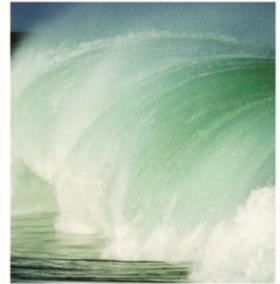
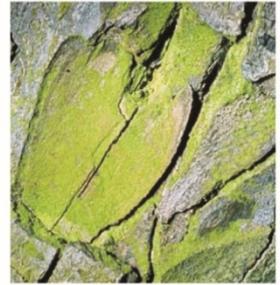


Leeuwfontein Extension 29
GAUT 002/21-22/E3158

Environmental Management Program

Date August 2022





TEXTURE
ENVIRONMENTAL CONSULTANTS

ENVIRONMENTAL IMPACT ASSESSMENT
ENVIRONMENTAL MANAGEMENT PROGRAM

Leeuwfontein X29
Environmental Management
Program
GAUT 002/21-22/E3158

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1 INTRODUCTION

The purpose of an Environmental Management Programme (EMPr) is to guide the planning and design, construction and operational phases of the development. The EMPr should be developed in parallel with the planning and design phase, which enables environmental guidelines and criteria to be incorporated into the detailed design. This is done to eliminate or mitigate the various possible risks to the environment and its surrounding inhabitants during the planning and pre-construction phase. And it will subsequently ensure that minimal damage will occur to these areas during the construction and operational phases of a project.

2 PHASES, ROLES & RESPONSIBILITIES

2.1 Phases of the Project

The point of departure for any EMPr is to take a pro-active route by addressing and minimising any potentially significant problem before it occurs. In particular this EMPr deals with the following phases:

2.1.1 Planning or Design Phase

It is essential that possible problematic situations be eliminated or mitigated during the planning phase, to ensure that contingency plans are prepared for any possible accidental situation that may arise during the construction phase. By having these contingency plans in order before construction starts it will limit any further potentially detrimental impacts to the environment and its surrounding inhabitants.

2.1.2 Construction Phase

The majority of possible impacts on a site would occur during the construction phase, and most of them will have immediate effect (e.g. dust pollution, fuel spillage). It is therefore vital that the site is monitored on a continual basis during this phase, as it would be possible to identify and correct these impacts as they occur, thus minimising their possible impact.

2.1.3 Operational Phase

By being pro-active during the design and construction phases, potentially harmful impacts originating in the operational phase will be minimised or eliminated. For the proposed development the following aspects are important during operations and is more thoroughly addressed under Items as indicated:

- Waste management
- Storm water management
- Noise
- Traffic
- Operational hours
- Visual
- Safety and security

2.1.4 Decommissioning Phase

Thoughtful design, thorough monitoring and strict adherence to the EMPr during the construction and operational phases will ensure that the decommissioning phase (if and when applicable) will be done efficiently and with minimal damage to the bio-physical and social environments.

2.2 Roles and Responsibilities

Various role players have a range of responsibilities to perform during the different phases of a project:

2.2.1 Contract Manager (CM) (Developer Representative)

- The CM will be responsible for overseeing the contract from initiation to completion of construction on the site
- The CM will appoint a team of contractors, which will be responsible for the construction of the entire project
- The CM will be responsible for ensuring that the development is implemented according to the requirements as set out in the EMPr
- The CM should ensure that sufficient resources are available to the other role players to efficiently perform their tasks in terms of the EMPr
- The CM must appoint an independent ECO to ensure strict adherence to the EMPr

2.2.2 Architects (Arch)

Only architects approved by the CM will be allowed to work on the project and will oversee the individual contracts between the owners of the entire site or portions thereof and the contractors.

2.2.3 Engineer (Eng)

An engineer act as a direct, on-site resource for all technical aspects related to the development. He is available on the construction site at all times, overseeing all phases of the construction activities.

2.2.4 Environmental Control Officer (ECO)

The ECO will be appointed at the start of the construction phase and is mandated to do the following:

- Ensure that all contractors/subcontractors/employees are fully aware of their environmental responsibilities. This will take the form of an initial environmental awareness-training program in which requirements of this document will be explained
- Any damage to the environment must be repaired as soon as possible after consultation between the ECO, Consulting Engineer and Contractor
- The ECO shall monitor their actions to ensure that the developer staff and/or contractor are adhering to all stipulations of the EMPr
- The ECO shall be responsible for monitoring the construction activities throughout the project by means of site visits and meetings. This should be documented as part of the site meeting minutes
- The ECO must sign off that the PM certify that they shall ensure that all clean-up and rehabilitation or any remedial action required, are completed prior to transfer of properties
- A post construction environmental audit is to be conducted to ensure that all conditions in the EMPr have been adhered to

2.2.5 Community Liaison Officer (CLO)

Where necessary / required a representative of the community, as nominated by the community, will be the CLO and has the role of representing the community and managing all communication between the ECO, the Contractor and the community (I&APs). (The details of the CLO are to be forwarded to the Ward Councillor for the area.)

3 IMPLEMENTATION AND MONITORING

3.1 Auditing/Inspections

- The appointed ECO on a regular basis, and also ad hoc basis will inspect the site where necessary
- The CM as well as the contractor's representative will accompany the ECO, on-site inspections
- The contractor will use the formats presented in this EMPr to report to the CM as to the compliance to this document

When, in the opinion of the ECO, a construction activity will result in environmental damage, the ECO will issue instructions to the CM, who will in turn order the Contractor to halt the activity. Spot fines or penalties may be levied for non-compliance.

3.2 Methods Statements

Methods statements from the Principal contractor and or subcontractor – where applicable - will be required for specific sensitive actions on request of the authorities or ECO. All method statements will form part of the EMPr documentation and are subject to all terms and conditions contained within the EMPr document. For each instance wherein it is requested that the contractor submit a method statement to the satisfaction of the ECO, the format should clearly indicate the following:

- What – a brief description of the work to be undertaken
- How – a detailed description of the process of work, methods and materials
- Where – a description / sketch map of the locality of work
- When – the sequencing (phases) of actions with commencement date and completion date estimates

The contractor must submit the method statement before any particular construction activity is due to start. Work may not commence until the method statement has been approved by the ECO.

3.3 Record Keeping

All records related to the implementation of this management plan (e.g. site instruction book, ECO diary, methods statements etc.) must be kept together in an office where it is safe. Records should be kept for two years and at any time be available for scrutiny by any relevant authority.

4 STANDARDS

- The ECO will keep written and photographic records of the site and its surroundings before, after and during construction on the site
- The Contractor will keep records of construction activities, instructions received from the ECO and CM concerning environmental matters

- The ECO will keep records of cases of non-compliance and remedial actions taken
- Where no quantitative standards are applicable, visual standards will apply
- The contractor will rehabilitate the site to a condition acceptable to the ECO, and respond timeously to any complaints and instructions regarding construction activities

5 EMPr OBJECTIVES

This EMPr must be used during the pre-construction, construction and operational phases of the proposed project.

The objectives of this plan are to:

- Ensure all environmental safeguards are carried out correctly
- Manage site activities effectively and coordinate with other trades
- Minimise adverse impacts on the environment
- Ensure that environmental mitigation measures are in place from the start of the project
- Minimise disruption to fauna and flora
- Monitor the project

6 EMPr CONTEXT AND ENVIRONMENTAL AUTHORISATION CONDITIONS

This EMPr fits into the overall planning process of the project and should be implemented by the developer as soon as the authorities have approved it. A copy of the EMPr should always be available on site. All contractors and sub-contractors are to be familiar with the EMPr and its contents.

7 LEGISLATION

The EMPr is compiled in order to comply with the following legislation.

Table 1: Legislation

| Legislation | Sections | Relates to |
|--|---------------------|--|
| The Constitution (No 108 of 1996) | Chapter 2 | Bill of Rights |
| | Section 24 | Environmental rights. |
| National Environmental Management Act (No 107 of 1998 [as amended]) | Section 2 | Defines the strategic environmental management goals and objectives of the government. Applies through-out the Republic to the actions of all organs of state that may significantly affect the environment. |
| | Section 24 | Provides for the prohibition, restriction and control of activities which are likely to have a detrimental effect on the environment. |
| | Section 28 | The developer has a general duty to care for the environment and to institute such measures as may be needed to demonstrate such care. |
| Environment Conservation Act (No 73 of 1989) and regulations | Sections 19 and 19A | Prevention of littering by employees and subcontractors during construction and the maintenance phases of the proposed project |
| National Heritage Resources Act (No 25 of 1999) and regulations | Section 32 | No person may, without a permit issued by the responsible heritage resources authority destroy, damage, excavate, alter, deface or otherwise disturb any archaeological or paleontological site. |
| | Section 34 | No person may, without a permit issued by the South African Heritage Resource Agency (SAHRA) or a provincial |

| | | |
|---|------------|--|
| | | heritage resources authority destroy, damage, alter, exhume, remove from its original position or otherwise disturb any grave or burial ground older than 60 years which is situated outside a formal cemetery administered by a local authority. Grave is widely defined in the Act to include the contents, headstone or other marker of such a place, and any other structure on or associated with such place. |
| National Environmental Management Biodiversity Act (Act No. 10 of 2004) | | Provide for the protection of species and ecosystems that warrant national protection and the sustainable use of indigenous biological resources. |
| Occupational Health and Safety Act (No 85 of 1993) | Section 8 | Control of dust |
| | Section 9 | Control of noise |
| National Water Act (No 36 of 1998) and regulations | Section 19 | General duties of employers to their employees |
| | Section 20 | General duties of employers and self employed persons to persons other than their employees |
| | Section 21 | A Water Use License Application is required for construction activities within any 1:100 year flood lines |
| National Road Traffic Act (No 93 of 1996) | | Road safety |
| Town Planning and Townships Ordinance 15 of 1986 | | Town Planning |
| SANS 10103 (Noise Regulations) | | The measurement and rating of environmental noise with respect to annoyance and to speech communication |

8 PROJECT OVERVIEW

Leeufontein X29 is situated on Portion 2 of the Farm Leeufontein 299-JR, City of Tshwane Metropolitan Municipality. The application site is north of Road K14 (Cullinan - Pretoria Road/ R513), east of Leeufontein Road and south of the proposed PWV 2 Road alignment. The Edendalspruit forms the eastern and northern boundary of the site.

All listed and specified activities triggered and applied for

| Relevant Government Notice: | Activity No (s) | Description of each listed activity as per the wording in the listing notices: |
|-----------------------------|-----------------|---|
| GNR 327/ 2017 | 12 | <p>The development of—</p> <ul style="list-style-type: none"> i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or ii) <u>infrastructure or structures with a physical footprint of 100 square metres or more;</u> iii) where such development occurs— <ul style="list-style-type: none"> a) <u>within a watercourse;</u> b) in front of a development setback; or c) if no development setback exists, <u>within 32 metres of a watercourse,</u> measured from the edge of a watercourse <p><u>Relevance</u> The construction of structures within 32 meters of a watercourse might be required.</p> |
| GNR 327/ 2017 | 19 | <p>The infilling or depositing of any material of <u>more than 10 cubic metres into,</u> or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than <u>10 cubic metres from a watercourse;</u></p> <p><u>Relevance</u> The construction of structures within 32 meters of a watercourse might be required.</p> |

| | | |
|---------------|----|---|
| GNR 327/ 2017 | 27 | <p>The clearance of an area of <u>1 hectares or more</u>, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for—</p> <p>(i) the undertaking of a linear activity; or</p> <p>(ii) maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p><u>Relevance</u> The development footprint is 32.26 ha.</p> |
| GNR 327/ 2017 | 28 | <p><u>Residential, mixed</u>, retail, commercial, industrial or institutional developments where such land was used for <u>agriculture</u> or afforestation on or after 01 April 1998 and where such development:</p> <p>(i) will occur <u>inside an urban area</u>, where the total land to be developed is <u>bigger than 5 hectares</u>; or</p> <p>(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare</p> <p><u>Relevance</u> Portions of the site could have been used for agriculture after 01 April 1998.</p> |
| GNR 325/2017 | 15 | <p>The clearance of an area of 20 hectares or more of indigenous vegetation.</p> <p><u>Relevance</u> The development footprint is 32.26 ha.</p> |
| GNR 324/2017 | 4 | <p>The development of a <u>road wider than 4 metres</u> with a reserve less than 13,5 metres.</p> <p>In Gauteng:</p> <p>i. A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>ii. National Protected Area Expansion Strategy Focus Areas;</p> <p>iii. Gauteng Protected Area Expansion Priority Areas;</p> <p>iv. Sites identified as <u>Critical Biodiversity Areas (CBAs)</u> and Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</p> <p>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No.10 of 2004)</p> <p><u>Relevance</u> The access roads will be wider than 4 meters and the site is in a Critical Biodiversity Area (CBA).</p> |
| GNR 324/2017 | 12 | <p>The clearance of an area of <u>300 square metres or more of indigenous vegetation</u> except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan.</p> <p><u>Gauteng</u></p> <p>i) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004;</p> <p>ii) Within <u>Critical Biodiversity Areas</u> or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or</p> <p>iii) On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.</p> <p><u>Relevance:</u> More than 300 square metres of indigenous vegetation will be cleared. The site is within a Critical Biodiversity Area (CBA).</p> |
| GNR 324/2017 | 14 | <p>The development of—</p> <p>(ii) <u>infrastructure or structures with a physical footprint of 10 square metres or more;</u> where such development occurs—</p> <p>(a) within a watercourse;</p> <p>(c) if no development setback has been adopted, <u>within 32 metres of a watercourse</u>, measured from the edge of a watercourse.</p> <p>c. <u>Gauteng</u></p> <p>i. A protected area identified in terms of NEMPAA, excluding conservancies;</p> <p>ii. National Protected Area Expansion Strategy Focus Areas;</p> <p>iii. Gauteng Protected Area Expansion Priority Areas;</p> <p>iv. Sites identified <u>as Critical Biodiversity Areas (CBAs)</u> or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans;</p> <p>v. Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004);</p> <p>vi. Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority;</p> <p>vii. Sites or areas identified in terms of an international convention;</p> <p>viii. Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA;</p> <p>ix. Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or</p> <p>x. Sites zoned for conservation use or public open space or equivalent zoning.</p> |

| | | |
|--------------|----|--|
| | | <p><u>Relevance</u> The construction of structures within 32 meters of a watercourse might be required. The site is within a CBA.</p> |
| GNR 324/2017 | 26 | <p>Phased activities for all activities—</p> <p>i) Listed in this Notice and as it applies to a specific geographical area, which commenced on or after the effective date of this Notice; or</p> <p>ii) Similarly listed in any of the previous NEMA notices, and as it applies to a specific geographical area, which commenced on or after the effective date of such previous NEMA Notices- where any phase of the activity was below a threshold but where a combination of the phases, including expansions or extensions, will exceed a specified threshold.</p> <p><u>All Areas.</u></p> <p><u>Relevance</u> Development will be done in phases.</p> |

Project type and description of the activity

The activity comprises township establishment consisting of a mixed land use model with the following land uses: Residential 2 (40 Units/Ha); Residential 3 (80 Units/Ha); Business 2; Community Facilities- Educational; and Open Space. The township will be known as Leeuwfontein X 29.

The proposal will comprise the following land uses:

Table 2: Land Use Details

| Use Zone | No of erven | Area |
|-----------------------------|-------------|-----------------|
| Residential 2 (40 units/ha) | 8 | 5.61 ha |
| Residential 3 (80 units/ha) | 11 | 17.65 ha |
| Business 2 | 1 | 0.65 ha |
| Educational | 1 | 0.50 ha |
| Public Open Space | 7 | 9.54 ha |
| Total | 28 | 33.95 ha |

9 PROPERTY DESCRIPTION

Portion 2 of the Farm Leeuwfontein 299-JR, City of Tshwane Metropolitan Municipality, Gauteng Province.

10 PROJECT LOCALITY

The proposed township development area is located north of Road K14 (Cullinan - Pretoria Road/ R513), east of Leeuwfontein Road and south of the proposed PWV 2 Road alignment. The Edendalspruit forms the eastern and northern boundary of the site. The study area is 48.65 ha in extent.

The GPS coordinates of the main landmarks within the project area are as follows:

- Approximate centre of study site: 25°40'24.17" South; 28°23'42.89" East.
- Quarter Degree Square (QDS): 2528CB.
- Quaternary Drainage Area (QDA): A23A.

The 21digit Surveyor General Codes for the property is T0JR0000000029900002 and the title deed Nr. is T124763/96. The proposed township is located in the eastern development areas of Tshwane - Region 5. The farm portion is currently zoned "Undetermined" in terms of the TSHWANE Town

Planning Scheme 2008 (Revised 2014).
 (Project indicated on the Site Location maps below).

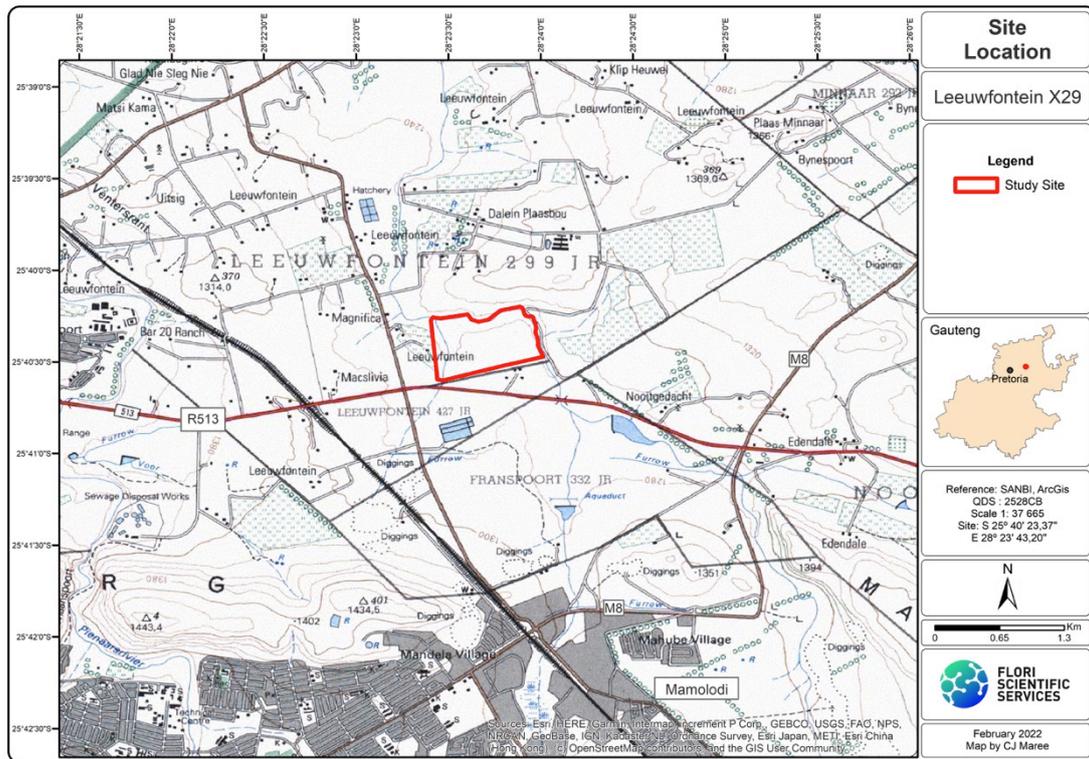


Figure 1: Locality map



Figure 2: Study area location (Google Earth)

11 RECEIVING ENVIRONMENT

The Site sensitivity assessment, conducted to inform the layout options, took a number of issues into consideration. These include the terrestrial and the aquatic ecology of the site and immediate surrounding area; the conservation status of the vegetation type in which the study site is situated, which in this case is endangered (EN); the presence of pristine veldtypes; the presence of red data fauna and flora species; and the presence of ideal habitats for priority species (which include, but are not limited to red data species), the presence of heritage resources etc.

The landcover of the study site is that of vacant plots of land with open thorn tree dominated bushveld. The site is bounded by the Edendal Spruit in the north and east and by undeveloped property in the south and west.

The study site is situated within Marikana Thornveld, which is a threatened veldtype with a status of 'Vulnerable'. The vegetation on the study site is a mix of moderately degraded to seriously degraded and altered (in certain areas where there is lots of illegal dumping). There is no pristine vegetation on the study site.

There is a small unnamed stream and associated valley bottom wetland in the western extreme of the study site. a Class 1 Ridge, is to the north of the Edendalspruit and study site.

The study site is within a Critical Biodiversity Area (CBA). No RDL fauna or floral species were observed on site during site investigations. There are also no protected trees on site.

There are a few orange data listed plants on site, namely: *Hypoxis hemerocallidea*, *Boophone disticha* and *Crinum macowanii*. Most of these are outside of the proposed development area.

It is likely that a plant permit will be required to lift and relocate the ODL plants found on the study site.

There are no 'no-go zones' along the study site that might trigger a 'fatal flaw' in terms of the project brief and scope.

The only 'high sensitive' habitats on site are the watercourses.

- Mitigating measures that must be implemented include:
 - Ensure small footprint during construction phase.
 - **32m Buffer zones**, from the edge of the banks of all streams and rivers need to be implemented.
 - **50m Buffer zones**, from the edge of wetlands need to be implemented.
 - **100m Buffer zone**, from the foot of the ridge.

12 LAYOUT

The sensitive areas identified during field investigations are the small unnamed stream and associated valley bottom wetland in the western extreme of the study site, the Edendal spruit to the north of the study site, and a Class 1 Ridge north of the Edendal spruit.

The watercourses, like all watercourses encountered, should be approached as sensitive. These areas were thus demarcated and rated as having a sensitivity rating of High. In addition, the flood line was determined and no development are proposed in the 1:100 year flood line area. The flood lines are indicated and endorsed by the relevant engineer on the Site Development Plan.

The layout options were investigated in terms of the layout for the proposed establishment so as to accommodate the riverine area.

The Mitigating measures that must be implemented include:

- **32m Buffer zones**, from the edge of the banks of all streams and rivers need to be implemented.
- **50m Buffer zones**, from the edge of wetlands need to be implemented.
- **100m Buffer zone**, from the foot of the ridge.

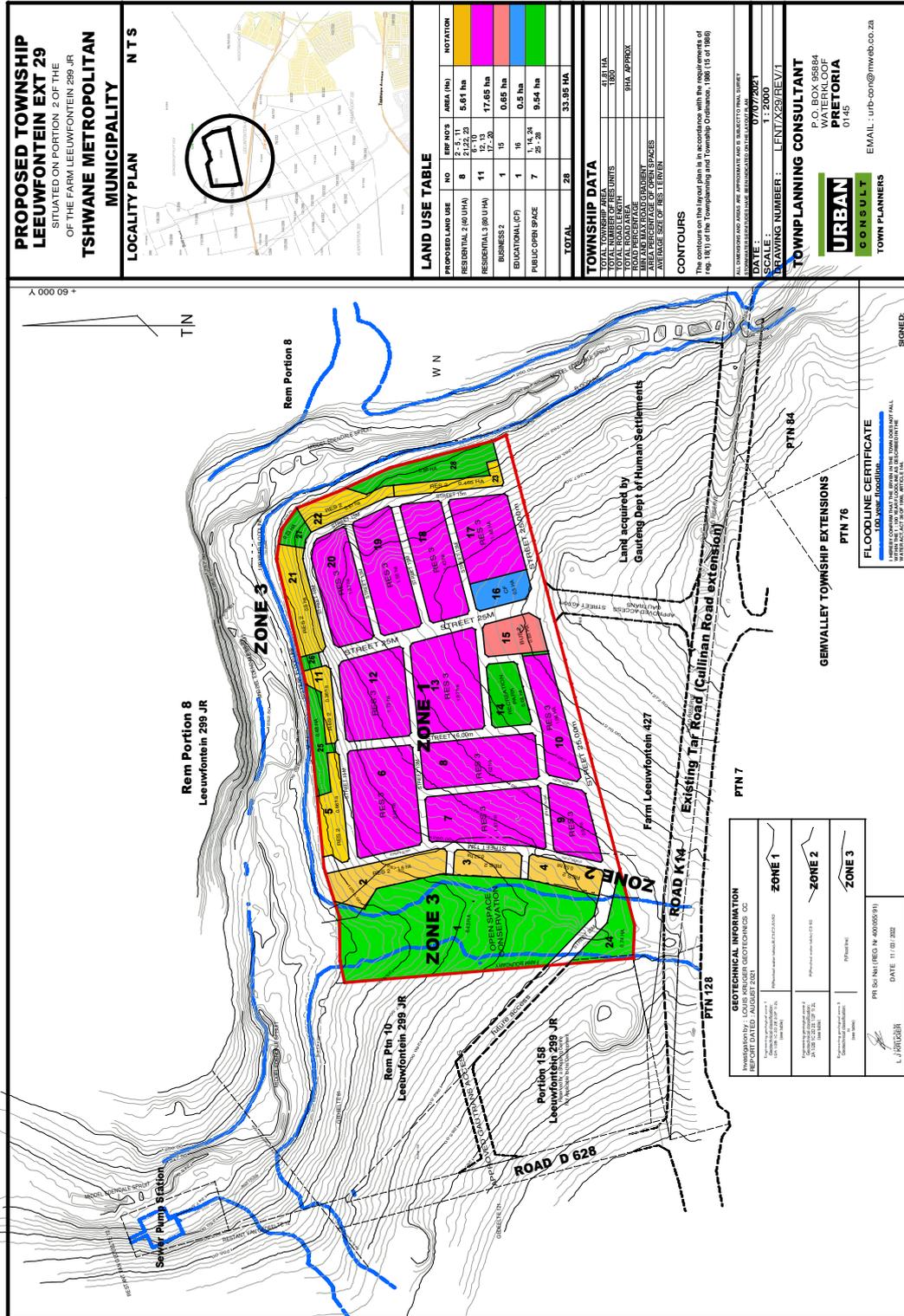


Figure 3: Layout

13 TIMEFRAMES

It is envisaged that the construction period will be concluded, and post construction monitoring requirements will be finalised approximately five years after commencement of the activity.

14 ENVIRONMENTAL MANAGEMENT PROGRAMME

Table 3: Environmental Management Programme

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|--|--|-------------------|----|----|----|---|------------|-----------|
| | | DS | CO | OP | DE | | | |
| 14.1 Planning | | | | | | | | |
| a) Appointment and duties of ECO | The Developer must appoint an independent ECO who must monitor the contractor's compliance to the EMPr. The developer must provide all contractors with a copy of the EMPr. The priority of the ECO is to maintain the integrity of the development conditions as outlined in the EMPr. The ECO must form part of the project management team and attend all relevant project meetings. Once appointed the ECO details should be included in the EMPr. | ✓ | ✓ | | | DEVELOPER, ECO, CONTRACTOR | Continuous | |
| b) EMPr | This EMPr must be made binding to the Contractor, as well as sub-contractors and should be included in the tender documentation for the construction contract. The EMPr is also binding to the owner during the operations of the facilities. | ✓ | ✓ | | | DEVELOPER, CONTRACT MANAGER, CONTRACTOR | Once-off | |
| c) Environmental incidents | The Contractor and Owner must take corrective action as per prescribed procedure, to mitigate an incident appropriate to the nature and scale of the incident and must also rehabilitate any residual environmental damage caused by the incident or by the mitigation measures themselves. | | ✓ | | | CONTRACTOR, ECO | Continuous | |
| d) Flooding, erosion and sedimentation | ➤ The stormwater management plan should aim to slow down water flow from hard permeable surfaces, prior to being released to the storm water system. | ✓ | | ✓ | | DEVELOPER, CONTRACT MANAGER | | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | <ul style="list-style-type: none"> ➤ Stormwater drainage must be in accordance with the Water Research Commission Report, 2012 and the South African Guidelines for Sustainable Drainage Systems. ➤ The storm water designs should include SUDS technologies, such as bio-retention ponds and permeable pavements. ➤ Storm water system must be implemented as per the approved Storm Water Management Plan. | | | | | | | |
| e) Service systems | The service systems are to be designed according to the minimum requirements of and submitted to the Local authority for approval. No construction activities must commence on site prior to obtaining the necessary approval. Underground services should be designed in such a way so as to require minimum maintenance to avoid disturbance of the underground and superficial environment. | ✓ | ✓ | ✓ | | CONTRACT MANAGER, ENGINEER, CONTRACTOR | | |
| f) Geology | Founding conditions for individual structures must be confirmed by a qualified geologist. <i>Refer to Geotechnical Report for recommendations.</i> | ✓ | | | | ENGINEER, GEOLOGIST | | |
| g) Structures | Structures should meet the National Building Regulations. | ✓ | | ✓ | | DEVELOPER, ARCHITECT OWNER | | |
| h) Landscape | <p>The natural features of the site should be managed in a holistic manner.</p> <ul style="list-style-type: none"> ➤ At least 80% of the proposed planting must be indigenous. This includes trees, shrubs, groundcovers and lawn; ➤ It is recommended that indigenous, and as far as possible, endemic trees be encouraged within the proposed development; ➤ The layout of the proposed development needs to consider open space provisioning within the proposed development. Hard landscape elements such as paving and walls need to be softened by vegetative landscaping. ➤ It is recommended to allow for one indigenous tree for every two open parking bays within areas of parking. Trees can be | ✓ | | | | DEVELOPER, LANDSCAPE ARCHITECT, ECO | | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | accommodated within hard landscaped areas by means of formal tree rings. | | | | | | | |
| i) Crime, safety and security | The Developer must determine which security system should be utilised for the site. Entrance points of the construction road must be secured. A 24-hour guard service must operate in the area and must conduct regular patrols. The intention is that the guards are visible on the streets and not only inside the facility. Loitering must be avoided by clearly indicated signs showing NO JOBS placed around the outside of the site | ✓ | ✓ | ✓ | | DEVELOPER, CONTRACTOR | | |
| 14.2 Soil | | | | | | | | |
| 14.2.1 Compaction | | | | | | | | |
| a) Designated Routes | Designated routes shall be determined for the construction vehicles and designated areas for storage of equipment. These areas shall preferably be already disturbed. The construction camp must be situated on an already disturbed area and approved by the relevant municipal department. | ✓ | ✓ | | | CONTRACT MANAGER, ECO, CONTRACTOR | Once-off | |
| b) Compacted areas | All areas that are compacted by machinery shall be ripped prior to them being rehabilitated with topsoil and grass seed. The compaction of the soil will be avoided by primarily using areas where existing disturbances exist at a level that precludes vegetation. | | ✓ | | | CONTRACTOR | Continuous | |
| c) Access points & route | Clearly mark the site access point and routes on site to be used by construction vehicles and pedestrians. | ✓ | ✓ | | | CONTRACT MANAGER, ECO, CONTRACTOR | Once-off | |
| d) Vehicular fences | Fence off areas which are off limits to vehicles | ✓ | ✓ | | | ECO, CONTRACTOR | Once-off | |
| e) Excavated areas | Mark out the areas to be excavated to ensure that only necessary areas | ✓ | ✓ | | | ECO, | Once-off | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | DS | CO | OP | DE | | | |
| | are excavated. | | | | | CONTRACTOR | | |
| 14.2.2 Erosion | | | | | | | | |
| a) Erosion prevention | All surface run-offs shall be managed in such a way so as to ensure erosion of soil does not occur. All surfaces that are susceptible to erosion shall be covered with a suitable vegetative cover as soon as construction is completed. Or where erosion may potentially occur, dissipaters such as gravel beds or straw bales must be installed to prevent erosion. | ✓ | ✓ | | | ENGINEER, ECO, CONTRACTOR | Continuous | |
| b) Stockpiles | Straw bales or sandbags must be used as a mitigation measure against erosion where needed. | ✓ | ✓ | | | ECO, CONTRACTOR | Once-off | |
| c) Wet areas | No vehicles whatsoever are allowed to move across sensitive areas which could cause erosion scouring and compaction. | | ✓ | | | CONTRACTOR | Continuous | |
| d) Swales | Erosion caused by construction methods or unusually heavy rainstorms must be prevented and managed by building retention swales and cut-off swales to direct the water to shallow slow flowing slope. | | ✓ | | | CONTRACTOR | Continuous | |
| e) Downhill areas | Straw bales or approved equal should be placed and adequately secured on all downhill locations where erosion may occur to prevent washouts and to retain siltation and topsoil from the site. A supply of straw bales must be kept on site for this purpose. | | ✓ | | | CONTRACTOR | Continuous | |
| f) Clearing of large areas outside of construction footprint | Where it is necessary to clear large areas, the clearing activities must be followed by the planting of grass or covering of the surface prior to clearing the area. | | ✓ | | | CONTRACTOR | Once-off | |
| g) Clearing on slopes | Where it is necessary to clear slopes, the clearing activities must be followed by the planting of grass or covering of the surface prior to clearing the area. | | ✓ | | | CONTRACTOR, ECO | Once-off | |
| h) Clearing footprints | The area being cleared of vegetation for the construction activities must be limited to a minimum. | | ✓ | | | CONTRACTOR, ECO | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| 14.2.3 Topsoil | | | | | | | | |
| a) Stripping of topsoil | The top (200-300mm) layer (as applicable) of all areas to be excavated for the purposes of construction shall be stripped and stockpiled in areas where this material will not be damaged, removed or compacted. This stockpiled material shall be used for the rehabilitation of the site. Weeds appearing on the stockpiled topsoil shall be removed by hand before seeding. | ✓ | ✓ | | | CONTRACTOR | Once-off | |
| b) Storing | In order to minimize erosion and siltation and disturbance to existing vegetation, it is recommended that stockpiling be done/ equipment be stored in already disturbed/exposed areas. | ✓ | ✓ | | | ECO, CONTRACTOR | Continuous | |
| c) Mowing of vegetation | Only areas directly affected by construction may be grubbed and stripped of topsoil. The vegetation on the remainder of the construction areas, where possible, may only be mowed short and shall not be removed. | | ✓ | | | CONTRACTOR | Once-off | |
| d) Grass component | When the stripping of topsoil takes place, the grass component shall be included in the stripped topsoil. The soil will contain a natural grass seed mixture that may assist in the re-growth of grass once the soil is used for back filling and rehabilitation. | | ✓ | | | CONTRACTOR | Once-off | |
| e) Infrastructure | During the laying of pipes or infrastructure (on or adjacent to the site), topsoil shall be kept aside to cover the disturbed areas immediately after such activities are completed. Measures should be taken to ensure that no rocks or any other materials are placed on the top layer of soil. | | ✓ | | | CONTRACTOR | Continuous | |
| f) Designated areas | Stockpiling will only be done in designated places where it will not interfere with the natural drainage paths of the environment and must be properly planned according to the construction programme. | ✓ | ✓ | | | ENGINEER, ECO, CONTRACTOR | Continuous | |
| g) Flood line areas | No stockpiling shall be allowed below the 1:100-year flood line. | ✓ | ✓ | | | ECO, CONTRACTOR | Once-off | |
| h) Stockpile covering | Cover stockpiles and surround downhill sides with a sediment fence to | | ✓ | | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | stop materials washing away. | | | | | | | |
| i) Runoff prevention | Care must be taken to prevent the runoff of silt from open soil and stockpiles into the sensitive areas. | | ✓ | | | CONTRACTOR | Continuous | |
| j) Removal areas | Remove vegetation only in areas designated during the planning stage. | ✓ | ✓ | | | CONTRACTOR | Once-off | |
| k) Stockpile footprint | Stockpiles must meet the requirements of the Regulation 28 of the Construction Regulations and Regulation 8 of the General Safety Regulations. | | ✓ | | | CONTRACTOR | Continuous | |
| l) Traversing topsoil | No vehicles are allowed to traverse the stockpiled topsoil areas. | | ✓ | | | CONTRACTOR | Continuous | |
| 14.3 Waste Management | | | | | | | | |
| 14.3.1 Construction waste | | | | | | | | |
| | Waste minimisation principles must be applied during the construction and operational phases of the development. Waste should ideally be avoided but where it does exist, it must be removed from site and disposed of at a registered or licensed landfill site for the type of waste produced. All waste streams to be generated must be managed in accordance with the hierarchy of waste management principles. Proof of disposal of waste must be kept on site and made available to the Department upon request. | | | | | | | |
| a) Planning | Plan the site before starting – for access, deliveries, construction areas, washout area, waste, stockpiles, and chemicals storage. Plan routes for trucks and also vehicles with limited turning ability. Indicate this on site and on maps prior to the event. | ✓ | | | | CONTRACT MANAGER, ECO, CONTRACTOR | Once-off | |
| b) Storage | Temporary waste storage points on site shall be determined. These storage points shall be accessible by waste removal trucks and these points should not be located in areas highly visible from the properties | ✓ | ✓ | | | CONTRACT MANAGER, ECO, CONTRACTOR | Once-off | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | of the surrounding land-owners/tenants/in areas. These areas should also be already disturbed. The storage of solid waste on site, until such time that it may be disposed of, must be in the manner acceptable to the relevant Authority. | | | | | | | |
| c) Waste Plan | Prepare and submit a Waste Management Plan to ECO. Coordinate with other trades on site and nearby businesses for potential reuse or 'waste exchange'. Coordinate with other trades working on site regarding: site management, timing of works and waste management (recycling and reuse potential). | ✓ | | | | CONSULTANT, ECO, CONTRACTOR | Once-off | |
| d) Disposal | Solid waste shall be disposed of in a manner approved by the Department of Water and Sanitation (DWS). All solid waste must be removed and transported to a recognised waste disposal site on a weekly basis. Waste disposal certificates must be obtained for all waste disposal. | ✓ | ✓ | | | CONTRACTOR | Continuous | |
| e) Record keeping | Keep records of waste reuse, recycling and disposal for future reference. Provide information to ECO. | | ✓ | | | CONTRACTOR | Continuous | |
| f) Cleaning/ clearing | Avoid the cleaning of the site camp or paved surfaces with soap. All roads should be cleared of any obstruction and should be swept clean with a broom, as to avoid the waste from entering the storm water systems. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| g) Waste removal | On completion of works, the contractor shall clear away and remove from the site all construction paint, surplus material, foundations, plumbing and other fixtures of every kind. Areas thus cleared shall be graded and scarified to restore the ground as near as possible to its original profile. | | | ✓ | | CONTRACTOR | Once-off | |
| 14.3.2 Household waste | | | | | | | | |
| a) Storage | Temporary waste storage points on the site should be determined. These storage points should be accessible by waste removal trucks and | ✓ | ✓ | ✓ | | CONTRACT MANAGER, | Once-off | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | DS | CO | OP | DE | | | |
| | these points should not be located in ecological sensitive areas /areas highly visible from the properties of the surrounding land-owners/ in areas where the wind direction will carry bad odours across the properties of adjacent landowners. | | | | | CONTRACTOR | | |
| b) Disposal | No waste materials shall at any stage be disposed of in public areas or adjacent properties, or where the wind direction will carry bad odours across the properties of adjacent tenants or landowners. The piling of any material that could rot and release unpleasant smells into the air will not be permitted. Burning of waste is not permitted. | | ✓ | ✓ | | ECO, CONTRACTOR | Continuous | |
| c) Recycling | Several waste bins must be provided in offices and domestic areas and clearly marked or colour coded according to industry standards to allow for recycling of waste into <ul style="list-style-type: none"> ➤ Paper ➤ Biodegradable ➤ Glass ➤ Plastics ➤ General | | | ✓ | | | | |
| d) Waste Bins | The waste bins shall be cleared by approved waste contractor. During municipal strikes special arrangements must be made to have the waste removed via private waste removal services. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| 14.3.3 Chemical waste | | | | | | | | |
| a) Design | Design the site in such a manner that chemical wastes are not located in close proximity to any fire. These areas shall be predetermined and located in areas that are already disturbed. These areas shall not be within 100 m from any 1:100-year flood line or drainage lines. This area should be on a concrete base to avoid any possible seepage into the soil. | ✓ | | ✓ | | CONTRACT MANAGER, CONTRACTOR | Once-off | |
| b) Contamination | Cover any wastes that are likely to wash away or contaminate storm | | ✓ | ✓ | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | DS | CO | OP | DE | | | |
| | water. Build a bund around waste storage area to stop overflow into storm water | | | | | | | |
| | If any soil contamination occurs during the construction phases of the proposed activity, the contaminated soil must be removed to a licensed landfill site and the site must be rehabilitated to the satisfaction of the Department. | | ✓ | | | CONTRACTOR | Continuous | |
| | The preparation of building material (e.g. mixing of cement, concrete, sand etc.) must be done on a concrete impermeable surface to avoid seepage into the soil and any riverine areas. | | ✓ | | | CONTRACTOR | Continuous | |
| c) Containers | All hazardous waste (fuel, lubricants, chemicals, diesel, etc) shall be placed in specifically designed containers and properly sealed. Should any fuel storage tank be required on site, the Contractor shall ensure that he has complied with the necessary legal requirements for the erection of such tanks. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| d) Collection | All containers shall be collected on a weekly basis by certified chemical removal companies. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| e) Disposal | All chemical waste shall be disposed of at a certified waste disposal site and proof of this disposal shall be sent to the contractor and ECO. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| 14.4 Fuel, Fuelling and Maintenance | | | | | | | | |
| 14.4.1 Fuel storage | | | | | | | | |
| a) Storage | Fuel storage shall be within the construction camp, and within a bunded area with at least 110% of the volume of the amount of fuel stored, as per agreement and approval of the ECO. No storage of any fuel will be allowed on site, other than what is approved by the applicable provincial government department. | ✓ | ✓ | | | ENGINEER, CONTRACTOR | Once-off | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| 14.4.2 Fuelling | | | | | | | | |
| a) Re-fuelling | According to Construction Regulation 25 and General Safety Regulation 4, in designated areas. | ✓ | ✓ | | | ENGINEER, CONTRACTOR | Continuous | |
| b) Drip trays and spill kits | Drip trays (min 10cm deep) are to be placed under construction vehicles overnight. The drip tray must be able to contain 110% of the total amount/ volume of oil in the vehicle. Spill kits must be available in all vehicles that transport hydrocarbons for dispensing to other vehicles on the site. The dispensing devices (pump heads) must be compatible with the vehicles to which they are dispensing. In addition, the dispensing devices must be fitted with the necessary valves/ apparatus that will ensure that the nozzles do not drip fuel after pumping has stopped. | | ✓ | | | ECO, CONTRACTOR | Continuous | |
| c) Decontamination | In the event of spills from vehicles, the area should be cleaned immediately using a bioremediation product, such as <i>Petro-Clean TM</i> . The absorbent and soil must be placed in a bin and removed from the site by a certified company and disposed of as a hazardous waste at a licensed commercial facility. No hydrocarbons may escape into the environment. A spill recovery kit must be on site, along with trained personnel. | | ✓ | | | CONTRACTOR | Continuous | |
| d) Notification | Applicable provincial and local government departments, local municipalities and adjacent landowners must be notified within 24 hours of a potentially hazardous spillage or leak. | | ✓ | ✓ | | ENGINEER, CONTRACTOR | | |
| 14.4.3 Maintenance | | | | | | | | |
| a) Design | The maintenance yard and secured storage area will be established as far as is practicable, outside the 1:100-year flood line. The maintenance yard should be indicated on the layout plan of the site. | ✓ | | ✓ | | CONTRACT MANAGER, CONTRACTOR | Once-off | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | | | | | OWNER | | |
| b) Maintenance area | The maintenance of vehicles and equipment used for any purpose during the development will take place only in the maintenance yard. Any breakdown in the field requires the presence of a spill treatment team and equipment. This team must prevent and mitigate any spills that occur in this situation. | | ✓ | | | ENGINEER, ECO, CONTRACTOR | Continuous | |
| c) Equipment | Equipment used in the development process must be adequately maintained so that during operations it does not spill oil, diesel, fuel, or hydraulic fluid. | | ✓ | | | ENGINEER, CONTRACTOR | Continuous | |
| d) Machinery | Machinery or equipment used on the site must not constitute a pollution hazard in respect of the above substances. The main contractor or ECO shall order such equipment to be repaired or withdrawn from use if he or she considers the equipment or machinery to be polluting and irreparable. | | ✓ | | | ENGINEER, CONTRACTOR | Continuous | |
| e) Buildings and facilities | Buildings, yards, paving areas, gardens, outside fencing or walls, etc. must be maintained in good standing at all times. Maintenance must be carried out expeditiously and with care to maintain the residential character of the area at all times. | ✓ | ✓ | ✓ | | CONTRACTOR OWNER | | |
| 14.5 Air Pollution | | | | | | | | |
| 14.5.1 Dust control | | | | | | | | |
| a) Water dampening | The liberation of dust into the surrounding environment shall be effectively controlled by the use of, <i>inter alia</i> , water spraying and/or other dust-allaying agents, such as dust nets. Regular and effective dampening down of working areas (especially during the dry and windy periods) must be carried out to avoid dust pollution that will have a negative impact on the surrounding environment. When necessary, these | | ✓ | ✓ | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | working areas should be damped down every 3 - 4 hours. | | | | | | | |
| b) Speed of trucks | The speed of haul trucks and other vehicles must be strictly controlled to avoid dangerous conditions and excessive dust. | | ✓ | | | CONTRACTOR | Continuous | |
| 14.5.2 Fire | | | | | | | | |
| a) Fires on site | A designated area shall be assigned for fire making by the construction workers, so as to ensure that run-away veld fires do not occur. This will reduce air pollution by excessive smoke. | ✓ | ✓ | | | CONTRACTOR | Once-off | |
| 14.5.3 Machinery | | | | | | | | |
| a) Exhaust fumes | Machinery or equipment used on the site must not constitute a pollution hazard in respect of air pollution via excessive exhaust fumes. This shall be inspected regularly by the contractor and rectified immediately. | | ✓ | | | CONTRACTOR | Continuous | |
| b) Transporting materials | All vehicles transporting material to and from a site that can be blown off (e.g. soil, rubble, etc.) must be covered with a tarpaulin. | | ✓ | | | CONTRACTOR | Continuous | |
| 14.6 Noise Pollution | | | | | | | | |
| 14.6.1 Working hours | | | | | | | | |
| a) Construction working hours | Hours stipulated by Local Municipal bylaw. Approval must be sought for working outside the regulated hours. | ✓ | ✓ | | | CONTRACT MANAGER, ECO, CONTRACTOR | Continuous | |
| b) Operational working hours | As per HOA guidelines. | | | ✓ | | OWNER AND MANANGER | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| 14.6.2 Staying on site | | | | | | | | |
| a) Construction workers | Where people stay on site, their actions and activities must be managed to avoid nuisance to adjacent occupants | | ✓ | | | CONTRACTOR | Continuous | |
| 14.6.3 Noise on site | | | | | | | | |
| a) Noise Regulations | Site workers must comply with the Provincial noise requirements as outlined in Provincial Notice No. 5479 of 1999: Noise Control Regulations. The contractor is required by contract to adhere to SABS 1200 and ISO 9000 safety measures during construction on the entire site. And to fit silencers to frilling and other machinery as required. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| 14.7 Safety and Security | | | | | | | | |
| 14.7.1 Safety | | | | | | | | |
| a) Site and crew | The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (85 of 1993) and the National Building Regulations. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| b) Informal settlement | No informal settlement will be allowed on the premises | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| c) Informal trading | It is the responsibility of the contractor to manage any informal traders on site. If they are allowed, toilets and waste bins must be provided. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| d) Dangerous areas | All dangerous areas and deep excavations should be barrier taped to ensure visibility of these areas in compliance with the Occupational Health and Safety Act (85 of 1993). In the case where demolition of buildings can pose a threat to workers or visitors to the site, emergency | | ✓ | | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | DS | CO | OP | DE | | | |
| | officers must be summoned. | | | | | | | |
| e) Equipment and materials | The Contractor should ensure that the handling of equipment and materials is supervised and adequately instructed. | | ✓ | | | CONTRACTOR OWNER | Continuous | |
| f) Sign boards | Clear sign boards should be erected at the entrance to the site to indicate that a construction site is being entered and that OHSA safety precautions should be followed. | | ✓ | | | CONTRACTOR OWNER | Continuous | |
| g) Fire extinguisher | A fire extinguisher should be accessible, and the personnel should receive training in the use of a fire extinguisher. Furthermore, a fire extinguisher must at all times be available wherever welding or similar activities take place and be present on all construction vehicles. A full-time fire prevention team and the associated equipment must be available on site. | ✓ | ✓ | ✓ | | CONTRACTOR OWNER | Continuous | |
| h) Emergency numbers | A list with all the relevant emergency telephone numbers shall be pasted up in the site office (hospital, fire department, police, ambulance, etc.) for easy access in the event of an accident. | ✓ | ✓ | ✓ | | CONTRACTOR OWNER | Continuous | |
| i) Equipment and materials | The Contractor should ensure that the handling of equipment and materials is supervised and adequately instructed. | | ✓ | | | CONTRACTOR OWNER | Continuous | |
| 14.7.2 Security | | | | | | | | |
| a) Security guards | Security officers will remain on site for the purpose of guarding the equipment. | ✓ | ✓ | | | CONTRACTOR | Continuous | |
| b) Access control | Access control must be enforced, the site could be checked and a search could be done each night for construction workers. The provincial government departments will be allowed access to site at any time of the day. | ✓ | ✓ | ✓ | | CONTRACTOR OWNER | Continuous | |
| c) Fencing | Fencing is required during the construction phase of the project to demarcate the boundaries of the construction site and work camp. Erection of the fence must occur with minimal impact on the natural environment. The fence will ensure that access to and from the site will | | ✓ | | | CONTRACTOR | Once-off | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | DS | CO | OP | DE | | | |
| | be restricted to staff only. | | | | | | | |
| d) Casual access | No casual access to the work camp and the construction site will be allowed. | | ✓ | | | CONTRACTOR | Continuous | |
| e) Fence rehabilitation | All negative effects caused by the erection of any temporary fences must be rehabilitated after construction is complete. | | | ✓ | | CONTRACTOR | Once-off | |
| 14.8 Health | | | | | | | | |
| 14.8.1 Chemical Toilets | | | | | | | | |
| a) Number of toilets | One (1) portable chemical toilet for every 30 workers must be established on site (not all in the contractor's camp, but within reasonable walking distance from where the workers are working). | ✓ | ✓ | | | CONTRACTOR | Continuous | |
| b) Location | Chemical toilets shall not be in close proximity to any natural drainage channels. Chemical toilets shall not be within 100 m of any 1:100-year flood line. It is important, however, that toilets be placed in areas where the largest number of workers is located on a daily basis. | ✓ | ✓ | | | ECO, CONTRACTOR | Continuous | |
| c) Usage | No person is allowed to use any other area than chemical toilets | | ✓ | | | CONTRACTOR | Continuous | |
| d) Inspections | Regular inspections shall be carried out to ensure that toilets are kept in a hygienic state. | | ✓ | | | CONTRACTOR | Continuous | |
| e) Toilet paper | Toilet paper shall be supplied to all toilets. | | ✓ | | | CONTRACTOR | Continuous | |
| f) Cleaning | Toilets shall be cleaned by a certified company on a weekly basis. | | ✓ | | | CONTRACTOR | Continuous | |
| g) Locking | Toilets must be secured to the ground so that they cannot be overturned and have a sufficient locking mechanism operational at all times. | | ✓ | | | CONTRACTOR | Continuous | |
| h) Shower facilities | Shower and changing facilities must be erected separate for each sex . | | | | | CONTRACTOR | Continuous | |
| i) Eating areas | Sheltered eating areas must be provided | | | | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | DS | CO | OP | DE | | | |
| 14.9 Blasting on Site | | | | | | | | |
| a) Authorisation | In cases where blasting is required, an authorisation must be obtained from the local blasting officer at the Local Police station and the Provincial Dept of Minerals and Energy. | ✓ | ✓ | | | CONTRACT MANAGER, ENGINEER, CONTRACTOR | | |
| b) Magazine area | The ECO, Contractor and Safety Officer will earmark a suitable area on site for a temporary magazine for the duration of the construction. This magazine however will only be used to store the daily stock and not for stock to be stored for a long period. | ✓ | ✓ | | | ECO, SAFETY OFFICER, CONTRACTOR | Once-off | |
| c) Blasting times | Blasting will only take place after confirmation between the ECO and Contractor. | | ✓ | | | ECO, CONTRACTOR | Continuous | |
| d) Notification | Blasting shall be limited to specific, pre-agreed periods of the day so as to minimize disturbance and shall be agreed upon with the ECO. The ECO shall be notified in writing 3 days in advance with a two weekly daily schedule of when blasting operations will take place and where so that he can notify surrounding residents of each blasting event in writing, 24 hours in advance before blasting events will take place. | | ✓ | | | ECO, CONTRACTOR | Continuous | |
| e) Safety precautions for blasting | The National Blasting procedures and regulations must be adhered to. | | ✓ | | | ECO, CONTRACTOR | Continuous | |
| 14.10 Fauna | | | | | | | | |
| a) Regulations | All activities on site must comply with the regulations of the Animal Protection Act, 1962 and NEMPAA 2003. | | ✓ | | | CONTRACTOR | Continuous | |
| b) Sensitive areas | No construction worker activity whatsoever will be allowed outside of the specific construction area. | ✓ | ✓ | | | CONTRACTOR | Continuous | |
| c) Snaring / hunting | Snaring and hunting of fauna by construction workers on or adjacent to the site are strictly prohibited and the Local Municipality shall prosecute | | ✓ | | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|--------------------------------|---|-------------------|----|----|----|--|------------|-----------|
| | | DS | CO | OP | DE | | | |
| | offenders. It should also be a condition of employment that any employees/ workers caught poaching will be dismissed. | | | | | | | |
| d) Training | Workers must be trained on how to deal with fauna species as intentional killing will not be tolerated. | | ✓ | | | ECO, CONTRACTOR | Continuous | |
| 14.11 Flora | | | | | | | | |
| a) Site inspection | Before any vegetation is removed, a suitably qualified person (i.e. on ECO request of a vegetation specialist) shall inspect the study area for any plant/ grass/ tree species that could be transplanted to other similar/ suitable areas. This includes all Red Data or Protected, or rare plants that may be found during the flora site assessment or during construction operations. | ✓ | ✓ | ✓ | | FLORA SPECIALIST, ECO, CONTRACTOR | Once-off | |
| c) Site access and circulation | Strictly no unauthorised access, land clearing, construction activities, vehicular traffic of any kind, pedestrian traffic or fires will be permitted external of specific construction areas or in sensitive vegetation areas. | ✓ | ✓ | ✓ | | ECO, CONTRACTOR | Continuous | |
| d) Drainage lines | No clearing of vegetation will be allowed within any 1:100 year flood line areas of any stream other than as indicated by the ECO. | ✓ | ✓ | | | ECO, CONTRACTOR | Continuous | |
| e) Exotic / invader species | All invader or exotic plant species must be removed from the site and disposed of at a landfill site. The National Department of Agriculture, will be consulted during this process. | | ✓ | ✓ | | FLORA SPECIALIST, CONTRACTOR | Continuous | |
| f) Landscaping | The use of indigenous vegetation should be optimised during the landscaping of the development. | ✓ | ✓ | ✓ | | FLORA SPECIALIST, LANDSCAPE ARCHITECT, LANDSCAPE CONTRACTOR | Once-off | |
| g) Wood harvesting | Wood harvesting of any trees or shrubs inside the protected area or adjacent areas for firewood shall be prohibited and subject to a fine. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| h) Retaining flora | On site floral assets and tree clumps shall be identified and retained | ✓ | ✓ | ✓ | | FLORA | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|------------------------------|--|-------------------|----|----|----|---|------------|-----------|
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| | where possible. Floral assets intended to be retained shall be clearly marked on site and be fenced off until they have been removed. | | | | | SPECIALIST, ECO, CONTRACTOR | | |
| i) Street trees | No street trees planted by the Local Municipality may be removed without prior approval by the relevant department. | ✓ | ✓ | ✓ | | FLORA SPECIALIST, ECO, CONTRACTOR | Continuous | |
| k) Vegetation along services | No trees, hedges or other large vegetation types may be planted along or over service pipelines/ areas, due to the risk of damage and for ease of maintenance purposes. Must comply to Local Municipality requirements. | ✓ | ✓ | ✓ | | LANDSCAPE ARCHITECT, LANDSCAPE CONTRACTOR, CONTRACTOR | Continuous | |
| l) Sensitive flora | No RDL fauna or floral species were observed on site during site investigations. There are also no protected trees on site. There are a few orange data listed plants on site, namely: Hypoxis hemerocallidea, Boophone disticha and Crinum macowanii. Most of these are outside of the proposed development area. It is likely that a plant permit will be required to lift and relocate the ODL plants found on the study site. There are no protected trees on the study site. | ✓ | | ✓ | | FLORA SPECIALIST, ECO | Once-off | |
| 14.12 Storm water | | | | | | | | |
| a) Covering of wastes | Cover any wastes that are likely to wash away or contaminate storm water | | ✓ | ✓ | | CONTRACTOR OWNER | Continuous | |
| b) Bunded area | Build a bund around waste storage area to stop overflow into storm water | | ✓ | ✓ | | CONTRACTOR OWNER | Continuous | |
| c) Natural flow | Natural storm water must flow freely, either as sheet flow or where | | ✓ | ✓ | | ENGINEER, | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|-----------------------|--|-------------------|----|----|----|------------------------------|------------|-----------|
| | | DS | CO | OP | DE | | | |
| | necessary in open grass swales, to allow for infiltration and retention. Natural veld grass must be left undisturbed as far as possible, to allow natural drainage. | | | | | CONTRACTOR | | |
| d) Piping of flow | Natural storm water must not be piped other than in areas where it runs perpendicularly cross a roadway. | | ✓ | ✓ | | ENGINEER, CONTRACTOR | Continuous | |
| e) Drainage channels | Drainage channels must be constructed along access roads every 50m to divert runoff during construction period. | ✓ | ✓ | ✓ | | ENGINEER, CONTRACTOR | Continuous | |
| f) Energy dissipaters | Depending on design, direction of stormwater run-off, etc. it is possible that a certain amount of erosion control (eg. Gabions along the outer edge of the floodline, etc.) may be required. The idea is to protect the integrity of the watercourse at all costs. | | ✓ | ✓ | | ENGINEER, CONTRACTOR | Once-off | |
| g) Engineering report | The engineer's service report will also specifically address storm water to the satisfaction of the Local Municipality. This report will only be set up once the development has been approved. This storm water design (as per civil engineers) for all hard surfaces will ensure the proper management and precautionary measures are taken into account. | ✓ | | ✓ | | ENGINEER | Once-off | |
| h) Vegetated swales | Where feasible the use of vegetated swales should be used to accommodate surface runoff, in order to increase infiltration into the soil. The swales should be vegetated with indigenous, riparian vegetation in order to provide habitat for bird life and other aquatic and semi-aquatic species. Where feasible, the swales should be provided adjacent to the property boundaries. | ✓ | ✓ | ✓ | | ENGINEER, ECO, CONTRACTOR | Continuous | |
| i) Retention ponds | Where feasible the utilisation of retention ponds should be applied. Retention ponds manage storm water runoff to prevent flooding and downstream erosion, and to improve water quality in adjacent water bodies. | ✓ | | ✓ | | ENGINEER | Once-off | |
| j) Alkaline soils | Where alkaline soils occur and the design of the development permits, swales should be used to infiltrate surface runoff, as this promotes the removal of metals from runoff. Especially runoff from any parking areas should be filtered in this fashion before passing into the underground | ✓ | ✓ | ✓ | | ENGINEER, CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|------------------------------|--|-------------------|----|----|----|--------------------|------------|-----------|
| | | DS | CO | OP | DE | | | |
| | storm water sewer system. | | | | | | | |
| k) Design of swales | The cross-section of the swale should be parabolic or trapezoidal in shape with side slopes no steeper than 1:3, to maximise the wetted channel perimeter. It is recommended that the longitudinal slope not exceed 2% where possible and that a maximum slope of 4% be used. Where a 4% slope must be exceeded, check dams should be provided at a minimum interval of 17m. As a rule of thumb the total surface area of the swale must be 1% of the area that drains into the swale. The surface of the swale must be carefully constructed, to avoid compaction, which will inhibit dense vegetation growth and effective runoff infiltration. The installation of vegetated filter strips parallel to the top of the channel banks can help to treat sheet flows entering the swale. | ✓ | | ✓ | | ENGINEER | Once-off | |
| l) Maintenance of swale | Maintenance of the swale should include periodic mowing of the grass (never shorter than the design flow depth of the channel). Bare areas should be re-seeded and debris and blockages regularly removed. Sediment depositions should be regularly removed from the swale, to prevent pollution of the runoff from contaminants contained therein. | | ✓ | ✓ | | CONTRACTOR | Continuous | |
| m) Hydrological Engineer | Please note that the recommendations for the design of the swales are guidelines only and that the designs of the swales, sedimentation ponds and check dams must be done by a hydrological engineer. | ✓ | | ✓ | | CONTRACTOR | Continuous | |
| 14.13 Traffic Impact | | | | | | | | |
| a) Departmental requirements | All requirements from the provincial roads and traffic departments and the Local Municipality must be adhered to and precautionary measures taken to provide safe and effective traffic management. The applicant must comply with the access arrangements, parking requirements and road upgrades recommended in the Traffic Impact Study. This compliance will be in terms of the City of Tshwane Metropolitan Municipality Bylaws (for applications i.t.o. SPLUMA) or the | ✓ | | ✓ | | ENGINEER OWNER | Once-off | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|------------------------------|--|-------------------|----|----|----|-------------------------|------------|-----------|
| | | DS | CO | OP | DE | | | |
| | Section 82 or Section 101 requirements (as applicable for applications i.t.o the Ordinance). | | | | | | | |
| b) Delivery trucks | Deliveries by excessive large vehicles vehicles may only take place during weekdays and pre-warning of at least one day prior to delivery must be given to the facility manager to ensure adequate space and manoeuvrability inside the facility and in the adjacent roads. | | ✓ | ✓ | | CONTRACTOR OWNER | Continuous | |
| c) Site access | The access of abnormal trucks will be investigated by the CM to provide a suitable access route that does not become a nuisance to surrounding residents. Only a specified number of trucks at any one time will be allowed onto the property as agreed to between the CM and the ECO based on the capacity of the site to carry the number of trucks. | | ✓ | | | ENGINEER, CONTRACTOR | Continuous | |
| d) Peak traffic hours | Construction vehicles and activities must aim to avoid peak hour traffic times. | | ✓ | ✓ | | CONTRACTOR OWNER | Continuous | |
| e) Legislation | Access roads and traffic planning will adhere to Provincial and the Local Municipality requirements. | ✓ | | | | ENGINEER | Once-off | |
| f) Established tracks | Access and travelling on site must follow current and established tracks only. | | ✓ | | | CONTRACTOR | Continuous | |
| 14.14 Sensitive Areas | | | | | | | | |
| 14.14.1 Watercourses | | | | | | | | |
| a) Flood line area | No activities may be allowed below any 1:100-year flood line area. | ✓ | ✓ | ✓ | | CONTRACTOR OWNER | Continuous | |
| b) Watercourse | Any watercourse is a 'no-go' area in terms of movement of people, vehicles and materials. | ✓ | ✓ | ✓ | | CONTRACTOR OWNER | Once-off | |
| c) Bufferzones | The required buffers are as follows: • 32m from the outer edge of the stream banks and riparian zone for the | | | | | | | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|------------------------------|--|-------------------|----|----|----|--------------------------------------|------------|-----------|
| | | DS | CO | OP | DE | | | |
| | Edendalspruit and other small streams • 50m from the outer edge of the valley bottom wetland. | | | | | | | |
| d) No dumping | No dumping will be allowed within any drainage areas. No bins shall be located within 50m of these areas. | | ✓ | | | CONTRACTOR | Continuous | |
| e) No toilets | No chemical toilets shall be situated within 50m from any natural drainage areas. | | ✓ | | | CONTRACTOR | Continuous | |
| f) Surface runoff | All surface runoff shall be managed in such a way as to ensure that erosion of soil does not occur. Depending on design, direction of stormwater runoff, etc. it is possible that a certain amount of erosion control (eg. Gabions along the outer edge of the floodline, etc.) may be required. The idea is to protect the integrity of the watercourse at all costs. | ✓ | ✓ | ✓ | | ENGINEER, CONTRACTOR OWNER | Continuous | |
| g) Vehicle access | No vehicles whatsoever are allowed to move across any flood line areas unless authorised by the DWS, which could cause erosion scouring and compaction. | | ✓ | | | CONTRACTOR | Continuous | |
| h) No stockpiling | No topsoil stockpiling, or stockpiling of any other material, shall be allowed below any 1:100-year flood line. | | ✓ | | | CONTRACTOR | Continuous | |
| i) Siltation ponds | Where natural drainage channels join up with man-made channels, siltation ponds/ stilling basins shall be implemented in order to allow for the sediments to settle before the water is dispersed into the natural system. | ✓ | ✓ | ✓ | | ENGINEER, CONTRACTOR | Continuous | |
| j) Longitudinal connectivity | No activity is allowed that will impede the longitudinal connectivity of drainage areas, as this will hamper efficiency and flow. | ✓ | ✓ | | | WETLAND SPECIALIST, CONTRACTOR | Continuous | |
| k) No bathing | No bathing will be allowed in any water body on or adjacent to the site. | | ✓ | | | CONTRACTOR | Continuous | |
| l) No washing | No washing of clothes will be allowed in any water body on or adjacent to the site. | | ✓ | | | CONTRACTOR | Continuous | |
| m) No taking of water | No taking of water from water bodies for drinking or cooking purposes will be allowed, as potable water should be available on site. | | ✓ | | | CONTRACTOR | Continuous | |
| n) No urinating | No urinating will be allowed anywhere on site, as this will result in an | | ✓ | | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | DS | CO | OP | DE | | | |
| | immediate fine. | | | | | | | |
| o) Sensitive zones rehabilitation | Post construction rehabilitation of the edges of the development area is required. This would include the re-grassing of denuded and disturbed areas with local species, etc. | | ✓ | | | WETLAND SPECIALIST, CONTRACTOR | Continuous | |
| 14.14.2 Rocky Outcrops / Ridges | | | | | | | | |
| a) Bufferzones | <ul style="list-style-type: none"> There is a Class 1 ridge to the north of the study site, that the project will have no negative impact on, including no fringe impacts during the construction phase. The recommended buffer zone for the ridge is along the same line as the 32m buffer zone for the Edendalspruit, in which case the buffer for the ridge will be a minimum of 100m from the foot of the ridge, and in some cases 140m to 200m. | | ✓ | | | CONTRACTOR, HERITAGE SPECIALIST, ECO | Continuous | |
| 14.14.3 Heritage / Palaeontology | | | | | | | | |
| a) Discovery of artefacts | <ul style="list-style-type: none"> The construction teams should be inducted on the significance of archaeological resources that may be encountered during subsurface construction work before they work on the area in order to ensure appropriate treatment and course of action is afforded to any chance finds. Prior to construction the presence of graves at L002 & L005 should be confirmed via either social consultation or Ground Penetrating Radar and Test Excavations subject to the required permits from SAHRA. <ul style="list-style-type: none"> Square stone packed feature that strongly resembles graves (L002 28° 23' 49.3007" E; 25° 40' 27.8831" S) | | ✓ | | | CONTRACTOR, HERITAGE SPECIALIST, ECO | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | <ul style="list-style-type: none"> ○ A small fenced off area may possibly indicate the demarcation of a grave. (L005 28° 23' 47.0689" E; 25° 40' 25.4027" S) • If confirmed to be graves the features should be avoided with an access gate and a 30 m buffer zone. If not feasible these features can be relocated adhering to the relevant legislation; • Requirements in terms of section 38(8) of the NHRA in the format provided in section 38(4) of the NHRA include: • 38(4)c(i) – If any evidence of archaeological sites or remains (e.g. remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, charcoal and ash concentrations), fossils or other categories of heritage resources are found during the proposed development, SAHRA APM Unit (Phillip Hine 021 462 5402) must be alerted as per section 35(3) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)c(ii) – If unmarked human burials are uncovered, the SAHRA Burial Grounds and Graves (BGG) Unit (Thingahangwi Tshivhase/Ngqabutho Madida 012 320 8490), must be alerted immediately as per section 36(6) of the NHRA. Non-compliance with section of the NHRA is an offense in terms of section 51(1)e of the NHRA and item 5 of the Schedule; • 38(4)d – See section 51(1) of the NHRA regarding offences; • 38(4)e – The following conditions apply with regards to the appointment of specialists: <ul style="list-style-type: none"> i) If heritage resources are uncovered during the course of the development, a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contracted as soon as possible to inspect the heritage resource. If the newly discovered heritage resources prove to be of archaeological or palaeontological significance, a Phase 2 rescue operation may be required subject to | | | | | | | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | <p>permits issued by SAHRA.</p> <p><u>Chance Find Protocol: Monitoring Programme for Palaeontology</u></p> <p>The following procedure is only required if fossils are seen on the surface and when excavations commence.</p> <ul style="list-style-type: none"> • When excavations begin the rocks and must be given a cursory inspection by the environmental officer or designated person. Any fossiliferous material (plants, insects, bone, invertebrates) should be put aside in a suitably protected place. This way the project activities will not be interrupted. • Photographs of similar fossils must be provided to the developer to assist in recognizing the fossil plants, vertebrates, invertebrates or trace fossils in the shales and mudstones (for example see Figure 5). This information will be built into the EMP's training and awareness plan and procedures. • Photographs of the putative fossils can be sent to the palaeontologist for a preliminary assessment. • If there is any possible fossil material found by the developer/environmental officer then the qualified palaeontologist sub-contracted for this project, should visit the site to inspect the selected material and check the dumps where feasible. • Fossil plants or vertebrates that are considered to be of good quality or scientific interest by the palaeontologist must be removed, catalogued and housed in a suitable institution where they can be made available for further study. Before the fossils are removed from the site a SAHRA permit must be obtained. Annual reports must be submitted to SAHRA as required by the relevant permits. • If no good fossil material is recovered then no site inspections by the palaeontologist will be necessary. A final report by the | | | | | | | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|---------------------------------------|--|-------------------|----|----|----|-----------------------------------|------------|-----------|
| | | DS | CO | OP | DE | | | |
| | <p>palaeontologist must be sent to SAHRA once the project has been completed and only if there are fossils.</p> <ul style="list-style-type: none"> If no fossils are found and the excavations have finished then no further monitoring is required. | | | | | | | |
| b) Fencing | <p>Any archaeological sites present on site shall be fenced and at least 5 metres around it should be safeguarded from construction and development.</p> <p>If confirmed to be graves the features should be avoided with an access gate and a 30 m buffer zone. If not feasible these features can be relocated adhering to the relevant legislation</p> | ✓ | ✓ | | | CONTRACTOR | Once-off | |
| c) Structures older than 60 years | No buildings / structures older than 60 years shall be damaged / demolished, or archaeological artefacts removed, without written authorisation from SAHRA. | ✓ | ✓ | | | CONTRACTOR | Continuous | |
| d) Burial grounds | <p>Any burial ground or grave found on site will be reported immediately to the Contractor, ECO and Contract Manager.</p> <p>If any unmarked human burials are uncovered and the archaeologist called in to inspect the finds and/or the police find them to be heritage graves, then mitigation may be necessary and the SAHRA Burial Grounds and Graves (BGG) Unit must be contacted for processes to follow (Thingahangwi Tshivhase/Ngqabutho Madida 012 320 8490).</p> | | ✓ | | | CONTRACT MANAGER, CONTRACTOR, ECO | Continuous | |
| e) Suspicious artefacts | The ECO will be notified of any suspicious artefacts prior to it being moved or removed. | | ✓ | | | CONTRACTOR | Continuous | |
| 14.15 Services | | | | | | | | |
| 14.15.1 Disruption in services | | | | | | | | |
| a) Informing EC | If any disruption in services to outside portions (electricity, water, sewage) are foreseen the contractor must inform the adjacent land | | ✓ | | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | DS | CO | OP | DE | | | |
| | owners and the ECO at least 4 days prior to these activities, to enable the ECO to inform the surrounding land owners of such possible disruptions. | | | | | | | |
| 14.15.2 Installation of services | | | | | | | | |
| a) Requirements | The service systems are to be designed according to the minimum requirements of, and submitted to, the Local Authority for approval. Thus, no construction activities must commence on site prior to obtaining the necessary approval. | ✓ | ✓ | | | ENGINEER, CONTRACTOR | Once-off | |
| b) Trenches | Excavate, close and rehabilitate trenches as soon as possible after site services pipes are installed. Avoid open trenches for any extended period of time. This shortens the duration of impacts and improves the recovery of the vegetation. This limitation includes the grubbing of the trench area. | | ✓ | | | CONTRACTOR | Continuous | |
| c) Backfill material | All trenching and excavations must be properly backfilled and compacted as per sub clause 5.7.1 of SABS 1200 DB. The backfill material must be less permeable than surrounding soil layers so as to prevent erosion of the sides of trenches. | | ✓ | | | CONTRACTOR | Continuous | |
| d) Water pressure from surrounding soil | Caution must be exercised to prevent that the water pressure from the surrounding soil is not greater than that within the pipe, as this may lead to damage. | | ✓ | | | CONTRACTOR | Continuous | |
| e) Existing storm water channels and other services | Existing storm water channels and services are not to be impacted upon in any way during the course of construction, except when part of the construction scope of works. Any damage repairs shall be for the Contractor's account. No littering or dumping of rubble shall be permitted in the channel and all potential blockages shall be removed immediately. Where necessary these areas should be clearly fenced off with white poles at 5m centres, with blue wire and orange barrier netting. | | ✓ | | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
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| | | DS | CO | OP | DE | | | |
| 14.16 Contractor's Site Camp | | | | | | | | |
| a) Establishment of site camp | A work site will be established and maintained for storing construction equipment on a non-sensitive area to be agreed upon by the ECO and contractor. The contractor shall furnish the Engineer on site with a site plan indicating the layout of site offices, facilities, such as chemical toilets, areas for stockpiling of materials and provision of containers | | ✓ | | | CONTRACTOR, ECO | Once-off | |
| b) Fencing | The site camp shall be fenced and all materials shall be stored within this camp. All hazardous materials i.e. fuel, polyethylene liners, etc. shall be stored in an appointed area that is fenced off and has restricted access. | | ✓ | | | CONTRACTOR | Continuous | |
| c) Camp location | No temporary laydown areas or site offices, etc. may be established within the demarcated 'no-go' zone of the watercourse. | | ✓ | | | CONTRACTOR | Once-off | |
| d) Rehabilitation of camp | The area where the camp was established must after the construction period be rehabilitated to guidelines in this document or as otherwise directed by the ECO. | | ✓ | | | CONTRACTOR, VEGETATION SPECIALIST, ECO | Once-off | |
| 14.17 Environmental Awareness Training | | | | | | | | |
| a) Training programme | An environmental awareness-training programme must be organized as part of the EMPr to ensure that each employee knows his/her responsibilities regarding the EMPr and the environment in general. Attendance certificates must be issued. Additional training as required, i.e. encounters with Red Data or other fauna should be arranged and provided. | ✓ | ✓ | | | CONTRACTOR, ECO | Once-off | |
| b) Appropriate activities | The employees, construction workers and maintenance crews will receive instruction in the appropriate activities that could take place among the natural resources of the area. | | ✓ | | | ECO | Once-off | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|---|---|-------------------|----|----|----|---------------------------------|------------|-----------|
| | | DS | CO | OP | DE | | | |
| 14.18 Rehabilitation & Landscaping | | | | | | | | |
| a) Landscaping | The use of indigenous vegetation should be optimised during the landscaping of the development. Landscaping should enhance the aesthetic appeal of the development/ mitigate the visual impact as far as possible. | ✓ | | | | LANDSCAPE ARCHITECT | Once-off | |
| b) Compacted areas | All compacted areas (including backfilled trenches) should be ripped prior to them being rehabilitated. | | ✓ | | | CONTRACTOR | Continuous | |
| c) Reseeding | Stored topsoil and reseeded must be used to rehabilitate all open soil areas following construction activities. Any proclaimed weed or alien invader plants shall be cleared by hand before seeding. All rehabilitated areas must be maintained and irrigated as required to ensure sufficient vegetation coverage. Re-seeding may be required if sufficient coverage has not been achieved after 6 months and shall be at the Contractor' expense. | | ✓ | | | LANDSCAPE ARCHITECT, CONTRACTOR | Once-off | |
| d) Timeframe | Rehabilitation/ landscaping is to be done immediately after the involved works are completed. | | ✓ | | | CONTRACTOR | Once-off | |
| e) Rehabilitation by Sub-contractors | The Contractor is responsible for the actions and works of the sub-contractors and is required to complete the rehabilitation work if the sub-contractor fails to do so. Payment may be withheld from the sub-contractor in the event that the work must be completed by the main contractor. | | ✓ | | | CONTRACTOR | Continuous | |
| f) Completion of work | On completion of works, the contractor shall clear away and remove from the site all construction paint, surplus materials, foundations, plumbing and other fixtures, rubbish and temporary works of every kind. Areas thus cleared shall be graded and scarified to restore the ground to its original profile as near as practicable before topsoil placement. | | ✓ | | | CONTRACTOR | Once-off | |
| g) Cement mixing | Cement mixing shall be done only at specifically selected areas within the construction sites. The preparation of building material (e.g. mixing | | ✓ | | | CONTRACTOR | Continuous | |

| Possible Impact | Mitigation measures | Applicable phases | | | | Responsible Person | Frequency | Compliant |
|--------------------------|---|-------------------|----|----|----|-----------------------------------|------------|-----------|
| | | DS | CO | OP | DE | | | |
| | of cement, concrete, sand etc.) must be done on a concrete impermeable surface to avoid seepage into the soil and riverine areas. After construction activities ended the cement shall be crushed and removed from the site. This mixing area shall then be ripped and rehabilitated. | | | | | | | |
| h) Natural features | The natural features of the site should be managed in a holistic manner. | ✓ | | | | LANDSCAPE ARCHITECT | Continuous | |
| 14.19 Advertising | | | | | | | | |
| a) Design | A graphic design of the advertisement will be subject to the local bylaws and the approval of the local municipality. | ✓ | | | | ARCHITECT, CONTRACTOR | Once-off | |
| b) Requirements | Must meet local municipal requirements. Advertisements will not obstruct traffic view, movement of pedestrians, cause visual pollution or appear to be unsightly. It will be tastefully low key, as will be defined by the Local Municipality and will not unrightfully interfere with other existing advertising rights. | ✓ | | ✓ | | ARCHITECT, CONTRACTOR | Continuous | |
| 14.20 Penalties | | | | | | | | |
| a) Payment of penalties | To prevent the contravention of the requirements of EMPr spot fines or penalties may be implemented in consultation with the CM. | ✓ | ✓ | ✓ | | CONTRACT MANAGER, CONTRACTOR, ECO | Continuous | |

APPENDIX A

UNDERTAKING BY DEVELOPER TO IMPLEMENT THE EMPr

Undertaking by the Developer

I,, acting on behalf of (the Developer), hereby indicate that I have read through the Environmental Management Programme and understand the measures required to be implemented in terms of the EMPr. I hereby undertake to implement these measures and carry out my duties as specified herein.

Signed at

on(date)

.....
Contractor's Environmental Representative Signature

Witness.....

Witness.....

APPENDIX B

UNDERTAKING BY THE CONTRACTOR

I,, acting on behalf of (the Contractor), hereby indicate that I have read through the Environmental Management Programme and understand the measures required to be implemented in terms of the EMPr. I hereby undertake to implement these measures and carry out my duties as specified herein.

Signed at

on(date)

.....
Contractor's Environmental Representative Signature

Witness.....

Witness.....

APPENDIX C

UNDERTAKING BY THE ENVIRONMENTAL CONTROL OFFICER

I,, the Environmental Control Officer appointed by, hereby indicate that I have read through the Environmental Management Programme, and understand the measures required to be implemented in terms of the EMPr and hereby undertake to fulfil my duties as specified herein.

Signed at

on(date)

.....
Environmental Control Officer Signature

Witness.....

Witness.....

APPENDIX D

ABBREVIATIONS AND DEFINITIONS

| | |
|-------------------|--|
| ARCH | Architect |
| CE | Consulting Engineer |
| CO | Construction |
| DE | Demolition |
| DS | Design |
| DWS | The Department of Water and Sanitation – both national office and their various regional offices, which are divided across the country on the basis of water catchment areas. |
| ECA | Environment Conservation Act (Act 73 of 1989) |
| ECO | Environmental Control Officer |
| EIA | An Environmental Impact Assessment as contemplated in Sections 21, 22 and 26 of the Environment Conservation Act |
| EMI | Environmental Monitoring Inspector – from Provincial Government (E.g. GDARD) |
| EMPr | Environmental Management Programme |
| FAUNA | All living biological creatures, usually capable of motion, including insects and predominantly of protein-based consistency. |
| FENCE | A physical barrier in the form of posts and barbed wire or any other concrete construction, ("palisade"- type fencing included), constructed with the purpose of keeping humans and animals within or out of defined boundaries. |
| FLOOD LINE | The line or mark to which a flood could rise, every 50 (1:50 year flood line), or 100 (1:100 year flood line) years |
| FLORA | All living plants, grasses, shrubs, trees, etc., usually incapable of easy natural motion and capable of photosynthesis. |
| FLORA | All living plants, grasses, shrubs, trees, etc., usually incapable of easy natural motion and capable of photosynthesis. |
| IEM | Integrated Environmental Management |
| MPRDA | The Mineral and Petroleum Resources Development (Act 28 of 2002) |
| NEMA | National Environmental Management Act (Act 107 of 1998) |
| NHRA | National Heritage Resources Act (Act 25 of 1999) |
| NWA | National Water Act (Act 36 of 1998) |
| OP | Operational |
| PENALTY | A fine against the contractor by the PM as per request from the ECO. This could also be used for the benefit of the labourers (such as a camp braai). |
| RA | Resident Architect |
| ROD | Record of Decision (approval or dismissal of project) as issued by GDACE |
| SABS | South African Bureau of Standards |
| SAHRA | South African Heritage Resource Agency |
| SAMOAC | South African Manual for Outdoor Advertising Control |
| SPOTFINE | A fine against a labourer by the PM as per request from the ECO. This fine should be used for the labourers' benefit. |
| SWALE | A depression between slopes that provides for drainage |
| TLB | Tractor, Load & Backhoe |
| TOPSOIL | The layer of soil covering the earth which- (a) provides a suitable environment for the germination of seed; |

- (b) allows the penetration of water;
- (c) is a source of micro-organisms, plant nutrients and in some cases seed; and
- (d) is not of a depth of more than 0,5 metres or such depth as the Minister may prescribe for a specific prospecting or exploration area or mining area.

VEGETATION Any and all forms of plants, see also Fauna

WETLAND A wetland is defined as land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which under normal circumstances supports or would support vegetation typically adapted to life in saturated soil (Water Act 36 of 1998).

APPENDIX E

EMPR CHECKLIST

| 14.1 | Planning | Score |
|------|---|-------|
| a | The Developer must appoint an independent ECO who must monitor the contractor's compliance to the EMPr | |
| b | This EMPr must be made binding to the Contractor, as well as sub-contractors and should be included in the tender documentation for the construction contract | |
| c | The Contractor and Owner must take corrective action as per described procedure. | |
| d | Storm water must be implemented as per the approved Storm water Management Plan. | |
| e | The service systems are to be designed according to the minimum requirements of, and submitted to the Local authority for approval. | |
| f | Founding conditions for individual structures must be confirmed by a qualified geologist. | |
| g | Structures should meet the National Building Regulations. | |
| h | The natural features of the site should be managed in a holistic manner | |
| i | The Developer must determine which security system should be utilised for the site. | |

| 14.2.1 | Soil Compaction | Score |
|--------|--|-------|
| a | Designated routes shall be determined for the construction vehicles and designated areas for storage of equipment. | |
| b | All areas that are compacted by machinery shall be ripped prior to them being rehabilitated with topsoil and grass seed. | |
| c | Clearly mark the site access point and routes on site to be used by construction vehicles and pedestrians. | |
| d | Fence off areas which are off limits to vehicles | |
| e | Mark out the areas to be excavate | |

| 14.2.2 | Soil Erosion | Score |
|--------|--|-------|
| a | All surface run-offs shall be managed in such a way so as to ensure erosion of soil does not occur | |
| b | Straw bales or sandbags must be used as a mitigation measure against erosion where needed. | |
| c | No vehicles what so ever are allowed to move across any sensitive areas (e.g. drainage line) | |

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| d | Erosion caused by construction methods or unusually heavy rainstorms must be prevented and managed | |
| e | Straw bales should be placed and adequately secured on all downhill locations where erosion may occur to prevent washouts and to retain siltation and topsoil from the site | |
| f | Where it is necessary to clear large areas, the clearing activities must be followed by the planting of grass or covering of the surface prior to clearing the area | |
| g | Where it is necessary to clear slopes, the clearing activities must be followed by the planting of grass or covering of the surface prior to clearing the area | |
| h | The area being cleared of vegetation for the construction activities must be limited to a minimum | |

| 14.2.3 | Topsoil | Score |
|--------|---|-------|
| a | The top layer of all areas to be excavated for the purposes of construction shall be stripped and stockpiled in areas where this material will not be damaged, removed or compacted | |
| b | Stockpiling be done/ equipment be stored in already disturbed/exposed areas. | |
| c | Only areas directly affected by construction may be grubbed and stripped of topsoil | |
| d | When the stripping of topsoil takes place, the grass component shall be included in the stripped topsoil | |
| e | During the laying of pipes or infrastructure, topsoil shall be kept aside to cover the disturbed areas immediately after such activities are completed | |
| f | Stockpiling will only be done in designated places where it will not interfere with the natural drainage paths of the environment | |
| g | No stockpiling shall be allowed below the 1:100 year flood line / within the transitional zones | |
| h | Cover stockpiles and surround downhill sides with a sediment fence to stop materials washing away | |
| i | Care must be taken to prevent the runoff of silt from open soil and stockpiles into the sensitive areas | |
| j | Remove vegetation only in areas designated during the planning stage | |
| k | Stockpiles must meet the requirements of the OSHA | |
| l | No vehicles are allowed to traverse the stockpiled topsoil areas | |

| 14.3.1 | Construction waste | Score |
|--------|--|-------|
| a | Plan the site before starting | |
| b | Temporary waste storage points on site shall be determined | |

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| c | Prepare and submit a Waste Management Plan to the ECO. | |
| d | Solid waste shall be disposed of in a manner approved by the Department of Water and Sanitation (DWS) | |
| e | Keep records of waste reuse, recycling and disposal for future reference. Provide information to ECO | |
| f | Avoid the cleaning of the site camp or paved surfaces with soap | |
| g | On completion of works, the contractor shall clear away and remove from the site all construction paint, surplus material, foundations, plumbing and other fixtures of every kind | |

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| 14.3.2 | Household waste | Score |
| a | Temporary waste storage points on the site should be determined | |
| b | No waste materials shall at any stage be disposed of in public areas or adjacent properties, or where the wind direction will carry bad odours across the properties of adjacent tenants or landowners | |
| c | Several waste bins must be provided and clearly marked or colour coded according to industry standards to allow for recycling of waste | |
| d | Waste bins with lids shall be provided on site at convenient locations | |
| e | The waste bins shall be cleared by approved waste contractor | |

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| 14.3.3 | Chemical waste | Score |
| a | Design the site in such a manner that chemical wastes are not located in close proximity to any fire | |
| b | Cover any wastes that are likely to wash away or contaminate storm water. | |
| c | All hazardous waste shall be placed in specifically designed containers and properly sealed | |
| d | All containers shall be collected on a weekly basis by certified chemical removal companies | |
| e | All chemical waste shall be disposed of at a certified waste disposal site | |

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| 14.4.1 | Fuel storage | Score |
| a | Fuel storage shall be within the construction camp, and within a bunded area with at least 110% of the volume of the amount of fuel stored | |

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| 14.4.2 | Fueling | Score |
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| a | According to approved legislation in a designated area | |
| b | Drip trays (min 10cm deep) are to be placed under all vehicles overnight | |
| c | In the event of spills from vehicles, the area should be cleaned immediately using a bioremediation product | |
| d | Applicable provincial and local government departments, local municipalities and adjacent landowners must be notified within 24 hours of a potentially hazardous spillage or leak | |

| 14.4.3 | Maintenance | Score |
|--------|--|-------|
| a | The maintenance yard and secured storage area will be established | |
| b | The maintenance of vehicles and equipment will take place only in the maintenance yard | |
| c | Equipment used in the development process must be adequately maintained | |
| d | Machinery or equipment used on the site must not constitute a pollution hazard | |
| e | Buildings, yards, paving areas, gardens, outside fencing or walls, etc. must be maintained in good standing at all times | |

| 14.5.1 | Dust control | Score |
|--------|--|-------|
| a | The liberation of dust into the surrounding environment shall be effectively controlled by watering. | |
| b | The speed of haul trucks and other vehicles must be strictly controlled. | |

| 14.5.2 | Fire | Score |
|--------|---|-------|
| a | A designated area shall be assigned for fire making | |

| 14.5.3 | Machinery | Score |
|--------|--|-------|
| a | Machinery or equipment used on the site must not constitute a pollution hazard in respect of air pollution via excessive exhaust fumes | |
| b | All vehicles transporting material to and from a site that can be blown off must be covered with a tarpaulin | |

| 14.6.1 | Working hours | Score |
|--------|---|-------|
| a | Hours stipulated by local Municipal bylaw | |
| b | As per HOA guidelines | |

| 14.6.2 | Staying on site | Score |
|--------|---|-------|
| a | Where people stay on site, their actions and activities must be | |

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| | managed to avoid nuisance to adjacent occupants | |
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| 14.6.3 | Noise on site | Score |
| a | Site workers must comply with the Provincial noise requirements | |

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| 14.7.1 | Safety | Score |
| a | The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (85 of 1993) and the National Building Regulations | |
| b | No new informal settlement will be allowed on the premises or in the adjacent roads leading to the construction site | |
| c | It is the responsibility of the contractor to manage any informal traders on site | |
| d | All dangerous areas and deep excavations should be barrier taped | |
| e | The Contractor should ensure that the handling of equipment and materials is supervised and adequately instructed | |
| f | Clear sign boards should be erected at the site entrance | |
| g | A fire extinguisher should be accessible and the personnel should receive training in the use of a fire extinguisher | |
| h | A list with all the relevant emergency telephone numbers shall be pasted up in the site office | |
| i | Vehicular movement beyond the property boundaries should be limited during peak hours | |

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| 14.7.2 | Security | Score |
| a | Security officers will remain on site for the purpose of guarding the equipment | |
| b | Access control must be enforced | |
| c | Fencing is required to demarcate the boundaries of the construction site and work camp | |
| d | No casual access to the work camp and the construction site will be allowed | |
| e | All negative effects caused by the erection of any temporary fences must be rehabilitated after construction is completed | |

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| 14.8 | Chemical Toilets | Score |
| a | One portable chemical toilet for every 30 workers must be established on site | |
| b | Chemical toilets shall not be in close proximity to any natural drainage channels or wetlands | |
| d | No person is allowed to use any other area than chemical | |

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| | toilets | |
| e | Regular inspections of toilets must be shall be carried out | |
| f | Toilet paper shall be supplied to all toilets | |
| g | Toilets shall be cleaned by a certified company on a weekly basis | |
| h | Toilets must be secured to the ground | |
| i | Shower and changing facilities must be erected separate for each sex | |
| j | Sheltered eating areas must be provided. | |

| 14.9 | Blasting on Site | Score |
|-------------|---|--------------|
| a | In cases where blasting is required, an authorisation must be obtained from the local blasting officer at the Local Police station and the Dept of Minerals and Resources | |
| b | The ECO, Contractor and Safety Officer will earmark a suitable area on site for a temporary magazine for the duration of the construction | |
| c | Blasting shall be limited to specific, pre-agreed periods of the day | |
| d | The National Blasting procedures and regulations must be adhered to. | |

| 14.10 | Fauna | Score |
|--------------|---|--------------|
| b | No construction worker activity whatsoever will be allowed outside of the specific construction area | |
| c | Snaring and hunting of fauna by construction workers on or adjacent to the site are strictly prohibited | |
| d | Workers must be trained on how to deal with fauna species as intentional killing will not be tolerated | |

| 14.11 | Flora | Score |
|--------------|--|--------------|
| a | Before any vegetation is removed, a suitably qualified person all inspect the study area for any plant/ grass/ tree species that could be transplanted to other similar/ suitable areas | |
| b | Any medicinal/ protected/ Red Data flora shall only be removed by a suitably qualified specialist and relocated | |
| c | Strictly no unauthorised access, land clearing, construction activities, vehicular traffic of any kind, pedestrian traffic or fires will be permitted external of specific construction areas or in sensitive vegetation areas | |
| d | No clearing of vegetation will be allowed within any wetland/ natural drainage areas other than as indicated by the ECO | |
| e | All invader or exotic plant species must be removed from the | |

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| | site and disposed of at a landfill site | |
| f | The use of indigenous vegetation should be optimised during the landscaping of the development | |
| g | Wood harvesting of any trees or shrubs inside the protected area or adjacent areas for firewood shall be prohibited and subject to a fine | |
| h | On site floral assets and tree clumps shall be identified and retained where possible | |
| i | No street trees planted by the Local Municipality may be removed without prior approval by the relevant department | |
| j | No indigenous trees or floral assets may be removed without permission from the specialist or in some cases a flora removal permit may be required | |
| k | No trees, hedges or other large vegetation types may be planted along or over service pipelines/ areas | |

| 14.12 | Storm water | Score |
|--------------|---|-------|
| a | Cover any wastes that are likely to wash away | |
| b | Build a bund around waste storage area to stop overflow into storm water | |
| c | Natural storm water must flow freely, either as sheet flow or where necessary in open grass swales | |
| d | Natural storm water must not be piped other than in areas where it runs perpendicularly cross a roadway | |
| e | Drainage channels must be constructed along access roads every 50m to divert runoff during construction period | |
| f | Energy dissipaters must be installed at all potential large flow volume areas | |
| g | The engineer's service report will also specifically address storm water to the satisfaction of the Local Municipality | |
| h | Where feasible the use of vegetated swales should be used to accommodate surface runoff, in order to increase infiltration into the soil | |
| i | Where feasible the utilisation of retention ponds should be applied | |
| j | Where alkaline soils occur and the design of the development permits, swales should be used to infiltrate surface runoff | |
| k | The cross-section of the swale should be parabolic or trapezoidal in shape with side slopes no steeper than 1:3, to maximise the wetted channel perimeter | |
| l | Maintenance of the swale should include periodic mowing of the grass | |
| m | The designs of the swales, sedimentation ponds and check | |

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| | dams must be done by a hydrological engineer | |
| o | Approval must be obtained from DWS for the abstraction of groundwater | |

| 14.13 | Traffic Impact | Score |
|-------|---|-------|
| a | All requirements from the provincial roads and traffic departments and the Local Municipality must be adhered to | |
| b | Deliveries by abnormal vehicles may only take place during weekdays and pre-warning of at least one day prior to delivery must be given to the facility manager | |
| c | The access of large trucks will be investigated by the PM to provide a suitable access route | |
| d | Construction vehicles and activities must aim to avoid peak hour traffic times | |
| e | Access roads and traffic planning will adhere to Provincial and the Local Municipality requirements | |
| f | Access and travelling on site must follow current and established tracks only | |

| 14.14.1 | Watercourses | Score |
|---------|---|-------|
| a | No activities may be allowed below any 1:100 year flood line or clearly definable drainage area. However should some minor encroachments of the 1:100 year flood line occur a Section 21 (c) and (i) Water Use License Application will be required. | |
| b | Any watercourse is a 'no-go' area in terms of movement of people, vehicles and materials. During construction it must be fenced off | |
| c | The required buffers are as follows: <ul style="list-style-type: none"> • 32m from the outer edge of the stream banks and riparian zone for the Edendalspruit and other small streams • 50m from the outer edge of the valley bottom wetland. | |
| d | No dumping will be allowed within any drainage areas. No bins shall be located within 50m of these areas | |
| e | No chemical toilets shall be situated within 50m from the natural drainage areas | |
| f | Surface runoff must be directed away from the streams and must be filtered or put into a municipal system prior to being released into the stream | |
| g | No vehicles whatsoever are allowed to move across the flood line areas unless authorised by the DWS, which could cause erosion scouring and compaction | |
| h | No topsoil stockpiling, or stockpiling of any other material, shall be allowed below the 1:100 year flood line | |

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| i | Where natural drainage channels join up with man-made channels, siltation ponds/ stilling basins shall be implemented | |
| j | No activity is allowed that will impede the longitudinal connectivity of drainage areas | |
| k | No bathing will be allowed in any of the water bodies on or adjacent to the site. | |
| l | No washing of clothes will be allowed in any water bodies on or adjacent to the site | |
| m | No taking of water from water bodies for drinking or cooking purposes will be allowed, as potable water should be available on site | |
| n | No urinating will be allowed anywhere on site, as this will result in an immediate fine | |
| o | Considerable attention must be given to avoid any vegetation disturbance within any natural drainage habitat zone and rocky outcrops | |

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| 14.14.2 | Rocky Outcrops / Ridge | Score |
| a | The recommended buffer zone for the ridge is along the same line as the 32m buffer zone for the Edendalspruit, in which case the buffer for the ridge will be a minimum of 100m from the foot of the ridge, and in some cases 140m to 200m. | |

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| 14.14.3 | Heritage / Palaeontology | Score |
| a | Should any Cultural / Archaeological artefacts be discovered during construction activities, construction shall immediately cease and the ECO must be contacted. | |
| b | Any archaeological sites present on site shall be fenced and at least 5 metres around it should be safeguarded from construction and development | |
| c | No buildings / structures older than 60 years shall be damaged / demolished, or archaeological artefacts removed, without written authorisation from SAHRA | |
| d | Any burial ground or grave found on site will be reported immediately to the Contractor, ECO and Contract Manager | |
| e | The ECO will be notified of any suspicious artefacts prior to it being moved or removed | |

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| 14.15 | Disruption in services | Score |
| a | If any disruption in services to outside portions are foreseen the contractor must inform the adjacent land owners and the ECO at least 4 days prior to these activities | |

| 14.15.2 | Installation of services | Score |
|----------------|--|-------|
| a | The service systems are to be designed according to the minimum requirements of the Local Authority for approval | |
| b | Excavate, close and rehabilitate trenches as soon as possible after site services pipes are installed. Avoid open trenches for any extended period of time | |
| c | All trenching and excavations must be properly backfilled and compacted as per sub clause 5.7.1 of SABS 1200 DB. | |
| d | Caution must be exercised to prevent that the water pressure from the surrounding soil is not greater than that within the pipe, as this may lead to damage. | |
| e | Existing storm water channels and services are not to be impacted upon in any way during the course of construction, except when part of the construction scope of works | |

| 14.16 | Contractor's Site Camp | Score |
|--------------|--|-------|
| a | A work site will be established and maintained for storing construction equipment on a non-sensitive area to be agreed upon by the ECO and contractor | |
| b | The site camp shall be fenced and all materials shall be stored within this camp | |
| c | The site camp shall not be situated within a natural drainage line or within 50m from a wetland or stream | |
| d | The area where the camp was established must after the construction period be rehabilitated to guidelines in this document or as otherwise directed by the ECO | |

| 14.17 | Environmental Awareness Training | Score |
|--------------|--|-------|
| a | An environmental awareness-training program must be organized as part of the EMPr | |
| b | The employees, construction workers and maintenance crews will receive instruction in the appropriate activities | |

| 14.18 | Rehabilitation & Landscaping | Score |
|--------------|--|-------|
| a | The use of indigenous vegetation should be optimised during the landscaping of the development | |
| b | All compacted areas (including backfilled trenches) should be ripped prior to them being rehabilitated. | |
| c | Stored topsoil and reseeded must be used to rehabilitate all open soil areas following construction activities | |
| d | Rehabilitation/ landscaping is to be done immediately after the involved works are completed | |
| e | The Contractor is responsible for the actions and works of the | |

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| | sub-contractors and is required to complete the rehabilitation work if the sub-contractor fails to do so | |
| f | On completion of works, clear away and remove from the site all construction paint, surplus materials, foundations, plumbing and other fixtures, rubbish and temporary works of every kind | |
| g | Cement mixing shall be done only at specifically selected sites. After construction activities ended the cement shall be crushed and removed from the site | |
| h | The natural features of the site should be managed in a holistic manner | |

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| 14.19 | Advertising | Score |
| a | A graphic design of the advertisement will be subject to the approval of the appropriate local authority. | |
| b | Must meet local municipal requirements | |

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| 14.20 | Penalties | Score |
| a | To prevent the contravention of the requirements of EMPr spot fines or penalties may be implemented in consultation with the CM. | |

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| Compliance summary | |
| Score: | Count: |
| 4 (Compliant) | |
| 3 (Early Warning) | |
| 2 (First warning) | |
| 1 (Second Warning) | |
| 0 (Immediate noncompliant) | |

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|----|---------------------------|--|
| | RESULTS SUMMARY | |
| 1 | 14.1 Planning | |
| 2 | 14.2.1 Soil Compaction | |
| 3 | 14.2.2 Soil Erosion | |
| 4 | 14.2.3 Topsoil | |
| 5 | 14.3.1 Construction waste | |
| 6 | 14.3.2 Household waste | |
| 7 | 14.3.3 Chemical waste | |
| 8 | 14.4.1 Fuel storage | |
| 9 | 14.4.2 Fueling | |
| 10 | 14.4.3 Maintenance | |
| 11 | 14.5.1 Dust control | |

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| 12 | 14.5.2 Fire | |
| 13 | 14.5.3 Machinery | |
| 14 | 14.6.1 Working hours | |
| 15 | 14.6.2 Staying on site | |
| 16 | 14.6.3 Noise on site | |
| 17 | 14.7.1 Safety | |
| 18 | 14.7.2 Security | |
| 19 | 14.8.1 Chemical Toilets | |
| 20 | 14.9 Blasting on Site | |
| 21 | 14.10 Fauna | |
| 22 | 14.11 Flora | |
| 23 | 14.12 Storm water | |
| 24 | 14.13 Traffic Impact | |
| 25 | 14.14.1 Rivers / Streams / Wetlands | |
| 26 | 14.14.2 Rocky Outcrops / Ridge | |
| 27 | 14.14.3 Heritage / Palaeontology | |
| 28 | 14.15.1 Disruption in services | |
| 29 | 14.15.2 Installation of services | |
| 30 | 14.16 Contractor's Site Camp | |
| 31 | 14.17 Environmental Awareness Training | |
| 32 | 14.18 Rehabilitation & Landscaping | |
| 33 | 14.19 Advertising | |
| 34 | 14.20 Penalties | |