

Appendix H1 Environmental Management Plan



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**PROPOSED DURBANVILLE INDUSTRIAL
DEVELOPMENT ON ERF 1991, PORTION 26 OF
FARM 724, AND PORTION 5 OF FARM NO. 724
JOOSTENBERG VLAKTE, FISANTEKRAAL, CITY
OF CAPE TOWN**

ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

October 2023

REF NO: 16/3/3/6/7/2/A5/31/2144/22

PROJECT DETAILS

TITLE	PROPOSED DURBANVILLE INDUSTRIAL DEVELOPMENT ON ERF 1991, PORTION 26 OF FARM 724, AND PORTION 5 OF FARM NO. 724 JOOSTENBERG VLAKTE, FISANTEKRAAL, CITY OF CAPE TOWN
COMPETENT AUTHORITY REF. NO.	16/3/3/6/7/2/A5/31/2144/22
REPORT TYPE	Environmental Management Programme (EMPr)
REPORT STATUS	DRAFT
LEGACY REF. NO.	22016
REVISION	1
REVISION DATE	September 2023
AUTHOR	Tayla Hobson
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CLIENT REF. NO.	-

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Name of the Company

December 2023

Date

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Terminology

The following abbreviations are used in this report:

Abbreviations	Description
AIR	Atmospheric Impact assessment Report
AEL	Atmospheric Emissions License
APC	Air Pollution Control
BPEO	Best Practical Environmental Option
CA	Competent authority
CBA	Critical Biodiversity Area
CBD	Convention on Biological Diversity
CoCT	City of Cape Town
C&RT	Comments and Responses Table
DFFE	Department of Forestry, Fisheries, and the Environment
DEA&DP	Department of Environmental Affairs and Development Planning
DWS	Department of Water and Sanitation
EA	Environmental Authorisation
EAP	Environmental Assessment Practitioner
EAPASA	Environmental Assessment Practitioners Association of South Africa
ECO	Environmental Control Officer
EIA	Environmental Impact Assessment
EMC	Environmental Management Consulting
EMPr	Environmental Management Programme
ESA	Ecological Support Area
GDPR	Gross Domestic Product
ha	Hectare
HWC	Heritage Western Cape
IAIAsa	International Association for Impact Assessment South Africa
I&APs	Interested and Affected Parties
IDP	Integrated Development Plan
MSDS	Material Safety Data Sheet
MES	Minimum Emissions Standards
MHI	Major Hazardous Installations
NAAQS	National Ambient Air Quality Standards

Abbreviations	Description
NEMA	National Environmental Management Act, 1998 (Act No 107 of 1998), as amended
NEM:BA	National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004)
NEM: AQA	National Environmental Management: Air Quality Act, 2004 (Act No. 29 of 2004), as amended
NWA	National Water Act, 1998 (Act No. 36 of 1998), as amended
NFEPA	National Freshwater Ecosystems Priority Area
NHRA	National Heritage Resources Act, 1999 (Act No. 25 of 1999), as amended
NID	Notification of Intent to Develop
NoI	Notice of Intent to Submit an Application
PSDF	Provincial Spatial Development Framework
PPP	Public Participation Process
PM	Particulate Matter
SACNASP	South African Council for Natural Scientific Professions
SAHRA	South African Heritage Resources Agency
SANS	South African National Standards
SDP	Spatial Development Plan
SDF	Spatial Development Framework
WDF	Waste Disposal Facility

1 ACTIVITY INFORMATION

1.1 Introduction

The Environmental Management Programme (EMPr) outlines the procedures that control the way the Applicant¹, Durbanville Industrial (Pty) Ltd., the Project Manager and the Contractors appointed for the construction phase activities and the operational phase activities of the proposed Durbanville industrial development on Erf 1991², Portion 26 of Farm No. 724 and Portion 5 of Farm No. 724 Joostenberg Vlake, Fisantekraal, City of Cape Town (hereafter referred to as 'the site'), shall conduct himself/ herself/ themselves.

The EMPr covers the spectrum of pre-construction, construction, and operation phases, and incorporates the recommendations of the Basic Assessment Report (BAR) and specialist studies in respect of the various actions that need to be taken to avoid / minimise / mitigate potential adverse impacts and enhance potential beneficial impacts of the project.

The EMPr describes impact management outcomes and impact management actions that need to be implemented during the various phases of the proposed project, including the careful implementation and management of the various proposed activities on the site from conception to implementation. The focus is usually placed on the activities to occur on the application property, i.e., the site; however, consideration of the adjacent or receiving environment (socially and ecologically) is equally important.

The impact management actions represented in this EMPr should not be regarded as static measures, but rather as procedures that can be adapted, as and when site conditions require. This EMPr sufficiently serves to provide the most practicable methods to promote sound environmental management during the construction and operational phases of the development. The EMPr subsequently is an on-site working and dynamic document.

This EMPr must be read in conjunction with the BAR, and the conditions of authorisation that the Department of Environmental Affairs and Development Planning (DEA&DP) is likely to put forward should authorisation be granted. In the unlikely event of any conflicting responsibilities or procedures, the precautionary principle must be adopted. Hard copies of the aforementioned documents should be kept on site along with the EMPr.

The EMPr is a fundamental element of the management process that is aimed at ensuring the environmental sustainability of the proposed development. The implementation of the EMPr will also aim to ensure that the conditions of approval laid down by the competent authority will be met. It is imperative for the EMPr to be actively implemented and used at all management levels as an integral part of the project. It is equally important to revise the EMPr in accordance with information that becomes available from the monitoring processes during the construction and operational phases and any new management practices that may be developed in the future.

1.2 Property Description

The site is a Greenfield site, since most of the development site has not been used for urban development. The site is predominantly vacant and almost completely transformed from previous land use management practices.

Refer to the locality map attached as **Figure 1** to this report. The property details are as follows:

The property details are as follows:

-  Erf 11924 (SG Code: C08500040001192400000), ± 3964,6 m² in extent.

¹The term 'Applicant' and 'Holder of the Environmental Authorisation' are interchangeable.

² Previously Portion 33 of Farm No. 168

- Erf 1991 (SG Code: C01600770000199100000): 31.99 ha = 319 900 m²
- Portion 5 of Farm 724 (SG Code: C05500000000072400005): 34.71 ha = 347 100 m²
- Portion 26 of Farm 724 (SG Code: C05500000000072400026): 0.53 ha = 20 0005 300 m²

1.3 Project Description / Components (Scope)

The Applicant, Durbanville Industrial Development (Pty) Ltd., wishes to establish the following as part of the proposed development on the site:

- ± 246 general industrial erven covering an area of ± 30 ha .
- ± 21 ha of open space, which includes the area below the 1:100-year flood line of the Mosselbank River as well as existing electrical and pipeline servitudes.
- Internal roads, up to 16 m wide.
- A 7 or 14 MVA brick-built substation and 11 kV cables.
- Associated infrastructure, such as connections to municipal water and sewer infrastructure.

The substation indicated on the concept site plan for Erf 1991 is existing. The concept layout makes provision for the extension of Darwin Road within the site. It is our understanding that the completion of Darwin Road will not constitute listed activities in terms of the EIA Regulations because: (a) the route determination of Darwin Road was completed no later than 1988, and it forms part of the City's planned road network; and (b) the road is partially completed, and construction of the road and associated infrastructure will take place along the determined route (i.e., there will be no variation in the routing of Darwin Road).

This section should be read together with the site development plan, attached as **Figure 2** to this report.

2 PURPOSE OF THE EMPr

2.1 Scope of the EMPr

The aim of the EMPr is to ensure that proper controls are in place to address the potential environmental and social impacts of the proposed pre-construction, construction, and operation phases of the development. The key activities to be undertaken in each phase are elaborated on below.

The **pre-construction (or planning/ design)** phase of the proposed development will include, amongst other activities, the following:

- Undertaking the various application processes for the required/retrospective authorisations (permits) from the relevant competent authorities to implement the proposed development. This phase also involves planning for and preparing/ refining the site layout plan for the proposed development.
- Appointment of a suitably experienced project team, including a Project Manager, Consulting Engineer (if required), Environmental Control Officer (ECO), External Auditor and an Occupational Health and Safety (H&S) Officer (if required).
- If required, refine the Site Development Plan.
- If required, prepare a Rehabilitation Plan for the remaining vegetation and clearance of the expansion area.
- Preparation of a 'staff procurement policy' to encourage the use of local labour/ staff.

The **construction** of the proposed development will include the following primary activities:

- The establishment of a construction yard/ office on the application site in non-environmentally sensitive area(s), to be ratified on-site by the ECO.
- Site clearance, including the demolition of existing structures and disposal of building rubble/ spoil to landfill.
- Site preparation by the Applicant/ Developer's contractor(s), including creation of building platforms on the development site, installation of services infrastructure, stormwater detention pond³.
- Training for members of the project team, contractors, and subcontractors in accordance with the provisions of the EMPr and the implementation of all safety measures in accordance with the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993), as amended (OHSA).
- The appointed ECO is to undertake site inspections at the frequency stipulated in the EMPr.

The **operational** phase of the proposed development will include the following primary activities:

- Undertake continuous air quality impact and hazardous risk reduction activities.

2.2 Legal Requirements

The provisions of the EMPr are binding on the Applicant and all Contractors during the life of the project and the lives of all contracts. If any conflict occurs between the terms of the EMPr and the project specifications, or pending Environmental Authorisation, the terms in the EMPr shall be subordinate.

The EMPr is a dynamic document subject to similar influences and changes as are wrought by variations to the provisions of the project specification. Any substantial changes must be submitted to the relevant authorities in writing for approval, in accordance with the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA), and the Environmental Impact Assessment (EIA) Regulations (2014), as amended.

The construction and operational phase aspects of this development must be undertaken according to best industry practice, as identified in the EMPr and any relevant project documentation. This EMPr, which forms an integral (**and compulsory**) part of all Contract Documents, informs the Contractors/ Responsible Persons as to his/ her/ their duties in the fulfilment of the project objectives, with particular reference to the prevention and mitigation of potential negative environmental impacts caused by the activities associated with the project.

All Contractors must note that obligations imposed by the EMPr are legally binding in terms of environmental statutory legislation. If any rights and obligations contained in this document contradict those specified in the standards or project specifications, then the latter will prevail.

2.2.1 Statutory and other applicable legislation

It is expected that the Contractor(s) is conversant with all environmental legislation pertaining to the project. In addition, the Contractor must also take cognisance of Provincial and Local Government Ordinances and by-laws, which may be applicable to the project.

³ The civils contract, which will include the following activities: site clearance, creation of platforms, installation of services infrastructure, incl. roads, boundary wall/fence and stormwater pond and landscaping of communal open spaces, will be the responsibility of the Developer; and that the construction of individual dwellings will be the responsibility of each property owner.

2.3 Impact Management Outcomes and Impact Management Actions

Impact management outcomes, and proposed impact management actions to achieve these outcomes, have been determined for the project based on the impact assessment undertaken and recommendations made by the EAP and specialist practitioners. The impact management actions include measures to avoid, manage and/or mitigate the identified impacts.

2.4 Fundamental Principles of the EMPr

The EMPr is based on fundamental principles⁴ derived from applicable government policy statements contained in various government documents and legislation (e.g., NEMA). The following principles contained in these documents and laws will be used in the EMPr to guide the various phases of the proposed development, namely:

- Environmental management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural, and social interests equitably.
- Development must be socially, environmentally, and economically sustainable, i.e., meet the “triple bottom line” criteria for development.
- Sustainable development requires the consideration of all relevant factors including the following:
 - that the disturbance of ecosystems and loss of biological diversity are avoided, are minimised and remedied;
 - that the disturbance of landscapes and sites that constitute the nation's cultural heritage is avoided, or where it cannot be altogether avoided, is minimised and remedied;
 - that the development, use and exploitation of renewable resources and the ecosystems of which they are a part do not exceed the level beyond which their integrity is jeopardised;
 - that a risk-averse and cautious approach is applied (also called the Precautionary Approach), which takes into account the limits of current knowledge about the consequences of decisions and actions;
- Environmental management must be integrated, acknowledging that all elements of the environment are linked and interrelated, and it must take into account the effects of decisions on all aspects of the environment and all people in the environment by pursuing the selection of the best practicable environmental option.
- Community well-being and Empowerment (e.g., of the construction personnel) must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means.
- Capacity building and education: The EMPr must play a dynamic role in developing the understanding, skills, and capacity of the Employees (e.g., construction personnel) in order to promote sustainable development.
- Consider all alternatives: Considering all alternatives results in making the best decisions. The BAR and EMPr must therefore ensure that all alternatives are considered in all decision-making. Developmental and environmental planning, problem solving, and decision-making are often complex. Possible consequences of conflicting interest as well as the consequences of not acting need careful consideration.
- Co-ordination: Various concerns and issues cut across the key sectors and functions in the area. Sustainability and integrated planning and management (including monitoring) therefore will depend on co-ordination and integration of the relevant role players in the construction and operational phases of the proposed development.

⁴ **Principles** are shared assumptions and truths that policy and action can be based upon.

- Due process: Due process must be applied in all integrated management activities. This includes adherence to the provisions in the Constitution and statutes dealing with just administration and public participation in regional and local governance.
- Duty of care: Every person (e.g., the Applicant and the contract workers) associated with the development and its associated infrastructure has a duty to act with due care to avoid damage to the environment, or pollution of the environment or waste a precious resource. Also called the Environmental Responsibility Principle.
- Equity: The EMPr is to ensure equitable access to natural resources, benefits, and services to meet basic needs and ensure human wellbeing. Each generation has a duty to avoid impairing the ability of future generations to ensure its wellbeing.
- Full cost accounting: Decisions must be based on an assessment of the full social and environmental costs.
- Good governance: Good governance depends on mutual trust and reciprocal relations between the various groups and sectors of the area and the controlling officials. This must be based on the fulfilment of constitutional, legislative, and executive obligations, and the maintenance of transparency and accountability.
- Prevention: The EMPr must be flexible enough to be adapted to take into account any potential problems that may arise in the future and thereby prevent any negative impacts on the environment, and on people's rights.
- Polluter Pays: Those responsible for environmental damage must pay the repair costs both to the environment and human health and must carry the costs of preventative measures to reduce or prevent further pollution or degradation.
- Subsidiary: Regulatory responsibilities belong at the most local level at which the tasks can be carried out effectively. Environmental management structures must match the ecological scale of the managed resource.
- Waste management: Waste management must minimise and avoid the creation of waste at source. The EMPr is to encourage waste recycling, separation at source and safe disposal of unavoidable waste.

2.5 Structure of the EMPr

Appendix 4 of the NEMA EIA Regulations, 2014 as amended, specifies the information that is to be included in an EMPr. These information requirements are summarised below in Table 1 and are cross-referenced with the contents of this report, where relevant.

Table 1: Content of EMPr as required by the 2014 EIA Regulations, as amended

Regulation	Description	Reference in the Report
(1)	An EMPr must comply with section 24N of the Act and include:	
(a)	(a) details of; (i) the EAP who prepared the EMPr; and (ii) the expertise of that EAP to prepare an EMPr, including a curriculum vitae	Section 10 and Appendix A
(b)	a detailed description of the aspects of the activity that are covered by the EMPr as identified by the project description	Section 1.3 and Section 2.1
(c)	a map at an appropriate scale, which superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers	Figures 1 - 2
(d)	a description of the impact management outcomes, including management statements, identifying the impacts and risks that need to be avoided, managed and mitigated as identified through the	Section 4.1, Section 5.1, and Section 6.1

Regulation	Description	Reference in the Report
	environmental impact assessment process for all phases of the development including; (i) planning and design; (ii) pre-construction activities; (iii) construction activities; (iv) rehabilitation of the environment after construction and where applicable post closure; and (v) where relevant, operation activities	
(f)	a description of proposed impact management actions, identifying the manner in which the impact management outcomes contemplated in paragraphs (d) will be achieved, and must, where applicable, include actions to; (i) avoid, modify, remedy, control or stop any action, activity or process which causes pollution or environmental degradation; (ii) comply with any prescribed environmental management standards or practices; (iii) comply with any applicable provisions of the Act regarding closure, where applicable; and (iv) comply with any provisions of the Act regarding financial provisions for rehabilitation, where applicable	Section 4.2, Section 5.2, and Section 6.2
(g)	the method of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 3.2.7
(h)	the frequency of monitoring the implementation of the impact management actions contemplated in paragraph (f);	Section 3.2.7
(i)	an indication of the persons who will be responsible for the implementation of the impact management actions	Section 3.2
(j)	the time periods within which the impact management actions contemplated in paragraph (f) must be implemented	In most cases ongoing during the particular phase of development, except where otherwise specified in the EMPr.
(k)	the mechanism for monitoring compliance with the impact management actions contemplated in paragraph (f);	Section 3.2.7 and Section 7
(l)	a program for reporting on compliance, taking into account the requirements as prescribed by the Regulations	Section 3.2.7 and Section 7
(m)	an environmental awareness plan describing the manner in which; (i) the applicant intends to inform his or her employees of any environmental risk which may result from their work; and (ii) risks must be dealt with in order to avoid pollution or the degradation of the environment; and	Section 9
(n)	any specific information that may be required by the competent authority	Sections 4 – 6 (incorporated, as relevant)
(2)	Where a government notice gazetted by the Minister provides for a generic EMPr, such generic EMPr as indicated in such a notice will apply	N/A

3 GENERAL SITE MANAGEMENT

3.1 Project and Environmental Management Team

The Project Management Team will consist of the Applicant (Developer), Project/ Site Manager (Resident Engineer/ Site Agent), Environmental Control Officer (ECO), External Environmental Auditor, Health and Safety Officer, Contractors and associated sub-contractors.

The specific names and contact details of the persons responsible within these positions and the sub-contractors involved are tabulated below.

The daily on-site activities will be controlled by the Project/ Site Manager.

Table 2: Site Management Contact Details

Designation	Name	Contact Details
Applicant / Developer / Holder of EA	Durbanville Industrial Development (Pty) Ltd.	Mr Jannie Kotze Tel: 076 333 0337 Janniek09@gmail.com
Project / Construction Site Manager / Principal Agent	To be appointed	
Environmental Control Officer (ECO)	To be appointed	
External Environmental Auditor	To be appointed	
Occupational Health and Safety Officer	To be appointed	
Contractor(s)	To be appointed	

3.2 Communication, Responsibilities and Complaints Management

3.2.1 General Public

It is the responsibility of the **Applicant** to facilitate interaction with the public. This responsibility includes:

- Informing the neighbouring residents of the intent to commence with the activities and in doing so provide background information as to the duration of the project, the working hours, and necessary contact details;
- Responding to all public complaints or queries whether such complaints are received by the Project/Site Manager, ECO and/or the appointed Contractors;
- Develop and maintain a register of all public complaints/ queries, as well as the Applicant's response to these complaints and queries; and
- Respond to the media and prepare media reports should such requests be received.

3.2.2 Duty of Care

The Applicant, Project Manager and Contractors have a *Duty of Care* towards the environment in terms of Section 28 of NEMA. Section 28 states that *“Every person who causes, has caused, or may cause significant pollution or degradation of the environment must take reasonable measures to prevent such pollution or degradation from occurring, continuing or recurring, or, in so far as such harm to the environment is*

authorised by Law or cannot reasonably be avoided or stopped, to minimise and rectify pollution or degradation of the environment.”

The EMPr requires all involved with the development to act in the spirit of “Duty of Care” throughout the various phases of the project.

3.2.3 Contractors

It is the responsibility of the Contractor(s) to:

- 🌀 Undertake all work on site in accordance with the requirements of the EMPr and Environmental Authorisation;
- 🌀 Undertake all work on site in accordance with the requirements of the applicable legislation, including the Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997), as amended and the OHSA.
- 🌀 Undertake regular (at least weekly) “tool-box talks” with personnel, the contents of which must include reference to the EMPr (with a focus on any issues raised by the ECO). Personnel to be made aware of the dangers associated with the work and that they have the right to refuse work that is harmful to human health or the environment;
- 🌀 Liaise directly with the Applicant, Project/ Site Manager regarding any queries concerning the EMPr or complaints received from the public;
- 🌀 Liaise directly with the Project/ Site Manager should any environmental problems be identified or actions in breach of the objectives set, take place e.g., littering, oil spill;
- 🌀 Keep on file proof of safe/ lawful disposal of all wastes generated during the construction phase
- 🌀 Carry out instructions issued by the Project/ Site Manager; and
- 🌀 Implementation of / Adherence to the Procurement Strategy.

3.2.4 Project Applicant / Holder of the Environmental Authorisation




The Project Applicant’s (Holder of the Environmental Authorisation) responsibilities include the following:

- 🌀 Attain all necessary approvals and ensure that they are acted on within their validity period and that the conditions of approval are adhered to;
- 🌀 Appoint a project team capable of implementing the requirements of the EMPr and EA, including an ECO and Landscape Architect (if necessary);
- 🌀 Fulfil all public relations responsibilities in conjunction with the Municipality;
- 🌀 Inform the relevant authorities of any site related problems that may occur during the various phases of the project;
- 🌀 Attend site meetings when appropriate;
- 🌀 Liaise with the Project/ Site Manager regarding environmental management on site; and
- 🌀 Assist the Project/ Site Manager in making decisions and finding solutions to environmental problems that may arise during the operation and closure phases.

NOTE: The Holder of the Environmental Authorisation is ultimately **responsible for ensuring compliance** with the conditions of authorisation by any person acting on its behalf, including but not limited to, an agent, sub-contractor, employee, or any person rendering a service to the holder of the authorisation.










3.2.5 Local Authority

The Local Authority's responsibilities include the following:

-  Attend site meetings when appropriate;
-  Liaise with the Project/ Site Manager regarding environmental management on site; and
-  Assist the Applicant, Project/ Site Manager in making decisions and finding solutions to environmental problems that may arise.

3.2.6 Project (Construction) Site Manager / Principal Agent

The Project/ Site Manager's responsibilities include the following:



-  Oversee the day-to-day activities on the site and keep an up-to-date diary of site activities;
-  Ensure that the requirements as set out in the EMPr and the conditions of EA are adhered to throughout the lifecycle of the project;
-  Direct the Contractors, whenever necessary, to comply with the conditions of the EMPr and EA and recommend corrective action where there is non-compliance with the EMPr;
-  The Project/ Site Manager must attend site meetings where required to be able to report on, and respond to any environmental issues, and be issued with copies of minutes of such meetings;
-  The Project/ Site Manager must obtain, examine, and approve method statements where applicable;
-  Advise the project team on environmental issues within the defined work and surrounding areas;
-  Collect and record all waste manifest data sheets;
-  Maintain the public complaints register on the site; and
-  Review the results of the ECO site visits (Reports) and facilitate any corrective actions that may be necessary.

The Project/ Site Manager has the authority to **stop works** if in his/ her opinion there is a serious threat to, or impact on the natural and/or social environment because of construction activities. This authority is to be limited to emergency situations where consultation with the applicant and/or contractor is not immediately possible. In all such work stoppage situations the Project/ Site Manager is to inform the applicant and contractor of the reasons for the stoppage as soon as possible. The necessary instructions should be issued verbally and followed up with written instruction (e.g., via email).

Upon failure by the contractor to show adequate consideration to the environmental aspects of this contract, the Project/ Site Manager may recommend having the contractor's representative or any employee(s) removed from the site or suspend work until the matter is remedied. No extension of time will be considered in the case of such suspensions and all costs will be borne by the responsible contractor.

3.2.7 Environmental Control Officer

The Environmental Control Officer's (ECO) responsibilities (if required by the Environmental Authorisation conditions) include the following:

-  The ECO must submit written notification of the commencement of work on site to the competent authority;
-  The ECO must monitor and report on the level of compliance by the Applicant, Project Manager and Contractors with the approved EMPr and the conditions stipulated in the Environmental

Authorisation for the proposed development at the frequency(ies) as stipulated in Section 3.2.7.2 below;

- 🌱 The ECO must meet with the Project Manager and Contractor(s) before construction begins to present the environmental education training and to go through the contents of the EMPr and EA. The ECO must explain to the Contractors, their environmental responsibilities whilst employed on the site, in particular their Duty of Care towards the environment;
- 🌱 The ECO will issue an ECO Report/ Checklist after each site visit (or at a minimum once per month), which provides a summary of project progress in general and the findings of the site visit and the level of compliance with the EMPr and EA. The ECO Report must be circulated to the DEA&DP and the Municipality.
- 🌱 The ECO must be contacted to attend to environmental problems, should they arise on site, and shall recommend corrective action where there is partial- or non-compliance with the EMPr and/or EA;
- 🌱 The ECO must attend site meetings where required to be able to report on, and respond to, any environmental issues, and be issued with copies of minutes of such meetings;
- 🌱 The ECO must obtain, examine, and approve method statements where applicable;
- 🌱 The ECO must manage and keep an up-to-date diary of site activities and a detailed photo record of all site visits;
- 🌱 The ECO must advise the applicant, Project/ Site manager and Contractors on environmental issues within the defined work areas;
- 🌱 The ECO shall liaise with the local authority's environmental officer on an as required basis.

The ECO has the authority to **stop works** if in his/ her opinion there is a serious threat to or impact on the environment because of construction activities. This authority is to be limited to emergency situations where consultation with the Project/ Site Manager or Applicant is not immediately available. In all such work stoppage situations the ECO is to inform the Project/ Site Manager and Applicant of the reasons for the stoppage as soon as possible. The necessary instructions should be issued verbally and followed up with written instruction (e.g., via email).

Upon failure by the Contractor or his employee to show adequate consideration to the environmental aspects of this contract, the ECO may recommend to the Project/ Site Manager to have the Contractor's representative, or any employee(s) removed from the site or work suspended until the matter is remedied. No extension of time will be considered in the case of such suspensions and all costs will be borne by the responsible Contractor.

3.2.7.1 Level and Type of Competency of ECO

A suitably experienced environmental practitioner(s), with at least 3 years relevant site supervision experience, will need to act as the ECO.

3.2.7.2 Frequency of ECO Site Visits

The frequency of ECO site visits during the construction phase of civils infrastructure should be as follows:

- 🌱 Twice per month during the first month of the construction works. *Twice per month may be too infrequent during certain construction activities, and therefore the frequency should be adapted as required.*
- 🌱 Thereafter once per month for the duration of the construction phase, based on the level of compliance with the EMPr and EA.

The monthly site visits should, as far as possible, coincide with the monthly site meetings [with the Project Manager and contractor(s)].

An ECO checklist must be completed once per month and must be forwarded to the Project Manager, Contractor(s) and Applicant (developer) within 5 days of the site visit and meeting. *Any environmental problems noted during a site inspection should, however, be brought to the attention of the Project Manager and Contractor as soon as reasonably possible.*

The ECO should undertake *ad hoc* site inspections should environmental problems arise during the construction phases, or when certain milestones have been reached.

The ECO will carry out a final site inspection at the end of the civils construction phase, to undertake an environmental 'close-out' inspection/ audit, to assess compliance with the EA, EMPr and the construction guidelines, and to ensure that satisfactory rehabilitation of any disturbed areas and access roads around the construction sites have been carried out.

Should any environmental problems arise during the construction phase, the Resident Engineer (RE) and/or contractor must immediately inform the ECO to undertake a site visit to assess and attend to the potential environmental problem(s). All works where problems exist are to be stopped until the ECO has been to site and assessed the situation and rectified the problem(s).

3.2.7.3 Reporting on Compliance

The ECO is required to report on compliance in writing to the Project Manager, Applicant, and relevant authorities monthly during the construction phase.

Refer to **Section 3.3** with respect to external auditing requirements.

3.2.8 Communication and Record Keeping Procedures on Site

All records related to the implementation of this EMPr (e.g., site instruction book, Site Manager Diary, method statements, environmental authorisation) must be kept together on site where it is safe and can be retrieved easily. These records should be kept for submission to the relevant authorities, if so requested.

3.2.8.1 Site Instruction Entries

An instruction book/ file should be kept on site by the appointed Contractor for the purposes of recording specific important site instructions that need immediate attention. The site instruction book will also be used for issuing "stop work" orders for the purposes of immediately stopping any activities on site due to the environmental risk or impact that may result.

Site inspections will be conducted by an ECO appointed by Applicant/ Developer. The ECO Checklists will serve as a general record of compliances and non-compliances in accordance with the content of the EMPr and EA that need to be addressed during the construction or operational phases of the development. The Project Manager must give immediate attention to any environmental issues that need to be dealt with.

3.2.8.2 Environmental Incidents and External Complaints Register

A register should be maintained by the Project Manager of all environmental incidents occurring on site. The register should record the following information for each incident: date, time, type of incident, person responsible for the incident, corrective action required, immediate corrective action implemented, and whether the incident was reported to the ECO and/or other parties.

A register should also be maintained of any complaints and/or comments received from external parties (such as from neighbours and members of the surrounding community or staff of the proposed development site). The register should record the following information for each complaint and/or comment received: date, time, details of the person who lodged the complaint/ comment, details of the complaint/ comment, action required, immediate action implemented, whether the complaint/ comment was reported to the ECO and/or other parties.

3.2.8.3 Minutes of the Site Meetings

The Minutes of each monthly site meeting must be forwarded to the ECO, Contractor, and the Applicant within one week of the meeting taking place. The minutes of the meeting must record any environmental issues that have been raised by the ECO, and that need to be addressed or rectified.

3.2.8.4 Photographs

It is recommended that photographs are taken of the site regularly by the Project Manager and during site visits by the ECO as a visual reference. These photographs should be filed with other records related to this EMPr.

3.2.8.5 Method Statements

Method Statements

Written submissions by the Contractor(s) must be prepared prior to any activity occurring on site if requested by the Applicant, Project/ Site Manager or ECO, or for activities not addressed in this EMPr. The submission will include the plant or equipment to be used as well as materials, labour, and methods to be used to undertake the activity.

The method statement must be completed in such detail that the Project/ Site Manager is enabled to assess whether the Contractor's proposal is in accordance with the environmental objectives set. The format for such a method statement should follow the following format and include the following information:

- 🌀 **What?** A brief description of the project;
- 🌀 **How?** A detailed description of the process of work, methods and materials; and where material will be stored;
- 🌀 **Where?** A description/sketch map of the locality of work (if applicable); and compliance/noncompliance with the specifications;
- 🌀 **When?** The sequencing of actions with due commencement and completion date estimates (duration of the activity);
- 🌀 **Who?** The names of the person/s or companies who are going to undertake the work; and
- 🌀 **Why?** An explanation of the reason why the work needs to be carried out.

Copies of all approved Method Statement must be kept on site as required in **Section 3.2.8** above.

3.3 External Auditing Requirements

Auditing of compliance with the EA and EMPr needs to be undertaken in accordance with Section 34 of the EIA Regulations 2014 (as amended from time to time). Audit Reports need to meet the objectives and content requirements as laid out in Appendix 7 to the EIA Regulations 2014 (GNR326) (as amended from time to time). DEA&DP is likely to include conditions relating to auditing in the EA.

3.4 Environmental Awareness

All Contractor teams involved in work on the development are to be briefed on their obligations towards environmental controls and methodologies in terms of this EMPr and conditions of the EA prior to work commencing.

3.5 Financing of Environmental Control

Financing of all control measures is the direct responsibility of the Applicant, or each contractor appointed by the Applicant. It is therefore accepted that the costs incurred for implementing the required environmental controls to ensure compliance with local authority By-laws, Provincial and National legislation, the EA and the objectives or requirements specified in this EMPr would be provided for in the specific tender documents.

All responsibilities not defined in the EMPr, or which fall outside of the tender specifications will be the responsibility of the Applicant.

4 ENVIRONMENTAL MANAGEMENT: PRE-CONSTRUCTION PHASE

4.1 Description of the Impact Management Outcomes for the Pre-Construction Phase

The impact management outcomes for the pre-construction phase include the following:

- 🌱 To ensure that the recommended plans and strategies are prepared and implemented timeously to maximise the benefits of the proposed development and manage the anticipated negative impacts prior to the construction phase commencing.
- 🌱 To ensure the recommendations of the respective specialists, the maintenance management plan and the stormwater management plan undertaken are considered during the detailed design phase, where applicable.

4.2 Environmental Specifications: Pre-Construction

4.2.1 Prepare Recommended Plans and Strategies

Responsible Entity: The Applicant must take responsibility for ensuring that the required plans and strategies as recommended by the specialist practitioners are timeously prepared and implemented.

The appointed **ECO** is to monitor compliance with the required actions below.

NOTE: The required actions below must be prepared **prior to** commencement of construction.

Required Actions:

- 🌱 Guidelines should be prepared, where relevant, for the implementation of a Procurement and Communication Strategy that includes the following:
 - 🌱 Initiate the activity during the first phase of the development after which the implementation of the strategy becomes the responsibility of the contractor(s) collectively under the guidance of the developer;
 - 🌱 Develop a database of local contractors who are competitive and possess the required skills and capacity to obtain contracts; and
 - 🌱 Local contractors are invited to tender for work in the context of the terms and conditions that should be included in Request for Proposal (RFP) documentation.
 - 🌱 Inform local people that enquire about employment opportunities of the procurement strategy and the terms of conditions that are applicable to procurement and employment.
- 🌱 Define/ determine the performance criteria for the project and institute a monitoring programme of construction performance.

5 ENVIRONMENTAL MANAGEMENT: CONSTRUCTION PHASE

5.1 Description of the Impact Management Outcomes for the Construction Phase

The impact management outcomes for the construction phase include the following:

- To control all aspects of the construction phase by implementing the necessary impact management actions and recommendations to manage any temporary or permanent negative environmental impacts.
- To ensure the conservation of the natural resource base on the site, and institute measures to prevent the degradation of the natural resource base from taking place, including:
 - To protect and conserve animal life, including birds and snakes which may occur within the development area.
 - To prevent fires from arising from the construction site.
- To ensure the conservation and sustainable use of scarce water resources by instituting measures to minimise water use during the construction phase of the project.
- To ensure waste minimisation and recycling of all waste at source and ensure that recyclables enter the waste stream by engendering an ethic of waste management amongst construction staff.
- To ensure that no stormwater is discharged to the working areas and further to ensure that the stormwater leaving the footprint of the proposed development area is not contaminated by any substance.
- To prevent any impacts on air quality, such as dust and smoke pollution, that could result during the construction phase of the project.
- To minimise the visual (aesthetic) impact of the development, during the construction phase, on the surrounding environment.
- To ensure the conservation of the archaeological and heritage resources on the site, by checking for such resources in any excavations undertaken.
- To optimise the social benefits of the development, local builders and contractors should enjoy preferential appointments to install infrastructure.
- To maintain and/or enhance security levels around the development site, during the construction phase of the development.

5.2 Environmental Specifications: Construction

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
E.1 GENERAL CONSTRUCTION MANAGEMENT				
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E.1.1 Establish appropriate partnerships and good relationships with local authorities, local community (including adjacent landowners), and contractors				
<p>Potential Impact: Poor relations with project stakeholders and the negative implications for project support, such as <i>developer interest</i>, and for project implementation, such as <i>authority approval</i>.</p> <p>Target Outcome: Appropriate partnerships and good relationships with local authorities, the local community (including adjacent landowners) and contractors established for the duration of the project lifespan.</p>	1. Ensure appropriate communication with all local authorities, local communities, and contractors.	To be undertaken by professional team and ECO, project manager (consulting engineer and/or site agent) as an ongoing process.	The Project Manager must take responsibility for establishing good relations.	The appointed ECO is to monitor environmental contractual obligations of contractors on an ongoing basis and must undertake the required environmental inductions and training of contractors. Monitoring Frequency: Monthly ECO Checklists
	2. Contractors to be fully informed by the ECO as to their environmental contractual obligations.	ECO to monitor environmental contractual obligations of contractors on an ongoing basis.		
	3. The ECO to give a presentation to contractor and site staff to familiarise them with the environmental aspects of the contract, prior to the commencement of construction. The Contractor and staff must attend this meeting.	ECO and Project Engineer (PE or RE) to meet with Contractor and staff before construction commences to introduce the EMPr.		
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E.1.2 Set-up of construction site and site offices				
<p>Potential Impact: Deterioration of environment surrounding construction site.</p>	1. Communicate with Contractor to ensure that all the environmental specifications are understood and carried out.	To be undertaken by ECO and site agent before construction commences.	The Project Manager must take responsibility for the setting up of the	The appointed ECO is to ratify the areas designated for the

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
<p>Target Outcome: Undertake construction works without adversely affecting the environment through the implementation of appropriate management measures.</p>	2. The Contractor must point out and demarcate the construction site and site offices. This area is to be fenced off and must be locked outside working hours.	To be sanctioned by the site agent with ECO before construction commences.	construction site and site offices and must ensure that construction activities are undertaken in such a manner as to not adversely affect the environment.	<p>construction uses and must monitor compliance with the required actions.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>
	3. Control all construction in terms of the EMPr.	ECO to inform and educate the construction staff and RE of the <i>Construction Guidelines</i> and the <i>Recommendations for Clearing of Invasive Alien Vegetation</i> prior to commencement of construction. ECO to monitor compliance.		
	4. Construction material (concrete and raw materials) must be stored in designated areas in a neat and orderly manner.	Area for construction material to be designated by the ECO and to be in a secured area. ECO to monitor compliance.		
	5. Contractor to store building rubble in a suitable designated area, with rubble removed from the site on a weekly basis (if not to be used as fill).	Area for building rubble storage to be designated by the ECO. Contractor to remove builders' rubble on a weekly basis. ECO to monitor compliance.		
	6. The Contractor must indicate the storage area for all spoil from the site. Trucks removing spoil must remain on designated access road/s. Access Road/s must be well maintained.	ECO to assess spoil storage area and to monitor the condition of the road.		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	<u>MONITORING:</u> RESPONSIBLE PARTY, ACTION AND FREQUENCY
	7. All other solid waste is to be kept in appropriate containers with lids and removed from the site on a weekly basis to a licensed waste disposal facility (WDF). The burning of solid waste and paper on site will not be allowed. Recyclable waste (e.g., paper, glass, tin, plastic) should be recycled if possible.	Contractor to remove the solid waste on a weekly basis. ECO to monitor compliance.		
	8. Only one refuelling area should be provided at the stores/site office. A bunded pit (large enough to contain 110% of the fuel volume to be stored) must be built beneath the fuel container. A concrete apron must be cast on the outside of the bunded area to contain diesel spills and drips. A sand layer, ± 150 mm thick, can be placed on top of the floor of the bunded pit. The sand layer must be replenished from time to time according to the degree of contamination. The contaminated soil must be removed to a licensed waste disposal facility that accepts such toxic waste.	ECO to supervise and monitor. Contractor to report all fuel and oil spills to the ECO immediately and to remove contaminated soil to a licensed WDF.		
	9. Concrete mixing must be restricted to a designated area on site and cement residues to be removed from site as soon as possible. Two wastewater catch pits must be constructed in series for the capture of cement residues from cleaning of the cement mixer. Residues are to be removed from site from time to time.	Contractor to remove cement residues from site as directed or at the end of the contract. ECO to monitor compliance.		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	<u>MONITORING:</u> RESPONSIBLE PARTY, ACTION AND FREQUENCY
	<p>10. Prevent cement spills or clear such accidental spills on any exposed soil on/near the site as soon as possible as cement powder has a high alkalinity pH rating that can contaminate and affect both soil and water pH dramatically. This will have negative impacts on surrounding vegetation.</p>	<p>Contractor to remove any spilt cement on exposed soil as soon as possible.</p>		
	<p>11. All parked mechanical vehicles must have a drip tray present to prevent spillage of oils and fuels. Used oil (from servicing of vehicles) should be recycled or disposed of at a hazardous waste disposal facility.</p>	<p>ECO to monitor compliance. Contractor to recycle or dispose of used oils at hazardous WDF. Contractor is also to dispose of contaminated soil at a hazardous waste disposal site and to ensure that spillage of hazardous substances on site are addressed immediately and appropriately.</p>		
	<p>12. All spills are to be addressed immediately to prevent seeping into the ground.</p>			
	<p>13. A hydrocarbon spill kit must be provided on-site, and personnel must be trained in its use. The requirements of the Hazardous Substances Act, 1973 (Act No 15 of 1973), as amended, must be adhered to where relevant. Emergency incidents that fall under section 30(1) (a) of the National Environment Management Act, 1998 (Act No. 107 of 1998), as amended (NEMA), must be dealt with as required. Containment and clean-up must commence immediately, and any incidents must be reported to the relevant authorities and within the prescribed period. Incidents must be reported to Ms. Maurietta Stewart, Head of the Environmental and Heritage Management Branch (Central) from the City of Cape Town (E-</p>			

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
	<p>mail: maurietta.stewart@capetown.gov.za / enviro@capetwon.gov.za, Tel: (021) 444 1761 / (021) 487 2284/ 2315/ 2319) as well as Pollution & Chemical Management: Remediation & Emergency Incidents Management Sub-directorate on 021 483 2571 or Amina.Sulaiman@westerncape.gov.za / Sibusisiwe.Matiya@westerncape.gov.za.</p>			
	<p>14. Disturbed areas where dust can arise should be kept moist by spraying with water from a bowser or by using other suitable means such as straw stabilisation. Water use for wetting of roads should not be potable water. It can be obtained from dams or the use of treated effluent.</p>	<p>Safety, Health & Environmental Officer to monitor the generation of any dust and advise the Contractor to mitigate accordingly.</p>		
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E.1.3 Prevent possible negative impacts of construction personnel on the environment				
<p>Potential Impact: Deterioration of environment surrounding construction site.</p> <p>Target Outcome: Preserve conditions of surrounding natural environment.</p>	<p>1. Contractors will be responsible for the conduct of their personnel on site, as it pertains to trespassing, littering, and unacceptable social behaviour.</p> <p>2. ECO must inform construction personnel of environmental rules to apply during construction period.</p>	<p>Contractor responsible for social management. ECO to monitor for duration of contract.</p> <p>ECO to meet with Contractor prior to commencement of construction in new areas to inform workers of the sensitivities of the site and how they should conduct themselves.</p>	<p>The Project Manager and responsible Contractor(s) must take responsibility for regular staff training and education regarding the environmental implications of construction activities to prevent / minimise the</p>	<p>The appointed ECO is to monitor compliance with the required actions for the duration of the contract(s). ECO must inform construction personnel of environmental rules, which apply during the construction period.</p>

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
	3. Maintain strict supervision over all construction activities.	ECO to monitor construction activities and if any adverse impacts occur, he must inform the Site Agent, RE and client of such conduct on an ongoing basis.	impacts of construction activities on the environment.	This includes informing personnel of the environmental sensitivities of the receiving environment as well as how they should conduct themselves on site. Monitoring Frequency: Monthly ECO Checklists
	4. All construction workers must stay within the development area demarcation and no personnel will be allowed beyond the demarcated area.	Contractor responsible for ensuring that personnel do not move beyond the demarcated areas of the site. ECO to monitor for duration of contract.		
	5. The contractor must provide temporary chemical toilet facilities at the stores/ site office area, and work sites, where possible. A minimum of one toilet and one handwash basin shall be provided per 15 persons at each working area or as stipulated by the local authority. In addition, at least one urinal should be provided for every 40 males on site or as stipulated by the local authority. The toilets and urinal(s) must be kept in a clean and sanitary condition and must be regularly serviced (on at least a weekly basis).	Contractor responsible for the functionality of the toilet facilities on site. ECO to monitor condition of such facilities.		
	6. Contractors must be informed of the efficient energy (electricity) use during construction. When not in use lights, angle grinders, motors etc. must be switched off.	Contractor to ensure energy used on site is conserved wherever possible.		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
	7. Designated eating areas must be provided for staff. Lidded bins must be provided for any waste.	Contractor to indicate areas suitable for eating on/off site. Safety, Health & Environmental Officer to monitor cleanliness of such area/s.		
	8. Construction staff will not be allowed to stay on site and must be bussed to site each day.	ECO to monitor for duration of contract.		
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E.1.4 Ensure that the construction phase meets the required performance criteria.				
<p>Potential Impact: Sub-standard contractor work during the construction work could lead to a number of negative impacts, such as delayed deadlines, financial implications and unnecessary harm to the natural environment and/or surrounding the site.</p> <p>Target Outcome: Contractor compliance with the EMPr and hence, minimal environmental damage due to construction works.</p>	1. Inform all contractors and their staff of the performance criteria.	To be undertaken by ECO prior to commencement of construction.	The Project Manager must ensure that the construction phase meets the required performance criteria and inform the Client of any time delays or non-performance during the contract period.	The appointed ECO is to monitor compliance with the required actions for the duration of the contract(s). Monitoring Frequency: Monthly ECO Checklists
	2. Institute and maintain a monitoring programme of construction performance.	Site Agent to supervise worker behaviour on a daily basis and to be monitored by ECO.		
	3. Monitor construction work.	PE to monitor progress and impacts and inform client of any time delays or non-performance during contract period.		
	4. Ensure that contractors adhere to the guidelines in respect of littering, sanitation, spills of toxic substances and general behaviour.	Site Agent to supervise worker behaviour on a daily basis. Significant impacts to be monitored by ECO		
E2 BIOPHYSICAL MANAGEMENT PROGRAMMES				
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
E2.1 Fauna and Flora				
E2.1.1 Alien plant management				
<p>Potential Impact: Alien vegetation infestation on the site and ecosystem implications thereof.</p> <p>Target Outcome: Effective management of the terrestrial habitat and vegetation present on the site.</p>	<p>1. Any alien vegetation present on the site must be removed by appropriate means according to national legislation requirement.</p>	<p>Alien plant management is a long-term commitment and must be continued by the holder of the EA.</p>	<p>The Project Manager and Contractor(s) must ensure that the terrestrial habitat and vegetation present on and around the development site is effectively managed.</p>	<p>The appointed ECO is to monitor compliance with the required actions.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>
E2.1.2 Fire Management Plan				
<p>Potential Impact: Fire outbreak due to construction activity.</p> <p>Target Outcome: No incidents of fire outbreak on site due to effective fire management.</p>	<p>1. Utmost caution must be taken not to make any fires on the site (e.g., burning of removed brushwood or for heating of food), especially during summer.</p> <p>2. The contractor(s) must have the appropriate insurance for fires caused by their personnel.</p> <p>3. Fire safety equipment (fire beaters and extinguishers) should be kept on site and fire training should be provided to personnel.</p>	<p>Contractor to reduce fire risk on site. ECO to monitor for duration of contract</p> <p>Contractor to ensure that insurance against fire outbreak due to activity of their construction personnel on site is established, to ensure recovery can be undertaken in the aftermath of any fire outbreak.</p> <p>Contractor to provide fire safety equipment on site. ECO to monitor for duration of the contract.</p>	<p>The Project Manager and Contractor(s) must take the necessary measures to reduce the risk of fire on the property.</p> <p>The Project Manager must ensure that the required insurance(s) is in place.</p>	<p>The appointed ECO is to monitor compliance with the required actions.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>
E2.1.3 Minimise disturbance to fauna				

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
<p>Potential Impact: Disturbance to and displacement of fauna on and/or surrounding site and/or poor handling of such instances.</p> <p>Target Outcome: Minimise incidents of fauna disturbance/displacement and/or surrounding site due to construction works and appropriate intervention where such cases occur.</p>	1. Contractors must not harm or disturb any wildlife, especially snakes, tortoises, lizards, and birds.	ECO/Contractor to monitor. The Contractor must report all incidents of harm to any fauna to the ECO who will report such incidents to the authorities.	The Project Manager and Contractor(s) must ensure that harm to fauna and avifauna is prevented, and disturbance is minimised. All incidents must be recorded and reported to the ECO on an ongoing basis.	The appointed ECO is to monitor compliance with the required actions. Monitoring Frequency: Monthly ECO Checklists
	2. Snakes, tortoises, and other animals must be physically removed from the construction site without harming them and taken to an appropriate location (e.g., a nature reserve). Only competent snake handlers must be Employed to move snakes, should it be necessary.	ECO/Contractor to monitor on an ongoing basis. CapeNature may be contacted for a list of snake handlers in the area (Tel: 087 087 8250).		
	3. Care must be taken when driving on site to not accidentally drive over tortoises or other animals.	ECO/Contractor to monitor. The Contractor must report all incidents of harm to any fauna to the ECO who will report such incidents to the authorities.		
E2.1.4. Minimise disturbance to flora (Terrestrial Habitat)				
<p>Potential Impact: Disturbance and/or displacement of populations of species of conservation concern and sensitive riparian area on site.</p>	1. A buffer of at least 20 metres on either side of the river course (in some places more where a wider strip of vegetation was mapped) is therefore recommended by the botanist and should ensure the protection of the identified SCC. (Take note of the 30 m buffer zone for the river corridor as recommended by the freshwater specialists, which should be preferentially	Contractor to ensure construction works do not take place within any recommended buffer zones. ECO to monitor for duration of contract.	The Project Manager and Contractor(s) must institute the necessary measures to minimise the disturbance to the terrestrial habitat on the site during the	The appointed ECO is to monitor compliance with the required actions throughout the construction period.

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
<p>Target Outcome: Preservation of indigenous diversity and value within the site.</p>	<p>implemented as it assumes the 'precautionary principle'.</p>		<p>construction phase of the project.</p>	<p>Monitoring Frequency: Monthly ECO Checklists</p>
	<p>2. Care should be taken to limit disturbance within a buffer zone following the river course where it crosses the site (apart from the Darwin Road crossing, which was previously approved).</p>			
<p>ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):</p> <p>E2.2 Water</p> <p>E2.2.1. Aquatic Ecosystem Impacts (Loss of biodiversity & habitat; impeding the flow; water quality impacts)</p>				
<p>Potential Impact: Disturbance of the freshwater ecosystem surrounding the site, the potential facilitation of alien vegetation invasion on site and the impairment of surface water quality and flow due to construction works.</p> <p>Target Outcome: Limit construction activities to take place within the watercourse corridors.</p>	<p>3. An ecological watercourse corridor through the development that is approximately 75 to 80 m wide, which allows for a 30 m buffer on either side of the tributary and is primarily vegetated with local indigenous vegetation should be established and maintained within the development that allows for the protection of aquatic habitat within the site.</p> <p>4. The aquatic ecological corridor/buffer zone should be treated as a "no-go" area during the construction phase and appropriately demarcated as such. No vehicles, machinery, personnel, construction material, spoil material, fuel, oil, bitumen or waste should be allowed into these areas except for any approved rehabilitation or maintenance work or construction of any infrastructure associated</p>	<p>Site Agent and Contractor to ensure that all personnel do not transgress the buffer zone. ECO to monitor maintenance of the buffer zone and to assess whether any watercourse corridor impacts have taken place due to construction activity for the duration of contract.</p>	<p>The Project Manager and Contractor(s) must institute the necessary measures to the maintenance of watercourse corridors and good housekeeping during the construction phase of the project.</p>	<p>The appointed ECO is to monitor compliance with the required actions throughout the construction period.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>

CONSTRUCTION PHASE MANAGEMENT																																		
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY																														
	with the proposed and approved development – these works should be undertaken according to an approved method statement and under the supervision of the ECO.																																	
	5. Construction activities adjacent to the watercourse corridors should preferably take place during the drier, low-rainfall months to reduce the potential for contaminated runoff from the construction activities on the site. Should this not be possible, measures should be put in place to prevent runoff from the construction activities from discharging directly into downstream aquatic features.	Contractor to ensure runoff containment from watercourse corridors due to construction works. ECO to monitor for duration of contract.																																
	6. The proposed stormwater management measures are supported to reduce the runoff and water quality impacts of the stormwater runoff of the developed site on the adjacent aquatic ecosystems. Recommended plants for the stormwater ponds are provided in the table below:	Contractor to plant recommended plant species to enhance protection against runoff, where possible. ECO to monitor for duration of contract.																																
	<table border="1"> <thead> <tr> <th>Aquatic bench</th> <th>Permanent pool</th> <th>Embankments</th> </tr> </thead> <tbody> <tr> <td><i>Juncus kraussii</i></td> <td><i>Aponogeton distachyos</i></td> <td><i>Cynodon dactylon</i></td> </tr> <tr> <td><i>Bolboschoenus maritimus</i></td> <td><i>Juncus lomaphyllus</i></td> <td><i>Ehrharta calycina</i></td> </tr> <tr> <td><i>Cyperus textilis</i></td> <td><i>Potamogeton sp.</i></td> <td><i>Eragrostis capensis</i></td> </tr> <tr> <td><i>Cyperus thumbergii</i></td> <td></td> <td><i>Eragrostis curvula</i></td> </tr> <tr> <td><i>Isolepis prolifer</i></td> <td></td> <td><i>Leonotis leonurus</i></td> </tr> <tr> <td><i>Juncus capensis</i></td> <td></td> <td><i>Themeda triandra</i></td> </tr> <tr> <td><i>Scirpoides nodosus</i></td> <td></td> <td><i>Tribolium uniolae</i></td> </tr> <tr> <td><i>Wachendorphia thyrsiflora</i></td> <td></td> <td></td> </tr> <tr> <td><i>Zantedeschia aethiopica</i></td> <td></td> <td></td> </tr> </tbody> </table>	Aquatic bench	Permanent pool	Embankments	<i>Juncus kraussii</i>	<i>Aponogeton distachyos</i>	<i>Cynodon dactylon</i>	<i>Bolboschoenus maritimus</i>	<i>Juncus lomaphyllus</i>	<i>Ehrharta calycina</i>	<i>Cyperus textilis</i>	<i>Potamogeton sp.</i>	<i>Eragrostis capensis</i>	<i>Cyperus thumbergii</i>		<i>Eragrostis curvula</i>	<i>Isolepis prolifer</i>		<i>Leonotis leonurus</i>	<i>Juncus capensis</i>		<i>Themeda triandra</i>	<i>Scirpoides nodosus</i>		<i>Tribolium uniolae</i>	<i>Wachendorphia thyrsiflora</i>			<i>Zantedeschia aethiopica</i>					
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E2.2.2 Institute measures to minimise potable water use during construction phases of the project																																		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
<p>Potential Impact: Wastage of potable water during the construction phase.</p> <p>Target Outcome: Ensure that the necessary measures to reduce potable water use are undertaken during the construction phase, where possible.</p>	1. No abstraction of any use of surface water or groundwater may be done without prior authorisation from the Department of Water and Sanitation unless it is a Schedule 1 Use or an Existing Lawful Use.	ECO to monitor for duration of contract.	The Project Manager and Contractor(s) must institute the necessary measures to minimise potable water use during the construction phases of the project.	The appointed ECO is to monitor compliance with the required actions throughout the construction period. Monitoring Frequency: Monthly ECO Checklists
	2. No pollution of surface or ground water may occur due to any activity on the property. The relevant requirements of the National Water Act, 1998 (Act No. 36 of 1998), as amended (NWA) must be complied with at all times.	The ECO or Project Engineer to monitor use of water during construction and advise accordingly. Appropriate training of staff in water management will be given by the ECO.		
	3. Contractors must use water sparingly during the construction phase (e.g., for mixing of concrete and washing of equipment). Should dust become a nuisance to surrounding industries, efficient use of non-potable water to wet dusty surfaces should be employed.	No potable water is to be used for wetting of roads. Water from dams or treated sewerage effluent should be used.		
	4. The necessary ablution facilities must be provided (one chemical toilet per 15 workers).	Project Manager to provide necessary amount of toilet facilities on site. ECO to monitor for duration of contract.		
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E2.4. Waste and Effluent Management				
E2.3.4 Institute measures to reduce waste and effluent management				
Potential Impact: Pollution of the surrounding environment due	1. An integrated waste management approach must be used that is based on waste	ECO to advise on the integrated waste management approach	The Project Manager and Contractor(s) must	The appointed ECO is to monitor compliance

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
<p>to poor waste and effluent management.</p> <p>Target Outcome: Appropriate waste and effluent management.</p>	<p>minimisation and must include reduction, recycling, re-use, and disposal where appropriate. Recycled waste (cement packets, paper, and cardboard) should be separately stored for inclusion into the waste stream.</p>	<p>undertaken and the implementation thereof for the duration of the contract.</p>	<p>institute measures to minimise the generation of waste and to implement the sorting (at source) or recyclables materials out of the waste stream.</p>	<p>with the required actions.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>
	<p>2. Solid waste must be properly disposed of at a licensed waste disposal facility and must comply with the relevant legislation.</p>	<p>Solid waste to be removed from the site to a licensed WDF on a regular basis to be determined in consultation with the ECO, for the different phases of construction.</p>		
	<p>3. Waste bins must be used on site. The bins must have lids and an external closing mechanism to prevent scavenging and/or the contents from blowing out. Access to the temporary storage area should be controlled.</p>	<p>ECO to monitor the maintenance of the waste bins and the conditions of the temporary storage area on site for duration of contract.</p>		
	<p>4. All waste must be deposited in the waste bins for removal. The bins must not be used for any other purpose than waste collection and must be emptied on a regular basis by the contractor at a suitably licensed WDF. Proof of disposal slips must be kept on site.</p>	<p>Site Agent to ensure that waste is correctly deposited into the waste bins on site and that all waste disposal slips are kept on file. ECO to monitor for duration of contract.</p>		
	<p>5. No domestic waste should be stored on site for longer than two (2) weeks.</p>	<p>Site Agent to ensure that domestic waste is removed from site regularly, as and when needed – but no longer than two weeks.</p>		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	<u>MONITORING:</u> RESPONSIBLE PARTY, ACTION AND FREQUENCY
	6. No solid waste is to be burnt on site.	Site Agent to ensure that personnel are aware that no solid waste is to be burnt on site.		
	7. Portable toilets to be placed further than 15 m from the closest industry.	ECO to advise on placement of toilets with Site Agent and to monitor the placement and condition of these toilets for duration of contract.		
	8. Building rubble generated during the construction phase should be diverted from landfill where possible for re-use in the construction of internal roads or taken to the nearest drop-off facility for crushing.	Site Agent should attempt to reduce waste sent to landfill through the re-purposing of builder's rubble in road construction for the site, where possible. ECO to advise Site Agent on rubble disposal where relevant for duration of contract.		
	9. All general and hazardous waste generated, during all project phases must be recorded and records of applicable documentation are to be filed and kept on-site including safe disposal certificates from a registered service provider. The service provider must dispose of all general and hazardous waste at a registered WDF. All records of waste generated, and any waste related complaints must be kept on site.	ECO to monitor the record of waste generated and disposed of kept on site for all phases of construction, and throughout the duration of contract.		
	10. Waste storage must comply with the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended (NEM:WA), National Norms and Standards for Storage of	Site Agent to be aware of the relevant waste legislation applicable to waste storage for the construction phase. ECO to monitor the		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
	Waste, 2013, if the storage of general waste exceeds 100 m ³ or that of hazardous waste exceeds 80 m ³ .	compliance of waste storage on site with the relevant legislation for duration of contract.		
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E2.5 Traffic Management Plan				
E2.3.5 Institute measures to reduce traffic				
<p>Potential Impact: Increased traffic for existing motorist movement in the surrounding areas due to the influx of vehicle movement on and off site for the duration of the construction period and during peak traffic hours.</p> <p>Target Outcome: Minimise risk of construction related traffic on existing motorists within the vicinity of the site, specifically within peak traffic hours.</p>	1. Road construction signs to be erected along appropriate roads, warning motorists of construction related activities and heavy vehicles. The use of traffic signals and flagmen to manage traffic flow around construction zones should be considered, if necessary.	Site Agent to institute measures such as signs and other traffic signals to assist and notify existing motorists of construction activity around the site. ECO to assess the appropriateness of attempts by the Site Agent to warn motorists of construction activity.	The Project Manager and Contractor(s) must institute measures to minimise the risk of construction related activities on motorists using the roads in the vicinity of the site.	The appointed ECO is to monitor compliance with the required actions. Monitoring Frequency: Monthly ECO Checklists
	2. Large construction vehicles and trucks must travel outside of typical weekday peak hours in the vicinity of the site.	Contractors to be instructed by Site Agent to ensure large construction vehicles travel during off-peak traffic hours.		
	3. Promote carpooling among construction staff to reduce the number of individual vehicles on the road.	Contractors must encourage personnel to carpool to site daily to reduce pressure placed on existing traffic.		
	4. Structural damage to roads in the vicinity of the construction site must immediately be repaired	Site Agent to liaise and communicate responsibility for structural road damage with Contractors. Project Manager to hold Contractors		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	<u>MONITORING:</u> RESPONSIBLE PARTY, ACTION AND FREQUENCY
	by the contractor responsible (in accordance with Provincial/ Municipal Road standards).	responsible for any structural road damage caused. ECO to monitor response to structural road damage caused by construction vehicles for duration of contract		
	5. Roads must be kept clear of sediment due to construction activities.	Site Agent to commission personnel to sweep the adjacent roads off-site where they are affected by sediment deposition due to construction work. ECO to monitor the condition of adjacent off-site roads for duration of contract.		
	6. Store construction materials and equipment in a way that minimizes interference with traffic flow.	Site Agent to ensure that construction materials storage does not hinder traffic flow. ECO to monitor for duration of contract.		
	7. Continuously monitor traffic patterns and adjust mitigation measures as needed to address any changing conditions and issues that arise.	ECO to communicate with Site Agent regarding any regarding any changing conditions in surrounding traffic that demand a change in the current traffic management plan approach.		
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E2.6 Energy Management				
E2.6.1 Use electricity sparingly during construction				

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
<p>Potential Impact: Waste of energy (electricity) sources on site.</p> <p>Target Outcome: Save energy (electricity) use on site, wherever possible.</p>	1. The contractors must be informed of the efficient use of energy (electricity) during construction. When not in use appliances (lights, electrical machinery, motors etc) must be switched off.	ECO and site agent to monitor for the duration of the contract period.	<p>Engineers to acknowledge the required actions regarding energy saving and to incorporate into their designs. The Municipality should only approve energy efficient designs.</p>	<p>ECO and site agent to monitor for the duration of the contract period.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>
	2. Electrical and electronic installations to be undertaken in accordance with the specifications of the appointed electrical engineers.	Municipality to ensure that such specifications are incorporated in the plans.		
	3. Solar generated lighting should be used where possible, to reduce the developments dependence on electricity from the municipal supply grid.	Project Engineer/s to acknowledge the required actions with regards to energy saving. The Municipality to only approve energy efficient designs.		
<p>ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):</p> <p>E2.7.1. Dust and Air Quality Management</p> <p>E2.7.1. Prevent Dust and other Air Quality impacts through effective management</p>				
<p>Potential Impact: Increased dust and air pollution due to poor management of dust on and off site caused by construction activities.</p> <p>Target Outcome: Minimise dust pollution during the construction phase of the project.</p>	1. Any stored building material from which dust could be generated, such as stockpiled building sand, should be covered or kept moist during windy periods to prevent dust from being generated.	Site Agent to source covering material/methods for exposed stockpiles on site during windy periods and when not in use. ECO to monitor provision and use of stockpile covering material, particularly during windy periods.	<p>The Project Manager and Contractor(s) to institute respective measures.</p>	<p>The appointed ECO is to monitor compliance with the required actions.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>
	2. The excavation, handling and transport of erodible materials must be avoided under high wind conditions.	Contractors should avoid the movement of erodible materials during windy conditions unless		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	<u>MONITORING:</u> RESPONSIBLE PARTY, ACTION AND FREQUENCY
		absolutely necessary. Site Agent to commission personnel to address any sediment deposition post-movement. ECO to monitor measures undertaken to reduce dust by Contractors.		
	3. Dust generated from the construction activities must comply with the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004), as amended (NEM:AQA), National Dust Control Regulation (GN No. R. 827) of 1 November 2013. These regulations prohibit a person from conducting any activity in such a way as to give rise to dust in such quantities and concentrations that the dust, or dust fall, has a detrimental effect on the environment and nearby receptors.	Contractors and Site Agent to take note of applicable dust legislation and to ensure compliance with such for duration of contract - ECO to monitor.		
	4. Staff may only be allowed to smoke within demarcated areas. Cigarette butts must be disposed of in the lidded waste bins provided.	Site Agent to demarcate dedicated smoking areas for Contractors and their personnel in consultation with the ECO. ECO to monitor smoking and signs of smoking in areas outside of this demarcated zone.		
	5. No fires will be allowed on site. The burning of solid waste and paper on site will therefore also not be allowed.	Contractors to take note of the prohibition of fires on site. ECO to monitor the management of waste on site and to record any signs of burning of waste on site.		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
	6. All vehicles and motorised equipment used on site must be maintained in a good condition to prevent and/or minimise excessive diesel fumes from such vehicles and equipment.	Contractors to ensure construction vehicles are regularly serviced and in good-working order. ECO to record any construction equipment or vehicles spewing excessive diesel fumes and to address the relevant vehicles' service requirements with Contractors.		
	7. Use dust suppression techniques (e.g., spraying bare surfaces with non-potable water and limiting driving speeds).	Site Agent to commission dust suppression techniques on site – such as the spraying of water on erodible material surfaces that have the potential to generate dust. Contractors to instruct personnel to limit driving speeds so as to reduce dust creation.		
E.3 SOCIO-ENVIRONMENTAL MANAGEMENT PROGRAMMES				
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E3.1 Noise Management Plan				
E.3.1.1 Institute measures to minimise noise pollution during construction phase of the project				
Potential Impact: Increased noise pollution developing a nuisance for the surrounding communities and/or affecting the	1. All plant equipment, including vehicles, must be properly maintained to minimise noise generation.	Contractors to ensure all plant equipment are in good working order and are fitted with silences, where necessary.	The Project Manager and Contractor(s) must institute measures to minimise noise pollution	The appointed ECO is to monitor compliance with the required actions.

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
workable conditions for neighbours. Target Outcome: Minimise noise pollution from construction activity wherever possible.	2. Any complaints regarding noise must be investigated, sources identified, and mitigation measures implemented. Feedback on resolution of the issue must be provided to the complainant and the noise control officer of the Local Authority.	Site Agent to ensure a complaints register is kept on file and the ECO is liaised with regarding noise complaints and the addressal of these with the complainant and the Local Authority.	during the construction phase of the project.	Monitoring Frequency: Monthly ECO Checklists
	3. Limit working hours to daylight hours.	Contractors to ensure work only takes place after daylight hours if absolutely necessary and communicates such after-hour intentions with the ECO before-hand so as to ensure such works are managed for noise generation.		
	4. Ensure silencers are installed on all vehicles.	Contractors to install silencers on all vehicles – ECO to monitor sound generation from vehicles on site.		
	5. Cover exposed waste daily to limit odours.	Site Agent to ensure that covering materials are available on site to cover exposed waste. ECO to monitor the covering of exposed waste and the significance of odours from waste on site.		
	6. Noise generated from construction activity(ies) must comply with the Western Cape Noise Control Regulations P.N. 200/2013.	Contractors and Site Agent to take note of relevant noise legislation applicable to construction work. ECO to ensure construction work		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
		compliance with relevant noise legislation.		
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E3.1 Archaeological and Heritage Resources				
E.3.1.1 Conserve all archaeological settings and artefacts				
<p>Potential Impact: Damage and/or the loss of valuable archaeological settings and artefacts.</p> <p>Target Outcome: All archaeological settings and artefacts are reported and conserved.</p>	<p>1. If any unmarked human remains are uncovered or exposed during construction activities, these must immediately be reported to Heritage Western Cape (HWC).</p>	<p>ECO to monitor excavated materials and inform HWC of any finds.</p>	<p>The Project Manager and Contractor(s) must ensure that all archaeological settings and artefacts are reported and conserved.</p>	<p>The appointed ECO is to monitor compliance with the required actions.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E3.2 Aesthetics (Visual) Impacts				
E.3.2.1 Institute measures to minimise the visual impacts of the development and of the construction works.				
<p>Potential Impact: Change in visual character of the site from a predominantly open area to a densely developed industrial area.</p> <p>Target Outcome: No negative effect on the character of the</p>	<p>1. Planting large trees along streets to soften the built environment within the Cultural Landscape.</p> <p>2. Use visually permeable fencing along edges and the Mosselbank River in particular.</p>	<p>Project Manager to appoint a landscape architect advise on the placement of tree planting, or otherwise to liaise with the visual specialist for advice in this regard.</p> <p>Project Manager to ensure that fencing used along the edge of the Mosselbank River is permeable.</p>	<p>The Project Manager and Contractor(s) must institute measures to minimise the visual impacts of the development.</p>	<p>The appointed ECO is to monitor compliance with the required actions.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	<u>MONITORING:</u> RESPONSIBLE PARTY, ACTION AND FREQUENCY
landscape and enhanced scenic experience.		ECO to review permeability of the fence installed by the river.		
	3. Use building materials and colours that are visually recessive and non-reflective.	Again, the Project Manager can discuss building materials and colours with a landscape architect or otherwise with the visual specialist to decide upon visually recessive colours for the proposed development, where possible.		
	4. For security and operational lighting to result in minimal visual impact to the immediate context, the Contractor should use lighting only where necessary, and lighting should be positioned at a lower level i.e., bollard height.	Contractors to reduce lighting exposure where possible. ECO to monitor how Contractors have minimised light exposure for the construction works.		
	5. For the reduction of potential negative impacts during the construction phase, the following management procedures should be implemented: <ul style="list-style-type: none"> • Reduce the construction period through proper planning and management, in addition to the productive implementation of resources; • Restrict the activities and movement of construction workers and vehicles to the immediate construction site as much as possible; 	ECO to monitor the visual condition of the site due to construction activity to ensure that measures have been instituted to reduce visual impacts where possible.		

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	<u>MONITORING:</u> RESPONSIBLE PARTY, ACTION AND FREQUENCY
	<ul style="list-style-type: none"> Ensure that rubble, litter, and disused construction materials are managed and removed regularly; Ensure that all infrastructure and the site are maintained in a neat manner; Reduce and control construction dust using approved dust suppression techniques; <p>Rehabilitate all disturbed areas and construction areas to acceptable visual standards.</p>			
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E3.2 Socio-Economic Benefits of the Development: Procurement Strategy (Job Opportunities)				
E.3.2.1 Institute measures to ensure a fair procurement strategy is maintained				
<p>Potential Impact: Employment opportunity for locals through the construction phase of the project would be lost.</p> <p>Target Outcome: Maintenance of a fair procurement policy and the empowerment of local/surrounding communities through employment.</p>	1. Contractors need to show a commitment to employ people from the immediate area whenever possible.	Contractors to ensure compliance with and monitor the local Procurement strategy.	<p>The Project Manager and Contractor(s) must institute measures to ensure a fair procurement strategy is maintained.</p> <p>The Applicant or Project Manager is to report on compliance with the respective strategies.</p>	<p>The appointed ECO is to monitor compliance with the required actions.</p> <p>Monitoring Frequency: Monthly ECO Checklists</p>
	2. Implementation of the Procurement Strategy referred to in Section 4.2.1 of this report above. The temporary job opportunities during the construction phase should be allocated to persons from the local community (e.g., Fisantekraal Area) as far as possible.	ECO to include the Procurement and Communication Strategies in the induction session with Contractors.		
	3. Implementation of the Communication Strategy referred to in Section 4.2.1 above.			
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				

CONSTRUCTION PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION AND FREQUENCY
E3.4 Security				
E.3.4.1 Minimise security risk during the construction phase				
<p>Potential Impact: Theft and damage to construction site and/or equipment and vehicles as well as harm to any persons on site due to poor security on site and misconduct of personnel.</p> <p>Target Outcome: Minimise security risk on site during the construction phase.</p>	<p>1. The Contractor(s) will be responsible for the security of their builder's site and the conduct of their personnel for the duration of the services and building contracts.</p>	<p>The Contractor and developer will need to monitor security issues.</p>	<p>The Project Manager and Contractor(s) must institute measures to minimise security risk during the construction phase.</p> <p>Contractor(s) are responsible for the behaviour of their personnel on site and is to assume financial and functional responsibility for any theft undertaken by their personnel.</p>	<p>The appointed ECO is to monitor compliance with the required actions.</p>

6 ENVIRONMENTAL MANAGEMENT: OPERATIONAL PHASE

6.1 Description of the Impact Management Outcomes for the Operational Phase

The impact management outcomes for the operational phase include the following:

- To control all aspects of the operational phase of the development by implementing the necessary impact management actions and recommendations to prevent any temporary or permanent negative environmental impacts from occurring in the future.
- To ensure the conservation and sustainable use of aquatic ecosystem resources by ongoing maintenance and management of the watercourse corridor during the operational phase of the project.

 To minimise the visual, aquatic, and terrestrial other impacts of the development, during the operational phase, on the surrounding environment.

6.2 Environmental Specifications: Operation

OPERATIONAL PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION, AND FREQUENCY
E.1 GENERAL OPERATIONAL MANAGEMENT				
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E.1. Visual Impact of the industrial erven and associated infrastructure				
<p>Potential Impact: Change in visual character of the Moselbank River from a natural and scenic resource to a densely developed industrial area.</p> <p>Target Outcome: No negative effect on the character of the Mosselbank River landscape and enhanced scenic experience.</p>	<p>1. The Mosselbank River, which is a scenic resource, should be enhanced by development – e.g., ecological restoration of the areas below the 1:100 year floodline.</p>	<p>To be undertaken by Applicant / Project Manager (Project Engineer and/or Site Agent), also referred to as the 'Management Entity', on an ongoing process.</p> <p>Take note of the freshwater specialists' recommended rehabilitation works for the river corridor that will be implemented.</p>	<p>The Management Entity of the Industrial Development must ensure that the change of visual character of the site is effectively managed.</p>	<p>Management Entity to monitor on an ongoing basis.</p>
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E.2. Aquatic Ecosystem Impacts				
E.2.1. Control of alien vegetation growth				
<p>Potential Impact: The potential facilitation of alien vegetation invasion on site and the disturbance of the aquatic habitat, impairment of surface</p>	<p>1. Control alien vegetation growth.</p> <p>a. Ongoing monitoring and control of invasive alien vegetation must be undertaken within the disturbed areas using recommended alien vegetation</p>	<p>Management must undertake ongoing alien vegetation removal on site.</p>	<p>The Management Entity of the Industrial Development must ensure that the disturbance and</p>	<p>Management Entity to monitor on an ongoing basis.</p>

OPERATIONAL PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION, AND FREQUENCY
water quality and flow due to the operation of the site. Target Outcome: Maintenance of river corridor and any associated infrastructure and ongoing disturbance associated with development.	clearing methods as provided by the Working for Water Programme. b. Maintenance works such as the removal of sediment, debris and alien vegetation within and adjacent to the stormwater pond should be undertaken under the guidance of an approved Maintenance Management Plan of the river should one exist for the City for this river, or according to the EMPr for the project.		modification of the aquatic habitat; flow and water quality impacts during the operation phase are effectively managed.	
	2. No discharge of effluents or polluted water shall be allowed into the stream.	Management Entity to ensure that measures are implemented to ensure that no discharge/effluent from any polluted water generated on site is allowed into the Mosselbank River. The Management Entity should make contact with the freshwater specialist for advice in this regard if needed.		
E.2.2. Recommendations for Maintenance and Management Maintenance and management of the watercourse corridor along the unnamed tributary of the Mosselbank River within the property can be divided into activities immediately required to rehabilitate the corridor and minimise the impact of the proposed development of the site on the watercourse and the longer-term maintenance activities. E.2.2.1. Short-term Maintenance and Management Activities consist of the following: i. Rehabilitation of the riparian zone and buffer area within the site. ii. Establishment of a functional ecological stream corridor through the development.				
Potential Impact: Impediment of the functionality of the ecological	1. An ecological stream corridor through the development that is approximately 75 to	Management Entity to ensure that an ecological stream corridor is established	The Management Entity of the Industrial	

OPERATIONAL PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION, AND FREQUENCY
<p>stream corridor on the site due to the impacts of the operational development and the lack of rehabilitation and maintenance activities.</p> <p>Target Outcome: Rehabilitation of the riparian zone and proposed buffer areas.</p>	<p>80 m wide, which allows for the stream with a 30 m buffer on either side should be established within the site in which no hard structures should be constructed.</p>	<p>and maintained throughout the project lifespan.</p>	<p>Development must ensure that the riparian zone and buffer area within the site are rehabilitated and maintained to establish the functionality of the ecological stream corridor.</p>	<p>Management Entity to monitor on an ongoing basis.</p>
	<p>2. Any rubble on the property should not be dumped in the riparian/ buffer zone and the existing rubble should be removed from this area.</p>	<p>Management Entity to ensure that effective waste management is maintained throughout the site and the condition of the riparian/buffer zone is evaluated on a regular basis to ensure that no rubble is dumped into this zone.</p>		
	<p>3. The disturbed riparian zone/buffer area should be covered with topsoil and shaped to resemble ground levels of the surrounding stream banks and then revegetated with appropriate indigenous vegetation as listed in Appendix D of the Aquatic Impact Assessment report.</p>	<p>Management Entity to appoint a suitable landscape architect or other such entity, to undertake the revegetation of the disturbed riparian zone/buffer area as per recommended vegetation given in Appendix D of the Aquatic Impact Assessment report.</p>		
	<p>4. Alien vegetation which recruits in the disturbed area, and in particular <i>Acacia saligna</i>, <i>Echium plantagineum</i> and <i>Pennisetum clandestinum</i>, should be removed/weeded according to acceptable alien vegetation control methods such as those provided by the Working for Water Programme.</p>	<p>Management Entity should establish ongoing measures to address alien vegetation removal within the riparian zone/buffer area and ensure such activity is undertaken in accordance with the Working for Water Programme.</p>		

OPERATIONAL PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION, AND FREQUENCY
	5. Larger machinery, such as diggers or bulldozers, should not be operated within the buffer zone to remove alien vegetation.	Management Entity to take note that no larger machinery should ever be entered into the riparian zone/buffer area, even if for maintenance purposes.		
<p>E.2.2.2. Long-term Maintenance and Management Activities consist of the following:</p> <ul style="list-style-type: none"> i. The river channel does not become blocked with sediment, debris, or nuisance vegetation growth. ii. No erosion of the upgraded river channel occurs. iii. The vegetation within the river channel and riparian zone is properly established and remains clear of invasive alien plants. iv. Weeds, alien species, and undesirable species such as <i>Typha</i> do not grow within wetland areas. 				
<p>Potential Impact: Blockage of river channel with sediment, debris or other nuisance vegetation, channel erosion, alien vegetation invasion collectively impeding the functionality of the ecological stream corridor on the site due to the impacts of the operational development and the lack of rehabilitation and maintenance activities.</p> <p>Target Outcome: Rehabilitation of the riparian zone and proposed buffer areas.</p>	1. The disturbance of aquatic habitats associated with the maintenance works should be limited (both temporal and spatial extents) as far as possible.	Management Entity to evaluate the condition of the aquatic habitat on an ongoing basis to ensure that disturbance to the aquatic habitat is limited or is otherwise addressed.	The Management Entity of the Industrial Development must ensure that the riparian zone and buffer area within the site are rehabilitated and maintained to establish the functionality of the ecological stream corridor.	Management Entity to monitor on an ongoing basis.
	2. Care should be taken to minimize the sedimentation that would be caused downstream of the works.	Management Entity to establish regular monitoring/evaluation measures to assess the potential for sedimentation downstream of the development site.		
	3. Work should preferably be undertaken by hand with no machinery driven into aquatic habitats.	Management Entity to take note that no larger machinery should ever be entered into the riparian zone/buffer area, even if for maintenance purposes.		
	4. Activities associated with the maintenance work should be undertaken during the low flow period before the onset of the winter high flows.	Management Entity to take note and preferentially ensure that any rehabilitation work takes place during the low flow		

OPERATIONAL PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION, AND FREQUENCY
		period, i.e., during the summer months, as far as possible.		
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E.3. Water Use and Prevention of Water Pollution				
<p>Potential Impact: Wastage of water resources and the pollution of surface and groundwater through poor water management practices. During the operational phase.</p> <p>Target Outcome: Wise and efficient water use and the prevention of water pollution.</p>	1. Water conservation measures must be implemented within the site. Ensure that water is sparingly used during the operational phase.	The Management Entity should ensure that all developers and/or buyers of the operational industrial development site are made aware of the importance of water conservation measures.	The Management Entity of the Industrial Development must engender an ethic of responsible water use on site.	Management Entity to monitor on an ongoing basis.
	2. No pollution of surface or ground water may occur due to any activity on the site. The relevant requirements of the NWA must always be complied with.	The Management Entity must take note that a no pollution tolerance should be tolerated with regards to surface and ground water pollution from any activity on site, and in such cases, appropriate measures should be taken to rectify the pollution.		
ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):				
E.4. Archaeological and Heritage Resources				
E.4.1. Conserve all archaeological settings and artefacts				
<p>Potential Impact: Damage and/or the loss of valuable archaeological settings and artefacts.</p>	1. All finds of human remains must be reported to the nearest police station. Furthermore, the South African Heritage Resources Agency (SAHRA) or HWC must be contacted if any human remains	The Management Entity must ensure that any finds of human remains are reported immediately to the appropriate channels, i.e., nearest police station, HWC or SAHRA.	Should the Management Entity of the Durbanville Industrial site find any archaeological objects of any nature (including	Management Entity to monitor on an ongoing basis.

OPERATIONAL PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION, AND FREQUENCY
<p>Target Outcome: All archaeological settings and artefacts are reported and conserved.</p>	are found during the operational phase of the project.		<p>fossils, graves, or remains of structures), the Management Entity must notify the appointed ECO and Legacy EMC (Pty) Ltd. immediately. HWC and/or SAHRA must be consulted for further investigation and clarification.</p>	
	2. Human remains or any burial ground or part thereof that are deemed to be of cultural significance may not be destroyed, damaged, altered, exhumed, or removed from their original positions without a permit from HWC.	Management Entity to ensure that all developers and/or buyers within the operational industrial site are made aware, during the contractual process, that the finding of any human burial remains on the site are not removed without the respective heritage authority permit.		
	3. Under no circumstances must the Management Entity, his/ her employees, his/ her subcontractors, or his/ her subcontractors' employees remove, destroy or interfere with archaeological artefacts. Any person who causes intentional damage to archaeological or historical sites and/or artefacts could be penalised or legally prosecuted in terms of the National Heritage Resources Act, 1999 (Act No. 25 of 1999), as amended (NHRA).	The Management Entity must furthermore ensure that all developers and/or buyers within the operational industrial site are made aware, during the contractual process, of the legislative seriousness of the damage to any heritage resource found on site.		
<p>ENVIRONMENTAL ASPECTS (PROJECT ACTIVITY):</p> <p>E.5. Socio-Economic Benefits of the Development: Procurement Strategy (Job Opportunities)</p> <p>E.5.2. Institute measures to ensure a fair procurement strategy is maintained throughout the operational phase</p>				
<p>Potential Impact: Employment opportunity for locals throughout</p>	1. Buyers, and subsequent employers, operating within the Durbanville Industrial development need to show a commitment	Management Entity to engender an ethic of fair procurement through the inclusion/induction/communication of the	The Management Entity of the Durbanville Industrial site should	Management Entity to monitor on an ongoing basis.

OPERATIONAL PHASE MANAGEMENT				
POTENTIAL IMPACT	REQUIRED ACTIONS	SPECIFIC TARGETS AND RESPONSIBILITY	RESPONSIBLE ENTITY (TO IMPLEMENT REQUIRED ACTIONS/MITIGATION)	MONITORING: RESPONSIBLE PARTY, ACTION, AND FREQUENCY
the operational lifespan of the project would be lost. Target Outcome: Maintenance of a fair procurement policy and the empowerment of local/surrounding communities through employment.	to employ people from the immediate area whenever possible, preferably persons from previously disadvantaged groups.	Procurement and Communication Strategies during the contractual process, where possible.	ensure that a fair procurement strategy is maintained throughout the operational phase of the development.	

7 MONITORING AND MANAGEMENT MEASURES

In keeping with current environmental and associated legislation, all environmental management procedures and actions should be reviewed and refined on an on-going basis. This is in accordance with the dynamic nature of environmental management and allows for the timeous identification and mitigation of issues as they come to light. The process of review and refinement, built into the requirements of the EMPr, is known as Monitoring and Auditing.

7.1 Monitoring Procedures

Environmental Monitoring is the continuous evaluation of the status and condition of environmental elements. Its purpose is to detect change that takes place in the environment over time and involves the measuring and recording of physical, social, and economic variables associated with development impacts.

To these ends, the ECO will monitor the site for compliance (i.e., Compliance Monitoring) with the EMPr and EA. Many techniques for Environmental Monitoring have been proposed, each detailing a specific protocol. Regardless of which technique is used, the aim is that each environmental management specification (and associated impact management actions) be checked by means of a system in which a score may be allocated for:

- 🌀 Full compliance;
- 🌀 Satisfactory performance;
- 🌀 Unsatisfactory performance; and,
- 🌀 No action.

Monitoring will take place regularly (to coincide with safety inspections, where relevant). Completed ECO Monitoring Reports will be submitted to the Project Manager and Contractor(s), who will attend to issues/rectify non-compliances and report back to the ECO. These ECO reports must be kept on record and be made available upon request by the Applicant and the Competent Authority.

The EMPr and EA conditions of authorisation apply as follows:

- 🌀 All persons employed by the Applicant, Contractor(s) and/or Management Entity must abide by the requirements of these EMPr and EA conditions as they apply to the site.
- 🌀 Any employees of the Applicant, Contractor(s) and/or Management Entity found to be in breach of any of the Environmental Specifications may be ordered to leave the site forthwith. The order may be given orally or in writing by the Project Manager or ECO. Confirmation of an oral order will be given as soon as practicable but lack of confirmation in writing shall not be a cause for the offender to remain on site.
- 🌀 Supervisory staff of the Applicant, Contractor(s) and/or Management Entity may not direct any person to undertake any activities that would place such person in contravention of the environmental management specifications.

The Applicant, Contractor(s), Project Manager, and/or Management Entity are deemed not to have complied with the Performance Specifications if:

- 🌀 There is evidence of wilful or accidental contravention of any specification included in the EMPr and EA.
- 🌀 There is evidence of the Applicant, Contractor(s), Project Manager and/or Management Entity carrying out activities not permitted in terms of the Specification.

- There is evidence of environmental negligence and/or mismanagement resulting in negative impacts on the environment.

The Applicant, Project Manager, Contractor(s) and/or Management Entity will be informed via ECO Reports as well as by means of direct instruction as to what corrective actions are required in terms of Environmental Compliance:

- Disregard for instruction, and failure to respond adequately to complaints from the public will be construed as non-compliance.
- Non-compliance may lead to the Contractor(s) and/or Management Entity Employee(s) being blacklisted, or, in more serious cases, the Contractor(s) and/or Management Entity Employee(s) may be evicted from site. Only the Project Manager may issue such instruction, claiming any costs required to remedy situations perpetuated by environmental negligence, mismanagement and / or non-compliance.

7.2 Document Control

The EMPr is a basic planning framework, guiding the various phases of the project. It is important for the EMPr to be revised (improved), if need be, by documenting all actions and management results in a structured format, and especially in accordance with the results of any external audits. It will be important for the EMPr and its supporting documents to be accessible to all the implementing and management members responsible for implementing its actions.

The content and results of the ECO checklist to be submitted after each site meeting can be used for compiling audits and making the necessary changes to the EMPr.

A dated photographic record of site works must be kept by the ECO and Site Agent/ RE.

7.3 Management Review

The EMPr should be a **dynamic document**, which depends on continual revision to maintain its relevance. It is therefore imperative for the EMPr to be updated and revised in accordance with information and data that emerges from the monitoring processes (such as ECO checklists), and any new management techniques and technology that may become available in the future.

To maintain continual revision, appropriateness, and effectiveness of the EMPr, and thereby enhance its performance, the ECO/ Auditor (as appropriate) should review and evaluate the EMPr at defined intervals. The reviews should include the following:

- review the results of the monitoring undertaken during ECO site inspections and audits;
- review the extent to which the impact management outcomes originally set in the EMPr have been met;
- review the applicability of the EMPr in relation to changing conditions, circumstances, and information; and
- obtain and review any concerns amongst relevant I&APs, property owners and relevant authorities that may arise during the construction phase and operational phase in the future.

8 TOLERANCE

8.1 Fines

Fines will be issued for the transgressions listed below. Fines may be issued per incident at the discretion of the Project Manager. Such fines will be issued in addition to any remedial costs incurred because of non-compliance with this document (where applicable). The Project Manager will inform the responsible Contractor of the contravention and the amount of the fine and will deduct the amount from monies due under the Contract.

Fines for the activities detailed below, will be imposed by the Project Manager on the responsible Contractor and/or his Subcontractors.

A	Any person, vehicles, plant, or thing related to the Contractors operations within the designated boundaries of a “no-go” area	R 4 000
B	Any vehicle driving in excess of designated speed limits	R 1 000
C	Any vehicle being driven, and items of plant or material being parked or stored outside the demarcated boundaries of the site	R 2 000
D	Any person walking outside the demarcated boundaries of the site	R 500
E	Persistent and un-repaired oil leaks from machinery. The use of inappropriate methods of refueling such as the use of funnel rather than a pump.	R 1 000
F	Litter of site	R 500
G	Deliberate lighting of illegal fires on site	R 5 000
H	The eating of meals on site outside the defined eating areas. Individuals not making use of the site ablution facilities.	R 500
I	Dust or excess noise on or emanating from the site.	R 1 000
J	Any person, vehicle, item of plant, or anything related to the Contractors operation causing a public nuisance.	R 2 000

For each subsequent similar offence, the fine may, at the discretion of the Project Manager, be doubled in value to a maximum value of R50 000.00. All fine values are excluding VAT.

All fines and penalties must be made out to an environmental organisation to be determined in consultation with the developer, ECO, and the competent authority.

8.2 Penalties

Penalties for the activities detailed below, will be imposed by the Project Manager/ Site Manager on the responsible Contractor and/or his Sub-contractors.

The following penalties are suggested for transgressions:

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 cleanup operations plus 20%
C	Damage to indigenous vegetation, including the landscaped areas	A penalty equivalent in value to the cost of restoration plus 20%
D	Damage to sensitive environments	A penalty equivalent in value to the cost of restoration plus 20%
E	Damage to cultural sites	A penalty to a maximum of R100 000 shall be paid for any damage to any cultural/historical sites

9 ENVIRONMENTAL AWARENESS AND TRAINING

Site training must be provided for all Contractors and Workers/ Personnel/ Employees in accordance with the provisions of this document.

Ensure that the relevant Environmental Awareness training is presented before the commencement of activities. Ensure that a Health and Safety Officer (compulsory) is appointed before the commencement of activities.

The Contractor must arrange that all of his/her employees receive a degree of environmental training during orientation. Such training should be compulsory for all employees, structured in accordance with their relevant rank, level and responsibility, in order that these employees:

- acquire a basic understanding of the environment and the environmental features pertaining to the site and its environs;
- are familiar with the requirements of the EMPr and EA as they apply to the site.

9.1 Environmental Awareness Plan

The following training programmes will be presented:

- Occupational Health and Safety (OHS) – Done internally by Health Officer;
- Personal Protection Equipment (PPE) – Done internally by Safety Officer; and
- Environmental training - Done internally by ECO.

The training is done either annually or bi-annually depending on the need identified by management of the development, as well as training for any new personnel. The environmental training and awareness will be implemented as close as possible to the commencement of the works on site and the training materials will be provided to the Contractor/ Project Manager for environmental induction of new staff.

The Environmental Awareness Plan will serve as the basis for the induction of all new employees (as well as contractors pending the nature of their work on site) on matters as described herein. The Plan will also be used to hone awareness for all employees on a continuous basis.

Specific environmental awareness performance criteria will also form part of the job descriptions of employees, to ensure diligence and full responsibility at all levels of the organisational work force.

9.1.1 Fostering Environmental Awareness

General environmental awareness will be fostered among the project's workforce to encourage the implementation of environmentally sound practices throughout its duration. This will ensure that environmental accidents are minimised and environmental compliance maximised.

Environmental awareness will be fostered in the following manner:

- Induction course for all workers on site, before commencing work on site;
- Refresher courses as and when required.

9.1.2 Training and environmental awareness

The Applicant/ Management Entity accepts that environmental awareness training is critical for the workforce to understand how they can play a role in achieving the objectives specified in the EMPr and ensure that the actions specified in the EMPr are implemented effectively and efficiently. Training needs will be identified based on the available and existing capacity of site and project personnel to undertake the required EMPr management actions and monitoring activities. Environmental awareness training, conducted by the ECO prior to construction, will be in addition to any specific detailed training required to implementing the EMPr. It is vital that all personnel are adequately trained to perform their designated tasks to an acceptable standard.

9.1.3 The environmental awareness training course

All employees should attend the course, regardless of position, status, or level of responsibility. With a background of basic environmental awareness and an understanding of basic environmental issues and sensitivities, personnel may be motivated and empowered to do their share in helping to maintain the integrity of the environment on the site through environmental impact management. The goal of this course is therefore to enable a shared understanding and common vision of the environment, the impact of the development on the environment (and why this is important) and the role of personnel in terms of environmental management and compliance. The induction course will comprise of the following steps:

- The first step will include background discussion of the environment concept: of what it comprises and how we interact with it;
- The second step will be a description of the components and phases of the operation;
- The third step will be a general account of how the operation and its associated activities can affect the environment, giving rise to what we call Environmental Impacts;
- The fourth and most important step will be a discussion of what staff can do in order to help prevent the negative environmental impacts from degrading our environment. This is known as Environmental Impact Management.
- Lastly the consequences of non-compliance will be explained.

9.1.4 Course content

The following can be seen as draft course content as it will be building on as specific needs as it arises and will be supplemented with the handout of reading material and extracts of the EMPr on which the course will be based.

9.1.4.1 The Environment

The environment consists essentially of the living environment, the non-living environment, and the man-made environment.

The living environment consists of our plant and animal resources. The non-living environment includes the soil, water, and geological resources.

The man-made environment comprises our infrastructure, social, cultural, and archaeological resources.

These aspects of the living and man-made environment depend on one another, and man depends on them all for his survival. Damage to one will be felt by others so an effort must be made to try and protect the environment as well as their interactions with one another as they occur in nature. When undertaking an operation or any other form of development this concept must be kept in mind. Development must be implemented in such a way that we benefit today without compromising the ability of future generations to

benefit as well. Employees should understand this concept of sustainability and sustainable development. The specific environment should also be explained as part of the induction course.

9.1.4.2 Description of the components and phases of the operation

The project description as set out in the BAR should be explained as part of induction together with the main components or activities that can affect the environment, giving rise to what we call Environmental Impacts. The operation consists of several different components including the following:

- Atmospheric Emissions Management;
- Hazardous Risk Management;
- Waste Management; and,
- Security.

9.1.4.3 Description of Environmental impacts

A general account of how the operation and its associated activities can affect the environment must be explained. This is basically a description of the concept of environmental impacts.

a) What is an Environmental impact?

An environmental impact is the result, either good or bad of man's actions on the natural environment. This results in one or many changes in the environment and may also affect the availability of resources and the environment's capacity to function.

Impacts can occur either because of:

- The use of a resource;
- Or the pollution of a resource.

In addition, impacts can be categorised as the following:

- Foreseen: such as the necessary clearing of the vegetation before works on site begin; or
- Unforeseen: such as the flooding of an area following heavy rains;
- Avoidable: such as the unnecessary spillage of diesel during refuelling;
- Unavoidable: such as the disturbance created during works;
- Simple: such as litter untidying the site; or
- Cumulative: such as the pollution of water upstream, which then makes downstream users sick.

b) Types of Environmental Impacts

Typical environmental impacts anticipated include the following:

- The loss of indigenous plants;
- The loss of animals;
- Dust liberation;
- Soil compaction and erosion;
- Litter and waste;
- Fire;

- ☞ Water pollution.

c) Causes of environmental impacts

These environmental impacts are caused primarily by inadequate planning and not adhering to the EMPr Specifications, e.g.:

- ☞ The injudicious removal / disturbance of vegetation and habitat;
- ☞ The unnecessary loss of soil;
- ☞ Uncontrolled vehicular movement and circulation;
- ☞ The haphazard storage of vehicles, equipment and material;
- ☞ The uncontrolled servicing, repair and refuelling of vehicles;
- ☞ Unclear policy on solid waste management;
- ☞ Unclear policy on waste water;
- ☞ The uninformed use, storage and disposal of hazardous material;
- ☞ The erosive power of storm water and runoff;
- ☞ Unintentional and/or uncontrolled fires.

The specific significant impacts of the operation as described in the BAR must be explained.

9.1.4.4 Description of Environmental Mitigation

The fourth and most important step of an induction course will be a discussion of what staff can do to help prevent the negative environmental impacts from degrading their environment. This is known as Environmental Impact Management and is described in the EMPr. The course discussion should also include general environmental code of conduct practices that is not listed as a significant impact or as a mitigation measure such as:

Impact management: Health & Safety (general)

- ☞ Always use the toilet and hand washing facilities provided;
- ☞ Only use the water provided on site - do not collect water from or dispose water into a natural water course;
- ☞ Make use of the specified protective gear for noisy and dusty conditions;
- ☞ Always wear proper protective head and foot gear while on site;
- ☞ Know where to find a list of emergency numbers in the event of one;
- ☞ Report accidents, injuries and unsafe site conditions to the Project Manager or Safety Officer;
- ☞ Adhere to the posted speed limits of construction vehicles whilst driving on the access roads.

Impact management: Storage of vehicles, equipment, and materials (general)

- ☞ Store machinery, vehicles and materials only in demarcated areas, and within drip trays;
- ☞ Do not leave machinery and equipment standing around if not in use;
- ☞ Only park vehicles in designated areas;
- ☞ Do not park heavy vehicles or store equipment under or near trees;
- ☞ Do not store machinery, vehicles, or materials in undisturbed or rehabilitating areas.

Impact management: Servicing, repair and refuelling of vehicles (general)

- 🌀 No machinery and vehicles will be serviced on site;
- 🌀 Regularly check your vehicle for fuel and oil leaks;
- 🌀 Inform the foreman/ environmental manager of leaking vehicles and machinery so that it can be scheduled for repairs;
- 🌀 Immediately clean any accidental fuel and oil spills using a hydrocarbon spill kit – do not hose spills into the natural environment;
- 🌀 Dispose of contaminated soil as hazardous waste in the correct location on site;
- 🌀 Explain the negative consequences of oil and diesel pollution.

Impact management: Solid waste management (general)

- 🌀 Do not litter – make use of refuse bins provided;
- 🌀 Do not hose spills into the natural environment – inform the foreman / project manager of spills you are unable to clean yourself;
- 🌀 Do not bury, hide or burn any waste of any nature;
- 🌀 Inform the foreman / project manager of any illegal litter or dumping site that you encounter.

Impact management: Waste water management (general)

- 🌀 Do not use any natural watercourse to wash machinery, vehicles or equipment;
- 🌀 Only wash machinery, vehicles or equipment in designated areas;
- 🌀 Conserve water and report any leaks and overflow to the foreman / project manager.

Impact management: Management of hazardous material (general)

- 🌀 Make sure that you know how to handle all hazardous substances;
- 🌀 Do not access stores for hazardous substances without permission;
- 🌀 Immediately clean any minor accidental spills and leaks using an appropriate hydrocarbon spill kit;
- 🌀 Do not hose any leaks or spills into the natural environment;
- 🌀 Dispose of all hazardous waste in specified storage areas - if in doubt, ask;
- 🌀 Immediately report any major leaks and spills to the foreman / project manager.

Impact management: Fire management (general)

- 🌀 Do not make open fires except in permitted areas and at permitted times;
- 🌀 Do not leave any fires unattended. Extinguish fires before you leave the area;
- 🌀 All cooking is to be done on gas / electric stoves and only in the areas provided;
- 🌀 No burning of waste;
- 🌀 Smoking only allowed in designated areas and cigarette butts must be disposed of in a bin;
- 🌀 Ensure that you know where firefighting equipment is located.

Impact management: Wildlife Management (general)

- 🌀 Any wildlife encountered during earthworks and construction must not be harmed;

- ☞ Snakes especially must be treated with care and should be left alone to escape from the construction area. If they do not escape by themselves, a competent person should remove them to a safe area;
- ☞ Snares may not be set to catch hares and small buck;
- ☞ Tortoises, lizards and other wildlife may not be harmed or collected and must be removed from the construction area or be allowed to escape from the construction area.

Impact management: Soil Erosion (general)

- ☞ Prevent erosion from diversion, restriction or increase in stormwater;
- ☞ Rainwater should be appropriately channelled to prevent erosion or flooding;
- ☞ If erosion or any damage caused by construction vehicles occurs (e.g. on access roads and tracks), appropriate measures will need to be undertaken to prevent erosion, and to rehabilitate any damage caused.

Impact management: Dust Abatement (general)

- ☞ Reasonable measures to minimise the generation of dust should be undertaken (e.g., removal of the bare minimum of vegetation);
- ☞ Areas where earth is moved should be kept wet with water in order to reduce dust.

Impact management: Pollution (general)

- ☞ Engender an ethic of waste pollution management and how plastic bags and paper waste cause, not only visual pollution, but can lead to animal deaths if ingested by them;
- ☞ All solid waste must be stored in wind – proof bins to prevent waste being blown around the site;
- ☞ Explain also that burning of waste, especially PVC can cause toxic air pollution that is harmful to man, and unsupervised fires can lead to run-away fires;
- ☞ The importance of the use of chemical or other toilets will also be emphasised.

9.1.4.5 Consequences of non-compliance

- ☞ Explain the consequences of not complying with the conditions of approval and the content of the EMPr, which can include the issuing of fines and/or a stop works order and/or result in dismissal.

10 DETAILS OF THE PERSON / COMPANY WHO PREPARED THE EMPr

Legacy Environmental Management Consulting (Pty) Ltd. was appointed as the Independent Environmental Assessment Practitioner (EAP) and has adequate experience within the required Environmental Impact Assessment (EIA) field to facilitate the required Assessment Process. See **Appendix A** for a full CV. The persons involved in the project include:

Lauren Abrahams	Project Manager & Report Reviewer
	<p>Lauren Abrahams is an Environmental Consultant with experience in applying the principles of Integrated Environmental Management (IEM), and in applying the Environmental Impact Assessment Regulations to various development projects in South Africa. She has experience in various sectors including residential, commercial and industrial developments.</p> <p>Her core experience includes Project Management of environmental projects, including oversight through the tendering, design, and construction, operational and decommissioning phases. Lauren also has extensive experience in Permitting and/or Licencing in respect with Specific Environmental Management Acts (SEMA), Environmental Compliance Monitoring, and Water Use Licence Applications in terms of the National Water Act, to mention a few. In addition, Lauren has valuable knowledge and experience in Public Participation Processes.</p> <p>Lauren started working at Legacy EMC as an Environmental Consultant since January 2022.</p>
Relevant Years of Experience	7+ years
Qualifications	BTech (Oceanography), Cape Peninsula University of Technology, 2010. ND (Oceanography), Cape Peninsula University of Technology, 2009
Professional Registration / Memberships	EAPASA Registered EAP (2019/656); SACNASP Cand.Nat.Sci (100126/12); Member: International Association for Impact Assessment South Africa (6891)
Role in Project	Report writing and stakeholder engagement.

Tayla Hobson

Report Compiler



Tayla Hobson is a Junior Environmental Consultant with diverse experience working within the environmental industry within South Africa. She has more than one year's experience in environmental consulting with an upcoming future of contribution and growth within the socio-economic complexities of this industry.

Her core expertise includes Project Management of environmental projects, including oversight through the tendering, design, and construction, operational and decommissioning phases. In addition, Tayla has valuable knowledge and experience in Public Participation Processes.

Tayla started working at Legacy EMC as an Environmental Consultant since May 2023.

Relevant Years of Experience

1 + years

Qualifications

MSc in Environment, Society and Sustainability, BSc (Honours) in Ocean and Atmospheric Science, BSc (Marine Biology and Ocean and Atmospheric Science), University of Cape Town (2015-2020)

Professional Registration / Memberships

Candidate EAP (2019/1018) (EAPASA).
Member: International Association for Impact Assessment South Africa (6303)

Role in Project

Report writing and stakeholder engagement.

Appendix A: EAP CV



Lauren Abrahams

Environmental Assessment Practitioner

Overview

Name of Firm	Legacy Environmental Management Consulting (Pty) Ltd.
Contact details	lauren@legacymc.co.za
Name	Lauren Abrahams
Date of Birth	25 April 1989
Tertiary Qualification	BTech (Oceanography), Cape Peninsula University of Technology, 2010. ND (Oceanography), Cape Peninsula University of Technology, 2009.
Professional Membership and Accreditation	Registered EAP EAPASA (2019/656) Cand. Nat. Sci. SACNASP (100126/12) Member: International Association for Impact Assessment South Africa (6891). Ergonomic Risk Auditor (Cert. No. 03/08/2017-04)

Areas of Expertise

Lauren Abrahams is an Environmental Consultant with experience in applying the principles of Integrated Environmental Management (IEM), and in applying the Environmental Impact Assessment Regulations to various development projects in South Africa. She has experience in various sectors including residential, commercial and industrial developments.

Her core experience includes Project Management of environmental projects, including oversight through the tendering, design, and construction, operational and decommissioning phases. Lauren also has extensive experience in Permitting and/or Licencing in respect with Specific Environmental Management Acts (SEMA), Environmental Compliance Monitoring, and Water Use Licence Applications in terms of the National Water Act, to mention a few. In addition, Lauren has valuable knowledge and experience in Public Participation Processes.

Areas of expertise includes (but not limited to):

- Project Management
- Environmental Impact Assessments
- Stakeholder engagement or Public Participation
- Environmental Control Officer
- Environmental/Legal Compliance Audits and Assessments
- Environmental Management Programmes
- Section 24G Applications
- Water Use Licensing via the e-WULAAS platform
- Ergonomic Compliance Obligations (workplace) in accordance with the requirements of the Ergonomic Regulations



Relevant Experience (2016 – Present)

De Hoop Integrated Mixed-Use Residential Development – Swartland Municipality | Malmesbury, Western Cape | 2021

Role and Responsibilities: Environmental Practitioner, as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Full Scoping EIA. Compilation of the Water Use Authorisation application in accordance with the requirements of the National Water Act. Liaison with client and authorities.

Proposed Central Cemetery Expansion on a Portion of Farm RE/957, Vredenburg – Swellendam, Western Cape | 2021

Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process.

Allesverloren Lifestyle Estate (Integrated Mixed-Use Development) on Erven 23, 32, 36, 138, 1845 – 1849 and a portion of Farm 8/642 Allesverloren, Riebeeck West | Riebeeck West, Western Cape | 2021

Central Cemetery Expansion on a Portion of Farm RE/957, Vredenburg – Saldanha Bay Municipality | Vredenburg, Western Cape | 2021

Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process.

Water Use Authorisation for the sewer network and stormwater network infrastructure upgrades associated with the Swellendam Housing – Swellendam Municipality | Swellendam, Western Cape | 2021

Role and Responsibilities: Compilation of the Water Use Authorisation application for Section 21 water uses, in accordance with the requirements of the National Water Act. Liaison with client and authorities

Water Use Authorisation for the road crossings and upgrades associated with the Swellendam Housing – Swellendam Municipality | Swellendam, Western Cape | 2021

Role and Responsibilities: Compilation of the Water Use Authorisation application for Section 21 water uses, in accordance with the requirements of the National Water Act. Liaison with client and authorities

Swartland Junction: The Establishment of an Integrated Mixed-Use Development and Associated Infrastructure on Erf 12526, Erf 12496, Portion 1 of the Farm No. 1113, Remainder of the Farm No. 1113, and Portion 1 of the Farm No. 697, Malmesbury and Erf 353, Abbotsdale – Agri Industria (Pty) Ltd | Malmesbury, Western Cape | 2021

Role and Responsibilities: Environmental Practitioner, as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Full Scoping EIA. Compilation of the Water Use Authorisation application in accordance with the requirements of the National Water Act. Liaison with client and authorities.



Water Use Authorisation for the Melkhoutfontein Housing Development proposed on Ptn 111 of farm 480 Melkhoutfontein and associated bulk infrastructure – Hessequa Municipality | Melkhoutfontein, Western Cape | 2021

Role and Responsibilities: Compilation of the Water Use Authorisation application for Section 21 water uses, in accordance with the requirements of the National Water Act. Liaison with client and authorities

Water Use Authorisation for the infrastructure associated with the Swellendam Housing – Swellendam Municipality | Swellendam, Western Cape | 2021

Role and Responsibilities: Compilation of the Water Use Authorisation application for Section 21 water uses, in accordance with the requirements of the National Water Act. Liaison with client and authorities

Melkhoutfontein Housing Development of portion 111 of Farm 480 Melkhoutfontein – Hessequa Municipality | Melkhoutfontein, Western Cape | 2021

Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process.

Clearance of Indigenous Vegetation on Erf 1929, Riebeeck West – De Gift Boerdery | Riebeeck West, Western Cape | 2021

Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process.

Variation of a Waste Management License - Bonnievale WDF – Langeberg Municipality | Bonnievale, Western Cape | 2020

Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Waste License Variation Application Process.

Clearance of Indigenous Vegetation for the Establishment of a Housing Development and Associated Infrastructure on Erven 7752 and 1003, Louwville, Vredenburg – Saldanha Bay Municipality | Louwville, Western Cape | 2020

Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process.

Compost Facility and Feedlot on Portion 6 of Farm Middelburg No. 10, Robertson [Waste Management License and Environmental Authorisation Application] – South African Farm Assured Meat (SAFAM) | Robertson, Western Cape | 2019

Role and Responsibilities: Environmental Practitioner, as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process. Compilation of the Water Use Authorisation application in accordance with the requirements of the National Water Act. Liaison with client and authorities.

Development of a Liquid Petroleum Gas (LPG) Import Facility, Pipeline and Handling Facility in The Port of Saldanha Bay – The Strategic Fuel Fund (SFF) | Saldanha Bay, Western Cape | 2019



Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Full Scoping EIA Process.

The Expansion and Licensing of the Compost Facility on Portions 54 And 56 of Farm Groenfontein Annex No. 716, Paarl [Waste Management License and Environmental Authorisation Application] - Boland Organic Supplies | Paarl, Western Cape | 2019

Role and Responsibilities: Environmental Practitioner, as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process. Compilation of the Water Use Authorisation application in accordance with the requirements of the National Water Act. Liaison with client and authorities.

Removal of Natural Vegetation for Cultivation of Portion 7 of Corner Farm No. 466, Caledon – Corner Farm | Caledon, Western Cape | 2018

Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process.

Malmesbury External Sewer Pipeline – Swartland Municipality | Malmesbury, Western Cape | 2017

Role and Responsibilities: Environmental Practitioner, as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process. Compilation of the Water Use Authorisation application in accordance with the requirements of the National Water Act. Liaison with client and authorities.

Orange Grove Vegetation Clearing and Dam Expansion – Orange Grove Trust | Worcester, Western Cape | 2017

Role and Responsibilities: Environmental Practitioner, as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process. Compilation of the Water Use Authorisation application in accordance with the requirements of the National Water Act. Liaison with client and authorities.

Robertson Nkanini UISP Housing Project– Langeberg Municipality | Robertson, Western Cape | 2017

Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process.

Robertson Heights Low-Cost Housing Project– Langeberg Municipality | Robertson, Western Cape | 2016

Role and Responsibilities: Environmental Practitioner as part of a team, responsible for Project Management, Report Writing, Management of Specialist Consultants, Review of Specialist Reports, Client and Authority Liaison and Public Participation as part of the Basic Assessment Process.

Skills & Strengths

- Project Management including the execution of the project, within budget and schedule
- Firm understanding of various legal policies and regulations



- Compliance and enforcement
- Microsoft Word, Microsoft Excel, Microsoft Office, PowerPoint
- Environmental Management, Water Management
- Report writing
- Resilient, able to work under pressure, self-starter or team player

Work History

- January 2022 - Present** Environmental Assessment Practitioner, Legacy Environmental Management Consulting (Pty) Ltd
- Sept 2019 - Nov 2021** Environmental Assessment Practitioner, Enviro-EAP (Pty) Ltd
- Aug 2014 - Aug 2019** Environmental Assessment Practitioner and Online Legal Database Administrator, Eco Impact Legal Consulting (Pty) Ltd
- Jun 2013 - Jul 2014** Research Assistant, SANParks Cape Research Centre, Tokai
- Jul 2012 - May 2013** Research Assistant, SEAON, Egagasini Offshore Node, Cape Town
- Oct 2011 - May 2012** Benthic Biodiversity Internship, SEAON, Egagasini Offshore Node, Cape Town
- May 2011 - Jul 2011** Research Assistant, University of Cape Town, Department of Zoology
- Jun 2010 - Nov 2010** Technical Assistant, Bayworld Research Centre for Research and Education
- Apr 2009 - Mar 2010** Internship, Department of Environmental Affairs and Tourism
-

Appendix B: Construction Guidelines

APPENDIX 1 to the EMP

GENERIC CONSTRUCTION GUIDELINES

1. INTRODUCTION

Construction is potentially one of the most destructive phases of the development process that can harm the environment permanently if it is not appropriately planned and the necessary mitigation correctly applied and managed.

Construction implies certain inevitable levels of change to the affected environment or 'place'. A certain degree of change to the environment, within acceptable environmental norms, nevertheless has to be accepted. It is, however, important for such inevitable change to be limited within confined boundaries, so as to protect ecological, social, and cultural characteristics (i.e. the 'sense of place') of the affected environment, by pursuing the best practicable environmental option(s) or practices.

A primary environmental objective is, therefore, to limit the unavoidable disturbance or fragmentation of the environment to the *'limits of acceptable change'*.

The EMP, together with these Construction Guidelines, is to form part of the construction contractual documentation, i.e. the appointed contracts must be fully aware of the environmental management programmes that need to be carried out as part of the construction programmes.

The construction programme is to be implemented by the appointed contractors, on behalf of the Implementing Agent, in accordance with the EMPs and these Construction Guidelines.

Compliance with the Construction Guidelines will be monitored by the ECO (Environmental Control Officer), to be appointed, who will also monitor compliance of the conditions of contract and conditions of approval (Environmental Authorisation).

This Construction Guideline document forms part of the Contractor's contractual documentation entered into between the Developer and the Contractor and must be signed by the appointed Contractor as acknowledgement of its content.

2. PRE-CONSTRUCTION PHASE

This phase is to be based on the following principles and guidelines:

- A construction contract must be established between the Implementing Agent and the appointed Contractor(s). The contract should include a penalty clause for both environmental and construction transgressions.
- The construction site office, stores, temporary storage of diesel and concrete batching equipment is to be located on an appropriate, non-environmentally sensitive site and must be accessible to large trucks and be large enough for the secure storage of equipment, pipes and fittings, and mechanical machinery and the delivery of raw materials.
- Construction personnel should not be housed on the site and will need to be transported to work on a daily basis. Only security personnel may live on site to maintain a security presence, should this be necessary.
- The Contractor should provide the necessary training of staff to fill certain construction jobs on site. The Contractor will also be obliged to apply a Stellenbosch first policy when employing staff.
- The ECO must inform all contractors and their personnel in respect of the environmental code of conduct prior to the commencement of any construction work.

- The Contractor must demarcate the boundaries of the construction sites with danger tape or fencing. Construction workers must remain in close proximity to the construction site.
- If a mobile fuel bowser is to be used it must be checked for leaks and efficient operation and must have a drip tray under it when parked. All oils diesel and release oils used in the construction process must be kept within the bunded area. Access to the bunded area must be controlled at all times and must be locked at all times.
- The parking and service area (if required) for construction vehicles should be well-compacted earth or concrete to prevent oil and diesel spills contaminating the soils of the site. Should oil or diesel spills occur, they should be treated with a suitable hydrocarbon absorption or remediation product. Absorbent spill mop-up products need to be on hand - Products to be investigated should include sunsorb absorbents (tel. 021 674 7277 www.sunsorb.com) and the hydrocarbon encapsulator "Oilcap" (www.gh2o.co.za).
- A suitable leak proof container for the storage of oiled equipment (filters, drip tray contents and oil changes etc.) must be provided if servicing of vehicles takes place at stores/site office. Fuels and oils must be safely located out of harms way from the elements (preferably within the bunded area) and safety and fire prevention must be strictly adhered to. The necessary fire hydrants should be on site.
- Alien vegetation should be cleared according to the directives contained in the EMP and MMP.
- Felled alien plant material must be removed from the property by appropriate means to reduce fire risk.
- Any removed topsoil is to be temporarily stockpiled in suitable designated areas for later use in the rehabilitation of the sites, if needed. It may be necessary for the Contractor to stabilise the exposed sandy areas to prevent erosion and dust by spreading straw or chipped vegetation (removed from the site) over the surface or by covering the stockpile with shade cloth. All soil stockpiles shall not exceed 2m in height. The access roads may also require wetting to suppress dust.
- The Contractor must provide temporary chemical toilet facilities at the stores/site office area. A minimum of **one toilet shall be provided per 15 persons at each working area** or as stipulated by the local authority. The toilets must be kept in a clean and sanitary condition, and must be regularly serviced (at least once per week). Toilet paper and potable water (for washing hands) is to be provided by the Contractor.

3. CONSTRUCTION PHASE

This phase is to be undertaken in accordance with the following principles and guidelines:

- The construction area must be clearly demarcated and no construction activity will be allowed outside of this area. All linear alignments of infrastructure must be appropriately demarcated.
- Construction and delivery vehicles must not be allowed to leave the demarcated areas and should only use the existing access road/s in and out of the construction area. All temporary access points to the river must be ratified by the ECO and rehabilitated after use).
- Any cultural-historic artefacts unearthed during excavations/ earth works must be reported to the ECO as soon as possible and all earthworks should be curtailed in those areas until such time as the ECO and/or a consulting archaeologist has surveyed the site(s) and made his/her recommendations. Heritage Western Cape must immediately be informed if the consulting archaeologist deems the finds to be significant.

- All vehicles, equipment, fuel and petroleum services and tanks must be maintained in a good condition that prevents leakage and possible contamination of soil or ground water supplies.
- All emergency servicing of vehicles must be conducted over a drip tray present to prevent accidental spillage of oils and fuels. Used oil should be recycled or disposed of at a hazardous waste disposal facility.
- All fuel/ oil spills must be reported to the ECO.
- Construction material must be stored in areas designated by the Site Agent and in a neat and orderly manner.
- The Contractor must store any building rubble in a suitable area designated by the ECO and should ideally be removed from site on a weekly basis (if not to be used as fill). The crushing of building rubble must be undertaken at a suitable site. Should dust become a problem, spraying of a water mist may be required. Stormwater controls may be required for diverting stormwater away from sensitive areas where erosion can take place.
- All other solid waste must be kept in appropriate containers and must be removed from the site by the Contractor on a weekly basis to a licensed waste disposal facility. The **burning of solid waste and paper will not be allowed on site**. Recyclable waste should be recycled if at all possible (metal, paper, cardboard, bottles, tins and plastic).
- Concrete mixing and the subsequent cement residues must be restricted to a designated area on the site. Such residues are to be removed from the site within one week of completing each phase of the construction period.
- **Used cement bags are to be stored in a wind and rainproof container for disposal.** Used bags may not lie around on site nor may they be burnt on site.
- Excess or spilled concrete should be confined within the works area and then removed to a waste site.
- Cement powder has a high alkalinity pH rating that can contaminate and affect both soil and water pH dramatically. Cement spills must therefore be prevented or cleared as soon after the spill as possible.
- All excavations (especially within deep unconsolidated sand) deeper than 1.5m must be shored up to prevent collapse of the sides and possible injury to workers or even loss of life.
- All open excavations must be protected with danger tape / danger fencing.
- The seeding or planting of indigenous grass or fynbos species may be considered over exposed soil surfaces to act as a quick binder of the soil in order to speed up the rehabilitation process of disturbed areas.
- Disturbed areas around the building sites, where dust can arise, may need to be kept moist by spraying with water from a water bowser or other suitable means, or alternatively straw can be worked into the surface to bind the soil and prevent windblown dust.
- The Contractor will be responsible for security on the site of works and will ensure that his staff do not trespass onto other properties.
- The Contractor must provide dedicated eating areas for staff. Waste bins with lids must be provided at such areas. Such eating areas are to be maintained in a neat condition.
- No fires will be permitted within the project area.

- The ECO/RE must monitor the contractors' compliance with the construction and progress in terms of the above environmental guidelines on a regular basis. The ECO will issue an ECO Checklist within 5 days after each site visit to provide a record of instructions given to the Contractor/Site Agent for environmental work that needs to be done or where problems have been noted.

4. POST-CONSTRUCTION PHASE

This phase is to be undertaken in accordance with the following principles and guidelines:

- All temporary structures must be removed from the site within three weeks after completion of a particular phase of the project.
- The Contractor must remove all oil and cement spills as soon as possible. Alternatively spills may be picked up and stored in appropriate containers/waste skips prior to removal.
- All rubble and other forms of waste must be removed from the site, within one week after completing a particular phase.
- The Contractor must repair disturbed areas (e.g. ripping of deep tracks left by construction vehicles) within one week after completing each phase of the project.
- The rehabilitation/landscaping of disturbed areas can commence as soon as disturbed areas become available and once climatic conditions allow for it.
- Topsoil and and/or wood chips/straw are to be evenly spread over disturbed areas to facilitate the rehabilitation.
- The ECO must make sure that all the environmental stipulations put forward in the construction contracts and/or ECO Checklists have been complied with, and must advise the Developer/RE if the penalty clause needs to be applied for any environmental impacts that may have occurred.

The Contractor must accept the above Construction Guidelines. **It is expected that the Contractor sign this document as part of the main contract with the Implementing Agent.** The main Contractor will also be solely responsible for the conduct of all subcontractors that may be used in this contract.

Signed by: _____ on behalf of: _____

Name: _____

Signed by: _____ on behalf of: _____

Name: _____

Witness: _____

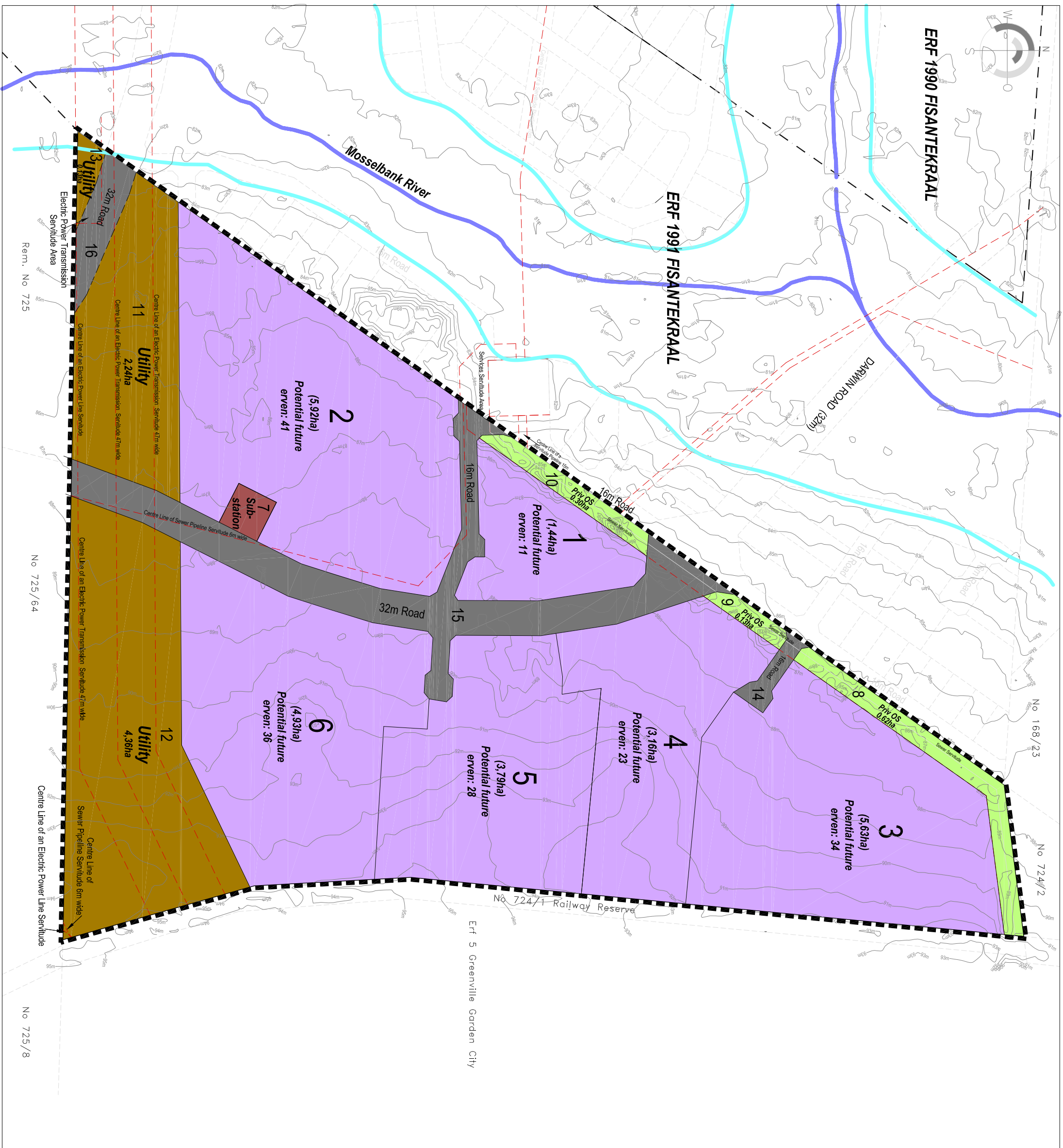
Name: _____

Date: _____

Figure 1: Locality Map



Figure 2: Site Development Plan



ZONING	TOTAL ERVEN
General	6
Industrial	1
Utility (Sub-station)	3
Utility (Eskom servitude)	3
Open Space 3 (Private open space)	3
Transport 2 (Public roads)	3
Total	16

- Subject Property
- Mid of Rivier
- Flood line - 1:100 year

BASE MAP & CONTOURS SUPPLIED BY:
DAVID HELGIG LAND SURVEYORS

NOTA: ALLE AFSTANDE BY BEWAARDINGS EN ONDERHEWING AAN OPMETTING
NOTE: ALL MEASUREMENTS APPROXIMATE AND SUBJECT TO SURVEYING

HERSIENINGS • REVISIONS

NO	DATUM/DATE	BESKRYWING/DESCRIPTION

N.A.PLAN AFRICA
INNOVATIVE PLANNING SOLUTIONS
165 Wellington - 7854 • E-mail: theo@nuplanfrica.co.za
Call +27 82 440 4893

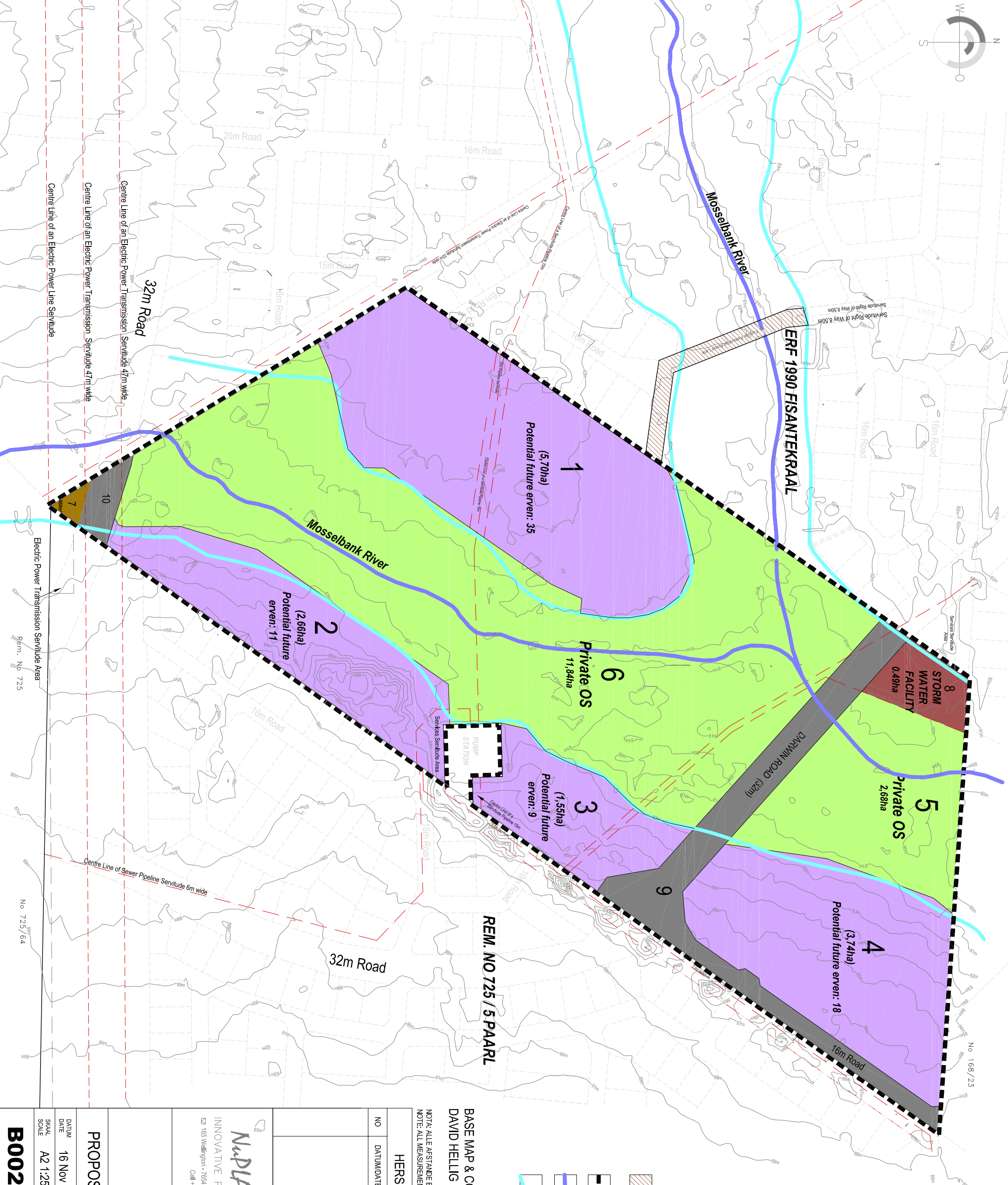
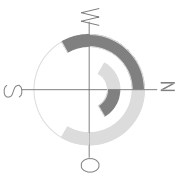
PAARL

Farm Joostenbergs Vlaakte
No 724/ Rem 5 & 724/26

PROPOSED SUBDIVISION & ZONING

DATE	GETEKEN	ONTWERP
16 NOV 2022	AV	TS

B0021 - 724/5 - 02



ZONING	TOTAL ERVEN
General	4
Industrial	1
Utility (Stormwater facility)	1
Utility (Eskom servitude)	1
Open Space 3 (Private open space)	2
Transport 2 (Public roads)	2
Total	10

- Proposed Right of Way servitude in favour of Erf 1991 (16m)
- Subject Property
- Mid of River
- Flood line - 1:100 year

BASE MAP & CONTOURS SUPPLIED BY:
DAVID HELG LAND SURVEYORS

NOTE: ALLE AFSTANDE BY BENDERING EN ONDERREKING AAN OPLETTING
NOTE: ALL MEASUREMENTS APPROXIMATE AND SUBJECT TO SURVEYING

HERSIENINGS • REVISIONS

NO	DATUM/DATE	BESKRIVING/DESCRIPTION

NUPHAN AFRICA
INNOVATIVE PLANNING SOLUTIONS
165 Wellington • 7054 • E-mail: theo@nuphanfricacoza
Cell: +27 82 440 4893

DURBANVILLE
PHESANTEKRAAL
ERF 1991

PROPOSED SUBDIVISION & ZONING

DATUM/DATE	GETEKEN/DRAWN	AV
16 Nov 2022	AV	
SKAAL/SCALE	ONTWERP/DESIGNED	TS
A2 1:2500	DESIGNED	

B0021 - ERF1991 - 02