STEPHANIE CLIFF
SEEDCRACKER ENVIRONMENTAL CONSULTING
Reg EAP. (EAPASA) 2019/487
BSc (Hons) Animal Science, BSc (Hons) Wildlife Management
Cell: 082 626 4117
WWW.SEEDCRACKERS.CO.ZA

DRAFT ENVIRONMENTAL MANAGEMENT PROGRAM FOR THE PROPOSED GREENGATE X 140 HIGH-DENSITY RESIDENTIAL TOWNSHIP ON A PART OF PORTION 268 OF THE FARM RIETFONTEIN 189 IQ, MULDERSDRIFT, MOGALE CITY

APPLICANT:
UMNOTHO LERUO INVESTMENT PRIMARY CO-OPERATIVE

AUGUST 2025

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DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Umnotho Leruo Investment Primary Cooperative has appointed Messrs Stephanie Cliff of Seedcracker Environmental Consulting, a registered Environmental Assessment Practitioner (EAP), to conduct the Basic Assessment application, which includes the compilation of this EMPr for the Greengate X 140 high density residential township. Messrs Cliff has no business, financial or personal interest in the development, and is therefore able to provide an independent, objective assessment.

Environmental Assessment Practitioner (EAP):	SEEDCRACKER ENVIRONMENTAL CONSULTING CC
Contact person:	STEPHANIE CLIFF
Postal address:	401 Lawley Street, Waterkloof, Pretoria, 0181
Telephone:	082 626 4117
E-mail:	Stephweb@mweb.co.za
EAP Qualifications	BSc Hons Animal Science BSc Hons wildlife Mgmt IAIA Member # 2514 Registered EAP # 2019/487

Messrs Cliff is a qualified Animal Scientist and Wildlife Manager, and practicing Environmental Assessment Practitioner, with over 20 years experience in leading and conducting environmental impact assessments in the development sector. Messrs Cliff is a founding member of the EAPASA accreditation board and a long-standing member of IAIA SA. Messrs Cliff is a registered Environmental Assessment Practitioner, Number 2019/487. Stephanie has considerable experience in the management and co-ordination of all aspects of the Environmental Impact Assessment (EIA) processes. Her experience includes the integration of various specialist assessments in the compilation of environmental impact reports and environmental management plans. Her profile is given in Appendix 1. The declaration of independence is also given in Appendix 1.

DETAILS OF THE APPLICANT

Applicant details:	**Umnotho Leruo Investment Primary Co-operative**		
Contact person:	Leslie Gama		
Postal address:	None		
Postal code:			074 351 1166
Telephone:			
E-mail:	leslie@umnotho.org.za		

EMPr REQUIREMENTS

REQUIREMENT	SECTION IN REPORT
1. Details of the EAP who prepared the EMPr; and the expertise of the EAP to prepare an EMPr, including a curriculum vitae.	**Page 2**
2. A detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description.	Section **12** – Implementation of the Management Plans Section **11** – Environmental Impacts and Mitigations Section **5** – Roles and Responsibilities
3. A map at an appropriate scale which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers.	**Appendix 1**
4. A description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the environmental impact assessment process for all the phases of the development including – a. Planning and design; b. Pre-construction activities; c. Construction activities; d. Rehabilitation of the environment after construction and where applicable post closure; and e. Where relevant, operation activities.	Section **12** – Implementation of the Management Plans Section **11** – Environmental Impacts and Mitigations Section **5** – Roles and Responsibilities
5. A description of the proposed impact management actions, identifying the manner in which the impact management outcomes contemplated above will be achieved and must, where applicable include actions to – a. avoid, modify, remedy control or stop any action, activity or process which causes pollution or environmental degradation; b. comply with any prescribed environmental management standards or practises; c. comply with any applicable provisions of the act regarding closure, where applicable; and d. comply with any provisions of the act regarding financial provisions for rehabilitation, where applicable.	Section **11** – Environmental Impacts and Mitigations

REQUIREMENT	SECTION IN REPORT
6. The method of monitoring the implementation of the impact management actions contemplated above.	Section **6** – **Env compliance, monitoring and reporting** Section **12** – Implementation of the Management Plans
7. The frequency of monitoring the implementation of the impact management actions contemplated above.	Section **6** – **Env compliance, monitoring and reporting**
8. An indication of the persons who will be responsible for the implementation of the impact management actions.	Section **5** – Roles and Responsibilities
9. The time periods within which the impact management actions must be implemented.	Section **12** – Implementation of the Management Plans
10. The mechanism for monitoring compliance with the impact management actions.	Section **6** – **Env compliance, monitoring and reporting**
11. A program for reporting on compliance, taking into account the requirements as prescribed in the Regulations.	Section **6** – **Env compliance, monitoring and reporting** Section **12** – Implementation of the Management Plans
An environmental awareness plan describing the manner in which – The Applicant intends to inform his or her employees of any environmental risk which may result from their work; and Risks must be dealt with in order to avoid pollution or the degradation of the environment.	Section **8 -**Environmental Awareness Training and Induction Annexure **12**: Environmental Awareness Material
13. Any specific information that may be required by the Competent Authority.	None required.

DEFINITIONS

Assessment is the evaluation, judgement, organising, rating, interpreting and communication of information which is relevant.

Clearing means the clearing and removal of vegetation, whether partially or in whole, including trees and shrubs, as specified.

Commence means the start of any physical activity, including site preparation or any other activity on the site.

Competent Authority in respect of the activities listed in the EIA Regulations, 2014 (as amended) is the Competent Authority in the province in which the activity is to be undertaken. In case of this development, the Gauteng Department of Environmental (GDE) is the Competent Authority.

Contractor – The Contractor has overall responsibility for ensuring that all work, activities, and actions linked to the delivery of the contract, are in line with the Environmental Management Programme and that Method Statements are implemented as described.

Construction activity is any action taken by the Contractor, the Sub-Contractors, suppliers or personnel in undertaking the construction work, otherwise referred to as "works".
Construction area is all areas used by the Contractor to carry out the required construction activities. This includes all offices, accommodation facilities, testing facilities/laboratories, batching areas, storage C stockpiling areas, workshops, spoiling areas, access roads, traffic accommodation (e.g. bypasses), etc.

Development means the building, erection, construction or establishment of a facility, structure or infrastructure, including associated earthworks or borrow pits, that is necessary for the undertaking of a listed or specified activity, but excludes any modification, alteration or expansion of such a facility, structure or infrastructure, including associated earthworks or borrow pits, and excluding the redevelopment of the same facility in the same location, with the same capacity and footprint.

Ecosystem is a biological community of interacting organisms (plants and animals) and their physical environment.

Environment is the surroundings within which humans exist and that are made up of land, water and atmosphere; micro-organisms, plant and animal life; any part or combination of the above and the interrelationships among and between them; the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and well-being.

Environmental Authorisation is the permission required from the Competent Authority for an activity listed in the National Environmental Management Act: Environmental Impact Assessment Regulations, 2014 (as amended).

Environmental Impact refers to any change to the environment, whether desirable or undesirable, that would result directly or indirectly from any construction activity.

Environmental Management ensures that environmental concerns are included in all stages of development to ensure that the proposed activity or development is done in a sustainable manner and does not exceed the carrying capacity of the surrounding local environment.

General waste means waste that does not pose an immediate hazard or threat to health or to the environment, and includes domestic waste; building and demolition waste; business waste; inert waste; or any waste classified as non-hazardous waste in terms of the regulations made under section 69, and includes non-hazardous substances, materials or objects within business, domestic, inert, building and demolition wastes.

Domestic waste in this case means waste, excluding hazardous waste, that emanates from premises that are used wholly or mainly for residential, educational, health care, sport or recreation purposes, which include: garden and park wastes; municipal waste; and food waste.

Hazardous Substances are substances which may cause injury or ill-health to or death of human beings by reason of their toxic, corrosive, irritant, strongly sensitizing or flammable nature or the generation of pressure thereby in certain circumstances. Hazardous Substances is a substance governed by the Hazardous Substances Act, 1973 (Act No. 15 of 1973) as well as the Hazardous Chemical and Substances Regulations, 1995.

Hazardous waste means any waste that contains organic or inorganic elements or compounds that may, owing to the inherent physical, chemical or toxicological characteristics of that waste, have a detrimental impact on health and the environment and includes hazardous substances, materials or objects within business waste, residue deposits and residue stockpiles.

Indigenous is a “native” species of plant or animal that occurs naturally in a particular place or region and was not artificially or intentionally introduced.

Invasive Alien Plants are all undesirable vegetation, defined as but not limited to, all declared category 1 and category 2 plants in terms of the National Environmental Management: Biodiversity Act, 2014 (Act No. 10 of 2004), as amended.

Local Authority is referred to as the local municipal authority that operates or is responsible in said area.

Method Statement means a written submission by the Contractor to the Employer’s Representative in response to this EMPr or if requested by the Employer’s Representative and Environmental Control Officer (ECO). The Method Statement must set out the equipment, materials, labour and method(s) the Contractor proposes using to carry out activities as part of the proposed development. This must be done in such detail that the Project Manager and ECO are able to assess whether the Contractor’s proposal is in accordance with this specification and/or will produce results in accordance with this specification.

Rehabilitation means restoring an area impacted by activities/works to its original or better condition prior to the impacts from the activities/works having occurred. Significant impact means an impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is

determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.

Solid waste means all solid waste, including construction debris, hazardous waste, excess cement/ concrete, wrapping materials, timber, cans, drums, wire, nails, food and domestic waste (e.g. plastic packets and wrappers).

Spoil means excavated material which is unsuitable for use as material in the construction works or is material that is surplus to the requirements of the construction works.

Topsoil means a varying depth (up to 300mm) of the soil profile irrespective of the fertility, appearance, structure, agricultural potential and composition of the soil.

Wastewater is water containing waste, or water that has been in contact with waste material. Wastewater includes: domestic wastewater; biodegradable industrial wastewater; and industrial wastewater

Works means the activities to be executed in terms of the Contract.

1. INTRODUCTION

Umnotho Leruo Investment Primary Cooperative (the applicant) proposes the establishment of a high-density residential development on Portion 268 of the farm Rietfontein 189 IQ, Muldersdrift, Mogale Local Municipality. The property measures 8,5653 hectares.

In terms of the amended EIA Regulations 2014, certain listed activities have been identified that will be affected by the proposed project, and which will subsequently require environmental authorisation from GDE. These activities are:

GNR 983: Listing Notice 1:

- **Activity 12:** The development of (i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or (ii) infrastructure or structures with a physical footprint of 100 square metres or more; where such development occurs—; a) within a watercourse; b) in front of a development setback; or c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse, excluding where such development occurs within an urban area.

- **Activity 19:** The infilling or depositing of any material of more than 10 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres from (i) a watercourse.

- **Activity 27:** The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.

GNR 985: Listing Notice 3:

- **Activity 4 c (iv);** The development of a road wider than 4 metres with a reserve less than 13,5 metres, **in Gauteng,** where Sites are identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;

- **Activity 12 c (ii):** The clearance of an area of 300 square metres or more of indigenous vegetation in Gauteng Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;

- **Activity 14 c (ii) (iv):** The development in metres; or (ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs (a) within a watercourse; Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans.

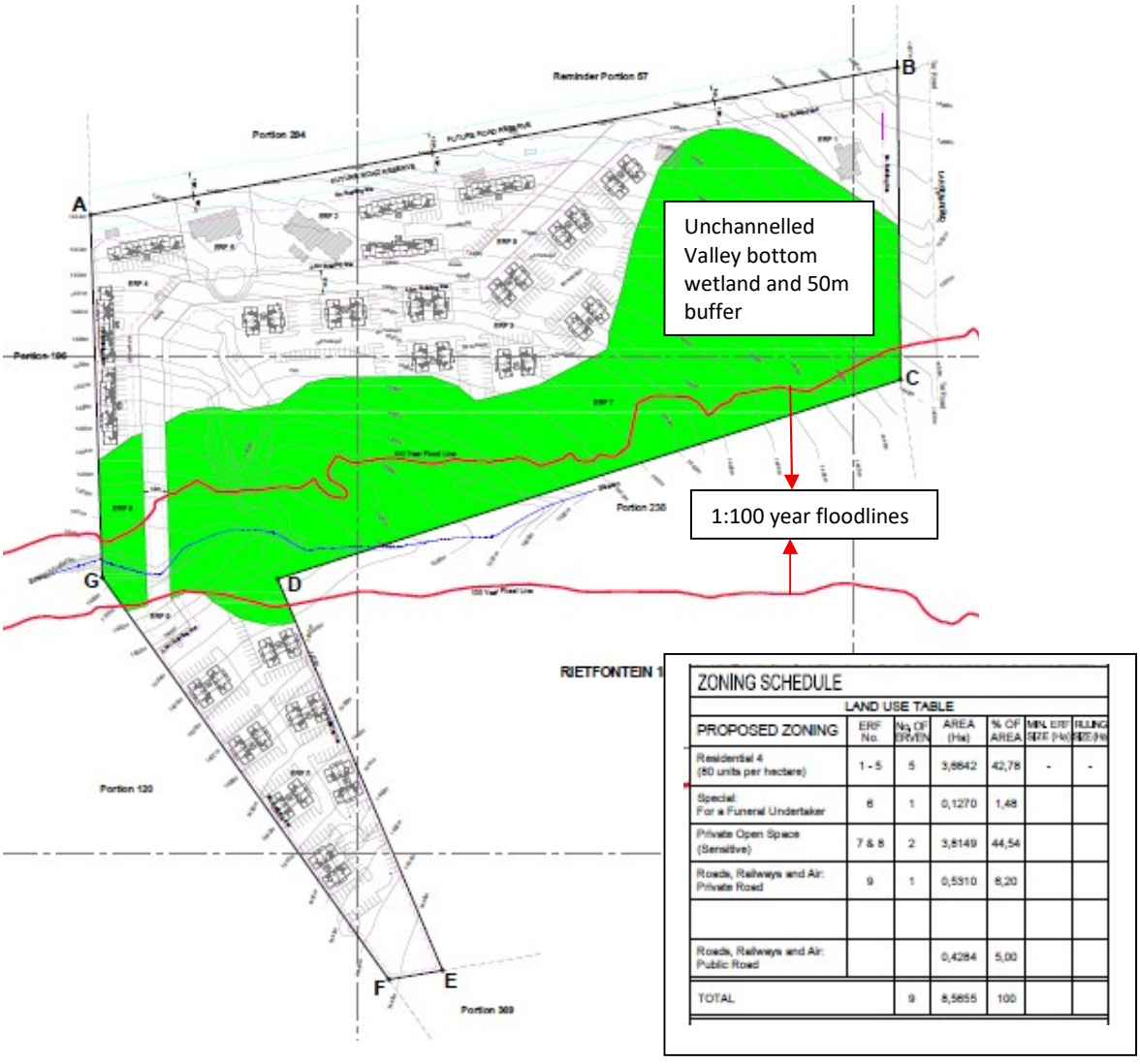
These activities may not commence until Environmental Authorisation has been received from the approving authority; the Gauteng Department of Environment [GDEnv]. The application will follow a Basic Assessment approach in terms of Section 19 of Government Notice R982 (as amended in March 2017) of NEMA: BAR.

2. LOCATION

The site adjoins Larsen Road in Muldersdrift and is located approximately one kilometre (km) east of the town of Muldersdrift, and approximately 0.3 km south of the R114 regional roadway. It falls within the Mogale City Local Municipality.

3. ACTIVITY DESCRIPTION

The proposed township will comprise four land use categories and nine erven for high-density residential, private open space, a funeral undertaker (existing residential home on site) and access.



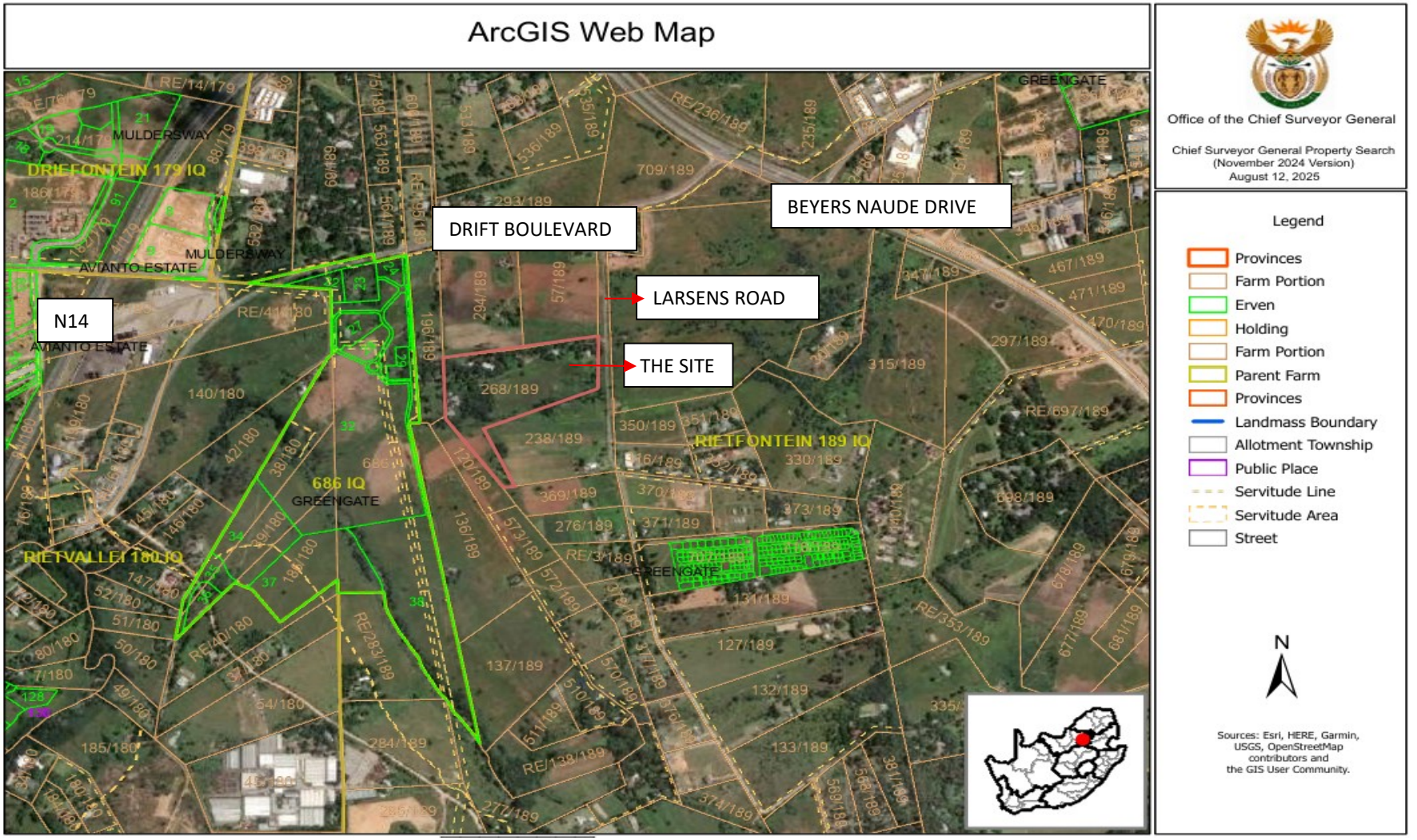
ZONING SCHEDULE

LAND USE TABLE

PROPOSED ZONING	ERF No.	No. OF ERVEN	AREA (Ha)	% OF AREA	MIN. ERF SIZE (sq.m)	RULING SIZE (sq.m)
Residential 4 (80 units per hectare)	1 - 5	5	3,6842	42,78	-	-
Special: For a Funeral Undertaker	6	1	0,1270	1,48		
Private Open Space (Sensitive)	7 & 8	2	3,8149	44,54		
Roads, Railways and Air: Private Road	9	1	0,5310	6,20		
Roads, Railways and Air: Public Road			0,4284	5,00		
TOTAL		9	8,5855	100		

The development proposes five separate erven zoned "Residential 4" with a density of 80 units per hectare, resulting in a maximum of 293 units that could be accommodated within the development. The housing will comprise three-storey walk-up apartments. The proposed development will include communal facilities such as a laundry, a clubhouse for meetings, a place of refreshment, and a children's play area. The funeral undertaker will be utilised for the *administration* of funerals only, and *will not include a crematorium or a mortuary.*

LOCALITY MAP OF THE SITE



The township layout includes the existing structures on the property as residential units. One of these units will be converted for use as the funeral undertaker. The full extent of the environmentally sensitive area (wetland and buffer) will not be developed and will form part of the township as private open space, allowing for the protection of this area within the development boundary.

The property currently gains access from Larsens Road. Access to Erf 5 will be from the Greengate Ext 140 access gate, crossing the wetland system on site, requiring the construction of a new box culvert bridge, as schematically illustrated below:

Access to each individual stand will be provided by a new 12m road reserve.

The township will be connected to water, sewer and stormwater municipal services.

4. APPLICABLE LEGISLATION AND GUIDELINES

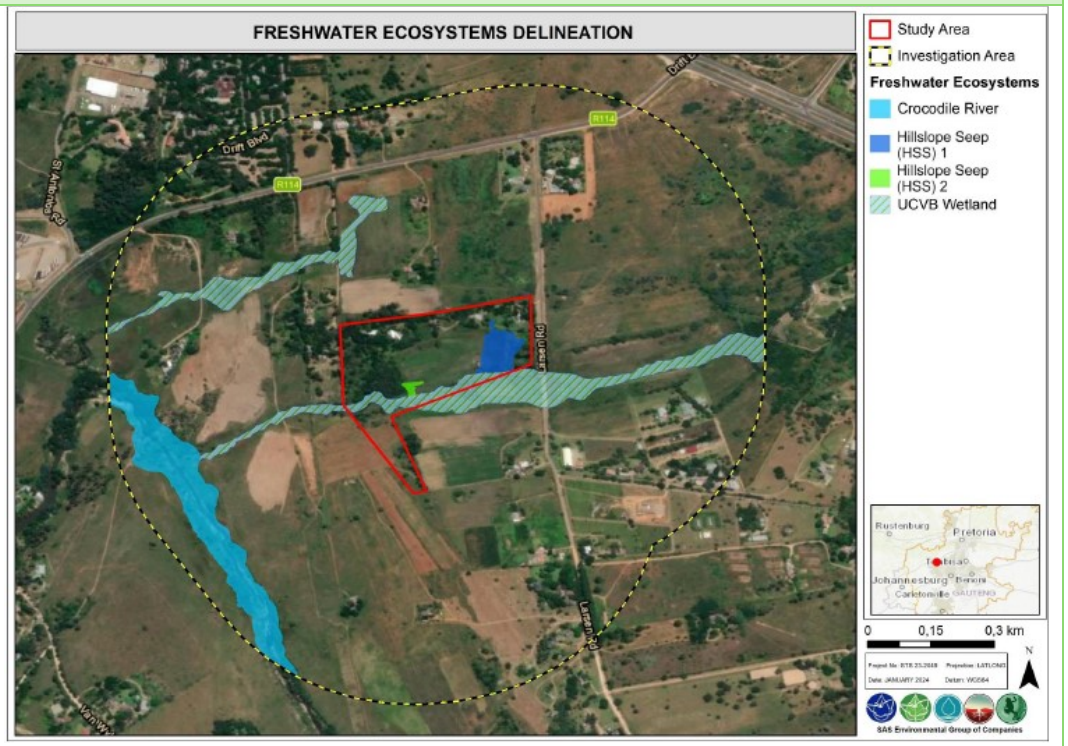
The following list of environmental legislation applies to the environmental activities identified in Section 1.

Table 1: Governing Legal Framework for activities on the site

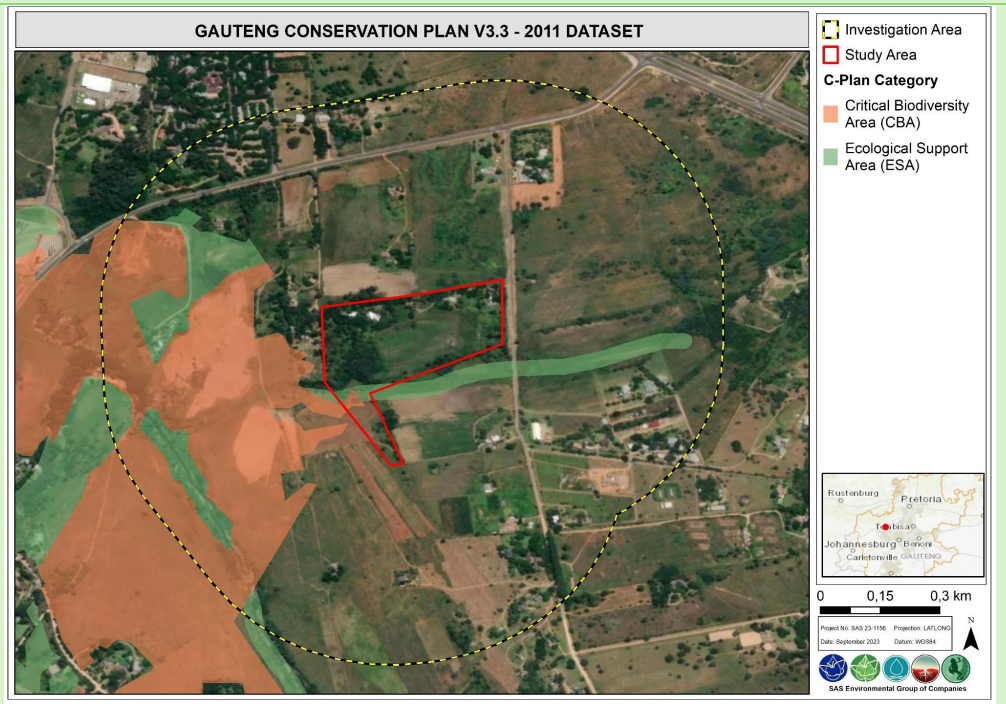
Title of legislation, policy or guideline:	Administering authority:	Legislative Requirements
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996): Chapter 2 Section 24	Department of Environment, Forestry and Fisheries (DFFE)	The Constitution, 1996 (Act No. 108 of 1996) guarantees the right to an environment that is not harmful and mandates measures to prevent pollution, promote conservation, and ensure sustainable development. These principles underpin NEMA's Duty of Care.
National Environmental Management Act (NEMA) Environmental Impact Assessment (EIA) Regulations 2014 (as amended)	Department of Environment, Forestry and Fisheries (DFFE)	NEMA requires authorisation for activities impacting the environment, as determined by an EIA. Section 2 principles include: • Prioritising avoidance, minimisation, and remediation of ecosystem disturbances; • Preventing environmental degradation; • Implementing integrated environmental management; • Protecting biodiversity and ecosystem integrity; • Managing and mitigating environmental damage. The EA Holder must uphold these principles within the EMPr. An Environmental Authorisation must be obtained for any NEMA activity that is listed in any of the government notices. Such an authorisation may only be granted once the required assessment has been compiled by an independent environmental assessment practitioner, and submitted to the competent authority.
Assessment for Reporting on Identified Environmental Themes	Department of Environment, Forestry and Fisheries (DFFE) Gauteng Department of Environment (GDE)	The Department of Forestry, Fisheries and the Environment (DFFE) has published requirements in terms of site sensitivity verification, GN 320 of 20 March 2020, Procedures for the Assessment and Minimum Criteria for Reporting on Identified Environmental Themes in terms of Section 24(5)(a) and (h) and 44 of the National Environmental Management Act, 1998, when applying for Environmental Authorisation.

Title of legislation, policy or guideline:	Administering authority:	Legislative Requirements
		Scientific Terrestrial Services (Pty) Ltd ("STS") has conducted a site verification in support of a compliance statement for the proposed urban development on Ptn 268/189 Rietfontein IQ. Given the general land use within the study area (i.e., residential and agricultural), the study area has been exposed to significant anthropogenic activities, which has resulted in a lowered habitat and ecological integrity. Specifically, anthropogenic activities such as mowing, alteration of vegetation communities through cultivation, Alien and Invasive Plant (AIP) introduction and proliferation, etc., have resulted in the subsequent modification of the biodiversity with the study area and have lowered the sensitivity of the habitat for both floral and faunal communities. Across the study area, the floral assemblages associated are degraded and modified in nature. The study area has little ecological value for fauna or flora. The very high sensitivity assigned to the Terrestrial Biodiversity Theme is confirmed only for the Freshwater Habitat (specifically the UCVBW). The high sensitivity is supported because of the presence of ESA habitat within the Freshwater Habitat.
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)	Department of Environment, Forestry and Fisheries (DFFE)	The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004; NEM:BA) protects threatened ecosystems and species. The National List of Threatened Ecosystems (Gazette 32689, 2009) applies. P*roactive conservation interventions, including alien invasive species control, vegetation monitoring, and long-term management planning, is important.*
Government Notice 598 Alien and Invasive Species Regulations (2014), including the Government Notice 864 Alien Invasive Species List as published in the	Department of Environment, Forestry and Fisheries (DFFE)	Alien plants present on site must be controlled as a high priority, since they pose a risk to ecosystems downstream. All Category 1 Declared Weeds and other alien invaders must be removed from the site.

Title of legislation, policy or guideline:	Administering authority:	Legislative Requirements
Government Gazette 40166 of 2016, as it relates to the National Environmental Management Biodiversity Act, 2004 (Act No 10 of 2004)		
National Environmental Management Waste Act GNR 921	Department of Environment, Forestry and Fisheries (DFFE) and Gauteng Department of Agriculture and Rural Development (GDARD)	While no waste management licence is required, an integrated waste management approach must be used that is based on waste minimisation and must incorporate reduction, recycling, re- use and disposal where appropriate.
National Water Act, 1998, Act 36 of 1998 **Water Services Act, 1997, Act 108 of 1997** **Government Notice 509 as published in the Government Gazette 40229 of 2016 as it relates to the National Water Act, 1998 (Act No. 36 of 1998)**	National Department of Water and Sanitation (DWS)	Scientific Aquatic Services (SAS) was appointed to conduct a freshwater ecosystem assessment for the site. An unchanneled valley bottom (UCVB) wetland, which intersects a southern portion of the study area, was identified as the main drainage feature of concern. Two hillslope seep (HSS) wetlands were also identified within the study area, both of which drain directly into the UCVB wetland.

Title of legislation, policy or guideline:	Administering authority:	Legislative Requirements
		 The NWA provides for pollution prevention measures, with particular emphasis on water resource pollution. In accordance, the licensee shall ensure that activities impacting upon water resources and effluent releases are monitored for compliance with the applicable Regulations. Emergency incidents involving water resources are included in the Act, requiring the polluter to remediate and mitigate the impacts of such an emergency incident. In terms of Section 19 of the NWA, “an owner of land, a person in control of land or a person who occupies or uses the land on which any activity or process is or was performed or undertaken; or any other situation exists, which causes, has caused or is likely to cause pollution of a water

Title of legislation, policy or guideline:	Administering authority:	Legislative Requirements
		resource must take all reasonable measures to prevent any such pollution from occurring, continuing or recurring". A water use must be licensed (in terms of Section 21) unless it is listed in Schedule 1 as an existing lawful water use; is permissible under a general authorisation; or if a responsible authority waives the need for a licence. A specialist water use license consultant will be appointed to conduct the Water Use Authorisation Application (WUA) process for the proposed development, and the impact it may have on freshwater resources within a 500m radius of the site.
National Environmental Management: Air Quality Act, Act 39 of 2004 and the Atmospheric Pollution Prevention Act, Act 45 of 1965	Department of Environment, Forestry and Fisheries (DFFE)	Based on the proposed land uses for the Greengate X 140 township, no noxious industries are permitted, and hence, no adverse or significantly negative impacts on air quality in the study area are envisaged.
National Heritage Resources, Act, 1999, Act 25 of 1999	South Africa Heritage Resources Agency (SAHRA)	The NHRA enables provinces to establish heritage authorities, which must adopt powers to protect and manage certain categories of heritage resources. It also provides for the protection and management of conservation-worthy places and areas by local authorities. The development will not impact any heritage resources.
Gauteng Conservation-Plan 3.3 (2011)	Provincial, Gauteng Department of Environment	From a provincial biodiversity management perspective, according to GDARD's C-Plan V 3.3, portions of the study area and investigation area associated with the Crocodile River and wetlands are indicated as Critical Biodiversity Areas.

Title of legislation, policy or guideline:	Administering authority:	Legislative Requirements
		 The western portion of the study area is in an ESA site.
The Gauteng Agriculture Potential Atlas Version 4.4 Gauteng Department of Agriculture and Rural Development (GDE)		GAPA class for the site is *Moderate to Low agricultural potential.* Large portions of the study area are historically or currently transformed by agriculture (crop cultivation). These disturbances have resulted in alterations to the hydroperiod of the freshwater ecosystems over time and have resulted in a complex mosaic of wet response areas interspersed between patches of terrestrial habitat.

Title of legislation, policy or guideline:	Administering authority:	Legislative Requirements
Gauteng Environmental Management Framework Gauteng Province 2015		The study and investigation area are mostly indicated as an Urban Development Zone (Zone 1) except for portions shown as High Control Zone (Zone 2) where the wetlands and the Crocodile River are indicated. A small section in the south of the investigation area is indicated to be within the Normal Control Zone (Zone 4). Zone 1 (Urban Development Zone): The intention with this zone is to streamline urban development activities in it and to promote development infill, densification, and concentration of urban development in order to establish a more effective and efficient city region that will minimise urban sprawl into rural areas. Zone 2 High Control Zone (Within Zone 1: the Urban Development Zone): This zone is sensitive to development activities. Only conservation should be allowed in this zone. Related tourism and recreational activities must be accommodated in areas surrounding this zone. Zone 4 Normal Control Zone: This zone is dominated by agricultural uses outside the urban development zone. Agricultural and rural development that support agriculture should be promoted.
Mogale City Spatial Development Framework, 2022	Local Authority	The proposed development of the subject property aligns with the principles and guidelines outlined in the SDF.
Muldersdrift Precinct Plan, 2024		The Muldersdrift Precinct Plan encompasses the property in Sub-Precinct 3, which encourages the following types of development: mixed-use, high-density residential, medium-density residential, and mining and quarries. The property is located within the high-density residential development area.

5. PURPOSE OF THE ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

An "Environmental Management Programme" (EMPr) is a plan or "programme" that sets out guidelines that describe how activities that have, or could have, an adverse impact on the environment, will be mitigated, controlled and monitored to achieve a desired operational and/or end state. The EMPr addresses the identified environmental impacts during the design, construction, operation and decommissioning/closure phases of a project. The purpose of an EMPr provides for preventative, corrective and best practice measures to ensure that activities related to construction, operation and/or closure of a facility and associated activities are done in an environmentally responsible and sustainable way.

The EMPr is a dynamic document that will be continually updated, as per authority instruction prior to authorization, and on site during monitoring activities as and when required. This EMPr prepared by Seedcracker Environmental Consulting, pertains to the implementation of an Environmental Management Programme and mitigation measures related to the construction of the Greengate X 140 high-density residential township. This EMPr sets out conditions for managing the identified environmental impacts during the planning, construction, and operational phases of the development.

Thorough consideration has been given to the development in terms of the planning, construction, operational phases whilst considering the environment. Environmental management must be addressed during the entire lifecycle stage of a project.

5.1 Scope of the EMPr

This document describes the role of the EMPr in the Environmental Impact Assessment (EIA) process, and the measures required in planning for ecologically sustainable development within the framework of existing legislation and environmental management policies.

This EMPr will be used as a binding document between the applicant and the appointed contractors, as well as all other persons involved in the execution of activities related to the construction of the Greengate X 140 high-density residential township. These conditions must be adhered to for the duration of the construction, post-construction and operation phases of the development.

This EMPr addresses the following phases of the development:

(a) The Planning and Design Phase

The planning phase is the ideal opportunity to incorporate pro-active measures to ensure that environmental impacts arising from the proposed Greengate X 140 high-density residential township, are avoided, and mitigated from the outset. Proper planning during this phase can ensure that the likelihood of specific impacts taking place is minimized, and that the required corrective action is undertaken to further limit potential impacts.

(b) The Construction Phase

Most of the impacts during the construction phase will have an immediate effect (e.g., loss of flora, faunal and aquatic habitat, traffic inconvenience, noise, dust and pollution / waste generation). If the site is monitored continually during the construction phase, it is possible to identify and appropriately mitigate these impacts as they occur. These impacts will then be mitigated through the implementation of the measures described in this EMPr.

(c) Post construction and Rehabilitation Phase

Following the completion of the construction phase, rehabilitation measures must be followed to minimise the impacts going forward. This includes ensuring removal of all material and structures that are no longer required used in construction and rehabilitation of disturbed areas.

5.2 Objectives of the EMPr

The EMPr plays a vital role in the implementation of consistent and continued environmental management for the duration of a project life cycle.

Specifically, the EMPr:

- Ensures compliance with regulatory authority stipulations and guidelines which may be local, provincial, national and all related legislation thereof.
- Ensures that there is sufficient allocation of resources on the project budget so that the scale of EMPr related activities is consistent with the significance of project impacts.
- Ensures compliance with legislation and regulations which may be national, provincial or local.
- Outlines the functions and responsibilities of responsible persons.
- Verifies environmental performance through information on impacts as they occur.
- Outlines mitigation measures and environmental specifications which are required to be implemented for all phases of a project to minimise the extent of environmental impacts, and to manage environmental impacts associated with the proposed project.
- Creates awareness and specifies measures to prevent or mitigate long-term or permanent environmental damage or degradation.
- Establishes monitoring methods for environmental management practices for the construction of the development.
- Ensures that all health and safety regulations are adhered to.
- Proposes methods to monitor compliance with the EMPr and subsequent reporting.
- Specifies timeframes within which measures set out in the EMPr must be implemented.
- Encourages good management practices through planning and commitment to environmental issues;
- Defines how the management of activities and their impact on the environment is to be reported and how performance should be evaluated;
- Provides practical environmental conditions / requirements to:
    - Minimise disturbance of the natural environment;
    - Ensure water resource protection;
    - Prevent or minimise all forms of pollution;
    - Protect indigenous flora and fauna;

- Prevent soil erosion and facilitate the re-vegetation of affected areas;
- Ensure the maintenance of newly vegetated / rehabiliated areas;
- Restrict noise disturbance;
- Ensure compliance with all applicable laws, regulations, standards and guidelines for the protection of the environment; and
- Provide for the best practical means available to prevent or minimise adverse environmental impacts.
- Develops waste management practices based on prevention, minimisation, recycling, treatment or disposal of waste;

- Defines the arrangements that will be put in place to ensure that the mitigation measures are implemented by including recommendations of the roles and responsibilities of the project proponent, environmental management team and contractors;
- Describes all monitoring procedures required to identify impacts on the environment; and
- Trains the Owner of the project, its employees and contractors with regard to their environmental obligations.
- Provides an environmental awareness plan.
- Responds to changes in project implementation not considered in the EIA.
- Responds to unforeseen events.
- Provides feedback for continual improvement in environmental performance.

5.3 EMPr Methodology

The methodology used for this Environmental Management Programme (EMPr) hasbeen described in the Integrated Environmental Management (IEM) Guidelines published by the Department of Environmental Affairs in 1992 as well as the EIA Regulations in 2014.

This EMPr includes:

- Specific goals of the Environmental Management Programme;
- Details of management actions;
- Parties responsible for carrying out management recommendations;
- Timing and duration of management actions;
- Personnel training and financial obligations; and
- Guidelines for monitoring and auditing of compliance.

This EMPr specifies the minimum requirements to be implemented as per the scope of works and scope of the EMPr, to minimise and manage the potential environmental impacts and ensure sound environmental management practices.

This EMPr is binding on the applicant and appointed contractor, during the life of the project. It is essential that the EMPr requirements be carefully studied, understood, implemented, and always adhered to. Each aspect related to the EMPr has been addressed as described in the below table. Each action within the EMPr is supported by the priority of when the specific action will need to be implemented.

ENVIRONMENTAL ASPECT	The various aspects/activities associated with the project, that will impact the environment, and that will require mitigation.
ENVIRONMENTAL MEASURES AND ACTION PLANS	Activities likely to cause significant impacts. The actions required to either prevent and/or minimise the potential impacts on the environment that are associated with the project.
TIMING	When the actions for that specific aspect must be implemented and/or monitor.
TARGET	The (quantitative) level of performance, sometimes determined by legislation, which must be met, and monitored by the ECO
RESPONSIBILITY	The party/ies responsible for implementing the environmental measures and action plans laid out in the EMPr.

6. ACCOUNTABILITY AND ENVIRONMENTAL CONTROL

6.1 Administration

Copies of this EMPr must be kept at the site office and will be distributed to all senior contract personnel. All senior personnel shall be required to familiarize themselves with the contents of this document.

6.2 Roles and Responsibilities

The implementation of this EMPr requires the involvement of several stakeholders, each fulfilling a different but vital role involved in the implementation of the EMPr and mitigation measures presented in the Basic Assessment Report, relevant to the various phases of the development of the Greengate X 140 high-density residential township, and the establishment thereof.

6.3 The Applicant

The applicant remains ultimately responsible for ensuring that implementation of this EMPr complies with the relevant legislation, and that the authorised activities are implemented according to the requirements of the EMPr.

Although the applicant will appoint an external Contractor to undertake the contract on a design and construct basis, the responsibility still remains with the applicant. The applicant must ensure that sufficient resources (time, financial, labour, equipment, etc.) are available to the other role players e.g. the Environmental Control Officer (ECO), and contractor, to efficiently perform their tasks in terms of the EMPr. The applicant will be held responsible for restoring the environment in the event of negligence leading to damage to the environment.

- The applicant must ensure that the EMPr is included in tender documentation so that the contractor who is appointed is bound to the conditions of the EMPr.
- The applicant must be familiar with all the recommendations and mitigation measures of this EMPr.

- The applicant must monitor site activities on a frequent basis for compliance.
- The applicant must conduct internal audits of the construction site against the EMPr.
- The applicant must confine the activities to the areas already occupied, and ensure that no encroachment into open areas which are sensitive in nature occurs.
- The applicant must rectify transgressions through the implementation of corrective action.

6.4 Authorities

The authorities (GDEnv, DWS) are responsible for processing and issuing necessary permits and authorisations within the NEMA regulated time frames. The authorities ensure that the applicant complies with the terms that are stipulated within the Environmental Authorisation. Where necessary, the authorities must assist the applicant in understanding and meeting the specified requirements. The authorities will perform random site visits and audits, to ensure compliance with the authorisation conditions. In case of long-term non-compliance, the applicant must provide an action plan with corrective measures for approval by the authorities.

6.5 Contractors and Project Engineers

The Project Engineer (PE), appointed by the applicant, reports directly to the applicant project manager, and oversees all technical aspects of the various projects. The PE oversees construction programmes and all construction activities performed by the Contractor, and as such also any EMP implementation, EMP compliance and environmental related activities, issues and impacts.

The contractor acts as the applicant's agent on site and is bound to the EMPr conditions through his/her contract with the applicant. The contractor is responsible for ensuring that he/she adheres to all the conditions of the EMPr. The contractor must thoroughly familiarise him/herself with the EMPr requirements before coming onto site and must request clarification on any aspect of these documents, should they be unclear. The contractor must ensure that he/she has provided sufficient budget for complying with all EMPr conditions at the tender stage.

The contractor must comply with all orders (whether verbal or written) given by the ECO, project manager or site engineer in terms of the EMP. It is the Contractor's role to always implement and comply with recommendations and conditions of the EMPr.

The PE works in close cooperation with the ECO and must ensure that the EMPr is implemented correctly. The Contractor or Project Engineer must appoint a dedicated Environmental Site Officer (ESO) for the duration of the construction period. The ESO must be a senior member of the construction company or on-site team, and have overall environmental management responsibilities for the site. The ESO must monitor the activities of the Contractor and all subcontractors, and must ensure that mitigation measures contained in this document are implemented and adhered to on a daily basis. The ESO must liaise with the Environmental Control Officer (ECO), where applicable, on a regular basis to inform the ECO of the adherence to and effectiveness of the prescribed management measures. In the absence of an ECO, an ESO will take on the duties of an ECO.

The ESO is the direct link between the ECO and the Contractors and subcontractors. The ESO must ensure that the EMPr forms part of the tender documentation to the Contractor and becomes legally binding on the Contractor and anyone acting on behalf of the Contractor during construction. It is

the responsibility of the project engineers, contractors and sub-contractors to prepare and implement Method Statements which detail the means they will employ in order to meet the objectives set in the EMPr. The contractors and sub-contractors will be required, where specified, to provide Method Statements to the Resident Engineer setting out in detail how the management actions will be implemented to ensure that the environmental management objectives will be achieved. Regular consultation with the ECO is required in this regard.

The PE is responsible for the implementation of the general and specific environmental awareness training programme (to be presented by the ESO). Further responsibilities include keeping records of waste disposal, audits, inspections, monitoring and corrective actions. The PE must assist the ECO with the identification of any new significant environmental impacts, and the necessary environmental management requirements to manage them.

6.6 The Environmental Control Officer (ECO)

The Environmental Control Officer (ECO) must be an independent environmental consultant appointed by the applicant or contractor to act as the applicant or contractors representative, to monitor and review the on-site environmental management and implementation of this EMPr by the Contractor.

The ECO must form part of the project team and be involved in all aspects of project planning that can influence environmental conditions on the site. The ECO must attend relevant project meetings, conduct inspections to assess compliance with the EMPr and be responsible for providing feedback on potential environmental problems associated with the development.

The ECO's duties will include the following:

- Assisting the developer in ensuring that any necessary environmental authorisations and permits have been obtained.
- Maintaining open and direct lines of communication between the applicant, project engineers, Contractor and Environmental Control Officer (ECO), with regard to environmental matters.
- Appointing specialists (botanists, ecological ecologists, etc.) as required to advise the ECO.
- Reporting on environmental issues at construction site meetings.
- Reviewing and approving the Contractor's construction method statements.
- Regular site inspections of all construction areas with regard to compliance with the EMPr.
- Monitoring and verifying adherence to the EMPr, the Environmental Authorisation (EA), and approved method statements at all times, monitoring and verifying that environmental impacts are kept to a minimum.
- Taking appropriate action if the specifications are not followed.
- Assisting the Contractor in finding environmentally responsible solutions to problems.
- Monitoring the undertaking by the Contractor of environmental awareness training for all new personnel coming onto site.

- Advising on the removal of person(s) and/or equipment not complying with the specifications.
- Recommending the issuing of fines for transgressions of site rules and penalties for contraventions of the EMPr.
- Auditing the implementation of the EMPr and compliance with the EA on a monthly basis.
- Undertaking a continual review of the EMPr and recommending additions and/or changes to the document to the developer and contractor for discussion.
- Keeping a photographic record of progress on site from an environmental perspective. This can be conducted in conjunction with the ESO as the ESO will be the person that will be onsite at all times and can therefore take photographic records weekly. The ECO would need to check and ensure that the ESO understands the task at hand.
- Recommending additional environmental protection measures, should this be necessary.
- Providing report back on any environmental issues at site meetings.

The ECO has the right to enter the site and carry out monitoring and auditing based on prior arrangement with the landowner/ applicant, and subject to compliance with health and safety requirements applicable to the site (e.g. wearing of safety boots and protective head gear.

6.7 Environmental Awareness Training

The ESO and ECO will be responsible for putting an Environmental Awareness Training Programme in place, for all staff members. Before commencing with any work, all staff members must be briefed about the Environmental Code of Conduct. After being briefed about the contents of the Environmental Code of Conduct, staff members must sign an Environmental Training register as proof of their training.

The presentation shall be conducted, as far as is possible, in the employees' language of choice. As a minimum, training should include:

* Explanation of the importance of complying with the EMPr.
* Discussion of the potential environmental impacts of construction activities.
* Explanation of the mitigation measures that must be implemented when carrying out their activities.
* The significant environmental impacts, actual or potential, because of their work activities.
* The importance of not littering.
* The need to use water sparingly.
* Details of, and encouragement to, minimise the production of waste and re-use, recover and recycle waste where possible.
* Details regarding archaeological and/or historical sites which may be unearthed during construction and the procedures to be followed should these be encountered.

* Details regarding fauna, and the procedures to be followed should these be encountered during the construction phase.

Training should be conducted by a suitably qualified person and if necessary, in more than one language to ensure it is understood by all workers. Copies of the environmental training must be available on site in languages appropriate to the work force. Records of the training sessions including attendance registers, nature of training and date of training should be kept to ensure all parties have received the necessary training and for auditing purposes. In addition to training, general environmental awareness must be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. Environmental awareness and training is an important aspect of the implementation of the EMPr.

Once the awareness plan and training material are available, the entire workforce and project management team should undergo an environmental awareness training course. Environmental awareness training is critical for the workforce to understand how they can play a role in achieving the objectives specified in the EMPr. All visitors to the site (including project team members which are not based onsite), must undergo Environmental Induction before being permitted to the construction and associated area. The Environmental Induction should be structured to provide a condensed version of the comprehensive Environmental Awareness Training that will be provided to the workforce / onsite staff.

Environmental awareness could be fostered in the following manner:

- Induction for all workers on site, before commencing work;
- Refresher courses as and when required;
- Daily toolbox talks at the start of each day with all workers coming on site, where workers might be alerted to particular environmental concerns associated with their tasks for that day or the area/habitat in which they are working; and
- Courses must be given by suitably qualified personnel and in a language and medium understood by workers/employees. The Environmental Awareness Plan should be drawn up by the PM, in consultation with the ECO and EO and should be kept for implementation and audit purposes. The Environmental Awareness Plan should be a dynamic document (or set of documents) which should be updated as changes to the project, environment, staff and etc. occur.

The applicable training will be as follows:

- The ESO must be appropriately trained in environmental management and shall possess the skills necessary to impart environmental management skills to all personnel involved in the construction of the proposed mixed land use and residential development;
- The PE and ESO must ensure, on behalf of the applicant, that the employees (including construction workers, engineers, and long-term employees) are adequately trained and understand the management measures provided in the EMPr; and
- All employees shall have an induction presentation on environmental awareness.

The induction and training must, as a minimum, include the following:

- The importance of conformance with all the specifications of the EMPr and other environmental policies and procedures;
- The significant environmental impacts, actual or potential, of their work activities;
- The environmental benefits of improved personal performance;
- Their roles and responsibilities in achieving conformance with the EMPr and other environmental policies and procedures;
- The potential consequences of departure from specified operating procedures; and
- The mitigation measures required to be implemented when carrying out their work activities.

7. ENVIRONMENTAL MANAGEMENT COMPLIANCE, MONITORING AND REPORTING

7.1 Environmental Officers (ESO and ECO)

The Environmental Control Officer is responsible for the implementation of environmental management measures with monitoring and reporting. The applicant and the Project Engineer must appoint an Environmental Site Officer (ESO) for the duration of the construction period. An ECO must be appointed to monitor the compliance with the pre-commencement and planning and design phase. The first construction ECO report must provide a description on compliance measures for this phase. The ECO must audit the site for compliance with the monitoring specifications / requirements once a month, and compile and submit an ECO report during the construction phase to the applicant and approving authority on a monthly basis.

It must be noted that the ECO is responsible for providing an independent evaluation of compliance with the EMPr, and not for enforcement of the conditions of the EMPr. The responsibility of enforcement of the conditions of the EMPr lies with the Applicant and PE, while the GDE Environmental Management Compliance Inspectors will also enforce existing and potentially new conditions through compliance notices.

The Contractor ESO must be a senior member of the construction on-site team and have overall environmental management responsibilities for the site daily. The ESO must monitor the activities of the Contractor and all subcontractors daily and must ensure that mitigation measures contained in this document are implemented and adhered to and corrective measures taken as per reports and instructions. Where relevant (e.g., significant environmental incidents and complaints), actions plan with timeframes and responsibilities must be developed and implemented by the ESO. The ESO must liaise with the Environmental Control Officer (ECO) on a regular basis to inform the ECO of the adherence to and effectiveness of the prescribed management measures.

Non-compliance with the conditions of the EMPr must be viewed as a breach of appointment contract for which the construction contractors will be held liable. The appointed contractor is in non-compliance with the EMPr if:

- There is evidence of contravention of the EMPr, or the Method Statements developed by the contractor within the boundaries of the construction site or areas of contractor responsibility;
- Construction related activities take place outside the defined boundaries of the site;
- Environmental damage occurs due to negligence/laziness/blatant disregard to the environment;
- The contractor fails to comply with corrective or other instructions issued by the ECO within an agreed time frame; or
- The contractor fails to respond adequately to complaints from the public or authorities.

The applicant and the construction contractors are liable for any construction rehabilitation costs associated with their non-compliance with the EMPr. This rehabilitation will be undertaken to the satisfaction of the ECO and the GDEnv.

7.2 Reporting and Review

Environmental monitoring is the continual evaluation of the status of the environment and condition of environmental elements. Its purpose is to detect activities that may have a negative impact on the environment as well as changes that takes place in the environment over time. It therefore involves the checking and correcting of onsite activities as well as the measuring of physical, social and economic variables associated with development impacts. Monitoring will be ensured in terms of the Environmental Authorisation, Permits, Licenses and EMPr as per conditions and relevant authority requirements by the Holder of the Authorisations as undertaken by the Holder and Contractor ESO and ECO appointments.

The timeframes for monitoring are specified as per the relevant conditions of the various phases i.e., planning and design, construction, and operational (with rehabilitation). The specific conditions related to the monitoring requirements per timeframe have been specified as per relevant condition and must be ensured.

An ECO must be appointed to monitor the compliance with the pre-commencement and planning and design phase. The first construction ECO report must provide a description on compliance measures for this phase.

The ESO must monitor the site activities *daily* during the construction phase and submit proof of inspections with findings and corrections to the ECO for consideration during the ECO visits to be conducted during the construction phase. The ESO must report any problems in terms of adherence with the EMPr directly to the PE and ECO.

The ECO must audit the site for compliance with the monitoring specifications / requirements once a month and compile and submit an ECO report during the construction phase to the applicant monthly.

The EMPr reporting and documentation requirements must be based on best environmental practice principles. ECO reports must be regularly reviewed by all accountable parties. The contents of this EMPr must be discussed at monthly or weekly project meetings with all contractors project managers. No parties may use the excuse, “I didn’t know”. The construction contractors will be contractually obliged to fulfill any reasonable recommendations, and implementation of these actions will be assessed in the ECO audits.

The Contractor is deemed not to have complied with the Environmental Specification / EMPr if:

- There is evidence of contravention of clauses within the boundaries of the site;
- Environmental damage ensues due to negligence;
- The Contractor ignores or fails to comply with corrective or other instructions issued by the applicant or Project Engineer within a specified time; and
- The Contractor fails to respond adequately to complaints from the public.

The Operational phase monitoring responsibilities and frequencies to be conducted by the Environmental Officer / ECO as per stipulated criteria and environmental authorisations e.g., WUL.

7.3 Complaints and Incidents register

Identifying, recording and reporting complaints and environmental incidents further ensures the monitoring and auditing of environmental compliance and assessment of performance against the actual and perceived environmental aspects and impacts on site.

Site Documentation

The following is a list of documentation that must be kept within the contractors offices on site, and must be made available to the ECO and/or any regulating body on request.

- A copy of this Environmental Management Programme (EMPr);
- Declarations of understanding by the Applicant; Project Engineer; Contractors and sub-contractors; designated Environmental Site Officer;
- Environmental Method statements;
- ECO approval of method statements.
- Incident reports and registers;
- Complaints register;
- Site Establishment Plan;
- Copies of ECO reports;
- Copies of internal monitoring reports (internal management and monitoring – daily/weekly checklists);
- Awareness training material (toolbox talks, inductions, etc.);
- Non-conformance Reports
- Written Corrective Action Instructions
- Notification of Emergencies and Incidents
- Service receipts for chemical toilets and waste removal; and
- Records of all remediation / rehabilitation activities.

Complaint records

The Contractor must record any complaints received. The lodged complaint must be brought to the attention of the ECO, ESO and PE. The following information will be recorded:

- Details of complainant
- Time, date and nature of the complaint

- Response and investigation undertaken
- Actions taken and by whom

The complaints must be communicated to the Applicant and ECO who will respond accordingly. An investigation must ensue and a response to the complainant must be provided within seven working days. All environmental incidents occurring on the site must be recorded by the Contractor,PE, ESO, ECO and submitted to the applicant. The following information will be documented:

- Time, date, location and nature of the incident
- Actions taken and by whom
- Response to complainant
- Measures to be implemented to address the complaint

The ECO, in conjunction with the Engineer and Contractor, will identify and authorize remediation action where necessary.

EMPr compliance is the responsibility of all the parties that make up the project team. Similarly, all these parties have a role to play in EMPr compliance monitoring and reporting in accordance with the authority structure. For example, sub-contractors must monitor their own compliance and report any discrepancies, non-compliances or incidents to the contractor, while the contractor must in turn monitor the sub-contractor compliance. In turn, the Engineer must monitor the Contractor's EMPr compliance on a day-to-day basis while the ECO has the role to undertake regular site inspections and audits and prepare audit reports.

The above records will form an integral part of the Contractors' Records. These records will be kept with the EMPr, and will be made available for scrutiny if so, requested by the applicant or authorities.

Outlined below are levels relating to the severity of environmental problems, which will be implemented. The principle is to keep as many issues at the lowest levels of severity as possible.

Level 1: The ECO discusses the problem with the contractor or guilty party, and they work out a solution together. The ECO records the discussion and the solution implemented.

Level 2: The ECO or Client observes a more serious infringement, and notifies the guilty party in writing, with a deadline by which the problem must be rectified. All costs will be borne by the contractor.

Level 3 : The ECO shall order the contractor to suspend part, or all, the works. The suspension will be enforced until such time as the offending party/parties, procedure or equipment is corrected and/or remedial measures put in place if required. No extension of time will be granted for such delays and all cost will be borne by the contractor.

Level 4: Breach of contract - One of the possible consequences of this is the removal of a contractor and/or equipment from the site and/or the termination of the contract, whether a construction contract or an employment contract. Such measures will not replace any legal proceedings that the applicant may choose to institute against the contractor.

8. NON-COMPLIANCE, PENALTIES AND STOP WORK ORDERS

The EMPr will be binding on all contractors operating on the site and must be included within the Contractual Clauses. The Contractor shall comply with the environmental specifications and requirements on an ongoing basis and any failure on his part to do so will entitle the ECO and applicant to impose a penalty.

8.1 Remedial and Preventative Action / Management of Environmental Incidents as they arise

The ECO must devise a Remedial Action Procedure for implementing corrective and preventive action. The Corrective Action Procedure is to be implemented by all contractors and subcontractors on site.

This system should:

a) Report non-compliance with procedures or targets identified during monitoring and inspections (on a formal Incident Form).
b) Report other failures creating environmental problems.
c) Report imminent non-compliance and potential environmental problems.
d) Through the Resident Engineer, delegate responsibility for corrective and preventive action.
e) Document the resolution of the reported non-compliance or environmental problem.
f) Impose disciplinary action where persistent non-compliance occurs.

8.2 Individual transgressions

It is recommended that the engineers/contractors institute fines for the following less serious violations and any others determined during work as detailed below:

- Littering on site.
- Lighting of illegal fires on site.
- Persistent or un-repaired fuel and oil leaks.
- Any persons, vehicles or equipment related to the Contractor's operations found within the designated "no-go" areas.
- Excess dust or excess noise emanating from site.
- Possession or use of intoxicating substances on site.
- Any vehicles being driven in excess of designated speed limits.
- Removal and/or damage to heritage objects on site.
- Urination and defecation anywhere except at designated facilities.
- Unauthorised camp establishment (including stockpiling, storage, etc.);
- Hydrocarbons / hazardous material: negligent spills / leaks and insufficient storage;
- Ablution facilities: non-use, insufficient facilities, insufficient maintenance;
- Late method statements or failure to submit method statements;
- Insufficient solid waste management (including clean-up of litter, unauthorised dumping etc.);
- Erosion due to negligence / non-performance;
- Excessive cement / concrete spillage / contamination
- Insufficient fire control and unauthorised fires;
- Non-induction of staff.

The Project Engineer should use these as a guide and use his/her own judgement in determining the issues of non-compliance and the severity of the contravention and thus the value of the spot fine:

An individual entering the defined No Go boundaries of the site;	R500 – 150
An individual driving a vehicle into the defined No Go boundaries of the site;	R300 – 1500
An individual driving any earthmoving plant into the defined No Go boundaries of the site;	R500 – 3000
A plant operator ignoring a verbal warning to have an oil leak from machinery repaired;	R100 – 300
An individual littering on site;	R50 – 300
An individual not making use of the ablution facilities;	R50 – 200
An individual spilling fuels (non use of funnels/pumps etc);	R100 – 500
An individual eating outside of the defined eating area;	R50 – 200
Smoking on site other than in the designated site camp;	R50 – 200

These fines should be revised when the construction phase commences to ensure relevance.

For each subsequent similar offence committed by the same individual, the fine should be doubled in value to a maximum value of R5 000. The Project Engineer will not collect the fines from individuals, but will rather inform the Contractor of the contravention, the individual's identity and the amount of the fine. The fine will be deducted from the Contractors' monthly certificate, or the Project Engineer will issue a variation order, to the value of the fine, for the Contractor to undertake activities that would in some way enhance the state of the environment or the site. It will be the Contractor's responsibility to reclaim such fines from the guilty individuals. These fines do not preclude any prosecution under any other law.

8.3 Contractors Transgressions

Offences and Penalties

The Project Engineer, in consultation with the ECO, may also issue penalties directly to the Contractor for general non-compliance with the EMPr. The following serves as a guide for such penalties in certain situations. Any avoidable non-compliance with the conditions of the EMP shall be considered sufficient ground for the imposition of a penalty. Possible offences, which should result in the issuing of a contractual penalty, include, but are not limited to:

- Entrance into no-go areas / adjacent properties;
- Unauthorised damage to natural vegetation;
- Stockpiling, hazardous chemical storage in no go areas;
- Hydrocarbons / hazardous material: negligent spills / leaks and insufficient storage;
- Ablution facilities: non-use, insufficient facilities, insufficient maintenance;
- Insufficient solid waste management (including clean-up of litter, unauthorised dumping etc.);
- Erosion due to negligence / non-performance;
- Excessive cement / concrete spillage / contamination'
- Insufficient fire control and unauthorised fires;

- Preventable damage to adjacent water courses or pollution of waterbodies; and
- Non-induction of staff.

	RANDS
Excessive litter on the site or in the site camp;	500 – 2000
Water wastage or water contamination;	500 – 4000
Spillage of fuels on site;	500 – 4000
Inadequate provision of waste bins and toilets;	500 – 2000
The non provision of eating areas;	500 – 1000
Unnecessary dust generation and inadequate control;	500 – 3000
Unnecessary noise generation;	500 – 3000
Non provision of hydrocarbon fuel absorbents;	1000 – 3000
Inadequate erosion controls and prevention;	500 – 4000

The issuing of a penalty will usually be preceded by a verbal warning by the ECO, during which a time frame for rectifying the situation, as well as the penalty to be implemented should this not be done within the time frame, will be agreed on. The value of the penalty will depend on the seriousness of the contravention, and thus the Project Manager/Engineer must use his/her judgement in determining the value of the penalty. In addition to penalties, the Project Manager/Engineer has the power to remove from Site any person who is in contravention of the EMPr, and if necessary, the Project Manager/Engineer can suspend the relevant part or all of the works, as required. Note that penalties can be issued over and above costs that are incurred for the repair or rehabilitation of any environmental damage caused by the Contractor and all the parties over which they have responsibility. In this regard costs incurred by the Contractor in repairing or rehabilitating any environmental damage caused by non-compliance with the EMPr cannot be claimed in the Contract Bill, nor can any extension of time be claimed for such works.

Penalty amounts should be deducted from Certificate payments made to the Contractor. As an example, these funds can be kept separately and donated to a non-profit organisation that works in the environmental or conservation field, or used as a reward system/incentive for employees doing a good job.

The applicant or project Engineer at their own discretion, or on recommendation from the ECO, may also order the Contractor to place on hold or suspend part or all the works if the Contractor repeatedly causes damage to the environment by not adhering to the EMPr (i.e., more than 3 cases of infringements). The suspension will be enforced until such time as the offending actions, procedure or equipment is corrected. No extension of time will be granted for such delays and all costs will be borne by the Contractor. Work may also be placed on hold if a heritage artefact or feature or grave is uncovered or to prevent a potential significant incident from occurring or spreading.

8.4 Emergency Preparedness

The contractor must develop environmental emergency response procedures to ensure that there will be an appropriate response to unexpected or accidental actions or unforeseeable incidents that will cause environmental impacts during the construction period. Such activities may include, *inter alia*:

- Accidental fires.
- Accidental spillage of hazardous substances.
- Accidental injury to staff.

The contractor and sub-contractors shall comply with the emergency preparedness incident reporting requirements that must be developed prior to construction.

9. METHOD STATEMENTS

A method statement must be completed *by the Contractor*, for each activity requiring a method statement, as specified in this EMPr or as requested by the ECO. A method statement is a document that details the way a work task or process is to be completed. The method statement should outline the hazards involved in the task, and include a step by step guide on how to implement the action in a safe manner, that reduces the overall risk to people and the environment. The method statement must also detail the control measures and remediation activities to ensure the safety of persons who are affected by the task or process, as well as the environment.

The method statement must identify the risks associated with the various work stage at hand. Steps to reduce the potential risk associated with these stages must then be determined and included in the method statement. The sequential steps and actions to be followed by the persons carrying out the works must be written down and signed by the responsible party. The Resident Engineer or his representative (and the ECO) must approve any deviations from the approved Method Statements. All amendments must be in writing and must be submitted to the Resident Engineer or his representative.

The method statement must cover applicable details with regard to:

- construction procedures,
- materials and equipment to be used,
- getting the equipment to and from site,
- how the equipment/ material will be *moved* and where it will be *stored* while on site,
- the containment (or action to be taken if containment is not possible) of leaks or spills of any liquid or material that may occur,
- timing and location of activities,
- any other information deemed necessary by the RE and ECO.

The method statement should be written by a person that is competent in the tasks to be undertaken and how these can be effectively communicated. *The contractor shall not commence an activity until all required method statements have been approved the ECO.* Such approval should not unreasonably be withheld.

All control measures detailed in the method statement must be the subject of "environmental awareness" talks prior to the initiation of works. By explaining these important measures during the environmental awareness discussion, everyone involved will have a clear understanding of how to carry out the work, as well as the safe work method sequences and equipment required. See Appendix B for the recommended Method Statement Template.

Approved method statements must be readily available on site, preferably in the contractors camp. The location of the approved method statements must be communicated to all relevant personnel. The contractor shall carry out the works in accordance with the approved method statements as they apply to the work in progress.

The contractor should produce the following method statements as a minimum, prior to construction activities:

- Site Office establishment
- Stockpiling of materials
- Stormwater management plan
- Site Dust Management
- Crew Camps and construction lay down areas
- Solid Waste Management
- Sourcing, excavating, transporting and dumping of fill and spoil material
- Hazardous Material Management
- Hydrocarbon Management
- Surface Water Management
- Noise and Vibration Management
- Cement and Concrete Batching
- Pollution Control
- Site Access and Traffic Management
- Incident and Emergency Response Management

Additional method statements must be developed (or revised) if the need therefore is identified during the construction phase of the project.

The Contractor must abide by these approved method statements, and any activity covered by a method statement shall not commence until the ECO has approved the method statement. The method statement must be submitted to the ECO 2 weeks prior to the intended date of commencement of the activity. See Appendix 2 for the proposed Method Statement Template.

10. **LIMITATIONS AND ASSUMPTIONS REGARDING ASSESSMENT AND MITIGATING OF IMPACTS**

The assumption for the development of this EMPr is that all significant issues have been identified. Environmental issues, concerns and development constraints were identified using professional judgement, project information (all technical and biophysical specialist reports), experience of similar projects, a review of available literature, site visits and consultation with the authorities.

The significance of the environmental issues has been evaluated, and mitigation and management measures have been identified as part of the EMPr development. The effectiveness of the EMPr is limited by the level of adherence to the conditions detailed in this report by the applicant, and the various contractors and agents acting on behalf of the Client. It is further assumed that compliance

with the EMPr will be monitored and audited on a regular basis as set out in the EMPr. This EMPr is a dynamic document that must be continually updated, as and when required.

11. SUMMARY OF ACTIVITIES AND ASPECTS CAUSING IMPACTS

The construction of the Greengate X 140 high-density residential township, will result in negative impacts on the receiving environment. These negative impacts have been identified and summarised by Seedcracker Environmental Consulting as follows:

- Geotechnical suitability
- Impact on the wetland on site during box culvert bridge construction
- Soil erosion
- Loss of vegetation and habitat
- Soil pollution
- Surface water quality
- Ground water quality
- Waste Management
- Noise and disturbance
- Visual impact
- Impact on Archaeological and/or Paleontological Resources
- Air quality
- Traffic Impact
- Infrastructure and services
- Employment, safety and security

The above-mentioned aspects can potentially cause negative impacts that may occur during the planning, construction, and operational phases of the proposed project. To prevent and/or minimise these impacts, care must be taken where practical and feasible, for the disposal of waste, spillage, storage, noise, dust control, sediment management, the rehabilitation of disturbed areas and management of the different phases of construction and operation. This can be achieved by effective implementation of the necessary mitigation measures as stipulated in this EMPr. With adequate management, the associated risks and significant negative impacts of the majority of the proposed project can be minimised and/or entirely negated. These are dealt with in this EMPr.

12. THE ENVIRONMENTAL MANAGEMENT PROGRAMME

The Environmental Management Requirements are designed to address the issues and impacts raised through the environmental assessment process. Each of the Environmental Management Requirements is presented in table format.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
Planning and Design: management actions that must be completed prior to the commencement of construction activities: Administrative and Legal Requirements				
Planning and Design requirements	• Environmental Authorisation Conditions must be incorporated into the final EMPr to ensure that all conditions and requirements of the Environmental Authorisation and the EMPr stipulated as pre-requisites for construction are met. • An unchannelled valley bottom wetland occurs on site. • The removal and translocation of impacted hydrophytes must be done prior to the construction of the box culvert bridge commencing on site. • Due to the perennial nature of the system, construction should preferably commence during the dry months, to minimise the risk of increased and sediment-laden runoff reaching the wetland because of these activities • The wetland system must be fenced during the construction phase to prevent any human activity from encroaching into this area. Monitoring of the fences is of paramount importance to ensure no infringement of the fences occurs. • The design of linear infrastructure (e.g. roads, powerlines, cables or pipelines) must avoid the freshwater ecosystem habitat as far as possible. • Secure perimeter fencing, lighting, and signage must be installed before works begin. • Appropriate Engineering design foundations is required to avoid intercepting or redirecting groundwater away	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity. During design and prior to, construction	Ensure that all requirements of the Environmental Authorisation are in place and that any approval is obtained in writing prior to commencing any construction activities. Prevent potential pollution and /or environmental degradation during the operational phase of the project	**Applicant, Project Engineer, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	from the seep wetland. • Careful planning of the construction footprint must be undertaken. The laydown areas must remain outside of the artificial wetland proposed to serve as the attenuation pond on site. • The construction area must be clearly demarcated before any construction activity take place and signage must be displayed during construction phase to inform and prevent the contractors and construction workers from entering the artificial wetland area; • Removed vegetation must be stockpiled outside of the delineated wetlands. • Ensure all licenses and authorizations (e.g., environmental authorisation, water use licence if applicable) are granted and conditions integrated into the final Environmental Management Program (EMPr). • Sustainable designs must be implemented to reduce resource consumption (electricity, water). • Develop an installation sequence and layout drawings to work methodically.			
Site Planning for Construction	• Prior to construction commencing on site, the Project Engineer in consultation with the ECO and other project staff must compile a detailed Environmental Management site plan indicating where the various infrastructures will be located, and which areas of the site will be utilised for construction and associated operations. The plan should include items such as the location of stockpile sites. Plans for the location of construction roads / tracks, turning circles, working		Approved site plan before commencing with construction	**Applicant, Project Engineer, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	areas and facilities should seek to minimise the total area that is to be disturbed at any given point. Plans for the removal and disposal of wastes and any hazardous or contaminated materials (such as; fuel drums, soil which has been contaminated with leaked fuel or oil, and alien weed infested soil) should be described, as appropriate for the scale of the operation. The construction camp site should also be located on this plan. The issues listed in Appendix 3 must be shown on the Site Plan. • Method statements for the above activities is required from the contractor. • Indicate details of the access and internal roads and track. • Indicate all "no go" areas. • Fence off the site to prevent edge effects into the wetland areas and adjacent vacant land portions.			
Construction Camp establishment	• The site selected for a construction camp must ensure potential negative impacts on the biophysical environment are kept to a minimum. All ancillary infrastructure including site offices, ablutions, storage facilities, vehicle parking facilities and any other infrastructure must be placed within transformed areas, avoiding areas of indigenous vegetation. • The construction site must be defined, fenced off and limited to authorised contractors only. • The construction site camp must comprise of: - Site office; - Ablution facilities;	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity. During design and prior to, construction	Approved site plan before commencing with construction	**Applicant, Project Engineer, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	- Designated first aid area; - Eating areas; - Storage areas; • Development must be kept within the footprint and may not extend into any areas outside of the footprint design/project area. • The footprint of the construction camp must be kept to a minimum. • Enough parking must be provided for site staff and visitors at the construction camp. • Drainage from the site must be planned to prevent standing water and erosion occurring from run-off. • No abstraction from downstream river sources is permitted without the required authorisations from DWS. • Chemical toilets must be used as ablution facilities during the construction period by all contractors. • Chemical waste from the toilets may under no circumstances be disposed via a septic tank system but must be disposed of by a reputable waste disposal company. Safe disposal certificates must be kept on site, for record keeping purposes. • Bins and / or skips must be provided at frequent intervals for disposal of waste at the construction area and construction camp • The excavation and use of rubbish pits on site is forbidden. All waste must be reused, recycled or disposed of by registered companies or at a registered waste disposal site.			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	• Fuel must be stored in closed drums within a secondary containment facility or bowsers with pollution prevention measures in the event of spillage. • Fuel tanks must meet relevant specifications and be elevated to provide for the early detection of leaks. • Staff dealing with these materials / substances must be aware of their potential impacts and follow the proper safety measures. • Appropriate safety signs (in accordance with SABS 1186) must be erected at storage facilities and tank capacities must be clearly indicated (in accordance with SABS 0232).			
Roles and Responsibilities	• The overall responsibility for ensuring the implementation of this environmental management plan rests with the applicant Project Engineer, Contractor, ESO and ECO. • Responsibility for on-site implementation of environmental management as well as the associated cost with the implementation of the EMPr rests with all appointed contractors, sub-contractors and suppliers. • Appointed contractors must ensure that all permanent and temporary staff, sub-contractors and suppliers adhere to this EMPr. • The Project Engineer and main contractor must appoint a senior staff member directly involved in the site construction activities as the Environmental Site Officer (ESO). This person must ensure the implementation of and adherence to the EMPr in the contractor's execution of the day-to-day construction activities.	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity. During design and prior to, construction	All team members are aware of their daily roles and responsibilities	**Applicant, Project Engineer, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	• The environmental responsibility of the ESO must be specified in this person's duties, which must also include: - Liaison with the appointed ECO; - Ensuring environmental awareness among members of the workforce; - Ensuring that the Contractor/s and members of the construction workforce are aware of the requirements of the EMPr; - The on-site implementation of the EMPr; - Monitoring inappropriate behaviour, environmental impacts, including pollution and environmental incidents; and - The implementation of corrective action. • The independent ECO must be the responsible person for monitoring and reporting on compliance in respect of the implementation of the EMPr. • The contractor and Environmental Site Officer must inform the ECO prior to the commencement of any significant construction activity.			
Compliance	• All persons appointed / employed by the PE and their contractors on this project must abide by the requirements of the EMPr. • The applicant, PE or contractors may not direct a person to undertake any activity which would place them in contravention of the specifications contained within the EMPr. • Any member of the construction, operation or maintenance workforce found to be in blatant disregard	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity. During design and prior	All team members are aware of their daily roles and responsibilities	**Applicant, Project Engineer, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	of any of the specifications contained within the EMPr may be ordered to leave the site. • If a contractor is in breach of any of the specifications contained in the EMPr, the applicant, PE / ECO / ESO must, verbally or in writing, instruct the responsible Contractor regarding corrective and/or remedial action required, specify a timeframe for implementation of these actions, and/or indicate that work must be suspended in the event non-compliance continues. Contractors must be responsible and will bear the cost of any delays, corrective or remedial actions required because of non-compliance with the specifications and clauses of the EMPr. • A fine will be issued by the GDE for willful negligence or non-compliance resulting in environmental degradation or pollution. The fine will be determined by the GDE based on the severity of the incident. These costs will not be recoverable from the project & will be utilised to rectify the environmental degradation caused • Monthly monitoring, auditing must be conducted by the independent ECO. • The appointed ECO must submit audit reports to the contractor and applicant on a monthly basis. • The ECO, ESO and Engineer must consult and review compliance and performance against the EMPr and resolve the identified environmental concerns, non-compliance (including environmental incidents) and any complaints.	to, construction		

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
Environmental Awareness	• Prior to the commencement of construction, proper signage must be erected along the roads warning both pedestrians and motorists of earthworks being undertaken on site. • All members of the construction workforce working on the site must be provided with proper high visibility clothing to ensure that they can be distinguished from the general public. • An after-hours must be provided for complaints, such as excessive dust from roads, noise after working hours, etc.	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity. The actions must be implemented daily by the entire construction team	Approved Training and Environmental Awareness programme before commencing with construction	**Applicant, Project Engineer, ESO, ECO**
Environmental Training and Induction	• The contractor has the responsibility to ensure all personnel involved in the project are aware of, and familiar with, the EMPr, the key environmental issues and consequences of non-compliance to the EMPr. • To ensure compliance to the EMPr by contractors, sub-contractors and employees, the applicant, PE and Main Contractor must ensure that the EMPr forms part of the formal site induction for all contractors, sub-contractors and casual labourers. The main contractor/ESO must prepare and submit the training material to the ECO for approval. The induction training must, as a minimum, include the following: - The unchannelled valley bottom wetland must be fenced prior to the construction phase, to prevent any human activity from encroaching into this area.	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity. During design and prior to, construction	Approved Training and Environmental Awareness programme before commencing with construction	**Applicant, Project Engineer, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	- Why the environment needs to be protected; - Their roles and responsibilities in achieving compliance with the EMPr, including emergency preparedness and response requirements; and - The potential consequences of departure from specified operating procedures.			
Restriction of Working Areas	• Access to the site must be restricted at any one time, to reduce the potential for accidents, dust generation, soil and water pollution, fires, noise, and unnecessary environmental damage. • The unchannelled valley bottom wetland must be fenced prior to the construction phase, to prevent any human activity from encroaching into this area. • Prior to any construction beginning, the actual site to be worked must be clearly defined and demarcated by means of highly visible durable materials, e.g. orange netting, no danger tape is to be used. • All construction material and machinery required for construction to be located within the demarcated activity zone. Vegetation within the demarcated zone may be cleared while vegetation outside of the zone must be left intact until construction reaches that area. • No activities or dumping may take place outside of the demarcated activity zone. This is to ensure that unnecessary damage is not done to the surrounding areas. It will also ensure the safety of people working on site and people moving in the vicinity of the site. • Construction workers may not be allowed to stay on-	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity. During design and prior to, construction	Controlled access to the site for the contractors, work crews, sub-contractors.	**Applicant, Project Engineer, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	site overnight.			
Water management	• Stormwater control measures must be designed and implemented in such a manner that ponding, soil saturation, and erosion are prevented. • Storage areas that contain liquids, that could be hazardous to the environment, must be bunded with an approved impermeable liner. Bunds must have the capacity to hold 110% of the quantity of liquid stored • A spill contingency plan must be compiled and implemented. The following must be considered in the event of a spill: - Stop the source of the spill; - Contain the spill; - All significant spills must be reported to the relevant authorities; - Remove the spilled product for treatment of authorised disposal; - Determine if there is soil, water, environmental or any other impact; - The incident must be documented; • Direct discharges of runoff from developed/ disturbed areas to receiving waters must be avoided wherever possible • Water discharged into the environment must be done so in a manner that does not cause erosion, and does not result in negative impacts to any waterbodies.	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity. During design and prior to, construction	Approved Water management programme before commencing with construction	**Applicant, Project Engineer, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
Site security and safety considerations	• The camp site must be secured with a fence to ensure the safety and security of the site and infrastructure as well as the safety of the general public. • Details identifying what safety precautions must be adhered to must be ensured for the safety of all staff, and the general public, on site during the construction period. This must include protective clothing requirements for all types of construction activities on site, e.g., protection against dust, noise, operation of heavy machinery. • No persons, other than a night-watchman / security guard, may stay overnight at the construction site camp.	During design and prior to, construction	No incidents on site	**Applicant, Project Engineer, ESO, ECO**
Fauna and Flora Management	• Vegetation clearing must be done at the development front/footprint. Large areas must not be cleared unless they are surfaced or used immediately • Vegetation must be cleared independently of the topsoil to allow for topsoil collection and stockpiling • Use of herbicides must not be allowed for vegetation clearing unless required for specific application to invasive species. • Exposed areas of soil must be stabilised as soon as possible such as through landscaping • No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. • Alien invasive plants which establish on site, must be removed and eradicated throughout all stages of the project.	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity. During design and prior to, construction	No unnecessary or negligent impacts to fauna and flora on site	**Applicant, Project Engineer, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
Construction: This section presents the environmental requirements for the construction activities for the Greengate X 140 township. Details of the actions to be undertaken must be presented in the Method Statement for each aspect prior to the commencement of construction activities. Method statements must be compiled by the Contractors or their sub-contractors and approved by the Project Engineer, ESO and the ECO.				
Construction camp site	• Chemical toilets must be maintained in a clean state. Portable chemical toilets must be provided to the ratio of at least 1 toilet per 10 workers. All temporary/portable toilets must be secured to the ground to the satisfaction of the PM to prevent them from toppling over or being blown over by wind. • No spillage must occur when the toilets are cleaned or emptied and that the contents are removed from the site. The contractor/service provider is to provide proof that the toilets contents are disposed of at a registered facility. • Under no circumstances may open areas or the surrounding properties be used as a toilet facility • Temporary toilet facilities and sanitation facilities must be serviced weekly • Storage of material, chemicals, fuels etc. must not pose a risk to the surrounding environment and this includes surface and groundwater. Temporary bunds must also be constructed around chemical or fuel storage areas to contain possible spillages • No construction or storing of materials must be located outside of the defined layout area. These areas must be demarcated prior to any activities commencing and personnel instructed of the rules to stay out of these	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	areas (unless clearing alien invasive plants). • Storage areas must be on level ground. • Plant and equipment must be maintained to prevent spillage of oil, diesel, fuel or hydraulic fluid. The Contractor must repair or withdraw equipment or machinery from use if they consider these to be polluting and irreparable. • Suitably covered receptacles must always be available and frequently placed for the disposal of waste oils and greases. All used oils, grease or hydraulic fluids must be placed therein, and these receptacles must be removed on a consistent basis for recycling. • No smoking must be allowed in the vicinity of storage or dispensing areas. • Fuel decanting and refueling must take place within the construction camp only. Oil spill kits must be placed at the construction camp for the handling of accidental spillage • All temporary offices, equipment laydown areas, storage areas, stockpile areas, etc., must be located on flat surfaces, to minimise the probability of impacts related to increased stormwater run-off intensity and spills of hazardous substances during construction activities.			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
Access to the construction site	• Dust outfall into the surrounding environment must be effectively controlled using water sprays, fabric containment or curtains, where required. • Pedestrian and vehicle access must be security controlled and restricted during construction to control access to dangerous excavations and materials.	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**
Vegetation clearing	• All ancillary infrastructure including site offices, ablutions, storage facilities, vehicle parking facilities and any other infrastructure must be placed within transformed areas. • No burning on site is allowed under any circumstances • All manually cleared Alien invasive Plant species must be disposed of carefully and must not be dumped in any areas of indigenous vegetation, even temporarily • No mass clearing of vegetation must be done, but rather vegetation should be cleared as work progresses. No large areas must be cleared unless surfacing occurs immediately after • Exposure of bare soil may lead to sediment runoff into the wetland. Install silt fences, sediment traps, and erosion control blankets. Stabilize disturbed areas promptly using mulch or reseed bare areas with indigenous vegetation.. • Limit earthworks to the dry season as far as possible.	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
Flora and Fauna	• Environmental impacts, such as erosion caused by storm water run-off and weed invasion, increase proportionally with the increasing area of disturbance. Weed invasion can be minimised by taking measures to ensure that construction operations do not introduce exotic species to an area, and also by adopting measures to manage weed infestations at the site until such time as native species have become established after rehabilitation. • Any existing and new alien species must be removed as soon as possible after emergence • Alien vegetation that proliferates onsite during construction activities should be immediately removed on discovery.	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**
Impacts on the UCVB Wetland on site during general construction activities	• The SWMP must implement the sustainable urban drainage principles by utilizing hydrophytes to reduce possible pollutants from the catchment into the receiving aquatic environment. • Compilation of systematic adaptive rehabilitation plan is recommended for post-construction activities for the box culvert bridge, • Management on site must take cognizance of possible pollution arising from the site, with emphasis on hydrocarbon and sediment pollution, • Signage must also be included to increase awareness of the aquatic ecosystems found on site. • The use of trench breakers in service trenches- especially in sloped areas is required • Concrete and cement-related mortars can be toxic to	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	aquatic life and other biota. Proper handling and disposal should minimize or eliminate discharges into the seep wetland. High alkalinity associated with cement can dramatically affect and contaminate both soil and ground water. The following recommendations must be adhered to: • Fresh concrete and cement mortar should not be mixed near the proximity of the wetland • Mixing of cement should only be undertaken within the construction camp and may not be mixed on bare soils; • Mixing of concrete should also be strictly undertaken within a lined, bound or bunded portable mixer. Consideration must be taken to use ready mix concrete; • A batter board or other suitable platform/mixing tray is to be provided onto which any mixed concrete can be deposited whilst it awaits placing; • A washout area should be designated outside of the wetland and buffer area, and wash water should be treated on-site or discharged to a suitable sanitation system; • Cement bags must be disposed of in the demarcated hazardous waste receptacles; • Concrete spillage outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site. • Install silt fences, sediment traps, and temporary retention ponds to prevent sediment entering the artificial wetland • Stabilize exposed soils immediately after earthworks			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	with mulch, grassing, or geo-fabric. • Use bunded, lined areas for machinery maintenance and hazardous materials. • Construct temporary swales or oil traps to filter runoff before it exits the site • Design energy dissipators at outlets to reduce flow velocity. • Maintain pre-development flow volumes and durations as part of Sustainable Drainage System (SuDS) designs. • Create vegetative buffer zones between the site and the wetland. • Train contractors on EMPr compliance and penalties for transgressions.			
Impacts on the Wetland during box culvert construction	• Contractor must submit a wetland-specific method statement (construction footprint, equipment, sequencing, and protection measures) to the Environmental Control Officer (ECO) for approval before works begin. • Peg and demarcate the construction footprint with danger tape or barrier netting to prevent encroachment into surrounding wetland areas and buffer zones. • Mark all wetland areas outside the culvert footprint as "No-Go" with visible signage. • Prefer dry-season construction to reduce soil saturation, sediment mobilisation, and ecological disturbance. • Environmental awareness training for all site staff on the sensitivity of the wetland and rules for working near it.	During construction of the box culvert bridge crossing the wetland to access Erf 5	Maintain an intact 50 m demarcated no-go buffer zone (excluding the approved working footprint) for 100% of the construction period. Continuous fencing and signage in place, visually inspected weekly by ECO. Zero incidents of encroachment into demarcated buffer areas. Zero hydrocarbon/chemical spill incidents within 50 m of the wetland. Zero litter, concrete wash water, or construction debris entering the	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	• Use existing disturbed tracks where possible; prohibit ad-hoc crossing through the wetland. • Remove vegetation only where essential; stockpile separately for later rehabilitation. • Keep all machinery, materials, and laydown areas outside the wetland buffer zone unless absolutely required for the bridge works. • Stockpile construction material and excavated soil outside the 1:100-year flood line and buffer. • Install upstream and downstream of works to capture mobilised sediment. • If in-stream work is needed, use a lined temporary diversion channel or coffer dam to isolate the construction area. • Use geotextiles, sandbags, or biodegradable mats on exposed soils. • Direct clean water away from disturbed areas and filter dirty water before release. • Bed the culvert to match existing wetland bed elevation and gradient to avoid creating a barrier to flow. • Place wetland soil/gravel mix inside culvert to mimic natural seep conditions and encourage vegetation regrowth. • Ensure culvert opening accommodates high-flow events without altering wetland hydrology upstream or downstream. • Refuelling and Maintenance may only take place 50m away from the wetland, over drip trays or on		wetland during construction.	

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	impermeable surfaces. • Keep hydrocarbon spill kits on site and train workers in their use. • Provide clearly marked bins; remove waste to licensed disposal facilities daily. • Replant disturbed wetland and buffer areas with indigenous sedges, rushes, and grasses typical of the seep wetland. • Replace stored wetland topsoil in the correct order (topsoil over subsoil). • Maintain erosion control measures until vegetation is well established.			
Erosion	• Soil stockpiles must be secured with sandbags / silt fences around the base of the stockpile should an erosion risk be observed • Temporary soil stockpiles must only be placed within the construction site boundaries. Soil not utilised during construction activities must be stored in a designated soil stockpile area within the construction site camp • Temporary erosion controls must be implemented at areas that are sensitive to erosive processes such as steep slopes; • Erosion and sediment controls must be regularly monitored and maintained to ensure functionality throughout the construction phase. Maintenance checks must be prioritised after high rainfall events and observed damage must be immediately repaired. • Stormwater run-off controls must be implemented	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	across the site in order to reduce the risk of concentrated run-off entering the downstream watercourse habitat.			
Cultural Historic, Archaeological and Palaeontological Features	• The Project Engineer must ensure that all staff are trained to recognise potential cultural historic, archaeological and palaeontological artefacts and sites. The Resident Engineer must also ensure that a system is in place to cease activities if such a site is identified. • Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the find brought to the immediate attention of the Resident Engineer who will report it to the Gauteng SAHRA. The area will be fenced off with a radius of 20m around the unearthed item, demarcated as a no-go area and access will be prohibited. • The Project Engineer must then arrange for the appointment of a qualified archaeologist to examine the site and recommend further action. • Following consultation with the archaeologist and SAHRA, the PE will be responsible for approving the Contractor‟s resumption of normal activities. • Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site. • Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51.(1).	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	• A Cultural Historic, Archaeological and Palaeontological Method Statement incorporating the above procedures and the site clearance Programme, including timing, physical boundaries, the maximum depth of excavations and programming of these excavations, must be submitted by the appropriate contractor(s) to the Resident Engineer for approval. • Human remains confirmed younger than 60 years (to be confirmed by the police forensic unit or archaeologist) are to be reported directly to the nearest police station.			
Air Quality Management	• Using environmentally acceptable suppression methods where appropriate. • Covering long-term stockpiles or temporarily re-vegetating them. • Halting dust generating activities when wind speed exceeds 35 km/h. • Imposing a 25 km/h speed limit on access roads. • Re-vegetating exposed areas during the operating phase. • Prompt rehabilitation and wetting down of recently cleared areas to minimize dust creation. • Stockpiles (e.g. soil) should be maintained for as short a time as possible and should be enclosed by wind breaking enclosures of similar height to the stockpile. Stockpiles should be situated away from the site boundary, access roads. • Until vegetation used in rehabilitation efforts has established, temporary stabilization methods must be used (e.g. protecting exposed soils with coarse granular	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	materials, mulches, or straw). • Construction should be undertaken in a phased manner, to limit the size of the area to be exposed at any one time. • The Contractor will be responsible for the continued control of dust arising from his operations. Should a dust control method prove to be ineffective by the Project Manager and ECO, alternative methods will need to be conducted by the Contractor. Any changes in the dust control methods shall be for the cost of the Contractor. • Any complaints about dust recorded in the complaints register must be immediately investigated by the Resident Engineer and addressed. Contact details (e.g. telephone number) should be located at the entrance of the site for reporting of excessive dust after hours. • No waste, vegetation or any other material may be burnt on site. • Trucks transporting any form of soil or waste should be covered with a tarpaulin. • The speed of the traffic on the access roads needs to be kept slow (25 km/h) to curb any unnecessary dust. • No waste may be buried on site. • Approved Air Quality Method Statements. • Excessive dust generation as determined visually by the ECO, Resident Engineer or his representative is not permitted.			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
Noise Management	• Where possible the contractors must use equipment, which limits excessive noise generation. • Within reason, any complaints pertaining to excessive noise and vibrations as recorded in the complaint register must be investigated by the Resident Engineer and addressed. • Construction activities to be limited to weekdays between 08:00 and 17:00. No work is to be undertaken on Sundays or public holidays. • Vehicles and machinery to be kept in good working order with the prescribed mufflers and silencers. • A Noise and Vibration Method Statement must be submitted by the appropriate contractors to the Resident Engineer for approval. • No loud music will be allowed on • No construction staff to be housed on site.	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**
Water use	• Opportunities to reduce consumption of, or re-use water must be adopted wherever possible. • 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. • A Water Consumption Method Statement must be submitted by the appropriate contractor(s) to the Resident Engineer or his representative for approval by the ECO. • Potable water tanks must be installed at the construction site for human consumption and sanitation purposes. The contractor will ensure safe drinkable	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	water for the labourers during the construction phase.			
Water Quality and Stormwater Management	• The Project Engineer must ensure that all precautions are taken to ensure that no surface or ground water becomes polluted. • Ensure all construction machinery is in sound working order and free of leaks from oil, fuel or hydraulic and excessive exhaust fume emissions. • Establish a dedicated area for construction vehicles, machinery or equipment to refuel and where cement can be mixed. Vehicle re-fuelling and cement mixing must only take place on impervious surfaces. • No vehicle must be refuelled, serviced or repaired on the construction site, except in designated areas. Only emergency repairs to be conducted on site, all regular service maintenance to be conducted off site. • Temporary storm-water runoff basins and drainage ditches may have to be constructed on site, in order to capture storm-water. • Wherever possible, drainage works should seek to mimic natural drainage patterns and utilise natural drainage lines with retained vegetation. • Anti-erosion measures must disperse run-off to reduce the volume and velocity of surface water flow and vulnerable areas to be stabilised. • Sedimentation into downstream drainage lines must be minimised through the effective stabilisation (e.g. gabions and Reno mattresses) and the re-vegetation of cleared areas.	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	• Details of storage of all chemicals must be submitted to the Project Engineer, ESO and ECO for approval. • Emergency plans must be in place in case of spillages onto road surfaces and/or open areas. Spill kits for small spills to be kept on site. • Contaminated soil (e.g. in vehicle parking areas, under generators) must be removed to an appropriate permitted solid waste disposal facility. Waste manifests to be kept by contractors to prove legal disposal of contaminated soil. • Environmental awareness training must ensure that staff is aware of the need to prevent water pollution.			
Cement and paint wash bay	A Paint Brush Wash Bay must be setup on site: 1. Location: Minimum 10 m away from stormwater drains, wetlands, watercourses, or open soil, placed on flat, stable ground, easily accessible for workers but away from sensitive areas. 2. Concrete slab area: 2 m x 2 m minimum, Height of bund walls: 150–200 mm. 3. Base and Containment: Surface: Reinforced concrete or heavy-duty plastic tray with an impermeable liner, Bunding: Around all sides to contain runoff, Slope: Slight slope (1–2%) to direct wash water to drainage channel 4. Equipment and Layout: Raised brush grate or wash platform: For draining and cleaning, Paint residue	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	capture screen or mesh: To prevent solids entering the sump, Sediment trap or sump pit: For paint solids and sludge, Sealed wastewater tank: Minimum capacity: 500–1000L, depending on site use, Drum storage for dried paint solids, lids on at all times. The Mobile PaintWash can also be used: •  The Mobile PaintWash can also be used for storage when empty, and has no moving parts or expensive filters. 5. Drainage and Disposal: All wash water must be directed to the collection tank, no discharge into the environment or drains, wastewater must be removed regularly by a licensed waste handler. Keep waste disposal records on-site. 6. Signage and Access: Sign reading: "Paint Brush Wash			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	Bay – No Discharge to Drains – Use Only for Cleaning Paint Equipment". Access restricted to trained personnel. Site induction includes paint wash bay use procedure. 7. Maintenance: Inspect weekly for: Sludge buildup, Overflow or leakage, Integrity of bunds and collection tank, Replace screens/filters as needed, Maintain log of inspections and waste removal.			
Waste Management	• Good housekeeping to be always undertaken. No illegal dumping or burning of waste allowed. Waste may not be buried. • Environmental awareness training to be undertaken with the construction workers regarding health and environmental impacts from illegal dumping. • Toilet facilities must be made available to construction staff. If portable chemical toilets are used, these are to be secured to the ground and cleaned weekly. Water should be provided for washing and sanitary bins for women. Waste to be disposed of at a wastewater treatment works. • A system for identifying, classifying and disposing of solid waste must be devised. • Waste should be classified as domestic (including litter), hazardous, or recyclable. • Waste materials (e.g. paper and glass) must be sorted and sent for recycling, where the quantity allows this and if the facilities are available.	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	• No littering is permitted on site; litterbins with secured lids must be provided throughout the site. • Centralised eating facilities must be provided for workers to facilitate litter control. • All non-hazardous solid waste must be removed on a regular basis and disposed of off-site at suitably permitted waste facilities. This includes any building rubble left after construction. • The Contractor may utilise the municipal waste collection services for disposal of waste. • Hazardous materials must only be disposed of at an approved hazardous waste disposal facility. No hazardous waste material to be disposed of as general waste. • A register of waste disposal (including waste manifests) and sorting records must be retained by the contractors and submitted to the Resident Engineer for auditing purposes. • Appropriate temporary disposal areas must be covered and be on an impermeable floor. • Excess soil and stone removed during the excavations should be used in site levelling or contouring. • Excess material not being reused, should be removed from the site and disposed of at a registered waste site landfill site. • A Waste Management Method Statement must be submitted by the appropriate contractor to the Resident Engineer for approval. • The requirements of the Waste Act (Act 59 of 2008),			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	Health Act (Act 50 of 1992) and the National Environment Management Act (Act 107 of 1998) are applicable to waste management.			
Hazardous Material Management	• Fuel, solvents and other hazardous or toxic substances must be securely stored in a restricted, locked facility approved by the Resident Engineer. • Fuel and hazardous materials containers must be properly labelled. • Chemicals must be stored safely on site, on an impermeable lined surface and surrounded by lined bunds. Chemical storage containers must be inspected daily so that any leaks are detected early. • Storage facilities must be maintained and fire-fighting equipment is to be available and kept in good operating order at all times. • An emergency response plan (ERP) for fire and to manage the capture and treatment of polluted water, must be prepared by the applicant. These ERP's must be made known to the Contractors, and RE, and all staff at the env awareness presentations. • Generators and fuel supply needed for equipment during the construction phase must be placed on trays, which rest on clean river sand. This is to prevent any oil or fuel spills. The river sand (clean or contaminated) must be removed from the site once construction has been completed. All contaminated material must be disposed of at a registered hazardous waste disposal facility. Vehicles are also to be parked over drip trays. • No cement or concrete should be mixed on the soil	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	surface or on plastic sheeting. • A Fuels and Hazardous Materials Storage Method Statement must be submitted by the appropriate contractor to the Resident Engineer for approval.			
Traffic Management	• Flag-men to be posted when construction works are being undertaken adjacent to main or secondary roads. • Signage is to be displayed regarding construction activities. • Construction vehicles are to keep to the speed limits. • Regular maintenance of roads during construction phase.	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**
Socio-Economic, Health, Safety and Security	• Adequate ablution facilities and chemical toilet facilities must be placed on site and maintained in good order for the duration of the construction phase. Toilets must be secured to the ground. Toilets should be removed from site when construction is completed. Waste must be disposed of at a registered waste site. • Adequate clean drinking water must be available to construction staff at all times during the construction period. • An area must be demarcated for staff to conduct all necessary cooking activities. The site must be selected to ensure that there is no risk of fires. • Work crews are not to be housed on site. • Awareness training to be undertaken with the construction workers regarding health and environmental impacts from illegal dumping. • Security to be provided after hours to protect	During construction	Full compliance with EMPr requirements	**Contractor, ESO, ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	equipment in the construction camp. • Excavations to be demarcated with orange netting. Excavations are to be checked daily, prior to work commencing, for any animals. • Shoring of excavations to ensure the safe workings of site staff. • The construction area must be demarcated and access controlled for the duration of the construction period. • Signage is to be displayed regarding construction activities. • Construction vehicles must adhere to speed limits and must be acutely aware of people walking and living in and around the construction activities. • A health and safety method statement/program is essential. • General risks associated with the construction activities should be addressed through compliance with the relevant health and safety procedures and regulations. • Access to and from the construction site(s) should be closely monitored and contractors should be required to make the necessary arrangements for the transport of workers to and from the site on a daily basis. • Visitors to report to the Site Office, and appropriate Protective Personal Equipment (PPE) to be worn by visitors. • Discuss the safety and security issues, as well as construction schedule with the local community policing forum and local SAPS. • Adjacent landowners are to be notified 14 days prior to			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	construction commencement. • Fire-fighting equipment in proportion to the fire risk that is presented by the type of construction and other on-site activities and materials used on site is to be available and kept in good operating order at all times. • Any welding or other sources of heating of materials must be done in a controlled environment, under appropriate supervision, in such a manner as to minimise the risk of fires and/or injury to staff. • Smoking is not permitted on site. • A policy of employing local people should be implemented wherever possible. This will ensure that benefits of the construction are provided to local communities and will prevent an influx of job seekers to the site. This policy must be finalised before the hiring of sub-contractors. • Local sub-contractors should be employed wherever possible to maximise the localised economic benefits of the project. • A mechanism must be established to receive and address complaints from the staff.			
Final Clean-Up and Close of Construction	• Remove all construction debris, excess material, formwork, scaffolding, and temporary structures from the site, including the wetland buffer and access routes. • Rehabilitate temporary construction laydown areas and access tracks (especially in the wetland buffer) by: - Scarifying compacted soils. - Spreading stockpiled topsoil. - Seeding/planting with locally indigenous species			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	matching the surrounding vegetation. • Stabilise exposed soils with mulch, brush-packing, or erosion-control matting. • Remove all temporary sediment control structures (e.g., silt fences, sandbags) only after vegetation cover is ≥80% established. • Clear all litter and construction waste from the wetland channel, banks, and buffer zone. • Ensure no foreign construction material (cement residue, metal offcuts, cable ties, geotextile scraps) remains in the wetland system. • Inspect all stormwater management infrastructure for: • Blockages from construction debris. • Sediment accumulation to be removed and disposed at an approved facility. • Confirm bridge culvert inlets and outlets are free of obstructions and erosion protection is intact. • Remove: Site offices, toilets, storage containers, and fencing (except permanent safety barriers). • Construction signage, except those required for operational safety. • Temporary haul roads or crossings, unless authorised as permanent. • Conduct a final sweep for hydrocarbons (oil stains, diesel spills) in plant areas — remediate contaminated soil. • Empty and remove all hazardous waste storage drums, bins, and skip containers. • Provide disposal certificates for all waste streams			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	(general & hazardous). • ECO to complete a Final Close-Out Audit, confirming: – All rehabilitation actions are implemented. – No construction waste remains on site. – Wetland buffer vegetation is established. • Record before-and-after photos of key rehabilitation areas. • Sign-off by ECO and Developer before the site moves to operation phase. • Hand over an Operational Phase EMPr to the HOA/body corporate for ongoing wetland and landscaping management.			
Operation: This section presents the environmental requirements for the operational activities of the Greengate X 140 high density township				
Impacts on the wetland	• Inspect the box culvert structure for cracks, blockages, undercutting, or erosion at inlets/outlets. • Assess re-vegetated and rehabilitated wetland/bank areas for vegetation survival (>80% cover within 12 months). • Remove excess sediment build-up inside culvert and at outlets if flow capacity is reduced. • Eradicate invasive alien plants (e.g., *Arundo donax*, *Typha capensis* if problematic, *Populus* spp.) from wetland buffer zone. • Ensure stormwater channels and energy dissipation measures (rip-rap, gabions) remain intact and functional. • Monitor for oil, fuel, and chemical spills from vehicles	Quarterly for first year; bi-annually thereafter. Quarterly during first two growing seasons, then annually. Annually, before rainy season. Bi-annually or as required. Quarterly inspections, and after >20 mm rainfall events.	• Maintain healthy indigenous wetland vegetation; remove invasive alien plants. • Prevent sediment choking of culvert; maintain hydraulic capacity. • Preserve wetland ecosystem and prevent spread of invasives. • Prevent scouring, bank	**Applicant, HOA, landscape architect, Engineers, facility manager, Aquatic ECO**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	using the bridge; clean immediately if detected. • Prevent litter dumping in wetland area through signage, bins, and periodic clean-ups. • Ensure barriers, handrails, or signage remain intact and functional where required. • HOA must maintain records of all inspections, maintenance works, vegetation rehabilitation, and incidents.	Monthly inspections and during stormwater checks. Ongoing; annual summary report to be compiled.	collapse, or alteration of wetland hydrology. • Maintain wetland as a litter-free, functioning ecosystem. • Demonstrable compliance with EMPr and environmental authorisation conditions.	
Site clean-up	Clear and completely remove all construction plant, equipment, storage containers, temporary fencing, temporary services, fixtures, waste and any other temporary construction works, from the site.	End of construction phase, beginning of operational phase	No waste or litter left on site	**Contractor and developer. ECO and landscape architect**
Vegetation and landscaping management	• Plant only locally indigenous wetland-appropriate species in the wetland buffer (e.g., *Cyperus textilis*, *Juncus kraussii*, *Phragmites australis*, *Aristida junciformis*). • Avoid planting any Category 1a, 1b or 2 alien invasive species in the township or buffer. • Implement a bi-annual alien vegetation removal programme. • Use manual or mechanical removal in the wetland buffer to avoid herbicide runoff into the seep. • Dispose of alien plant biomass at an approved waste facility, do not stockpile within the wetland or buffer. • No turf grass, paved surfaces, or permanent structures allowed within the demarcated wetland buffer.	Operational Township • Quarterly inspections to: • Check vegetation health and replace dead plants. • Remove any dumped garden refuse or litter. • Ensure landscaping remains	A well-designed landscaping strategy in the operational township which contributes to improving the biodiversity of the site, climate resilience, water efficiency, and overall environmental sustainability. Integrating green infrastructure and sustainable land management to reduce environmental impacts.	**Applicant, HOA, complex manager, landscape architect**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	• No ornamental exotic plants in common areas or stormwater management zones that drain into the wetland. • Maintain permeable landscaped surfaces to reduce stormwater runoff and erosion. • Install physical barriers or signage to prevent pedestrian shortcuts or vehicle access into the wetland buffer. • Designate controlled access points for maintenance staff. • Erect interpretive signage explaining the wetland's ecological value. • Establish and maintain dense indigenous groundcover in all disturbed buffer areas to prevent sediment runoff. • Progressive reinstatement of disturbed areas on an ongoing basis, immediately after the specified construction activities for that area are concluded, must be implemented on site. • All topsoil removed for any reason during construction must be used for landscaping or to rehabilitate any areas disturbed by construction works, that will form a part of landscaping plans. • Indigenous grass and shrubs should be planted in areas which are devoid of vegetation and within the landscaped gardens • Landscaping of gardens, and all open areas must be undertaken by qualified landscapers, and only indigenous trees, grasses and other plants are to be used for landscaping purposes and must be water-wise	consistent with approved indigenous planting plan.		

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	Indigenous plant species. • Hydroseed any open areas devoid of vegetation. • Remove all exotic and invasive plants in the area (as required), as well as within the road reserves. • Rainwater harvesting should be undertaken and used for garden watering			
General Township Waste Management	• All waste will be disposed of by the municipality, as agreed by the service agreements and bulk service contributions. • General waste generated by the township will be disposed of at a registered landfill site as agreed by the municipality • General waste must be sorted on site into the various waste types and recycled accordingly	Operational phase	• A well-implemented waste management strategy • Improve public health • Reduce pollution • Conserve resources • Create economic opportunities through recycling and reuse initiatives. By adopting sustainable waste practices, the township can move towards a circular, low-waste economy that benefits both the environment and the community.	**Applicant Development Manager** **Local Municipality**
Energy and water consumption	• Energy saving methods as per the BAR must be implemented over a long-term period for the operational township. • Alternative energy sources such as gas and solar panels must be considered for the long-term operation of the township. • Install low flow faucets, smaller toilets, and low flow showerheads in all office areas of the developments	Operational phase	Incorporation of alternative energy sources and low water use into all buildings.	**Applicant, PE** **Development Manager** **Architect**

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	TARGET	RESPONSIBILITY
	• Install Geysers timers • Install Solar geysers • Installation of Solar panels with battery backup and inverter systems to run a lights and other operations within the various warehouses and for the various industries. • Install Sky lights, to enhance natural light use in the core of the building. • Install LED lighting around and inside all buildings. LED's use less energy and last longer than traditional incandescent bulbs.			
Erosion and stormwater management	• Attenuation ponds must be maintained and desilted as and when required.	Operational phase	• Manage runoff to prevent flooding • Reduce pollution • Support groundwater recharge • Water quality improvement sustainable drainage • Biodiversity enhancement	**Applicant, HOA** **Development / facilities Manager**
Final ECO Audit and sign-off	• A close-out audit must be conducted by the ECO following the post-construction and rehabilitation activities.	Once all construction activities on site are completed	Full compliance with the EMPr	**Applicant, HOA, ECO**

13. DECLARATION OF ADHERENCE TO THE ENVIRONMENTAL MANAGEMENT PLAN

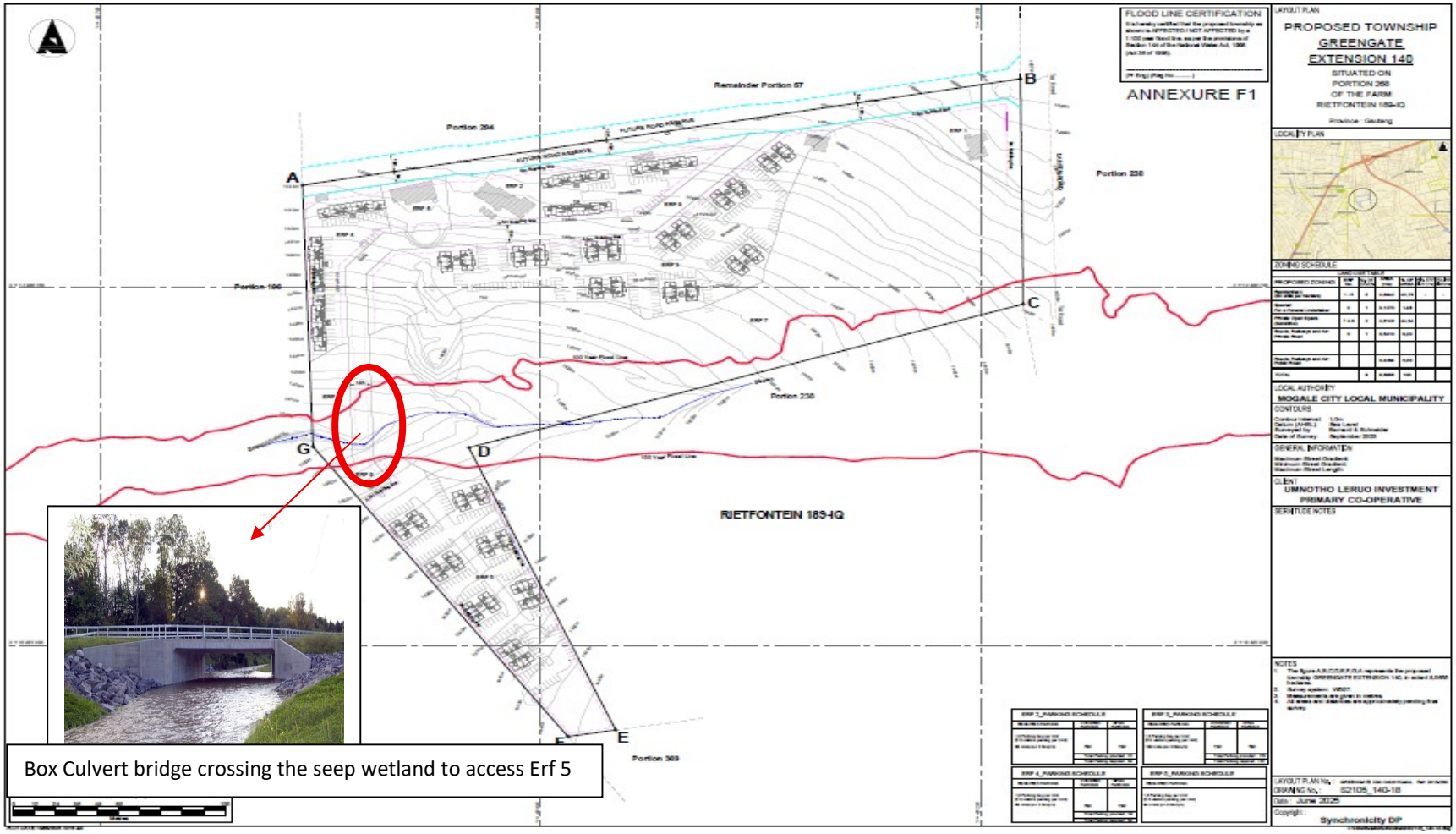
All persons involved must be made aware of the environmental goals and policy of the Applicant, and of the appointed project contractors, and must be encouraged to develop a commitment to compliance with the environmental legislation.

The appointed Contractor must sign declarations of adherence to the EMPr, stating the following:

- That the conditions of the authorisation were brought under their attention and that they have read and understood the contents of the Environmental Management Programme, all its contents, and agree to adhere to all the specified requirements.
- That they understand their responsibilities in terms of enforcing and implementing the Environmental Specifications as set out in the various documents for the project site.
- That they also undertake to inform all persons under their supervision of such specifications.

See Appendix 7

APPENDIX 1: GREENGATE X 140 TOWNSHIP LAYOUT PLAN



Box Culvert bridge crossing the seep wetland to access Erf 5

APPENDIX 2: EAP PROFILE, CV AND DECLARATION OF INDEPENDENCE

1. DECLARATION BY THE EAP

I, _____, declare that –

- I act as the independent environmental assessment practitioner in this application;
- I have expertise in conducting environmental impact assessments, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I will take into account, to the extent possible, the matters listed in Regulation 13 of the Regulations when preparing the application and any report relating to the application;
- I undertake to disclose to the applicant and the Competent Authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the Competent Authority; and - the objectivity of any report, plan or document to be prepared by myself for submission to the Competent Authority, unless access to that information is protected by law, in which case it will be indicated that such information exists and will be provided to the Competent Authority;
- I will perform all obligations as expected from an environmental assessment practitioner in terms of the Regulations; and
- I am aware of what constitutes an offence in terms of Regulation 48 and that a person convicted of an offence in terms of Regulation 48(1) is liable to the penalties as contemplated in Section 49B of the Act.

Disclosure of Vested Interest (delete whichever is not applicable)

- I do not have and will not have any vested interest (either business, financial, personal or other) in the proposed activity proceeding other than remuneration for work performed in terms of the Regulations;

- I have a vested interest in the proposed activity proceeding, such vested interest being:

_____

_____

_____

_____

Signature of the Environmental Assessment Practitioner

Name of Company:

Date

2. UNDERTAKING UNDER OATH/ AFFIRMATION

I, _____, swear under oath / affirm that all the information submitted or to be submitted for the purposes of this application is true and correct.

Signature of the Environmental Assessment Practitioner

Name of Company

Date

Signature of the Commissioner of Oaths

Date

APPENDIX 3: METHOD STATEMENTS FOR THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP

The MS should be submitted at least 7 working days prior to the commencement of work to the ECO.

For each instance where it is requested that the Contractor submit a MS to the satisfaction of the ECO, the format should clearly indicate as a minimum the following:

- Responsible person (Name and Identity Number) and an alternative (Name and Identity Number);
- The applicable requirements provided in all legislation and policies which have a bearing on the proposed activities;
- Training Requirements;
- Timing of activities as per the Project / Construction Schedule;
- Materials, plant and equipment to be used;
- Proposed construction procedure, including the order in which the activities making up the procedure will be carried out, designed to implement the relevant environmental specifications;
- The system to be implemented to ensure compliance with the above;
- Personal Protection Equipment (PPE) required;
- A detailed description of the process of work, methods and materials;
- Emergency Procedures;
- Response in the case of a non-compliance; and
- Other information deemed necessary by the ECO.

All MS must be signed by the Engineer; and works may not commence until the MS has been approved by the ECO. All MS will form part of the CEMPr documentation and are subject to all terms and conditions contained within the CEMPr main document.
A method statement can be requested or proposed when an activity is either not included in the EMP at all, if the EMPr specifications for an activity are not deemed adequate, if an activity is required that is not allowed by the EMPr, etc. In other words, when the EMPr does not give enough information to manage the environmental impact of a specific activity.

A method statement is defined as a written submission by the Contractor setting out the plant, materials, labour and method proposed to carry out an activity. Method statements must provide enough detail so that the environmental impact of the activity can be assessed. Method statements must therefore be submitted well in advance of the activity (usually at least 5 days but sometimes more).

Method statements are an extension of the EMPr, are also legally binding and are intended to ensure that the environmental implications of an activity outside of the EMP can be addressed.

Method statements usually require the approval of the engineer, the ECO/ESO, etc. before the activity can take place. If such an activity takes place without approval and result in environmental damage, the contractor is responsible for the cost of rehabilitation/clean-up/etc.

The following MS'S must as a minimum be prepared by the Contractor for approval:

1. Site layout and establishment

The Contractor shall provide a Site Layout Plan and the method of establishment of the construction camp, i.e., all offices, accommodation facilities, cement batching areas, storage and stockpiling areas, workshops and all other areas/facilities required for the undertaking of activities required for completion of the project must be provided. The Site Layout Plan shall include the location, demarcation and layout of waste storage areas, ablution facilities, eating areas, parking areas, access points, stockpiling and spoil areas, No-Go areas, and hazardous material storage areas. The Contractor should indicate the proposed lighting and security measures to be used. The decommissioning and removal of these facilities on completion of construction works shall also be detailed.

2. Site clearing

The Contractor shall provide a site clearing Method Statement for all areas where the Contractor is required to, or intends to, clear vegetation within the development footprint. The Method Statement shall clearly indicate, when the clearing will happen, what will be cleared and how this will be done, where and how cleared material would be stored or disposed of. This Method Statement will also detail the setting aside of topsoil for rehabilitation/landscaping.

3. Cement and concrete batching

The Contractor shall provide a Method Statement detailing the storage of cement, concrete batching areas and methods, method of transporting cement and concrete, storage and disposal of used cement bags, etc. The Contractor shall provide details of how cement mixing/batching will be done and what measures will be taken to prevent soil and ground contamination.

4. Traffic control and accommodation

The Contractor shall provide a Method Statement, indicating the access points and routes to the site and haul roads, location of parking areas, and detailing how traffic is to be accommodated within the development during the construction phase. Cognisance must be taken of any No-Go areas.

5. Construction and hazardous waste control system

The Contractor shall provide a Method Statement detailing how construction and hazardous waste will be controlled and managed on the site (storage, provision of bins, site clean-up schedule, bin clean-out schedule, rubble disposal/reuse, rubble removal frequency etc.).

6. Wastewater control system

The Contractor shall provide a Method Statement detailing how wastewater would be collected from all wastewater generating areas, as well as storage and disposal methods. If the Contractor intends to carry out any on-site wastewater treatment, this should also be included.

7. Dust control

The Contractor shall provide a Method Statement detailing how potential dust and windblown sand will be monitored, maintained and addressed on-site. The Contractor will consider the recommendations in this CEMP while bearing in mind that these are not the only available solutions.

8. Soil erosion prevention and sedimentation control

The Contractor shall provide a Method Statement detailing the measures to be undertaken to prevent and mitigate possible erosion and sedimentation issues on-site, methods to be used, and details on the rehabilitation of areas disturbed as a result of erosion and sedimentation.

9. Hazardous substances & Emergency Procedures

The Contractor shall provide a Method Statement detailing what hazardous substances/materials will be used during construction, as well as the storage, handling, and disposal procedures for each substance. This includes materials such as rubble, soil and water contaminated with hazardous substances. The Method Statement should also include an Emergency Procedure Plan that details the procedures that will be undertaken when leaks or spillage of fuels oils or other hazardous substances occur during the construction phase. This Method Statement shall in no way override, replace, void or offer any exemption from any relevant legislation nor the requirements of the OHS Act.

10. Landscaping and Rehabilitation

The Contractor shall provide a Method Statement detailing the rehabilitation works and methods required for the rehabilitation of disturbed areas. The Method Statement must include rehabilitation relating to plant species (all indigenous and suitable to the vegetation type), plant numbers, irrigation and establishment, planting methods etc. The Contractor must also include the approved Landscaping Plan (if applicable).

Description of the Activity:			
Project Name	**GREENGATE X 140**	**Project Ref:**	
Site address / location		**Start Date / Time:**	
		Finish Date / Time:	
	Name	**Responsibility**	
Personnel Involved			
Works Supervisor:		Contact Details:	
WHAT work is to be undertaken			
WHERE are the works to be conducted			
HOW are the works to be undertaken			
Specific identified impacts to be avoided on site			

Note: **please give too much information rather than too little. Please ensure that issues such as emergency procedures, hydrocarbon management, wastewater management, access, individual responsibilities, materials, plant used, maintenance of plant, protection of natural features etc. are covered where relevant**.

APPENDIX 4: DECLARATION OF ADHERENCE TO THE METHOD STATEMENT FOR THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP: *CONTRACTOR*

I, _____, in my capacity as

_____ understand the contents of this Method Statement and the scope of the works required of me. I further understand that this Method Statement may be amended on application to and with approval by the Engineer, and that the SHE Coordinator, Construction Manager and ECO will audit my compliance with the contents of this Method Statement, pertaining to the GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP located on a part of Portion 268 of the farm Rietfontein 189 IQ, Muldersdrift, Mogale City Local Municipality.

Signed:_____

Date:_____

APPENDIX 5: ENVIRONMENTAL MANAGEMENT SITE PLAN FOR THE GREENGATE X 140 TOWNSHIP LOCATED ON A PART OF PORTION 268 OF THE FARM RIETFONTEIN 189 IQ, MULDERSDRIFT, MOGALE CITY LOCAL MUNICIPALITY

The following issues must be addressed and shown on the **annotated Environmental Management Site Plan**, *prior to construction activities commencing on site:*

PLANNING ISSUE	DESCRIPTION	RESPONSIBLE PARTY
Sequence of events	Description of the nature of the process required. 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 Project Developer.	Applicant, Contractor, Resident Engineer
Health and safety	• Potential risks and hazards and precautions that will be taken. • Cooking area, hazardous materials site, first aid kit, fuel store, security issues, fire control. • Safety of surrounding sensitive receptors (e.g. residents and road • users).	Applicant, Contractor, Resident Engineer
On site toilets	• How many required for the particular development? • How long are the toilets required on site? • Location of toilets (Site Plan)	Contractor, Resident Engineer
Workforce	• Number of on-site workers • Training of workforce in terms of environmental awareness • Management of workforce, particularly sub-contractors	Contractor, Resident Engineer
Transport and traffic	• Transport required for site workers • Routes to be used by construction vehicles	Applicant, Contractor, Resident Engineer
Infrastructure and associated equipment	• Nature and extent of infrastructure construction	Contractor, Resident Engineer
Earthworks/cleaning	• Volume of material to be excavated/cleaned • Duration of operations • Where stocks to be kept on site (Site Plan)	Contractor, Resident Engineer

	• How long to be kept on site • Where, when and how to be disposed of	
Equipment needed for construction activities	• Area required for material and equipment storage • Duration of works • Nature of equipment and necessary materials	Contractor, Resident Engineer
Drinking water	• Quantity required • Duration of period in which required • Source of water • Location of potable water (Site Plan)	Applicant, Contractor, Resident Engineer
Cooking/Eating/Rest areas	• Area required • Equipment required e.g. gas stoves, matches etc. • Location - must take into consideration the vegetation conditions • (Site Plan)	Applicant, Contractor, Resident Engineer
Existing structures	Indication of location of any structures that need to be removed and/or protected	Applicant, Contractor, Resident Engineer
Life of project	• Working hours • Time frame	Applicant, Contractor, Resident Engineer
Construction site	• Work area required • Location of construction site and work area (Site Plan)	Applicant, Contractor, Resident Engineer
Environmentally sensitive areas and possible environmental risks associated with construction activities	A training programme 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	Applicant, Contractor, Resident Engineer
Waste management	• Litter drums - number, type, size, location (Site Plan) • Construction of a waste transfer station within the site boundaries • Closest registered waste disposal site (Location map) • Waste management plan • Recycling / material re-use options	Applicant, Contractor, Resident Engineer

Appendix 6: ENVIRONEMNTAL COMPLAINTS RECORD SHEET: FOR THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP LOCATED ON A PART OF PORTION 268 OF THE FARM RIETFONTEIN 189 IQ, MULDERSDRIFT, MOGALE CITY LOCAL MUNICIPALITY
COMPLAINT RAISED BY:
COMPLAINT:
PROPOSED REMEDIAL ACTION:
Signature: _____ Date: _____
NOTES BY ESO:
ECO: _____ Date: _____ Site Manager: _____ Date: _____
NOTES BY ECO:
ECO: _____ Date: _____ Site Manager: _____ Date: _____

APPENDIX 7: DECLARATION OF ADHERENCE TO THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN FOR THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP LOCATED ON A PART OF PORTION 268 OF THE FARM RIETFONTEIN 189 IQ, MULDERSDRIFT, MOGALE CITY LOCAL MUNICIPALITY: *APPLICANT*

I, _____, in my capacity as **applicant and land owner,** hereby declare my adherence to the contents of the CEMPr compiled for THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP located on a part of Portion 268 of the farm Rietfontein 189 IQ, Muldersdrift, Mogale City Local Municipality, Construction Activities.

I declare that:

- I have read and understood the contents of the Construction Environmental Management Programme and agree to adhere to all the specified requirements.
- I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications as set out in the various documents for the project site.
- I undertake to inform all persons under their supervision of such specifications.

Signed: Date:

APPENDIX 8: DECLARATION OF ADHERENCE TO THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN FOR THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP LOCATED ON A PART OF PORTION 268 OF THE FARM RIETFONTEIN 189 IQ, MULDERSDRIFT, MOGALE CITY LOCAL MUNICIPALITY: *CONTRACTOR*

I, _____, in my capacity as the **appointed contractor,** hereby declare my adherence to the contents of the CEMPr compiled for the GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP located on a part of Portion 268 of the farm Rietfontein 189 IQ, Muldersdrift, Mogale City Local Municipality, Construction Activities. I declare that:

- I have read and understood the contents of the Construction Environmental Management Programme and agree to adhere to all the specified requirements.
- I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications as set out in the various documents for the aforementioned site.
- I undertake to inform all persons under their supervision of such specifications.

Signed: Date:

APPENDIX 9: DECLARATION OF ADHERENCE TO THE CONSTRUCTION ENVIRONMENTAL MANAGEMENT PLAN FOR THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP LOCATED ON A PART OF PORTION 268 OF THE FARM RIETFONTEIN 189 IQ, MULDERSDRIFT, MOGALE CITY LOCAL MUNICIPALITY: *RESIDENT ENGINEER*

I, _____, in my capacity as the **appointed Resident Engineer** (RE), hereby declare my adherence to the contents of the CEMPr compiled for THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP located on a part of Portion 268 of the farm Rietfontein 189 IQ, Muldersdrift, Mogale City Local Municipality, Construction Activities. I declare that:

- I have read and understood the contents of the Construction Environmental Management Programme and agree to adhere to all the specified requirements.
- I understand my responsibilities in terms of enforcing and implementing the Environmental Specifications as set out in the various documents for the aforementioned site.
- I undertake to inform all persons under their supervision of such specifications.

Signed: Date:

APPENDIX 10: DECLARATION OF ADHERENCE TO THE FOLLOWING DUTIES FOR THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP LOCATED ON A PART OF PORTION 268 OF THE FARM RIETFONTEIN 189 IQ, MULDERSDRIFT, MOGALE CITY LOCAL MUNICIPALITY: *ENVIRONMENTAL SITE OFFICER (ESO)*

I, _____, in my capacity as

_____ hereby declare my understanding and adherence to my duties as follows: Liaison with the appointed ECO; Ensuring environmental awareness among members of the workforce; ensuring that the Contractor/s and members of the construction workforce are aware of the requirements of the CEMPr; the daily on-site implementation of the CEMPr; monitoring inappropriate behaviour from the work force that will cause negative environmental impacts, including pollution and environmental incidents; and the implementation of corrective action, pertaining to THE GREENGATE X 140 HIGH DENSITY RESIDENTIAL TOWNSHIP located on a part of Portion 268 of the farm Rietfontein 189 IQ, Muldersdrift, Mogale City Local Municipality.

Signed:_____

Date:_____

ANNEXURE 11: WASTE MANAGEMENT PLAN

A Waste Management Plan (WMP) outlines measures and procedures for the appropriate handling, storage and disposal of wastes generated during the entire project lifecycle (pre-construction, construction and operational phases).

The objectives of the WMP are to:

- Formalise waste handling, transfer and disposal activities associated with waste from the Industrial township;
- To prevent inappropriate management of waste and associated risk of pollution of the environment;
- To facilitate waste minimisation entailing avoidance, reduction, reuse, recycling or treatment before disposal;
- To streamline waste segregation, storage, and disposal and promote resource recovery from waste;
- To contain, control and dispose of waste in accordance with the required waste management practices (e.g. waste segregation);
- To define responsibilities for waste management at the various levels of operation associated with the development;
- To provide a framework for the selection of waste management service providers in line with cradle to grave principles.
- To provide actions and guidelines to ensure that waste management is undertaken in line with Existing South African waste management legislation, waste management guidelines and policies; and international best practise (Waste Hierarchy).

In accordance with international trends, the management of all waste streams that will be generated at the warehouse should demonstrate support for the Hierarchy of Waste Management (HWM), which aims to promote the re-use and recycling of wastes, giving effect to the concept of 'cradle-to-cradle' waste management. The aim of the Waste Management Plan is to minimize the amount of waste disposed of, and as such, a waste hierarchy is followed:
Prevent → Minimise → Reuse → Recycle → Recover, and only then, → Dispose.

As this section forms part of the CEMPr, the overall responsibility of ensuring compliance with the Waste Management Plan ultimately lies with the Applicant.

Planning phase*: Permits and permissions*

- In order to comply with legislation, the following storage volumes may not be exceeded without a Waste Management License
  - General Waste: -100m3
  - Hazardous Waste: 35m3
- Finalize agreements and programmes with the Local Municipality regarding the disposal of domestic waste at the nearest landfill, particularly in terms of initial cleanup volumes (existing dumping) required for this rehabilitation project.

Construction Phase:

Good management practices

- Ensure that all personnel are familiar with waste management requirements on site;
- An adequate number of refuse bins must be provided at the construction sites. refuse bins must be equipped with a closing mechanism to prevent their contents from blowing out and from scavenging animals.
- Ensure that personnel make use of the refuse bins provided;
- Empty refuse bins for disposal at least once per week, but more often if required;
- Ensure that rubble, litter, and disused construction materials are appropriately stored (if not removed daily) and then disposed regularly at licensed waste facilities.
- If there is a shortage of space and not enough room for multiple skips the principal contractor should employ a licensed waste management company to deal with waste,
- Onsite recycling containers and/or areas must be clearly marked.
- The working areas and storage sites must be cleared of litter on daily basis. The contractor will maintain 'good housekeeping' practises as ensure that all work sites and construction camp are kept tidy and litter free.
- Dispose of solid waste at the nearest, applicably licensed recycling centre, salvage yard or landfill site;
- All waste must be transported in an appropriate manner (e.g. plastic rubbish bags) to the approved waste site.
- The contactor may not dispose of any waste and / or construction debris by burning, or by burying.
- Safe disposal waybills for all waste and material loads removed from the site must be kept on file.
- Complete waste transfer notes before any waste leaves the site.
- Ensure all waste service providers have a valid waste carrier's registration certificate.

Non-hazardous construction waste

- Segregate different types of waste as they are generated using different skips where possible (General wastes, non-hazardous wastes and hazardous wastes). At a minimum there should be skips for wood, metals, inert and mixed materials,
- Collect maintenance and domestic refuse (scrap metal, packaging materials etc.) in appropriate bins for recycling or send to landfill for disposal in an approved manner.
- Recycle suitable spoil, demolition materials, all pruning, and surplus construction material arising from the works on site to avoid the need to transport materials.
- Metal waste has commercial value and is to be sold on to a scrap metal contractor for recycling purposes.
- Wood waste includes oversized cable reels, wooden packaging boxes, palettes and other wood materials. Palettes in good condition may be reused and are to be returned to materials suppliers on a return system – this will need to be negotiated with the relevant suppliers. Damaged wood waste is to be donated to local communities.

Hazardous construction waste

Hazardous waste can be defined as waste, which can, even in low concentrations, have significant adverse effects on public health and/ or the environment.

- The disposal of hazardous waste must comply with all relevant Regulations, Norms and Standards pertaining to waste classification in order to ensure disposal at the correct landfill class.
- Avoid the generation of hazardous waste wherever possible through procurement processes e.g. purchasing of less toxic / environmentally friendly products.
- Petroleum, chemical, harmful and hazardous waste must be stored in enclosed, bunded areas. The bunded areas shall be clearly marked. Such waste shall be disposed of off-site at a licensed hazardous waste disposal site.
- Forecast and prevent potential situations in which accidents and spills can mitigate against unwarranted waste emissions.
- Hazardous waste may be temporarily stored on site in vessels equipped with secondary containment structures to prevent contamination of soil, groundwater and surface waters due to accidental spills or releases.
- Hazardous waste must be separated at source from the general waste stream. Where possible, all hazardous wastes, including hydrocarbon wastes such as oils, should be recycled either by a recognized recycling company or returned to the supplier.
- All hazardous wastes that cannot be reused or recycled should be labelled correctly and stored in the designated waste storage area until collected for correct disposal.
- Load and unload any solid hazardous materials in a manner that reduces potential spills.
- Ensure that a spills containment kit is available on site and that personnel are trained in spills clean up procedures.
- No spills may be hosed down into a storm water drain or sewer, or into the surrounding natural environment.
- Immediately clean leaks and spills of hazardous substances and dispose of as hazardous waste. The ESO and ECO should be notified immediately if a hazardous waste spill occurs, to ensure proper clean-up and disposal.
- Any contaminated soil / substrate must be removed and stored in a skip until it can be disposed of at a permitted disposal site.
- Report major spills to the regional DWS office.
- Hazardous waste disposal must be undertaken by an approved waste contractor, and waste must be disposed of at a permitted hazardous waste disposal facility on a regular basis (H:H or H:h – landfill operator to be contacted for verification). Ensure that all transportation and disposal / recovery permits and licenses are held by the service provider.
- All hazardous waste transported from the site must be reconciled with safe disposal certificates to be issued by the waste management service provider. These should be kept on file for inspection by the environmental authorities if required.

Sewage and effluent

- Ensure that sufficient numbers of mobile toilets are available on site and that these are located beyond the buffer zones.
- The location of chemical toilets or soak-aways should be put as far as possible from any wetland, watercourse or drainage line.
- Ensure that mobile toilets are maintained in a sanitary and operational state. Service slips need to be kept on file for verification
- Waste from ablution facilities must be regularly removed and care must be taken to ensure that there is no spillage.

Operational Phase

Waste management areas

- Waste must be transported from the point of generation directly to the centralised waste storage area where it can be safely stored prior to offsite disposal.
- The operator must obtain consent / confirmation from the nearest landfill (or similar) to dispose their non-recyclable waste at the facility.
- Duty of care obligations should be adopted and enforced, meaning that only reputable waste transport companies and permitted waste disposal facilities are used.
- Recordkeeping of the waste types and quantities must be as accurate as possible. Landfill waybills must be obtained and kept on file.
- Arrangements must be in place for the regular maintenance and cleaning of waste/recycling storage areas.

Landscape and organic waste

- Develop a comprehensive system for waste separation at the relevant generation points.
- Separate waste into items, which can be reused, composted, or recycled, and send the remaining portion to the general waste stream for disposal at landfill.

General waste

- Adopt waste reduction procurement philosophy, also known as "Greener purchasing", “Pre-cycling”, or “eco/green procurement”.
- Staff should be made aware of the aim to recycle waste by means of posters, training and staff meetings.
- Visitors/residents should be made aware of the recycling programmes by means of recycling in strategic locations.
- Implement a ‘sort-at-source’ approach to waste management, and separate recyclable waste from non-recyclable waste;
- Separate viable recyclable components from the general waste stream prior to disposal. Recyclables that are typically recovered from general waste include metals, plastics, glass, and paper / cardboard.
- Waste storage receptacles must be covered or lidded to prevent scavenging by wild animals and vermin, and to prevent waste from being windblown into the adjacent open areas.

- Undertake regular clean-ups and litter removal across the entire site;
- Skips / receptacles should be emptied on a weekly basis to prevent the formation of odour.
- Ensure that the waste is removed by a suitably qualified waste service provider and that the relevant documentation with proof of proper waste disposal is available.

- A manifest indicating the volume (monthly) of disposed general waste should be kept on file.

APPENDIX 12: ENVIRONMENTAL AWARENESS PLAN

Environmental Management during Construction

WHY should we care about the environment?

The environment provides us with everything we need to survive – food, water, fuel, air, etc. Human activity uses resources and has an impact on those resources. Managing our resource use and ensuring that our impact is minimised will ensure that these resources are not depleted.

The Constitution says that all people in South Africa have the right to a healthy environment. If you damage the environment, you are taking away that basic right of others as well as future generations – your children and grandchildren!

WHY is there environmental management if there is already conservation?

Historically, development and environmental conservation have been in conflict, because conservation was understood as the protection of resources, and development as the use, or exploitation of resources. The two competed for the same resources, but both are needed!

Sustainable development is a development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sustainable development aims to improve the quality of human life while living within our ecological means, which in turn means the wise use of resources!

WHY must there be environmental management during construction?

South Africa's effort to attain sustainable development is based on the concept of Integrated Environmental Management (IEM). The purpose of IEM is to resolve or lessen any negative environmental impacts and to enhance positive aspects of development.

IEM is designed to ensure that the environmental consequences of development proposals are understood and adequately considered in the planning, implementation and management of all developments.

It is intended to guide, rather than impede the development process by providing a method of gathering, analysing and utilising information about the environmental impacts of development. IEM and other principles of environmental management are set out in the National Environmental Management Act, 1998 (No. 107 of 1998) ("NEMA").

WHAT CONSTITUTES THE ENVIRONMENT?

The environment is not only the 'conservation-worthy' such as rare plants and endangered animals. The environment is everything around you! It is made up of living things (e.g. people, plants & animals) and non-living things (e.g. soil, water, buildings & cars). People and man-made things are also important parts of the environment.

Protection of the environment means that all living and non-living things are protected. During construction, Environmental Management Programmes (EMPr's) are implemented not only to protect fauna and flora but also to protect people (both on site and off), property (houses, cars, etc.) as well as natural resources such as water, air and soil.

WHAT do EMPr's do?

EMPr's are tools to facilitate environmental management during the construction phase of development projects and thereby avoid unnecessary impacts to the environment. In the past, the functionality and efficiency of EMPr's were hampered by resistance from contractors and engineers, the difficulties of costing for compliance and the lack of legal enforceability.

Now EMPr's are stipulated in the Environmental Authorisations (EA) as a condition of the approval to go ahead with the development, in other words it is legally binding. **When you sign a contract to work on a project with an EMPr, you are legally bound to comply with that EMPr!**

Methods of implementing EMPr's are becoming increasingly stringent and issues of enforceability are being addressed. Those individuals and companies that are familiar with compliance with EMPr's will be at a competitive advantage!

WHAT do EMPr's consist of?

EMPr's usually contain an environmental policy statement, organisational structure detailing the responsibilities and authorities involved in the project, procedures for communication and record-keeping and environmental specifications.
EMPs are adapted to the scale and sensitivity of the construction project. They can be thick documents detailing specifications for every eventuality specifically adapted to the project, or they can be short and brief documents setting out standard environmental procedures and controls. Sometimes EMPr's include extensive penalty and incentive schemes.

WHAT is an ECO and ESO?

EMPs usually require the appointment of an ECO, ESO, etc. to oversee the implementation of and compliance with the EMPr on behalf of the engineer or the contractor(s). Ultimate responsibility for compliance with the EMPr lies with the contractor(s) and the engineer.

ESO = Environmental Site Officer – usually on site permanently or often. Can be an independent consultant or contractor/engineer.

ECO = Environmental Control Officer – usually visits the site on a regular basis and audits compliance with the EMPr. Usually independent consultant.

It is therefore important to familiarise yourself with that part of the EMP that deals with the organisation and responsibilities for each contract that you are involved in.

HOW do EMPrs promote sustainable development?

They don't! It is *the people on site* that protect the environment. The EMPr, like any other plan or policy, is not worth anything if there isn't a commitment from those working on the project to comply with the EMPr.

HOW can I ensure my work complies with the EMPr?

Environmental specifications in different EMPrs can vary from vague to very detailed. It is obviously important to know what those specifications are, vague or not, so READ THE DOCUMENT! Ignorance does not absolve you from your responsibility. A copy of the EMPr must be kept at the site office at all times.

It also helps to understand WHY those specifications are there – some things are obvious but others may not be. Some EMPrs may have specifications that are not relevant. Don't be afraid to question the EMPr; it can only increase its efficiency!

Know where the sensitive areas on site are – watercourses, wetland areas, residential areas, etc. – and be extra vigilant when working in these areas. Mostly environmental management of construction activities and compliance with EMPrs requires only common sense and with good housekeeping, the battle is half won!

Reasons why should we look after the environment

- We have a right to a clean environment
- A clean environment is essential to healthy living
- All our basic needs come from the environment
- A contract has been signed – development vs the environment
- Penalties / fines could be issued

How to look after the environment

- Report issues
- Teamwork
- Follow the set rules and guidelines (EA, EMPr, Method statements etc.)
- Conserve, reuse and recycle

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DO'S AND DON'TS

Workers & equipment must stay inside the site boundaries at all times.
Nobody may enter areas marked as No-Go areas.

Why? Construction activities, equipment and people cause damage and disturbance to the area surrounding the site. As small an area as possible will be affected if all workers and equipment stay within the site boundaries. This is especially important if there are people who live around the site or natural areas around the site which should not be disturbed.

Do not swim in or drink from streams.
Do not throw oil, petrol, diesel, concrete or rubbish in streams.
Do not work in the stream without direct instruction.
Do not damage the banks or plants of streams.

Why? River water may be polluted which could make you sick.
Oil, petrol, diesel, concrete or rubbish will kill plants and animals living in the water. They may also make people who may drink the water downstream sick. Rubbish in the stream also makes it look ugly.
People and machinery working in the stream will damage it and kill plants and animals living in the stream. It may also cause erosion, which is expensive to repair.
The plants on the edge of the stream bind the soil together and prevent the soil from getting washed away. Soil washed into a stream may affect people using the water downstream (e.g. for irrigation).

Protect animals on the site.
Ask your supervisor to remove animals found on site.

Why? Animals are an important part of the environment. All animals have a purpose, even snakes which catch mice and rats. Other important animals are owls, chameleons and frogs.

Do not damage or cut down any trees or plants without permission.
Do not pick flowers.

Why? Some plants are rare and may take a long time to grow back, if at all. Plants in the "no go" areas should not be damaged.
Some plants will die if their flowers are picked. Rare plants may be lost.

Put cigarette butts in a rubbish bin.
Do not smoke near gas, paints or petrol.
Do not light any fires without permission.
Know the positions of fire fighting equipment.
Report all fires.
Do not burn rubbish/ vegetation without permission.

Why? Leaving a burning cigarette butt on the ground may lead to runaway fires which are dangerous to construction workers, people living around the site, equipment, houses, plants and animals.
Smoking near flammable material is dangerous and may cause an explosion.
Lighting a fire without permission may cause a runaway fire (see above).
Reacting quickly to fires that break out will prevent them from spreading and causing damage.

Work with petrol, oil & diesel only in designated areas.
Report any petrol, oil & diesel leaks or spills.
Use a drip tray under vehicles & machinery.
Empty drip trays after rain & throw the content away were instructed.

Why? Designated areas should have measures to protect against petrol, oil & diesel spills. Oil, petrol and diesel can drip onto the soil and soak into it. Plants will not grow and animals will not live in dirty soil.
It also looks ugly to people living around the area.
Drip trays will prevent oil, petrol or diesel from soaking into the soil and killing plants and animals.
If drip trays are not emptied they may overflow and pollute the surrounding soil. If oil, petrol or diesel are put into a stream, plants and animals living in the stream will be killed. They may also make people who may drink the water downstream sick. Ask your supervisor where drip tray water may be disposed of on-site.

Try to avoid producing dust – wet dry ground and stockpiles.

Why? Dust can be irritating to people and can reduce production on-site. It can cause problems such as eye irritations and coughs. It also reduces visibility on and around the site, which can be dangerous to drivers and pedestrians and can cause damage to the surrounding environment.
Soil should not be made too wet because that will cause safety problems and soil may be washed away.

Do not make loud noises around the site, especially near schools and homes.
Report or repair noisy vehicles.

Why? Loud noises are irritating to workers and people living around the site. Loud noise can also be harmful to people (especially children) and affect their hearing.
By keeping vehicles in good condition, loud noise can be prevented.

Use the toilets provided.
Report full or leaking toilets.

Why? Sewage attracts flies and other irritating pests. If the site is near a river or stream, sewage makes the water smell and people who swim in it or use it to wash their clothes will get sick. It also causes plants to grow too much which blocks the river, which may cause flooding of houses and property. Regular emptying of toilets is hygienic and will also prevent overflows.

Use designated eating and drinking area.
Make sure that you eat where there is a rubbish bin nearby.
Never eat near a river or stream.
Put packaging and leftover food into rubbish bins.

Why? Eating areas generate a lot of rubbish and litter (e.g. bottles and packets) which will pollute the site and surrounding areas. Therefore, eating must be done near bins which are placed in the eating.
Rubbish in a stream looks ugly and can be harmful to people's health. It may also kill the plants and animals living in the stream. Rubbish and food left lying around will attract pests (such as rats) which are dangerous to people and cause a health hazard. Also, the rubbish left lying around is ugly and unpleasant to look at.

Do not litter! Use the rubbish bins provided.
Ask your supervisor for a bin if there is none.
Report full bins to your supervisor.
The responsible person should empty bins regularly.

Why? Littering is unacceptable. It is also dangerous and unhealthy for adults, children and animals walking around the area. Not putting the lid back on the bin will cause rubbish to be blown away.
Regularly emptying bins will prevent litter and rubbish from flying around the site.

REDUCE

REUSE

RECYCLE

Reduce, Reuse, and Recycle waste.
Don't create waste if you don't have to.
Reuse waste on-site where suitable.
Only dispose of waste at a registered landfill if absolutely nothing else can be done with it.
Separate different waste materials before recycling.

Why? It is critical to minimise the amount of waste discarded into the environment to conserve natural resources, reduce landfill waste, reduce greenhouse gas emissions, and promote sustainability.

Always keep to the speed limit.
Drivers - check & report leaks.
Ensure loads are secure & do not spill.

Why? Speeding is dangerous to people who live in the area, especially children. Speed kills!
Faulty vehicles are dangerous to the driver, pedestrians and other motorists. Leaks can also pollute the ground and water and smoke from vehicles can cause health problems.
This is a potential danger to other motorists. Also, do not overload vehicles.

Know all the emergency phone numbers.

Why? Prompt reaction to an accident, fire or spill will reduce the risk of serious damage to the environment and to workers.

If rules are broken:

- **Construction may be stopped.**
- **Spot fines**
- **Removal from site.**

Why? Failure to adhere to the EMP may result in spot fines being issued to the company. It is then the Site Agent's responsibility to collect these fines from guilty individuals.
The fines are meant to act as an incentive for workers to take the EMPr seriously.
A person may be removed from the site if they continually disregard the specifications in the EMPr.
If the EMPr is not adhered to, the local Environmental Authority may stop construction.

ENVIRONMENTAL AWARENESS TRAINING
REGISTER: GREENGATE X 140
DATE:_____

NAME / ATTENDEE	COMPANY REPRESENTED	CONTACT NUMBER	SIGNATURE