DRAFT ENVIRONMENTAL MANAGEMENT PROGRAMME FOR AN "INDUSTRIAL 1" TOWNSHIP, LANSERIA EXTENSON 81, LOCATED ON PORTION 72 OF THE FARM BULTFONTEIN 533 JQ, CITY OF JOHANNESBURG METRO MUNICIPALITY, GAUTENG PROVINCE

GAUT 002/24-25/E4121

APPLICANT:
MR CRAIG MURCHIE

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ACRONYMS

For the purposes of this document the following acronyms shall apply:

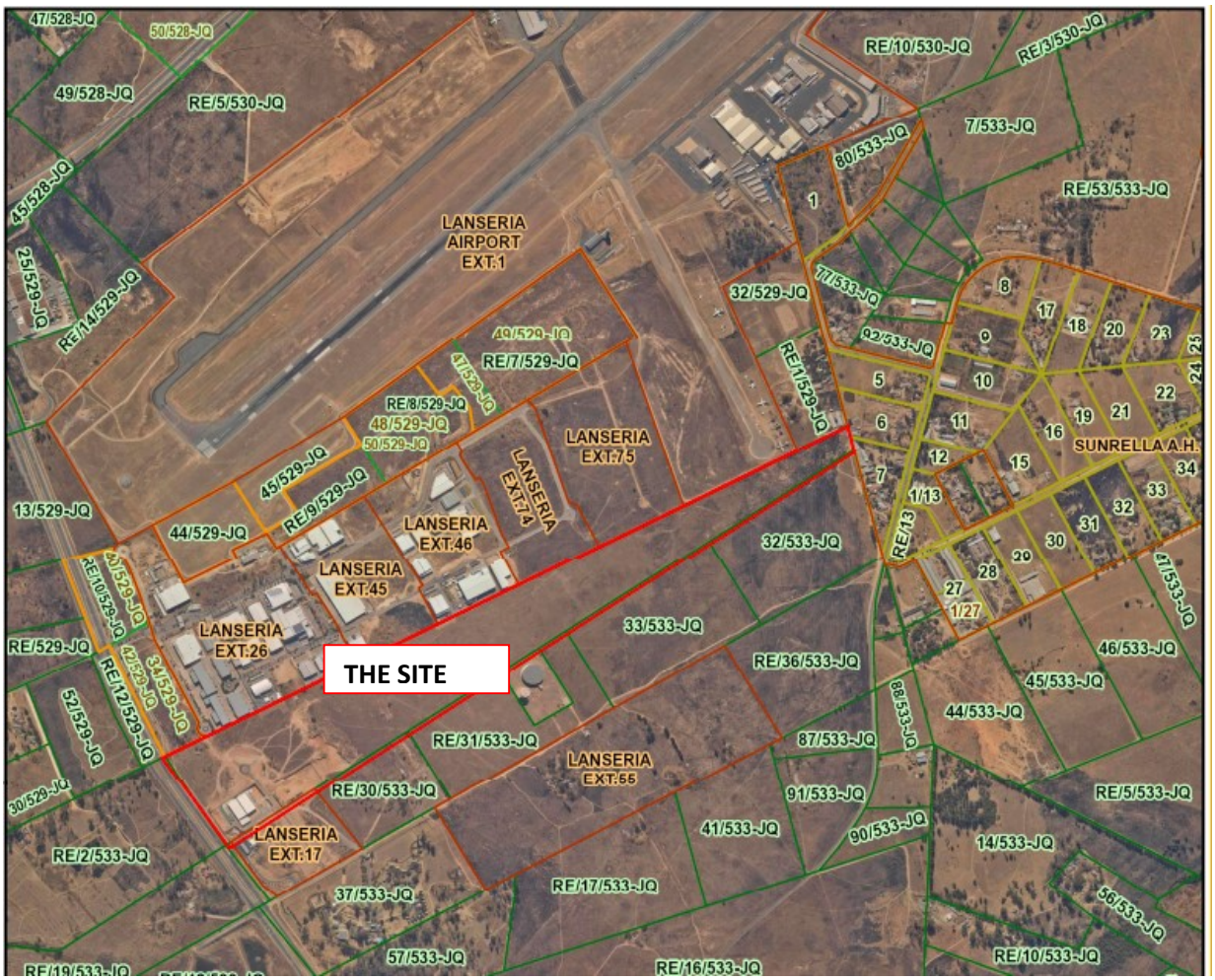
GDARDE	Gauteng Department of Agriculture Rural Development and Environment
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMPr	Environmental Management Programme
SAHRA	South African Heritage Resources Act

1. INTRODUCTION

The Applicant and landowner, Mr Craig Murchie, proposes to establish warehousing and light industrial uses on Portion 72 of the Farm Bultfontein 533 JQ, city of Johannesburg Metropolitan Municipality. Twenty (20) erven of varying sizes are proposed to cater for large and smaller light industrial buildings, with the eastern most erf reserved for a wetland system. This wetland will be retained as private open space. The farm portion measures 32ha. The township will only be established over a portion thereof measuring 30.7995ha in extent. The property is registered in the name of Corpclo 1482 (Pty) Ltd The study area is located 1 kilometre (km) south of the Lanseria airport. The N14 is located 2.3 km southeast of the study area, directly east of the R512 and directly south of the existing Lanseria Corporate Estate.

The secure light industrial park will have access from the R512, Malibongwe Drive. The light industrial park is aimed at capitalising on the location of the site within the Lanseria Smart City, as well as its location immediately adjacent to the established Lanseria Corporate Estate. The intention of the application is to permit the development of industrial uses that will fit in with the surrounding character of the area.

Figure 1: Locality Map



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 GDARD. These activities are:

Listing Number	Description of Listing triggered by the proposed activity
GN. R 983, 8 December 2014, Activity 12, Listing 1	**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 (aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour; (bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies; (cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies; (dd) where such development occurs within an urban area; (ee) where such development occurs within existing roads, road reserves or railway line reserves; or (ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the commencement of development and where indigenous vegetation will not be cleared.
GN. R 983, 8 December 2014, Activity 13, Listing 1	**The development of facilities or infrastructure for the off-stream storage of water, including dams** and reservoirs, with a combined capacity of 50 000 cubic metres or more
GN. R 983, 8 December 2014, Activity 19, Listing 1	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.**
GN. R 983, 8 December 2014, Activity 27, Listing 1	**The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation**, except where such clearance of indigenous vegetation is required for (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.
GN. R 983, 8 December 2014, Activity 28, Listing 1	Residential, mixed, retail, commercial, **industrial** or institutional **developments where such land was used for agriculture,** game farming, equestrian purposes or afforestation **on or after 01 April 1998 and where such development:** (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or **(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare**; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.
GN. R 984, 8 December 2014, Activity 15,	**The clearance of an area of 20 hectares or more of indigenous vegetation,** excluding where such clearance of indigenous vegetation is required for (i) the

Listing Notice 2	undertaking of a liner activity; or maintenance purposes undertaken in accordance with a maintenance management plan.
GN. R 985, 8 December 2014, Activity 4 (c) iv, Listing 3	The **development of a road** wider than 4 metres with a reserve less than 13,5 metres, in Gauteng, in Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans
GN. R 985, 8 December 2014, Activity 12, **Listing Notice 3**	**The clearance of an area of 300 square metres or more of indigenous vegetation** except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. c**. Gauteng** i. Within any critically endangered or endangered ecosystem listed in terms of Section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; **ii. Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans;** or iii. On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning

These activities may not commence until Environmental Authorisation has been received from the approving authority; the Gauteng Department of Agriculture and Rural Development [GDARD]. 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.

The applicant has appointed Seedcracker Environmental Consulting CC (SEC), an independent and registered Environmental Assessment Practitioner, to conduct the Basic Assessment Application, including this EMPr.

2. DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER

Mr C Murchie 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. Messrs Cliff has no business, financial or personal interest in the development, and is therefore able to provide an independent, objective assessment.

Company of Environmental Assessment Practitioner (EAP):	SEEDCRACKER ENVIRONMENTAL CONSULTING CC
Name of the EAP:	STEPHANIE CLIFF
EAP Qualifications	BSC Hons Animal Science BSC Hons Wildlife Management
Professional affiliation or registration:	Registered Environmental Assessment Practitioner: Number 2019/487 Member of IAIA SA
Physical address:	Waterkloof, Pretoria
Telephone:	082 626 4117
E-mail:	Stephweb@mweb.co.za

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.

3. DETAILS OF THE APPLICANT

Land owner	Corpclo 1482 (Pty) Ltd		
Contact person:	Craig Murchie		
Postal address:	P O Box 1403, Lanseria		
Postal code:	1748	Cell:	083 228 7028
Telephone:	011 474 4555	Fax:	
E-mail:	craig@hireall.co.za		

4. LOCATION AND PROPERTY DESCRIPTION

Portion 72 of the Farm Bultfontein 533 JQ is located 1 kilometre (km) south of the Lanseria airport. The N14 is located 2.3 km southeast of the study area, directly east of the R512 and directly south of the existing Lanseria Corporate Estate. The site is located within the City of Johannesburg Metropolitan Municipality.

The corner coordinates of the site are:

25 57 19.34 S	25 56 51.40 S
27 54 52.63 E	27 55 32 .86 E
25 57 27.01 S	25 56 53.48 S
27 54 57.99 E	27 55 53.53 E

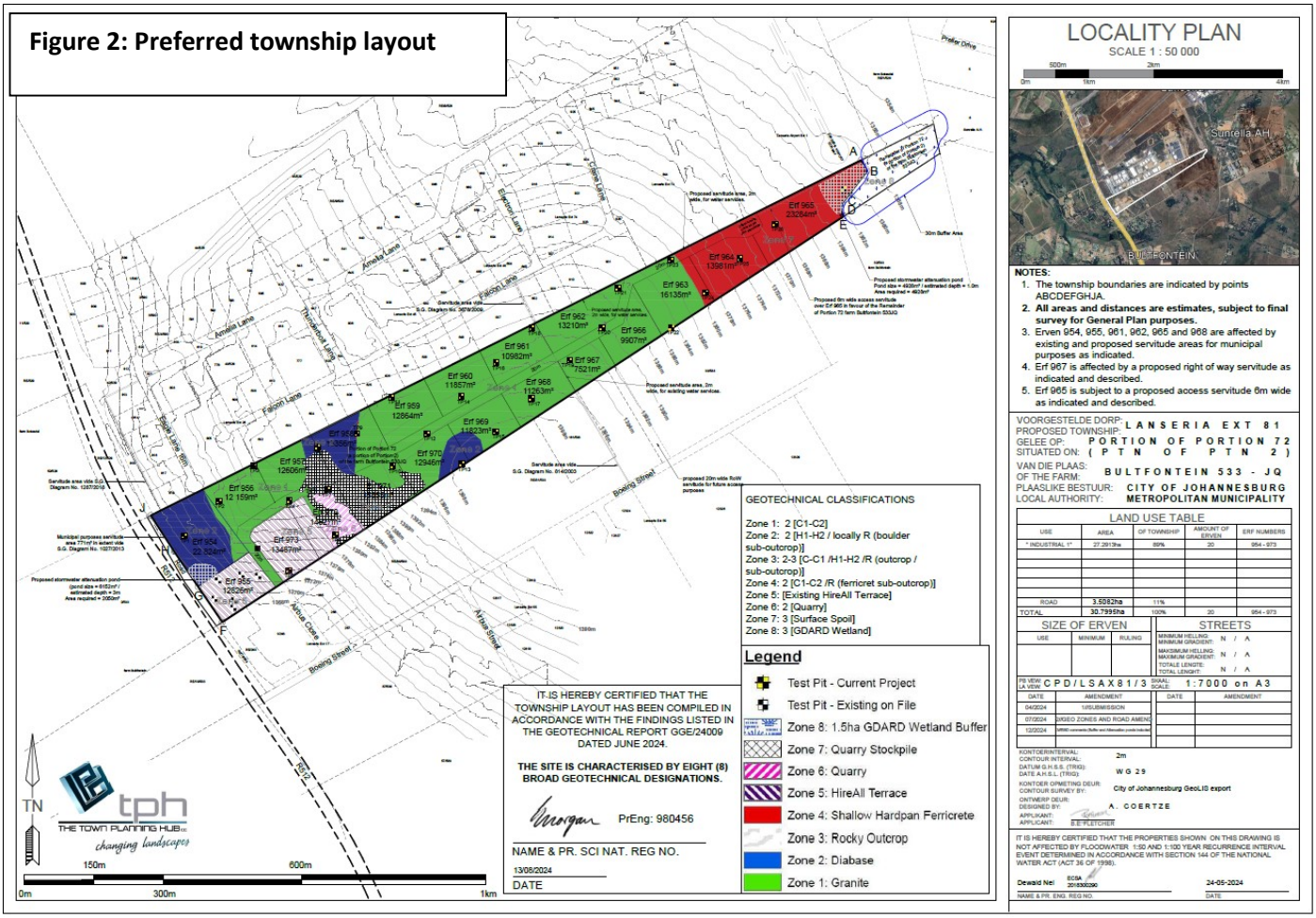
5. ACTIVITY DESCRIPTION

The applicant proposes to establish warehousing and light industrial uses on the site. Twenty (20) erven of varying size are proposed to cater for large and smaller light industrial buildings, with the eastern most erf reserved for a wetland system. This wetland will be retained as private open space.

The township sewage treatment for the township will have to be sewer package treatment plants that will be located on each individual site, on the lowest points of the site. The typical sewer demand ranges between 18KL – 30KL /day for the individual sites, with a sewer flow of 0.6l/s to 1.5 l/s including 15% stormwater infiltration and 2.5 peak factor.

The township water will have a conventional formal connection, and a total demand for the site are of 648.7 KL / day AADD. The peak domestic water demand, including the 1.3 seasonal factor, as well as the instantaneous peak factor of 4, will be 39.04 l/s. With a Moderate category for fire flow, an additional 100 l/s will have to be provisioned. The accumulates to a total demand of 139.04 l/s.

Figure 2: Preferred township layout



Rainwater harvesting is an effective and sustainable way to manage and conserve water resources for any land use development. The following rainwater harvesting methods and techniques can be implemented to harvest rainwater for each warehouse building to be built on site for Lanseria X 81. Implementing rainwater harvesting in a built development can significantly reduce the reliance on external water sources, conserve water resources, and lower water bills for tenants. It is an environmentally friendly and sustainable way to manage water in communities and should be implemented for the Lanseria X 81 development.

1. Roof Rainwater Harvesting:
   Rooftops are the primary catchment area for rainwater in buildings. Gutters and downspouts to collect rainwater from the roof must be installed in all the buildings. The collected rainwater must be directed to a storage tank through pipes or channels.

Regular maintenance of the rooves is required, to ensure that the water is clean and free from contaminants to prevent pollution of the harvested rainwater.

2. Storage Tanks:
   Install underground or above-ground storage tanks to store collected rainwater. Use materials like concrete, plastic, or fiberglass for the tanks. Ensure the tanks are properly sealed to prevent contamination and evaporation.

3. First Flush Diverters:
   To minimize the collection of initial polluted runoff, install first flush diverters. These diverters channel the first portion of rainwater away from the storage tank, capturing cleaner water after the initial flush of contaminants.

4. Filter Systems:
   Use various filtration systems to remove debris and contaminants from collected rainwater before storage. Common filters include mesh screens, gravel beds, sand filters, and cartridge filters.

5. Sump Pumps:

   Install sump pumps to lift water from underground storage tanks to overhead tanks or distribution points. These pumps ensure water is readily available for residential use.

6. Distribution System:
   Each individual township must have a distribution system to supply harvested rainwater to different parts of the township. Use gravity flow or pressure-based systems to distribute the water as needed.

7. Water Quality Testing:
   Regular testing of the quality of harvested rainwater to ensure it meets safety standards for domestic use must be in place. The water must be treated as necessary, to remove impurities and make it safe for drinking, cooking, and other uses.

8. Overflow and Recharge:
   Overflow systems must be designed to handle excess rainwater during heavy rains to prevent flooding. Recharge pits or borewells must be considered to replenish groundwater by directing excess rainwater into the ground.

9. Educational Programs:
   Promote awareness and educate residents about rainwater harvesting and the importance of water conservation, so that gutters and rain water harvesting water systems are not vandalized.

10. Maintenance:

Regularly maintain the rainwater harvesting system by cleaning filters, checking for leaks, and ensuring all components are in working order.

The stormwater on site will have 3 different discharge scenarios.

- Scenario 1 – Conventional connection to a v-channel of road infrastructure.
- Scenario 2 – Discharge a few sites to the Eastern discharge point, into the open fields / gravel road
- Scenario 3 – Individual sites that is unable to drain to the road, will discharge to external open field areas individually.

Attenuation ponds will be constructed on each erf to treat stormwater to the pre 5 year flow rates, and by sizing ponds to attenuate the difference between the Post 25 and Pre 5 year storms. All stormwater outlets which discharge into open field areas will have head walls, with energy dissipating structures.

Eskom will require a system strengthening project, prior to making power available for this development. The Eskom team will investigate various options and incorporate the solution they deem optimal in the budget quote to the Developer.

There is an existing access road, Airbus Close, that will be extended to service internal site areas. Six (6) intersections must be upgraded to accommodate the new township as per the township Traffic Impact Assessment (Corli Havenga Transportation Engineers).

6. APPLICABLE LEGISLATION AND GUIDELINES

The EMPr must adhere to the local authority by-law requirements as well as any other obligatory environmental and other legal requirements. Once the activity has commenced, a holder of an EA may make amendments to the impact management outcomes and impact management actions in the EMPr in the following manner:

- Amendment of the impact management outcomes or objectives: in line with the process contemplated in Regulation 37 of the EIA Regulations; and

- Amendment of the impact management actions: in line with the process contemplated in Regulation 36 of the EIA Regulations.

It is understood that the applicant / appointed developer will be fully responsible for this EMPr and its requirements including any environmental rehabilitation that may be needed. This is required in terms of Section 28 (Duty of Care and Remediation of Damage) of the NEMA, as amended.

The applicant must adhere to any statutory requirements which may be relevant to the construction of the development, contained in the following list of environmental legislation.

Table 1: Governing Legal Framework for activities on the site;

Title of legislation, policy or guideline:	**Administering authority:**
Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996): Chapter 2 Section 24	National, Provincial, and Local Authorities
National Environmental Management Act No. 107 of 1998 as amended	Department of Environmental Affairs (DEA) Gauteng Department of Agriculture and Rural Development (GDARD)
NEMA Environmental Impact Assessment Regulations as amended, GNR 326	Department of Environmental Affairs (DEA) Gauteng Department of Agriculture and Rural Development (GDARD)
National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) • GN number 1002: National List of Ecosystems that are Threatened and Need Protection dated 9 December 2011, as it relates to the NEMBA; • GN number R.1020: Alien and Invasive Species Regulations, 2020, in Government Gazette 43735 dated September 2020 as it relates to the NEMBA; • GN number 1003: Alien and Invasive Species Lists, 2020, in Government Gazette 43726 dated 18 September 2020, as it relates to the NEMBA; and • GN number 30568: Threatened or Protected Species (TOPS) list dated 14 December 2007, as it relates to the NEMBA.	Department of Environmental Affairs (DEA) Gauteng Department of Agriculture and Rural Development (GDARD)
National Forest Act, 1998 (Act No. 84 of 1998, amended) (NFA); • GN 1935: List of Protected Tree Species as published in the Government Gazette 46094 dated 25 March 2022, as it relates to the NFA	Department of Environment, Forestry and Fisheries (DFFE)
The National Environmental Management: Protected Areas Act, 2003 (Act No. 57 of 2003) (NEMPAA)	Department of Environment, Forestry and Fisheries (DFFE)
Government Gazette 45421 dated 10 May 2019 as it relates to the Department of Forestry, Fisheries, and the Environment (DFFE's) national environmental screening report required with an application for EA as identified in regulation 16(1)(v) of EIA Regulations: o For the Terrestrial Biodiversity Theme: GN 320 Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental Impacts on Terrestrial Biodiversity as published in Government Gazette 43110 dated 20 March 2020; and • For Animal and Plant Species Themes: GN 1150 Protocol for the Specialist Assessment and Minimum Report Content Requirements for Environmental	Department of Environment, Forestry and Fisheries (DFFE) and Gauteng Department of Agriculture and Rural Development (GDARD)

• Impacts on Terrestrial Plant and Animal Species as published in Government Gazette 43855 dated 30 October 2020;	
National Environmental Management Waste Act GNR 921	Department of Environment, Forestry and Fisheries (DFFE) and Gauteng Department of Agriculture and Rural Development (GDARD)
National Water Act, 1998, Act 36 of 1998	National Department of Water and Sanitation (DWS)
Water Services Act, 1997, Act 108 of 1997	
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)
National Heritage Resources, Act, 1999, Act 25 of 1999	South Africa Heritage Resources Agency (SAHRA)
Gauteng Conservation-Plan 3.3 (2011)	Provincial, Gauteng Department of Agriculture and Rural Development (GDARD)
Conservation of Agricultural Resources (Act 43 of 1983) National Department of Agriculture 21 April 1983	National Department of Agriculture
The Gauteng Agriculture Potential Atlas Version 4.4 Gauteng Department of Agriculture and Rural Development (GDARD	The Gauteng Agriculture Potential Atlas Version 4.4 Gauteng Department of Agriculture and Rural Development (GDARD
National Heritage Resource Act, 1999 (Act No. 25 of 1999)	South African Heritage Resources Association (SAHRA).
Sustainable Development Criteria for Built Environment Projects requiring Environmental Impact Assessments in Gauteng, 2009	Provincial
Gauteng Environmental Management Framework Gauteng Province 2015	Gauteng Province
Gauteng Spatial Development Framework, 2030	Gauteng Province
Gauteng Urban Edge 2008 / 2009	Gauteng Province
Joburg 2040 – Growth and Development Strategy	City of Johannesburg
Johannesburg Spatial Development Framework, 2040	
Nodal Review, 2020	
Draft Greater Lanseria Smart City Framework	Office of the Gauteng Premier

7. 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 applicants preferred alternative for a light industrial 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 and the concerns of interested and affected parties. Where relevant, rehabilitation and closure aspects (decommissioning the on-site sewer treatment plants when municipal infrastructure becomes available) have also been considered and addressed. Environmental management must be addressed during the entire lifecycle stage of a project.

7.1 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 Development. 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 Lanseria x 81 Project 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

The majority of the impacts during the construction phase will have an immediate effect (e.g., loss of habitat and ground cover, earth works, excavations and platform construciton, 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.

7.2 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.

7.3 EMPr Methodology

The methodology adopted is that of an Environmental Management Programme (EMPr) as 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.

The provisions of this EMPr are 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. To simplify the EMPr requirements, each aspect related to the EMPr has been addressed. Each action within the EMPr is supported by the priority of when the specific action will need to be implemented. Each of these aspects is briefly described below:

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
RESPONSIBILITY	The party/ies responsible for implementing the environmental measures and action plans laid out in the EMPr.

8. ACCOUNTABILITY AND ENVIRONMENTAL CONTROL

8.1 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.

8.2 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 Lanseria X 81 township, and the establishment thereof.

8.3 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 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 ensure that no encroachment into open areas which are sensitive in nature occurs (the seep wetland).
- The applicant must rectify transgressions through the implementation of corrective action.

8.4 Authorities

The authorities 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 turn, the applicant must assist the authorities to ensure environmental compliance. In case of long-term non-compliance, the applicant must provide an action plan with corrective measures for approval by the authorities.

8.5 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.

8.6 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 ROD 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 ROD 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/s and subject to compliance with health and safety requirements applicable to the site (e.g. wearing of safety boots and protective head gear).

8.7 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, as a result 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 so as 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 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.

9. ENVIRONMENTAL MANAGEMENT COMPLIANCE, MONITORING *AND REPORTING*

9.1 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 GDARDE Environmental Management Compliance Inspectors must 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 GDARDE.

9.2 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 change 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.

9.3 Contractor's Environmental Officer (ESO) Checklist

The Contractors' Environmental Officer is to complete a **weekly site inspection checklist** in accordance with the requirements of the EMPr, to be supported by photographic evidence, and provide this to the ECO each week. The ECO is to review the checklist and revert to the Contractors' Environmental Officer if there are any issues identified.

9.4 External Audits by the ECO

The ECO will complete monthly site inspections for the duration of the construction phase.

The ECO may need to conduct more frequent site inspections, as required, particularly if the Contractor's Environmental Officer's checklists are incomplete, not submitted timeously or show evidence of significant non-compliance with the conditions of the EMPr

9.5 Monthly Monitoring Reports

The ECO will compile a monitoring checklist to facilitate checking against the requirements of the EMPr, which will be used to record the site visits. Monthly monitoring reports will be compiled in which events, concerns, and general compliance of the Contractor with the EMPr will be recorded. This report will be submitted to the Project Manager and to the authorities if required.

Should the EMPr require updates at any stage, the manner and frequency for updating the EMPr must be done as follows:

- An application for amendment to the EMPr must be submitted to the competent authority (GDARDE) if any further amendments are to be made to the EMPr, other than potential amendments mentioned in the environmental authorisation, possible recommendations from DWS and/or the town planning approvals. Further changes may only be implemented once the amended EMPr has been authorised by the competent authority.

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 of 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 will audit the site for compliance with the monitoring specifications / requirements once or twice a month (as necessary) 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.

9.6 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.

9.7 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.

9.8 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 authorise 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 steps relating to increasing severity of environmental problems, which will be implemented. The principle is to keep as many issues within the first few steps as possible.

1. **Step 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.

2. **Step 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.

3. **Step 3 : T**he 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.

4. **Step 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.

10. 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.

10.1 Penalties

Where the applicant fails to ensure that the Project Manager and Contractor are not provided with this EMPr or where an ECO is not appointed prior to commencement of construction works, a fine of R50, 000.00 (excl. VAT) should be imposed, and the Environmental Authorisation should be suspended or revoked (this would be at the discretion of the GDARDE) until such time as the situation has been rectified to the satisfaction of the authority.

Furthermore, a retrospective audit of the construction activities should be carried out against the specifications of the EMPr by an independent, suitably qualified ECO at the expense of the applicant. The retrospective audit should also suggest fines in line with those recommended in the EMPr for any non-compliances and should be provided to the applicant, contractor and GDARDE for comment.
Where the Contractor inflicts damage upon the environment or fails to comply with any of the Environmental Specifications contained within this EMPr, they shall be liable to pay a penalty for breach of the conditions of the Environmental Specifications which form part of the works contract.

The Contractor is deemed NOT to have complied with these Environmental Specifications if:

- There is evidence of contravention of the Environmental Specifications within the boundaries of the site, site extensions and haul/ access roads;
- Environmental damage ensues due to negligence;
- The Contractor fails to comply with corrective or other instructions issued by the Project Manager within a specific time; or
- The Contractor fails to respond adequately to complaints from the public.

Penalties shall be issued per incident and per individual for the Contractor's responsibility. The amount of the penalty shall be determined by the ECO, in consultation with the Project Engineer. The Project Engineer shall inform the Contractor of the contravention and they shall notify the consulting quantity surveyor to deduct such a penalty from monies due under the Contract prior to the issuing of the monthly payment certificates.

Payment of any penalties in terms of the contract shall not absolve the offender from being liable from prosecution in terms of any law.

The following penalties (not an exclusive list) shall be issued in addition to any remedial costs incurred because of non-compliance with the Environmental Specifications, and shall be imposed by the Project Manager on the Contractor for contraventions of the Environmental Specifications by individuals or operators employed by the Contractor and/or their sub-contractors. Where there are ranges, the amount shall depend on the severity and extent of the damage done to the environment, as indicated in the table below:

OFFENCE	PENALTY
Contractor's Environmental Site Officer fails to complete and provide ECO with weekly environmental checklist	R1,000 per week not submitted, with 50% added to each subsequent transgression
A Contractor fails to inform the ECO immediately of events that may cause serious environmental damage or breach the requirements of the EMPr	R 500
The Contractor fails to produce Method Statements on identified aspects of the project prior to commencement of that aspect	R 1,000 per Method Statement
The Contractor's Environmental Site File is incomplete/non-existent	R 500
The Contractor fails to keep activities within the site boundaries	R 1,000
Dust and/or erosion occurs because of lack of appropriate implementation of mitigation measures	R 200
Waste is not disposed of at an approved waste site or composting facility	R400
Trespassing of people into no-go areas	R 500
Trespassing of machinery or equipment into no-go areas	R500–R2000
Delivery drivers are off-loading without supervision	R 300
Loads for transporting are unsecured or uncovered	R 500
Temporary storage of fuel used for construction purposes is not within specifications	R 100- R1,000
Fuel is dispensed with the incorrect equipment	R 400
Individuals are smoking in the vicinity of the fuel stores	R 200
Appropriate safety signs (e.g., Danger) are not displayed	R 200
There is a lack of firefighting equipment at the fuel stores	R 500
The storage areas fail to comply with standard fire safety regulations	R 200
Inadequate supply of material to absorb / breakdown and encapsulate minor hydrocarbon spillage	R 1,000- R2,000
An integrated waste management system is not established	R 100- R1000
Waste is buried as a means of disposal	R 1000- R3000
There is evidence of littering	R 100 per item
Appropriate scavenger and weatherproof bins are not supplied	R 1,000- R1,500
Bins are overflowing	R 400 per bin
Refuse is not removed or disposed of at an approved site	R 100-R1000
Empty cement bags are not removed from the construction area and placed under cover or discarded in the hazardous waste stream	R 1,000- R2,500
Hazardous waste is not stored in an enclosed area	R 1000
Hazardous waste is not disposed of at a hazardous waste disposal facility	R 500 – R1000
Rubble is not appropriately stored in a skip or central stockpile	R 500

OFFENCE	PENALTY
Materials that do not constitute clean building rubble are stored at the stockpiling site	R 200
An individual makes use of areas other than the designated facilities for ablutions	R 200
Latrine facilities and first-aid services are not in a sanitary condition	R 500
Insufficient provision of toilets	R 1000
Toilet waste (sewage) is discharged or buried in the environment	R 1000 – R2000
Potential pollutants are not stored safely away to prevent pollution of ground or surface water	R 500
Washing of vehicles on site	R 500
Hazardous chemical substances are not stored in secondary containers	R 800- R2000
Paint products, chemical additives or cleaners are being disposed of on site	R 200 – R 1500
Adequate sheds/ dry containers for the storage of materials are not provided	R 500
Maintenance of plant occurs on site when only emergency maintenance is permitted	R 200
Emergency maintenance is performed without efforts to prevent contamination of the surrounding environment	R 100 – R1500
Individuals fail to repair leaking equipment immediately	R 100 per item
Drip trays are not provided in construction areas under all relevant plant/equipment	R 100 – R500 per absent drip tray
Effective silencing devices are not in use to reduce noise impacts	R 50
Amplified music is heard on site	R 50
Failure to provide environmental awareness training to all site personnel	R 500 per staff member/ worker
Necessary Information posters (procedures for ensuring compliance) are not displayed	R 500
Lighting of fires occurs on site	R200–R10000
Smoking occurs outside of designated areas	R20–R50
Unnecessary spillage of cement due to inadequate prevention measures, or haphazard working procedures	R500–R1500
Spillage of cement products are not rectified to the satisfaction of the ECO	R50–R1000
Cement is not stored in a suitable weatherproof location	R 1000
Polluted runoff is reaching groundwater/stormwater	R200–R3000
Screening and suitable containment is not in place /constructed in the concrete batching area	R100–R500
Hydrocarbon spills are not isolated, contained, cleared, and rehabilitated	R100–R2000
Appropriate safety precautions are not implemented	R20–R1000
Personnel other than security staff are living on site	R1000
Animals are being trapped, poisoned, shot, or harmed	R 1,000 – R 5,000
Erosion or sedimentation caused by construction is not rectified	R400–R2000
The ECO is not notified of heritage or archaeological remains found	R1000
Trenching is conducted without the specified environmental specifications	R 1000
Failure to avoid stormwater impacts through the adequate protection of stormwater inlets	R 100 per inlet
Unapproved materials are used for landscaping (e.g., invasive plant seeds)	R50–R2000
All elements of the site are not removed during clean-up for closure	R 100 – R 3000
A specialist is not employed for rehabilitation where necessary and previously advised by the ECO	R 500- R2000
The site not demarcated as required	R 300- R3000
Water wastage	R 100 – R 1000
Method statements not appropriately and/or fully implemented	R 500 – R 1,000 per Method

OFFENCE	PENALTY
	Statement
Speed limit on site not adhered to	R 100

The following penalties are suggested for transgression where damage has been done to the environment:

a	Erosion	A penalty equivalent in value to the cost of rehabilitation plus 20%
b	Oil Spills	A penalty equivalent in value to the cost of clean-up operation plus 20%
c	Damage to sensitive environments	A penalty equivalent in value to the cost of restoration plus 20%
d	Damage to archaeological finds	A penalty to a maximum of R 100 000 shall be paid for any damage to any archaeological sites/finds

All money collected through penalties shall be held an environmental fund by the Applicant and be accounted for. A summary page is to be included with the monthly payment certificates as a record of penalties issued to date. A portion of these funds may be used for token monetary bonuses to individual site staff members that have shown exceptional diligence in applying good environmental practice on the site. The remaining funds shall be allocated for the purposes of contributing to environmental education efforts in the local community e.g., for environmental books for the library, posters, excursions or trees for local schools or environmental resource material for the local public library. The Applicant, in consultation with the ECO, and Contractor will make a final decision regarding the precise allocation of all penalty funds. Documentation accounting for all penalty funds obtained and how these funds were utilized shall be included in the environmental closure documentation on completion of the project.

10.2 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.

10.3 Occupational Health and Safety Requirements

The Occupational Health and Safety Act (Act 85 of 1993) and the requirements of the Construction Regulations issued in July 2003, must be complied with.

10.4 Social Responsibilities

The Developer and Contractor(s) shall encourage and implement wherever possible the procurement of locally based labour, skills, and materials. Historically disadvantaged individuals should also be employed as far as possible.

11. 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 "live document" in that modifications are negotiated between the Contractor and the ECO/project management team, as circumstances unfold. All Method Statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMPr.

A Method Statement is a 'starting point' for understanding the nature of the intended actions to be carried out and allows for all parties to review and understand the procedures to be followed in order to minimise risk of harm to the environment. The Method Statement describes the scope of the intended work in a step-by-step description for the ECO and the Project Manager to understand the Contractor's intentions. For each instance where it is requested that the Contractor submit a Method Statement to the satisfaction of the Project Manager and ECO, the format should clearly indicate the following:

1. A brief description of the work to be undertaken;
2. A detailed description of the process of work, methods, and materials;
3. A description/sketch map of the locality of work (if applicable);
4. The sequencing of actions with due commencement dates and completion date estimates;
5. The person responsible for undertaking the works described in the Method Statement; and
6. A description of why the activity is required.

The method statement should outline the risks and impacts involved in the task, and include a detailed 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 regarding:

- 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 Establishment and Site Camp Division**
  The location, layout and method of establishment of the construction camp (including all no-go areas, buildings, offices, lay down yards, vehicle wash areas, fuel storage areas, batching areas and other infrastructure required for the running of the project) shall be detailed and presented in a drawing. Cognisance must be taken of the environmental management requirements set out in this EMPr in developing this plan.

- **Site Clearing**
  Method and schedule for clearing of vegetation on site during site, disposal procedure for cleared material, as well as topsoil management.

- **Access/Haul Routes**
  Details, including a drawing, showing where and how the access points and routes (including areas where plant would be parked) will be located and managed, including traffic safety measures that will be utilised.

- **Fuel Storage and Use**
  The design, location and construction of the fuel storage and service areas as well as for the filling and dispensing from storage tanks and management of drip trays.

- **Solid Waste Management**
  Expected solid waste types, sorting methods, quantities, methods and frequency of collection and disposal, as well as location of disposal sites. Include details of the proposed recycling program.

- **Contaminated Water**
  Methods of minimising, controlling, collecting, and disposing of contaminated water.

- **Stormwater management**
  Methods of managing, controlling, stormwater runoff during construction, including dewatering where required.

- **Hazardous Substances**
  Details of any hazardous substances / materials to be used, together with the transport, storage, handling, and disposal procedures for the substances.

- **Cement and Concrete Batching**
  Location, layout, and preparation of cement / concrete mixing areas including the methods employed for the mixing of concrete, particularly the containment of runoff water from such areas and the method of transportation of concrete.

- **Dust**
  Details on the methods employed for reducing dust on the site.

- **Trenching**
  Details on the methods employed for trenching, depths of trenches, supporting structures for trenches, time-line regarding the duration at which they would remain open, phasing for excavation and in-filling, details of slopes areas for fauna to escape (if they fall in), search and rescue plan for fauna that fall in trenches (to include examples of types of fauna and the manner in which they would be dealt with).

- **Emergency Procedures**
  Emergency procedures for fire, accidental leaks, and spillages of hazardous substances (including fuel and oil). Include details of risk reduction measures to be implemented including fire-fighting equipment, fire prevention procedures and spill kits (materials and compounds used to reduce the extent of spills and to breakdown or encapsulate hydrocarbons).
- **Noise mitigation methods**
  Detail the steps to be implemented to reduce/avoid noise impacts on the surrounding area.

- **Works within wetlands for services installation**
  Detail the steps to be implemented to minimise the impacts to the wetland on P/72 Bultfontein 533 JQ during construction activities and indicate access routes to the site.

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 3 for the proposed Method Statement Template.

12. 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 set forth 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. It should also be noted that this EMPr is a dynamic document that must be continually updated, as and when required. Also, all other documents from the Client must be referred to in addition to this EMPr.

13. SUMMARY OF ACTIVITIES AND ASPECTS CAUSING IMPACTS

The construction of the applicants preferred alternative for the development of the proposed Light Industrial township, will result in moderate to low negative impacts on the receiving environment, most notably the loss of floral habitat, topsoil, soil erosion and potential groundwater pollution. These potentially significant negative impacts have been identified and summarised by Seedcracker Environmental Consulting as follows:

- Storm water management
- Erosion
- Ground and Water pollution
- Alien vegetation
- Waste management
- Onsite sewer treatment plants
- Noise, dust and odours
- Edge effects and indirect impacts from stormwater discharge on the conserved Seep wetland

Excluding the obvious negative wetland impacts, the above-mentioned aspects can potentially cause negative impacts that may occur during the planning, construction, operational or decommissioning 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 most of the proposed project can be minimised and/or entirely negated. These are dealt with in this EMPr.

14. 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. 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.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
Planning and Design: Management actions that must be completed prior to the commencement of construction activities on site: Administrative and Legal Requirements for Lanseria X 81					
Planning and Design requirements	• Environmental Authorisation and Water Use License 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. • The WUL must be in hand prior to construction activities. • Sustainable architectural designs must be considered and implemented to reduce resource consumption (electricity, water, rain harvesting)	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	To ensure that the final designs are in line with the considerations contemplated in the environmental authorisation.
Services	• The final Services Plan must be approved by the COJ Municipality		A suitably qualified ECO is appointed prior to the commencement of any construction activities taking place on site.	Applicant	

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
Appoint an Environmental Control Officer (ECO)	• A suitably qualified and experienced Environmental Control Officer must be appointed before any activities commence on site. • The ECO should inspect the site fortnightly for the duration of the construction phase, additional visits may be required during the site establishment phase. The appointed ECO must be advised on the construction start date, before any activities commence on site so that the ECO can perform a pre-commencement inspection and plan for environmental awareness training of construction workers.		Developer During Design Phase		The conditions of Environmental Authorisation and the requirements of the EMPr are implemented and monitored during all phases of the development, which will promote sound environmental management on site.
Pre-construction ECO Visit	• The ECO will provide for site contractor management training sessions (if required), who will in turn ensure that all staff working on site are familiar with the workings and requirements of this EMPr.		The site contractor and all site management are trained and aware of the all the conditions listed in this EMPr.	Applicant, Project Engineer, ESO, ECO	Good environmental management is to be promoted and enforced by the ECO during the pre-

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
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 selected 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 areas and facilities should seek to minimise the total area that is to be disturbed at any given point. A plan for the stormwater attenuation ponds must be included for the site. 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.		Approved site plan before commencing with construction	Applicant, Project Engineer, ESO, ECO	construction and construction phases. Site facilities must be appropriately located on site. Construction workers receive environmental awareness training before commencing work on site.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• This EMPr provides the management objectives for the applicants preferred township layout alternative, figure 2. • The seep wetland and its buffer zone is a sensitive "no-go" area, and must be cordoned off with danger taping prior to construction activities commencing on site. • Temporary Impacts to the wetland for the installation of services must be planned with the ECO prior to trenching on site. • Compile an annotated base Plan/map of the site indicating the various activity zones, roads and tracks, all stockpile areas, campsites and all other areas which will be used or altered during the construction phase. • Indicate details of the access and internal roads and track.				
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.	Actions and method statements are to be completed by the PE prior to the commencement of the relevant construction activity.	Approved site plan before commencing with construction	Applicant, Project Engineer, ESO, ECO	No deviations from the management measures and no damage to environmentally sensitive areas or harm to fauna as a result of the location and set-up of the site camp.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• 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; - 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 a watercourse is permitted without the required authorisations from DWS. • Chemical toilets must be used as ablution facilities during the construction period by all contractors. • Chemical toilets must not be located closer than 100m from any identified	During design and prior to, construction			

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	watercourses/sensitive environments • 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 are forbidden. All waste must be reused, recycled or disposed of by registered companies or at a registered waste disposal site. • 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				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	with SABS 1186) must be erected at storage facilities and tank capacities must be clearly indicated (in accordance with SABS 0232).				
Approved Detailed Stormwater Management Plan	• A detailed, approved, storm water management plan must be developed and must adhere to the principles of storm water management to ensure stormwater areas surrounding the site does not cause flooding to downstream properties.	During design and prior to, construction	An appropriate storm water management plan is developed which includes the recommendations of the Wetland reports and wetland Rehabilitation Plan.	Applicant	• The measures required to adequately control and manage storm water are identified, and adequate planning and provision is made to implement these measures during subsequent phases of the project. • Mitigate quality prior to direct discharge.
Complete a Detailed Design Including Detailed Services Plan	• Detailed Design for the proposed top structures and associated services must be designed based on the designs included in	During design and prior to, construction	Detailed Designs are drawn up and are compliant with the Environmental Authorisation &	Applicant, Project Engineer, ESO, ECO	The development is compliant with the Environmental Authorisation, the

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	the EIA report and approved by the Department. • If any changes to the approved Conceptual Plans are made, this should be checked with the appointed ECO or an EAP to ensure no EA Amendment or EMPr Amendment Application is required		EMPr designs already approved		EMPr, Conceptual Site Layout Plan and Conceptual Services Plans Submitted.
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	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	All team members are aware of their daily roles and responsibilities

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	construction activities. • 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.				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
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 blatanat disregard 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 continue. Contractors must be responsible and will bear the cost of any delays, corrective or remedial actions required as a result of non-compliance with the specifications and clauses of the EMPr. • A fine may be issued by the GDARDE for	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	The development is compliant with the Environmental Authorisation, the EMPr, Conceptual Site Layout Plan and Conceptual Services Plans Submitted.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	wilful negligence or non-compliance resulting in environmental degradation or pollution. The fine will be determined by the GDARDE 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 GDARDE Compliance section at a frequency dictated in the Environmental Authorisation received for the project. • 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.				
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	Actions and method statements are to be completed by the PE prior to the commencement of the relevant	Approved Training and Environmental Awareness programme before commencing with construction	Applicant, Project Engineer, ESO, ECO	No deviation from the management actions

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	proper high visibility clothing to ensure that they can be distinguished from the general public. • An after-hours number must be provided for complaints, such as excessive dust from roads, noise after working hours, etc.	construction activity. The actions must be implemented daily by the entire construction team			
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 environmental impacts, actual	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	No deviation from the management actions

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	or potential, of their work activities such as excavations and impacts to the wetland, and the importance of separation of soil and subsoil; - 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. • 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	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	No deviation from the management actions

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	may be cleared while vegetation outside of the zone must be left intact until construction reaches that area. • Once the demarcated area has been approved, a written motivation to alter the boundary must be submitted to the Resident Engineer for consideration and (possible) approval. • The markings of the site must be maintained throughout the construction period, as and where determined by the Resident Engineer and ECO. • 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 and seep wetland. 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-site overnight.				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
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 are soil, water, environmental or any other impact; - The incident must be documented • All freshwater systems within the development site must be clearly identified before construction activities begin. • Direct discharges of runoff from developed/ disturbed areas to receiving waters must be avoided	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	No deviation from the management actions

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• Water discharged into the environment must be done so in a manner that is not conducive to erosion and does not result in negative impacts to any watercourse.				
Site security and safety considerations	• The campsite 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	No deviation from the management actions

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
Fauna and Flora Management	• Vegetation clearing must be done at the development front/footprint. Large areas must not be cleared all at once, 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 • A full site walk-through must be conducted in the summer prior to any construction activities to identify and list all SSC (if present). Associated permits must be obtained for their removal or transplantation • Search and rescue for Orange Listed species, that may have been overlooked, before construction commences. *Boophone disticha* (least concern (LC) and *Hypoxis hemerocallidea* (LC), were recorded within the study area (Grassland Habitat).	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	No deviation from the management actions

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
Construction: This section presents the environmental requirements for the construction activities for the Lanseria X 81 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 15 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. Such storage areas must be located outside of any watercourse and must be fenced to prevent unauthorised	During construction	• The ECO will monitor the site to check that the measures have been implemented. • The environment is not polluted or contaminated as a result of construction activities on site. Spillage incidents are effectively contained and do not lead to pollution of the soil or water resources	Contractor, ESO, ECO	To avoid the contamination of soil and groundwater by inappropriate waste management practises, fuel and oil spills, chemical toilet spills and inappropriate cement mixing. Full compliance with EMPr requirements and no damage to environmentally sensitive areas or harm to fauna as a result of the location and set-up of the site camp.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	access onto the area. 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 areas (unless clearing alien invasive plants). • The choice of location for storage areas must be located more than 50m away from watercourses. 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.				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• No smoking must be allowed in the vicinity of storage or dispensing areas. • Fuel decanting and refuelling must take place within the construction camp only, away from sensitive environments. Oil spill kits must be placed at the construction camp for the handling of accidental spillage				
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 restricted during construction to control access to otherwise potentially dangerous excavations and materials	During construction	To avoid and/or minimise impacts on the local road network and road users any such impacts are appropriately dealt with to prevent further impacts in the longer term. To avoid construction related impacts to other road users associated with the movement of construction vehicles.	Contractor, ESO, ECO	No disruptions to traffic on local networks such that complaints are elicited, no damage to vehicles and related claims and no nuisance to surrounding caused by dust.
Vegetation clearing	• All ancillary infrastructure including site offices, ablutions, storage facilities, vehicle parking facilities and any other infrastructure must be placed within transformed areas and not in any sensitive areas. • No burning on site is allowed under any circumstances • All manually cleared Alien invasive Plant species must be disposed of carefully and	During construction	• Ensure that no vegetative cover is removed and/or impacted on outside of the approved works area (i.e., nearby mapped environmental areas). To protect any protected plant species found on the property and prevent impacts on fauna found on the site.	Contractor, ESO, ECO	• No removal of vegetation and/or other impacts on any vegetative cover in the area outside of site limits. • No damage or defacing of any natural

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	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.		• Preserve the top layers of soil for use in the final landscaping. • Appropriate temporary storage and stockpiling of topsoil to prevent erosion, sedimentation, and dust pollution. Avoid intrusion into the adjacent natural areas and prevent related impacts.		features situated in or around the site. • No harm or destruction of vegetation outside the site limits.
Flora and Fauna	• Flora: • At all times, ensure that sound environmental management is in place during the planning phase; • Minimise loss of indigenous vegetation where possible • Where possible, minimise paved areas to reduce habitat loss and to increase on-site infiltration of stormwater. • Where possible / feasible, the landscaping plan must aim to retain native species in the open space areas, removing all AIPs and reinstating native species from the reference vegetation type • An AIP Management/Control Plan should be compiled for implementation: Removal of alien invasive species, especially within	During construction	Indigenous vegetation is planted in public open spaces. The ECO will measure the performance of these mitigation measures during the compliance audits to take place during the construction phase. No reports, evidence or recorded incidents of trapping, fires, killing reptiles. Seep wetland is cordoned off until temporary works are required therein	Contractor, ESO, ECO	To have a development which comprises of indigenous vegetation and grasses to stabilise the soil.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	the footprint area must preferably commence during the pre-construction phase and continue throughout the construction, operational and maintenance phases. • A walkdown of the approved footprint area is required before construction activities can commence, where all anticipated floral SCC are searched and marked for relocation and/or destruction so that all necessary permits and authorisations can be obtained from the GDARD and DFFE; • The site walkdown must occur within the flowering periods of the SCC flagged for concern in the specialist floral report (SAS). The relocation site will need to be fenced-off (or somehow barricaded) and monitoring of relocated / transplanted species will be essential until it is evident that the species have successfully established; • Geophytes are good candidates for rescue and relocation, and these should be targeted for such initiatives. • A rescue and relocation plan must be drafted and approved by the relevant authorities (if necessary) for all floral SCC				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	that will be impacted by the proposed development (based on the outcome of the walkdown). • Translocation of species may only occur onto directly adjacent areas (including protected areas) considered to be part of the same original population and within the same home range. Where landscaped gardens are envisioned, these species can be relocated to such areas. Monitoring of their relocation success will still be a high priority. • The construction footprint must be kept as small as possible to minimise impact on the surrounding environment (edge effect management) • Removal of vegetation must be restricted to what is absolutely necessary and should remain within the approved development footprint. Where possible / feasible, any remaining natural areas should be utilised as part of the landscaping of the proposed development; • Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the construction activities.				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• No collection of indigenous floral species is allowed by construction personnel, especially with regards to floral SCC and medicinal species; • Care should be taken during the construction of the proposed development to limit edge effects to surrounding natural habitat. This can be achieved by: • Demarcating all footprint areas during construction activities; • Demarcating sensitive species and habitat that must be maintained as open space; • All soils compacted as a result of construction activities should be ripped and profiled and re-seeded; • Manage the spread of AIP species, which may affect remaining natural habitat within surrounding areas. Specific mention in this regard is made to Category 1b and 2 species identified within the development footprint areas and surrounding, connected Habitat Units; and • No dumping of litter, rubble or cleared vegetation on site should be allowed. Infrastructure and rubble removed as a result of the construction activities should				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	be disposed of at an appropriate registered dump site away from the development footprint. No temporary dump sites should be allowed in areas with natural vegetation. • Waste disposal containers and bins should be provided during the construction phase for all construction rubble and general waste. Vegetation cuttings must be carefully collected and disposed of at a separate waste facility; • If any spills occur, they should be immediately cleaned up to avoid soil contamination that can hinder floral rehabilitation later down the line. Spill kits should be kept on-site within workshops. • Upon completion of construction activities, it must be ensured that no bare areas remain, and that indigenous species be used to revegetate the disturbed area. • Any areas outside of the approved development area that have been left bare because of the construction activities should be rehabilitated using indigenous species. • Floral SCC and medicinal plants must be monitored where they were either relocated or if used in landscaped				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	gardens; • No collection of floral SCC or medicinal floral species must be allowed by construction personnel; • Edge effect control needs to be implemented to prevent further degradation and potential loss of floral SCC outside of the proposed development footprint area. • Edge effects arising from the proposed development, such as erosion and alien plant species proliferation, which may affect adjacent natural areas, need to be strictly managed. • Ongoing alien and invasive plant monitoring and clearing/control should take place throughout the operational phase, and the project perimeters should be regularly checked for AIP establishment to prevent spread into surrounding natural areas; • Alien vegetation that is removed must not be allowed to lay on unprotected ground as seeds might disperse upon it. All cleared plant material to be disposed of at a licensed waste facility, which complies with legal standards. • As far as possible, no collection of floral				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	SCC or medicinal floral species within the Study Area, or adjacent natural habitat must be allowed during the operational phase of the development; • Floral SCC and medicinal plants must be monitored (where they were either relocated or used within landscaped gardens); • Edge effect control needs to be implemented to prevent further degradation and potential loss of floral SCC or suitable habitat for such species outside of the proposed development footprint. Fauna: • At all times, ensure that sound environmental management is in place during the planning phase; • Develop a plan to control and manage alien plants during the construction phase; • Clearly demarcate the construction footprint boundary; • As far as possible, plan for vegetation clearance activities to be undertaken in winter. • Vegetation clearance must be limited to				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	the designated areas only. No clearance of vegetation outside of the construction footprint is permissible; • Vegetation clearance should be undertaken in a phased manner, ideally progressing towards the wetland and un-developed areas so that faunal species can self-relocate ahead of clearance activities into the areas not earmarked for clearance; • All edge effects are to be managed and controlled, notably AIP proliferation and erosion; • Vehicles should be restricted to travelling only on designated roadways to limit the ecological footprint of the construction activities; • No collection of faunal species by construction personnel is allowed, unless as part of a rescue and relocation process; • No hunting / trapping of faunal species by construction personnel is allowed; • No development is to occur within the conserved freshwater habitat or the stipulated buffer areas as per the freshwater assessment; • No dumping of litter, rubble or cleared vegetation is allowed on site or in the				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	surrounding open space areas. All waste material must be disposed of at an authorised site; • No illicit fires may be allowed during the construction phase. • No dumping of litter, garden refuse or any waste must be allowed on-site or within surrounding habitats; • Erosion and stormwater should be managed to ensure no further impacts to the wetland habitats occur, notably increased sediment deposition; • Cultivation activities should not be allowed to occur within the wetland habitat or the adjacent grassland areas; • No trapping or killing of any faunal species is to be allowed; and • Landscaped / garden areas should use indigenous plant species, whilst rock features should also be considered to create additional habitat for invertebrates and reptiles that select for rocky areas. • No faunal SCC were observed or are expected, however, should an SCC be encountered for whatever reason, a suitably qualified specialist should be contacted to advise on the best way forward.				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• Outside lighting should be designed to minimise impacts on fauna, especially invertebrates. Use of fluorescent, LED and mercury vapour lighting should be avoided and sodium vapour (yellow) lights should be used wherever possible for outside lighting. All lights should be downward and inward facing as far as possible. • In the event that reptiles are encountered during activities, harmless species should be carefully relocated by a suitably nominated operational personnel. For larger venomous snakes, a suitably trained professional should be contacted to assist in the relocation of the species, should it not move off on its own. No reptiles are to be killed or harmed.				
Seep Wetland	• Careful planning of the construction footprint must be undertaken. It should be ensured that laydown areas are to remain outside of the delineated wetlands and the associated setback areas; • Construction and associated activities must preferably take place outside of the wet season in order to minimise the risk of increased and sediment-laden runoff reaching the wetland as a result of these	During construction	Full compliance with EMPr and SAS Freshwater report requirements	Contractor, ESO, ECO	No deviation from the management actions The wetland area on adjacent land portions to the site must be designated as no-go areas,

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	activities; • 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 workers from entering the wetland; • It must be ensured that the sediment traps between the wetland and construction areas are installed to manage sediment laden runoff; • Removed vegetation must be stockpiled outside of the delineated boundary of the wetland, • The footprint areas and height of these stockpiles must be kept to a minimum (not higher than 2m). Should the vegetation not be suitable for reinstatement after the construction phase or be alien/invasive vegetation species, all material must be disposed of at a registered garden refuse site and may not be burned or mulched on site; • Dust suppression techniques must be implemented to prevent smothering of freshwater vegetation; • The delineated freshwater ecosystem which does not form part of the development				except for temporary disturbance of installing services.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	must be clearly demarcated on site and remain off-limits to all non-essential activities. It is recommended that a geotextile mesh be used to demarcate the system • Exposed soil, including topsoil, must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) in order to prevent erosion and sedimentation of the freshwater ecosystem; • Soil must be stockpiled according to the natural sequence in order to ensure that topsoil and subsoils are not mixed during backfilling processes; and • An Environmental Control Officer (ECO) must be appointed in order to ensure all water related aspects are adequately mitigated during the construction phase; Control measures for concrete mixing on site: • No mixed concrete may be deposited outside of the designated construction footprint; • As far as possible, concrete mixing should be restricted to the contractor laydown area. Additionally, batter / dagga board				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	mixing trays and impermeable sumps should be provided, onto which any mixed concrete can be deposited while it awaits placing; and • Concrete spilled outside of the demarcated area must be promptly removed and taken to a suitably licensed waste disposal site. • The proponent is encouraged to incorporate Sustainable Drainage Systems (SuDS) principles into the design of the proposed development to manage stormwater during the operational phase. The use of SuDS principles such as bioswales in addition to the attenuation ponds to manage stormwater will further assist in preventing significant impacts on the hydrological functioning of the wetlands, reduce the risk of flooding during high flow periods and reduce the risk of increased erosion. Furthermore, vegetated swales with indigenous wetland or riparian species can assist with water polishing, trapping hydrocarbons from stormwater run-off from roads before this is released into the wetlands. Lastly, the use of swales or similar attenuating features that ensure a diffuse outflow of stormwater into the GDARDE setback areas are seen as critical				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	to replicating the subsurface and surface inflows that will be altered by the proposed development, thus assisting in retaining the hydrology of the downgradient seep wetland. The following is deemed applicable for the construction of the development according to SuDs principles: • All swales must be constructed through excavation of the in-situ material, sloped to a ratio not steeper than 3:1 and lined with rocks and cobbles to assist with energy dissipation and prevent sedimentation and erosion as well as improve the aesthetic appeal of the swales and stormwater infrastructure; • Swales must be vegetated with indigenous obligate and facultative species suitable for seasonal saturation. This will assist with energy dissipation and prevent sedimentation and erosion as well as improve habitat provision; and Swales must be designed to allow diffuse discharge of stormwater into the environment to encourage re-infiltration of such water into the soil profile. • At no point should erosion or gully formation be allowed as this will have an impact on the water dispersal into and				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	across the wetland, which could potentially reduce the extent and functionality of the wetlands in the long-term; • All materials used to construct the swales must not generate toxic leachates or lead to significant changes in pH or dissolved salt concentrations; • No plastic lining may be used as part of the swale and stormwater infrastructure construction as this has various ecological impacts, with special mention of impacts to faunal assemblages. • All stormwater channels must be designed to allow stormwater to disperse across the channel before releasing into the wetland. This will prevent incision and scouring; and • Regularly inspect vehicles for leaks to prevent hydrocarbon spills in freshwater ecosystems. Temporary trenching activities for civil services: • A Water Use License Application (WULA) must be received from the Department of Water and Sanitation for works within the wetland area. • All construction and site clearing must take place during the dry season to limit potential impacts to the wetland because				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	of construction activities. • During excavation activities, it must be ensured that stockpiles are not higher than 2 m in height and all exposed soil must be protected for the duration of the construction phase with a suitable geotextile (e.g. Geojute or hessian sheeting) to prevent erosion and sedimentation of the conserved wetland. • Concrete and cement-related mortars can be toxic to aquatic life and other biota. Proper handling and disposal is considered imperative to minimise and eliminate discharge into the wetland. High alkalinity associated with cement can dramatically affect and contaminate both soil and ground water. • 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 soil; • Mixing of concrete is also to 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				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	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 confines of the wetland; • 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 licenced waste disposal site • Careful planning of the placement of all construction machinery must be undertaken beforehand to ensure that the minimum impact on the wetland occurs during the installation of any service infrastructure; • An AIP management plan should be developed and implemented following the construction phase of the proposed development which should be applied to wetland. AIP's should be removed by hand and no machinery should be allowed in the UCVB and Seep wetlands; • The portions of the wetlands disturbed by construction activities must be rehabilitated with indigenous wetland vegetation, thus reinstating faunal and				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	floral habitats. This will ensure that the current levels of ecological service provision of the wetlands are maintained and where feasible, improved. • Rehabilitation of these areas should take place after the construction of the proposed development has been completed and ongoing maintenance is required to ensure vegetation growth.				
Erosion	• Soil stockpiling areas must be situated at least 50m away from any watercourses • Soil stockpiling areas must be situated at least 50m away from any watercourses. • Soil stockpiles must be secured with sand bags / silt fences around the base of the stockpile should an erosion risk be observed • Temporary soil stockpiles must only be placed within the predetermined construction servitude. Soil not utilised during active reinstatement of the trench must be stored in a designated soil stockpile area within the construction site camp • No works must be undertaken where high rainfall conditions are expected. The contractor must be cognisant of weather forecasts for the area. • Temporary erosion controls must be	During construction	Prevent soil erosion associated with poor stormwater management on site	Contractor, ESO, ECO	No non-conformances, no soil erosion occurrences as a result of the construction activities.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	implemented at areas that are sensitive to erosive processes such as steep slopes (i.e., watercourse banks or edge of existing roads), the channel beds as well as recently cleared and backfilled areas • Erosion and sediment controls must be regularly monitored and maintained in order 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 across the site in order to reduce the risk of concentrated run-off entering downstream watercourse habitat • If dewatering is required on site, water must pass through a series of silt traps or an alternative silt filtering area prior to being discharged to nearby watercourses. The intensity of discharge flows must be adequately managed to ensure no erosion within the watercourses.				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
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.	During construction	Protection of archaeological and/or palaeontological resources on the site.	Contractor, ESO, ECO	No non-conformances and no impacts on such resources and proper execution of the excavation thereof.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• 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). • 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	During construction	• The appointed ECO must undertake regular site inspections for the duration of the construction phase, and to produce regular ECO monitoring audit reports,	Contractor, ESO, ECO	• The surrounding environment, land users, residents and passers-by do not experience significant

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	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, main roads, and nearby receptors and should take into account the predominant wind direction. • Until vegetation used in rehabilitation efforts has established, temporary stabilization methods must be used (e.g. protecting exposed soils with coarse granular 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.		auditing on the compliance of the property developer with the conditions of the EA and the approved EMPr. • No unacceptable levels of dust. To avoid and/or minimise impacts on the adjacent residents and activities, and to ensure that any such impacts are appropriately dealt with to prevent further impacts in the longer term. To prevent wind and water erosion and/or sedimentation of any features surrounding the site. To provide a forum for any Interested and/or Affected Parties to raise their concerns and log complaints for remediation action and prevention of similar incidents. • Excessive dust does not arise from the site. • Dust complaints from the community are monitored by		nuisance impacts related to dust. • No nuisance to adjacent residents caused by dust. • Effective complaints handling. • No repeat complaints received.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	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, in compliance with smoke control regulations issued in accordance with the Air Quality Act (Act 39 of 2004). • 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.		the ECO.		

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
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. • Attempts must be made to schedule noisy activities so that they occur simultaneously and over as short a period as possible. • Vibration inducing activities must also be simultaneously scheduled wherever possible. • 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 site or in the construction camp. • 10. No construction staff to be housed on	During construction	• The appointed ECO must undertake regular site inspections for the duration of the construction phase. • Noise complaints from the community are monitored by the ECO. • Avoid and/or minimise impacts on the surrounding farm users and farm activities and ensure that any such impacts are appropriately dealt with to prevent further impacts in the longer term. To provide a forum for any Interested and/or Affected Parties to raise their concerns and log complaints for remediation action and prevention of similar incidents.	Contractor, ESO, ECO	• The surrounding environment, land users, residents and by-passers do not experience significant nuisance impacts related to noise and vibration. • No disruptions or nuisance to adjacent residents by noise from the construction site. • Effective complaints handling. • No repeat complaints received.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	site.				
Water use	• Opportunities to reduce consumption of, or re-use water must be adopted wherever possible (see rainwater harvesting in Section 9 of this document). • 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. • Potable water tanks must be installed at the construction site for human consumption and sanitation purposes. The contractor will ensure safe drinkable water for the labourers during the construction phase.	During construction	Full compliance with EMPr requirements	Contractor, ESO, ECO	No water wastage.
Water Quality and Stormwater	• Minimise the potential contamination of ground and surface water, and to minimise	During construction	Full compliance with EMPr requirements	Contractor, ESO, ECO	

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
Management	soil erosion, 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 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 to be included to disperse run-off so as to reduce the volume				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	and velocity of surface water flow and vulnerable areas to be stabilised. • Sedimentation into drainage lines must be minimised through the effective stabilisation (e.g. gabions and Reno mattresses) and the re-vegetation of cleared areas. • 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.				
Waste Management	• Good housekeeping to be undertaken at all times. No illegal dumping or burning of waste allowed. Waste is not to be buried. • Environmental awareness training to be undertaken with the construction workers	During construction	To prevent pollution/contamination associated with the generation and temporary storage of general	Contractor, ESO, ECO	No non-conformances and no pollution of soil, groundwater and/or stormwater as a

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	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. Certain waste materials are valuable and could be sold to (local) entrepreneurs for further use. • 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		waste, hazardous waste construction rubble and litter generated by the workforce on site.		result of waste generation and management activities.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	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 (Hatherley licenced landfill site). • A Waste Management Method Statement must be submitted by the appropriate contractor to the Resident Engineer for				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	approval. • The requirements of the Waste Act (Act 59 of 2008), 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 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. Also see section 10 of this EMPr for	During construction	To prevent pollution or fire associated with the handling storage and use of materials deemed hazardous to human health or the environment.	Contractor, ESO, ECO	No non-conformances and no pollution of soil, groundwater and/or stormwater because of the construction activities. No fires because of the handling / use of fuel.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	Emergency Procedures. • 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 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 road during construction phase. • Additional warning signage regarding sharp	During construction	• The ECO will monitor these mitigation measures to ensure they are implemented. • No safety incidents occur to pedestrians or truck drivers.	Contractor, ESO, ECO	During the construction phase of the development while materials are being delivered to the site, damages to road infrastructure does not occur and the safety to

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	bends in road.				pedestrians is not at unacceptable risk. Other road users are not significantly impacted by the movement of construction vehicles, equipment, machinery of workers to/ from the site.
Socio-Economic, Health, Safety and Security	• Adequate ablution facilities and chemical toilet facilities must be erected and maintained in good order on the site 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.	During construction	• Employment opportunities are created of which preference is given to the local community. • Construction materials are sourced from local suppliers. • To ensure the safety of all site personnel as well as the surrounding users of the farm.	Contractor, ESO, ECO	• Local contractors as well as local suppliers are used during the construction phase. • No injuries / incidents on site and emergency situations managed effectively. No safety breaches.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• 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 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				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	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 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 will not be permitted.				

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• 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.				
Operation: This section presents the environmental requirements for the operational activities required to address the protection and ongoing management of the seep wetland on site					
Wetlands	• Alien vegetation management plan to be implemented that is subject to routine inspection and monitoring. • A stormwater management plan must be incorporated into the design of the development;	Operational phase	Correct implementation of environmental actions.	Applicant, PE, ESO, ECO	No unauthorised deviation from the management actions

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	• Release of stormwater into the freshwater environment must not result in further bank incision or erosion and must be done in a diffused manner; and • It is highly recommended that Sustainable Urban Drainage Systems (SUDs) principles be incorporated into the stormwater management plan for the development. • Ensure that regular maintenance takes place to prevent failure; • Develop emergency response plan to be implemented in case of emergency; and • Only existing roadways must be utilised during maintenance and repairs to avoid indiscriminate movement of vehicles within the freshwater ecosystem. • Alien vegetation management plan to be developed and implemented; and • Incorporate indigenous terrestrial and wetland vegetation into landscape plan (if applicable).				
Rehabilitate & Stabilise Disturbed Areas, Ensure Environmentally Sensitive Closure	• On completion of the construction operations, the site camp area must be cleared of all site camp facilities, ablution facilities, fencing, signage, waste and surplus material. • Surfaces are to be checked for waste	Post-construction Rehabilitation *(Some rehabilitation measures can be*	All construction-related materials, equipment, facilities and waste have been removed from the site. The final ECO inspection will	Applicant, Contractor, ECO,ESO	Once construction is complete, the site is according to the EMPr requirements.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	products from activities such as concreting or asphalting and cleared in a manner approved in writing by the ECO. • Any contaminated soil must be collected and disposed of as hazardous waste. • All construction waste, litter and rubble are to be removed from the site and re-used elsewhere or recycled/disposed of at an appropriate facility. • Burying or burning of waste or rubble on site is prohibited. • All natural areas that are to remain untransformed but that are impacted by the dumping of materials must be ripped and re-planted after construction is complete, to the satisfaction of the Environmental Control Officer (ECO • The site clean-up shall be to the satisfaction of the Project Manager and the ECO • Construction/demolition activities that must take place within the aquatic ecosystems (such as the flood protection measures, civil services, etc) or the ecological buffers must be done in the dry season, to reduce the risks of contamination of the aquatic ecosystems through rainfall and runoff • Implementation of the relevant	*applied during the construction phase, as construction activities are completed in each phase)*	comprise of a Closure Audit Report, measuring the performance of the mitigation measures listed above. Final rehabilitation of the site must be done to the satisfaction of the ECO and signed off by the ECO. Prevent impacts on the environment as a result of the conclusion of construction activities and any related impacts requiring rehabilitation actions prior to the contractors leaving the site		Provision of a development whereby all construction-related materials are no longer evident and rehabilitation of all disturbed areas, both on and off-site.

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	components of the rehabilitation plan must commence upon completion of the landscaping and / or the flood protection measures. The rehabilitation plan can be implemented in a phased manner, and must include monitoring visits by a freshwater ecologist				
Resource Use: Electricity	• All electrical equipment must be maintained in a good working condition. • All light fittings must be energy efficient (e.g., low voltage, or compact fluorescent lights). • The facility must keep up with new technologies / industry standards that exist for energy efficiency in terms of their respective operations. • Should the applicant consider the installation and operation of a generator, the noise aspect should be considered and appropriately mitigated regarding the operation of a generator.	Operational phase	Incorporation of alternative energy sources into all buildings	Applicant, PE, ESO, ECO	No excessive / unmitigated use of electricity/energy
Solid Waste Management Plan	• General waste generated during the operational phase will comprise typical domestic waste generated by administrative and housekeeping operations as well as waste associated with convenience stores and take-away food outlets, such as paper, lunch wrappers, packaging material etc. The	Operational phase	Responsible waste management in the operational township, with programmes in place to adhere to the waste management hierarchy.	Applicant	No non-conformances and no pollution of soil, groundwater and/or stormwater as a result of waste

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
	hazardous waste will comprise of empty oil cans / tins, oily rags, spent fluorescent tubes, etc. • An integrated waste management system must be implemented, and this must be underpinned by the waste management hierarchy.  • Waste from the township is to be incorporated into the existing municipal waste management system. • All general waste material (e.g., non-hazardous waste) should be contained in lined general waste bins.				generation and management activities.
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	Full compliance with the EMPr and wetland rehabilitation and	ESO, ECO	

ASPECT	ENVIRONMENTAL ACTIONS	TIMING	PERFORMANCE INDICATOR	RESPONSIBILITY	IMPACT MANAGEMENT OUTCOME
		completed	management plan		

15. FINAL CLEAN UP AND CLOSE OF CONSTRUCTION

When construction is complete, there will be a final construction cleanup phase that will involve the removal of all infrastructure not necessary for operations and final reclamation of all areas disturbed during construction that will not be used during operations.

- All disturbed areas will be cleaned and freed from any residue. All wastes will be disposed of appropriately
- The ECO will inspect the areas to make sure all the activities have been performed according to the environmental technical specifications in the CEMPr.

16. CONCLUSION

It is the opinion of the EAP that the implementation of the management and mitigation measures provided in this EMPr is sufficient to manage the environmental impacts associated with the proposed project. This EMPr will furthermore contribute to realising the following over-arching objectives set out to be reached using the document as an environmental management tool:

- Verify environmental performance through information on impacts as they occur;
- Respond to unforeseen events and environmental incidents; and
- Provide feedback to drive continual improvement in environmental performance.

The effectiveness of this EMPr will to a large degree rest on adherence to and fulfilling the roles and responsibilities of each role player and stakeholder. The roles and responsibilities for management actions contained in the EMPr and arrangements for co-ordination among the role players are clearly defined in this document.

17. DECLARATION OF ADHERENCE TO THE ENVIRONMENTAL MANAGEMENT PROGRAM

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 8-10

APPENDIX 1: EAP PROFILE, CV AND DECLARATION OF INDEPENDENCE FOR THE "INDUSTRIAL 1" TOWNSHIP, LANSERIA EXTENSON 81, LOCATED ON PORTION 72 OF THE FARM BULTFONTEIN 533 JQ, CITY OF JOHANNESBURG METRO MUNICIPALITY, GAUTENG PROVINCE, GAUT 002/24-25/E3970

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

APPENDIX 2: UNDERTAKING UNDER OATH/ AFFIRMATION FOR THE "INDUSTRIAL 1" TOWNSHIP, LANSERIA EXTENSON 81, LOCATED ON PORTION 72 OF THE FARM BULTFONTEIN 533 JQ, CITY OF JOHANNESBURG METRO MUNICIPALITY, GAUTENG PROVINCE, GAUT 002/24-25/E3970

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

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.

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

1. **Site Layout**: The graphical representation with detailed notes of the location, layout and method of establishment of the construction camp must be provided and must include the following:
    - All Contractor's buildings, and/or offices;
    - Lay down areas;
    - Vehicle and plant storage areas;
    - Workshops, if required and approved by ECO;
    - Fuel storage and dispensing areas, if required and approved by ECO;
    - Cement/concrete batching areas, if required and approved by ECO (including
    - the methods employed for the mixing of concrete and particularly the
    - containment of runoff water from such areas and the method of transportation

- of concrete);
- Other infrastructure required for the running of the project.

2. **Access Routes**: Details, including a drawing, showing where and how the access points and routes will be located and managed must be provided in a MS. Details of fences and gates affected or used during the construction activities, including a drawing showing the location of fences and access gates must be provided.

3. **Pollution control**: Expected solid waste types, quantities, methods and frequency of collection and disposal as well as location of disposal sites must be identified and stated in a MS. The MS shall further include methods of minimising, controlling, collecting and disposing of contaminated water, and details of any hazardous substances/materials to be used, together with the transport, storage, handling and disposal procedures for the substances.

4. **Safety considerations**: The Contractor shall provide details identifying what safety precautions will be implemented to ensure the safety of all staff, and the general public at large, on site during the life of the project. This will include protective clothing requirements for all types of construction activities on site, including protection against dust, noise, falling objects, and work associated with electricity and working at heights.

5. **Emergency procedures**: The Contractor shall provide details regarding all relevant emergency procedures that will be implemented for fire control and accidental leaks and spillages of hazardous substances (including fuel and oil). The Contractor shall further include details of risk reduction measures to be implemented including firefighting equipment, fire prevention procedures and spill kits.

6. **Waste management control**: The Contractor shall provide details regarding how solid and liquid waste generated on the construction site and site camp will be collected, stored, transported and disposed of. Details of any service provider(s) appointed to manage this task must also be provided.

7. **Storm water and erosion control**: The Contractor shall provide details of how storm water emanating within or adjacent to the construction site may impact on construction activities. Details on how the Contractor will deal with storm water runoff on site, must be provided. Details of any service provider(s) appointed to manage this task must also be provided.

.

APPENDIX 4: METHOD STATEMENT TEMPLATE

Description of the Activity:			
Project Name	**LANSERIA X 81**	**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**.

DECLARATION OF ADHERENCE TO THE METHOD STATEMENT: *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 "INDUSTRIAL 1" TOWNSHIP, LANSERIA EXTENSON 81, LOCATED ON PORTION 72 OF THE FARM BULTFONTEIN 533 JQ, CITY OF JOHANNESBURG METRO MUNICIPALITY, GAUTENG PROVINCE, GAUT 002/24-25/E3970Project.

Signed:_____

Date:_____

APPENDIX 5: ENVIRONMENTAL MANAGEMENT SITE PLAN

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) • How long to be kept on site • Where, when and how to be disposed of	Contractor, Resident Engineer

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: COMPLAINTS / INCIDENT REGISTER

COMPLAINTS RECORD SHEET: "INDUSTRIAL 1" TOWNSHIP, LANSERIA EXTENSON 81, LOCATED ON PORTION 72 OF THE FARM BULTFONTEIN 533 JQ, CITY OF JOHANNESBURG METRO MUNICIPALITY, GAUTENG PROVINCE, GAUT 002/24-25/E3970
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: 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 EMPr, 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 8: DECLARATION OF ADHERENCE TO THE ENVIRONMENTAL MANAGEMENT PLAN: *APPLICANT*

I, _____, in my capacity as **applicant and land owner,** hereby declare my adherence to the contents of the EMPr compiled for the "INDUSTRIAL 1" TOWNSHIP, LANSERIA EXTENSON 81, LOCATED ON PORTION 72 OF THE FARM BULTFONTEIN 533 JQ, CITY OF JOHANNESBURG METRO MUNICIPALITY, GAUTENG PROVINCE, GAUT 002/24-25/E3970, Construction Activities. I declare that:

- I have read and understood the contents of the 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 9: DECLARATION OF ADHERENCE TO THE ENVIRONMENTAL MANAGEMENT PLAN: *CONTRACTOR*

I, _____, in my capacity as the **appointed contractor,** hereby declare my adherence to the contents of the EMPr compiled for the "INDUSTRIAL 1" TOWNSHIP, LANSERIA EXTENSON 81, LOCATED ON PORTION 72 OF THE FARM BULTFONTEIN 533 JQ, CITY OF JOHANNESBURG METRO MUNICIPALITY, GAUTENG PROVINCE, GAUT 002/24-25/E3970, Construction Activities. I declare that:

- I have read and understood the contents of the 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 ENVIRONMENTAL MANAGEMENT PLAN: *RESIDENT ENGINEER*

I, _____, in my capacity as the **appointed Resident Engineer** (RE), hereby declare my adherence to the contents of the EMPr compiled for the "INDUSTRIAL 1" TOWNSHIP, LANSERIA EXTENSON 81, LOCATED ON PORTION 72 OF THE FARM BULTFONTEIN 533 JQ, CITY OF JOHANNESBURG METRO MUNICIPALITY, GAUTENG PROVINCE, GAUT 002/24-25/E3970, Construction Activities. I declare that:

- I have read and understood the contents of the 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: