCUMENT.

BELINDA JOAN CLARK

HANDTEKENING/SIGNATURE
MAG. NO./POLICE NUMBER 71723595- RANG RANK Cjt
NAAM IN DRUKSKRIF NAME IN PRINT DE RIDDER


Vice-Chancellor / Vise-Kanselier


Registrar / Registrateur



Port Elizabeth
19 April 1997

University
of
Port Elizabeth



Universiteit
van
Port Elizabeth

This is to certify that, the
requirements having been
satisfied, the degree of

Hiermee word verklaar dat,
nadat aan die vereistes
voldoen is, die graad

Baccalaureus Scientiae Honores

(Botany / Botanie)

has been conferred upon

BUID AFRIKAANSE POLISIEDIENES
COMMUNITY SERVICE CENTRE
2018 -02- 02
CSC
SOUTH AFRICAN POLICE SERVICE

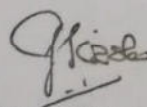
toegeken is aan

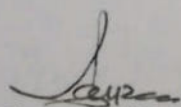
BELINDA JOAN CLARK

EK SERTIFISEER DAT HIERDIE DOKUMENT 'N WAER AFDRUK (AFKOPIE) IS VAN DIE OORSPRONKELIKE DOKUMENT WAT AAN MY VIR VERAGTERING VOORGELÊ IS. EK SERTIFISEER WEDER DAT, VOLGENS MY WAARNEMING DAAR NIE 'N WYSDING OF VERANDERING OP DIE OORSPRONKELIKE DOKUMENT AANGEBRING IS NIE.

I CERTIFY THAT THIS DOCUMENT IS A TRUE REPRODUCTION (COPY) OF THE ORIGINAL DOCUMENT WHICH WAS HANDED TO ME FOR AUTHENTICATION. I FURTHER CERTIFY THAT, FROM MY OBSERVATIONS, AN AMENDMENT OR A CHANGE WAS NOT MADE TO THE ORIGINAL DOCUMENT.


.....
HANDTEKENING/SIGNATURE
MAGSNOMMER / FORCE NUMBER 71723595 RANG / RANK CJ
NAAM IN DRUKSKRIF / NAME IN PRINT DE RIDDER


Vice-Chancellor / Vise-Kanselier


Registrar / Registrateur



Port Elizabeth
18 April 1998

University
of
Port Elizabeth



Universiteit
van
Port Elizabeth

This is to certify that, the requirements having been satisfied, the degree of

Hiermee word verklaar dat, nadat aan die vereistes voldoen is, die graad

Magister Scientiae
(Botany / Botanie)

has been conferred upon



toegeken is aan

IK SERTIFISEER DAT HERDIE DOKUMENT N WATN WEDER (KOPIE) IS VAN DIE OORSPRONKELIKE DOKUMENT. WAT AAN N VERVALSLETTING VOORGELE WYSDING OF VERANDERING OF DIE OORSPRONKELIKE DOKUMENT AANGE BRIND IS NIE.

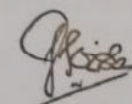
I CERTIFY THAT THIS DOCUMENT IS A TRUE REPRODUCTION (COPY) OF THE ORIGINAL DOCUMENT. ANY ALTERATION, TAMING OR FALSIFICATION OF THE FORGED COPY OF THE ORIGINAL DOCUMENT IS A CRIME. AN AMENDMENT OR A CHANGE WAS NOT MADE TO THE ORIGINAL DOCUMENT.

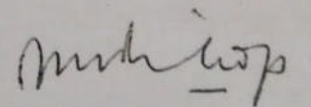
BELINDA JOAN CLARK

HANDTEKENSIGNEATUUR

MAGNUMMER 71723595 RANG CJT
FORCE NUMBER RANG

NAAM IN DRIENKOP DE RIDDER
NAME IN PRINT


Vice-Chancellor / Vise-Kanselier


Registrar / Registrateur



Port Elizabeth
21 April 2001

NELSON MANDELA UNIVERSITY

This is to certify that, all the requirements
having been met, the degree

Doctor of Philosophy

Botany

with all the associated rights and privileges,
was conferred upon

Belinda Joan Clark

Identity no.: 7507170038084

at a congregation of the Nelson Mandela University on

15 April 2005

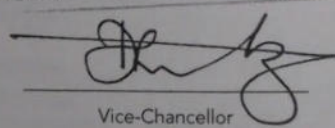
Certificate no.: 520198

EK SERTIFISEER DAT HIERDIE DOKUMENT 'N WARE AFDRUK (AFSKRYF) IS VAN DIE
OORSPRONKLIKE DOKUMENT WAT AAN MY VR WAARHEMING VOORGELE IS. EK
SERTIFISEER VERDER DAT VOLGENS MY WAARHEMING, DARTOE 'N WYSIGING OF
VERANDERING OF DIE OORSPRONKLIKE DOKUMENT AANGEWIND IS NIE.

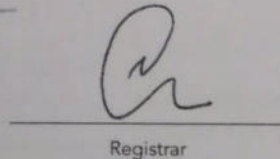
I CERTIFY THAT THIS DOCUMENT IS A TRUE REPRODUCTION COPY OF THE ORIGINAL
DOCUMENT WHICH WAS PRESENTED TO ME FOR VERIFICATION. I FURTHER CERTIFY
THAT FROM MY OWN KNOWLEDGE AND BELIEF, NO ALTERATION WAS MADE TO
THE ORIGINAL DOCUMENT.



VICE-CHANCELLOR
NAME IN PRINT



Vice-Chancellor



Registrar



This is a duplicate qualification certificate. The original certificate was either lost or damaged.



00001774



Registration No. 2019/1336

Herewith certifies that

Belinda Clark

is registered as an

Environmental Assessment Practitioner

***Registered in accordance with the prescribed criteria of Regulation 15. (1)
of the Section 24H Registration Authority Regulations
(Regulation No. 849, Gazette No. 40154 of 22 July 2016, of the
National Environmental Management Act (NEMA), Act No. 107 of 1998, as
amended).***

Effective: 01 March 2023

Expires: 29 February 2024

Chairperson

Registrar

