



**Client  
Project**

**MLANGENI FAMILY TRUST**

Belfast Mall and Mixed Use Development

EIA Ref No.: 1/3/1/16/1N-121

Draft Environmental Management

Programme (EMPr)

February 2019

**Labesh**

ability to sustain

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Draft Environmental Management Programme (EMPr)

EIA Ref No.: 1/3/1/16/1N-121

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## DEFINITIONS

### Alternatives

In relation to a proposed activity, means different means of meeting the general purpose and requirements of the activity, which may include alternatives to the-

- a) property on which or location where the activity is proposed to be undertaken;
  - b) type of activity to be undertaken;
  - c) design or layout of the activity;
  - d) technology to be used in the activity; or
  - e) operational aspects of the activity;
- and includes the option of not implementing the activity.

### Application

An application for an Environmental Authorisation (EA).

### Biodiversity Plan

A spatial plan that identifies one or more categories of biodiversity priority areas, using the principles and methods of systematic biodiversity planning.

### Biodiversity Sector Plan

A map of Critical Biodiversity Areas and Ecological Support Areas accompanied by contextual information, land and resource-use guidelines and supporting GIS data. The map must be produced using the principles and methods of systematic biodiversity planning. A Biodiversity Sector Plan is the precursor to a Bioregional Plan.

### Biodiversity target (threshold)

The minimum proportion of each ecosystem type that needs to be kept in a natural or near-natural state in the long term in order to maintain viable representative samples of all ecosystem types and the majority of species associated with those ecosystem types.

### Buffer Area

Unless specifically defined, means an area extending 10 kilometres from the proclaimed boundary of a world heritage site or national park and 5 kilometres from the proclaimed boundary of a nature reserve, respectively, or that defined as such for a biosphere.

### Conservation Area

Areas of land not formally protected by law, but informally protected by the current owners and users and managed at least partly for biodiversity conservation. Because there is no long-term security associated with conservation areas, they are not considered a guaranteed form of protection.

### Critical Biodiversity Areas

Terrestrial and aquatic areas required to meet biodiversity targets for ecosystems, species or ecological processes, as identified in a systematic biodiversity plan.

### Cumulative Impact

In relation to an activity, means the past, current and reasonably foreseeable future impact of an activity, considered together with the impact of activities associated with that activity, that in itself may not be significant, but may become significant when added to the existing and reasonably foreseeable impacts eventuating from similar or diverse activities.

## **Development**

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

## **Development footprint**

Any evidence of physical alteration as a result of the undertaking of any activity.

## **EAP**

An environmental assessment practitioner as defined in section 1 of NEMA.

## **Ecological corridors**

Ecological corridors, also referred to as biodiversity corridors, can be landscape structures of various size, shape and habitat composition that maintain, establish or re-establish natural landscape connectivity. They can have a continuous or interrupted structure or a structure of stepping stones (Jongman *et. al.*, 2002).

## **Ecological Support Areas**

Terrestrial and aquatic areas that are not essential for meeting biodiversity targets, but play an important role in supporting the ecological functioning of one or more Critical Biodiversity Areas, or in delivering ecosystem services.

## **EMPr**

An environmental management programme contemplated in regulations 19 and 23 of the EIA Regulations, 2014.

## **Environment**

The surroundings (biophysical, social and economic) within which humans exist and that are made up of:

- (i) the land, water and atmosphere of the earth;
- (ii) micro-organisms, plant and animal life;
- (iii) any part or combination of (i) and (ii) and the interrelationships among and between them; and
- (iv) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

## **Environmental Impact Assessment**

A systematic process of identifying, assessing and reporting environmental impacts associated with an activity and includes Basic Assessment and Scoping and Environmental Impact Reporting.

## **Environmental Impact Assessment Report**

A report contemplated in regulation 23 of the EIA Regulations, 2014.

## **Independent**

In relation to an EAP, a specialist or the person responsible for the preparation of an environmental audit report, means-

- a) that such EAP, specialist or person has no business, financial, personal or other interest in the activity or application in respect of which that EAP, specialist or person is appointed in terms of the EIA Regulations; or
- b) that there are no circumstances that may compromise the objectivity of that EAP, specialist or person in performing such work;

excluding -

- (i) normal remuneration for a specialist permanently employed by the EAP; or

(ii) fair remuneration for work performed in connection with that activity, application or environmental audit.

### **Indigenous Vegetation**

Vegetation consisting of indigenous plant species occurring naturally in an area, regardless of the level of alien infestation and where the topsoil has not been lawfully disturbed during the preceding ten years.

### **Mitigation**

To anticipate and prevent negative impacts and risks, then to minimise them, rehabilitate or repair impacts to the extent feasible.

### **Phased Activities**

An activity that is developed in phases over time on the same or adjacent properties to create a single or linked entity.

### **Plan of Study for Environmental Impact Assessment**

A study contemplated in regulation 22 of the EIA Regulations that forms part of a Scoping Report and sets out how an Environmental Impact Assessment will be conducted.

### **Present Ecological State (PES)**

The PES of a river is expressed in terms of various components. That is, drivers (physico-chemical, geomorphology, hydrology) and biological responses (fish, riparian vegetation and aquatic invertebrates), as well as an integrated state, the EcoStatus.

### **Protected Area**

An area of land or sea that is formally protected by law and managed mainly for biodiversity conservation. This is a narrower definition than the IUCN definition, which includes areas that are not legally protected and that would be defined in South Africa as Conservation Areas rather than Protected Areas.

### **Registered Interested and Affected Party**

In relation to an application, means an Interested and Affected Party whose name is recorded in the register opened for that application in terms of regulation 42 of the EIA Regulations, 2014.

### **Scoping Report**

A report contemplated in regulation 21 of the EIA Regulations, 2014.

### **S&EIR**

The scoping and environmental impact reporting process contemplated in regulation 21 to regulation 24 of the EIA Regulations, 2014.

### **Significant Impact**

An impact that may have a notable effect on one or more aspects of the environment or may result in non-compliance with accepted environmental quality standards, thresholds or targets and is determined through rating the positive and negative effects of an impact on the environment based on criteria such as duration, magnitude, intensity and probability of occurrence.

### **Specialist**

A person that is generally recognised within the scientific community as having the capability of undertaking, in conformance with generally recognised scientific principles, specialist studies or preparing specialist reports, including due diligence studies and socio-economic studies.

### **Systematic Biodiversity Plan**

A plan that identifies important areas for biodiversity conservation, taking into account biodiversity patterns (i.e. the principle of representation) and the ecological and evolutionary processes that sustain them (i.e. the principle of persistence). A systematic biodiversity plan must set quantitative targets/thresholds for aquatic and terrestrial biodiversity features in order to conserve a representative sample of biodiversity pattern and ecological processes.

### **Watercourse**

- (a) a river or spring;
  - (b) a natural channel in which water flows regularly or intermittently;
  - (c) a wetland, pan, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998); and
- a reference to a watercourse includes, where relevant, its bed and banks.

### **Wetland**

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 land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.



## ABBREVIATIONS

<b>BID</b>	-	Background Information Document
<b>CRR</b>	-	Comments and Response Report
<b>DWS</b>	-	Department of Water and Sanitation
<b>EA</b>	-	Environmental Authorisation
<b>EAP</b>	-	Environmental Assessment Practitioner
<b>EIA</b>	-	Environmental Impact Assessment
<b>EIR</b>	-	Environmental Impact Report
<b>EMF</b>	-	Environmental Management Framework
<b>EMPr</b>	-	Environmental Management Programme
<b>GN</b>	-	Government Notice
<b>I&amp;AP</b>	-	Interested and Affected Party
<b>IWULA</b>	-	Integrated Water Use Licence Application
<b>NEMA</b>	-	National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended
<b>NEM:WA</b>	-	National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008), as amended
<b>NHRA</b>	-	National Heritage Resources Act, 1999 (Act No. 25 of 1999), as amended
<b>MDARDLEA</b>	-	Mpumalanga Department of Agriculture, Rural Development, Land and Environmental Affairs, Mpumalanga
<b>NWA</b>	-	National Water Act, 1998 (Act No. 36 of 1998), as amended
<b>R</b>	-	Regulation
<b>SAHRA</b>	-	South African Heritage Resources Agency
<b>S&amp;EIR</b>	-	Scoping and Environmental Impact Reporting

## 1. PROJECT TITLE

Belfast Mall and Mixed Use Development.

## 2. APPLICANT DETAILS

<b>Applicant Name</b>	Mlangeni Family Trust
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## 3. ENVIRONMENTAL ASSESSMENT PRACTITIONER DETAILS

<b>Environmental Assessment Practitioner Company</b>	Labesh (Pty) Ltd
<b>Contact Person</b>	Lourens de Villiers
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<b>Fax Number</b>	086 552 6837
<b>Email Address</b>	admin@labesh.co.za
<b>Qualifications</b>	B.Sc Earth Science (North West University) Hons B.Sc Geography and Environmental Studies (North West University) M.Sc Water Resource Management (University of Pretoria)
<b>Relevant experience</b>	More than 15 years' experience conducting Environmental Impact Assessment processes

The EAP's full Curriculum Vitae is attached to the Basic Assessment Report under Appendix E.

## 4. LOCATION OF THE PROPOSED DEVELOPMENT AND ACTIVITIES

The property for the proposed development and its associated activities is as follows:

Property/Land Parcel	21 digit Surveyor General Code	Property size
The Remainder of the Farm Bergendal 981, J.T.	T0JT0000000098100000	The Remainder of the Farm Bergendal 981, J.T.
The Remainder of Portion 12 of the Farm Wemmershuis 379, J.T.	T0JT0000000003790012	The Remainder of Portion 12 of the Farm Wemmershuis 379, J.T.

The project location is 3km to the South-east of Belfast, in the Emakhazeni Local Municipality, Nkangala District Municipality, Mpumalanga Province. Access to the project properties is from the R33 (South of the N4). The GPS coordinates for the project site are as follows: 25°43'1.42"S; 30° 4'15.71"E.

A locality map, provided on the next page, shows the location of the two project properties, at an appropriate scale.

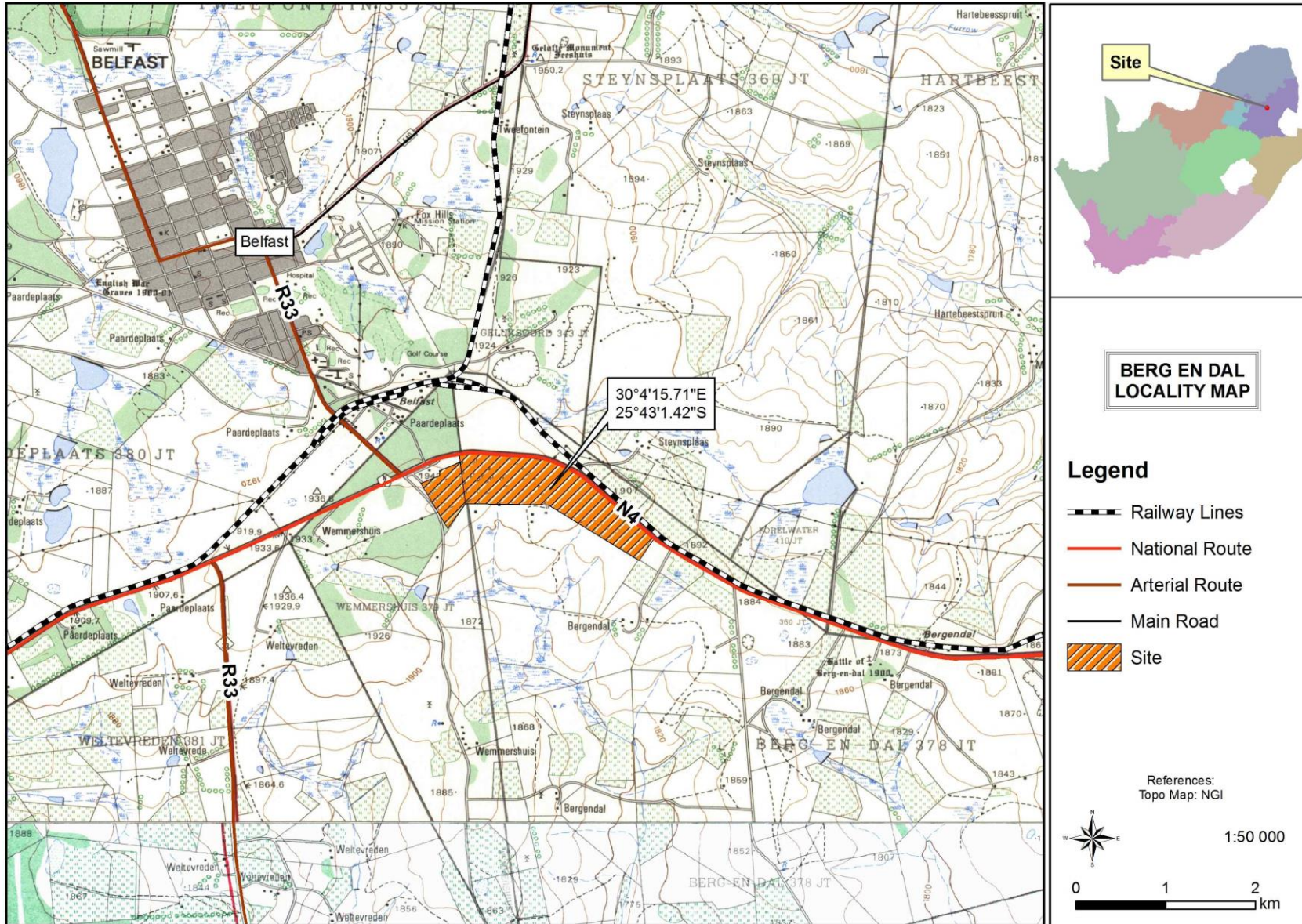


Figure 1: Site locality map



The following photographs give an indication of the current status of the project property.



## 5. DESCRIPTION OF THE ASPECTS OF THE ACTIVITY THAT ARE COVERED BY THE EMPr AS IDENTIFIED BY THE PROJECT DESCRIPTION

### 5.1 Description of the activities to be undertaken

Agriculturally related buildings are currently present at the project site and agricultural activities, such as livestock grazing, take place on site.

The proposed project will entail an upmarket, mixed land use development for the promotion of tourism and economic growth on the following properties:

- Remainder of the Farm Bergendal 981, Registration Division J.T., Province of Mpumalanga; and
- Remainder of Portion 12 of the Farm Wemmershuis 379, Registration Division J.T., Province of Mpumalanga.

The two project properties are 117.5729ha in extent. Of this land, 11.4324ha will be kept as “open space”. 52.2357ha will remain as “agricultural” land. The area of land that will be developed is therefore 53.9048ha.

The proposed development will consist of the following land uses and the allocation towards the different land uses is given in *Table 1*:

- Medium density residential;
- High density residential;
- Agriculture;
- Institutional;
- Mixed use;
- Industrial;
- Open space;
- Utilities; and
- Streets/public roads.

*Table 1: Land use differentiation and density units per hectare of the proposed development*

Proposed uses	Number of Erven	Size (ha)	Height	Coverage	FAR
Medium Density Residential	161	8.5008	2 storeys	50%	0.5
High Density Residential	2	9.6774	2 storeys	50%	0.5
Agriculture	6	52.2357	As approved by Council	As approved by Council	As approved by Council
Institutional	7	1.4025	As approved by Council The norm is 2 storeys	Institutional uses: 70% Education facilities: 40%	Institutional uses: 1.2 Education facilities: 0.6
Mixed Use	36	18.9075	2 storeys or as approved by Council	50%	0.8
Industrial	9	2.3753	2 storeys	40%	0.6

Proposed uses	Number of Erven	Size (ha)	Height	Coverage	FAR
Open Space	6	11.4324	As approved by Council	As approved by Council	As approved by Council
Utilities	1	0.1915	As approved by Council	As approved by Council	As approved by Council
Street		12.8498	N/A	N/A	N/A

The following specific land uses have been identified as part of the proposed development:

- A business node, consisting of a shopping centre/mall that will host various shops, restaurants and general stores. Services like a clinic and doctor's rooms will be accommodated directly across from the shopping centre. The area to the north of the shopping centre will cater for other small businesses and/or office buildings;
- A small industrial centre;
- An Industrial Park with two access points to make the movement of trucks easy and practical. The Industrial Park is recommended for use as a distribution depot, as Belfast is centrally situated within Mpumalanga;
- A Disaster Management Centre (within the Industrial Park), with good road access. The only other Disaster Management Centre is in Nelspruit. This proposed centre will provide additional support and is also strategically located between Emalahleni/Steve Tshwete and Nelspruit. A Public and Private Partnership is proposed for the centre;
- Within the Medium Density Residential area, it is proposed for the street portion to function as an activity street, in order to promote walking or biking instead of relying on vehicle transportation. The land uses that will feature along this activity spine will be focussed on attracting tourists to the area by featuring various cultural and heritage related shops and kiosks, restaurants and coffee shops, parks with trout dams and picnic areas, general stores, a wedding venue, chapel and lodge;
- The two agriculturally zoned properties central in the development will be utilised for a nursery and farmyard, respectively. The farmyard will primarily be an attraction for kids where they can learn about smaller farm animals and have an opportunity to feed and touch them, while the nursery will have various native plants, trees and some vegetables for sale;
- Erf 218, which is situated east of the residential area and directly north of the "High Density Residential" erven, will feature a park site with various entertainment functions, a trout dam and coffee shop, playgrounds and picnic areas. This area is proposed as a large 'get-together' area for residents as well as tourists and families traveling through Belfast and promotes walking or biking instead of being reliant on vehicle transportation;
- South of the ring road are two "Higher Density Residential" erven that will accommodate higher density flats or sectional title dwelling units;
- To the east thereof are agricultural holdings that will be utilised for small scale agricultural activities in the form of grazing for horses or developed as urban agricultural units; and
- East of the proposed farm yard and residential development a "Lekgotla" (Meeting Place) Convention Centre is proposed. The proposed centre will cater for conference facilities and events such as cultural gatherings, meetings, training, functions and workshops with low-key high-tech support.

Ultimately, the proposed township can be regarded as sustainable as it provides various job opportunities as well as housing options, all situated in close proximity and within walking distance of each other. This development also promotes tourism development and growth within Emakhazeni town and the greater municipal area as it is situated along the Maputo Corridor, which is earmarked for tourism development according to the Emakhazeni Spatial Development Framework, 2015, and would be visible to passers-by while providing easy access from the N4 and D1477 off-ramp.

The following was identified within the Breaking New Ground Policy as having high importance in developing sustainable human settlements and has been taken into account for this proposed development:



- Citizens should live in safe and secure environments and have adequate access to economic opportunities, a mix of safe and secure housing and tenure types, reliable and affordable basic services, educational, entertainment and cultural activities, and health, welfare and police services;
- Ensure that low-income housing is provided in close proximity to areas of opportunity;
- Ensure the development of compact, mixed land use, diverse, life-enhancing environments;
- Ensure the development of more integrated, functional and environmentally sustainable human settlements, towns and cities; and
- A multi-purpose cluster concept should be applied to ensure the sustainable provision of primary municipal facilities, such as parks, playgrounds, sports fields, crèches, community halls, taxi ranks, satellite police stations, municipal clinics and informal trading facilities.

It is proposed for the development to be a country style development, similar to that shown in the figure below:



*Figure 2: Illustrative building style of the proposed development*

The following were taken into consideration with regard to the design of the layout plan and buildings to be incorporated into the proposed development:

## Creating a sense of place

*"A sense of place is a unique collection of qualities and characteristics – visual, cultural, social, and environmental – that provide meaning to a location. Sense of place is what makes one city or town different from another, but sense of place is also what makes our physical surroundings worth caring about."*

McMahon argues that planners need to concentrate less time focused on facts and figures and more attention on defining and developing the distinct characteristics and quirks that make a city its own. Joseph Cortright, a leading economic development authority says that "the unique characteristics of place may be the only truly defensible source of competitive advantage for communities."

## Existing buildings on site

The existing buildings on site are uniquely characteristic to buildings commonly found within the country side and the character of these buildings will be incorporated in the proposed design of the structures. Some of these structures will be kept, modified and renovated to house various land uses and contribute to the cultural and aesthetic nature of the proposed development.

Adjacent to the project property are the following land uses:

- North: Agricultural land, the Belfast train station and Emakhazeni town;
- East: Agricultural Land;
- South: Agricultural Land; and
- West: Agricultural Land.

## 5.1.1 Roads and Storm Water

### Access

It is proposed that access to the proposed development will be granted directly opposite the R33. The access is situated approximately 350m from the southern terminal of the N4 and R33/Road D1477 interchange. It was requested that the intersection layout be a "butterfly" configuration with free flow movement on R33/Road D1477. In addition, it was agreed that the southern leg of R33/Road D1477 (gravel road) will be closed. The proposed access will be the only access to the development. Refer to the Traffic Impact Assessment, attached under Appendix D, for more information.

Services like storm water, sewerage and water, as well as telecommunication and electricity will be accommodated in the road servitudes. These services will be accommodated according to the protocol set by Emakhazeni Local Municipality in terms of positioning in the servitudes.

### Surface Drainage

The road layout of the development lends itself to an adequate drainage system, as sufficient material slopes exist. There is a watershed running through the site, dividing the area into one small area (western) and one large area (eastern). The storm water from the western area will be taken to the national road reserve and the storm water from the remaining eastern area will be taken to a retention pond and be distributed to the agricultural holdings.

Storm water will be able to drain freely from erven via streets to curb inlets that will be provided on all internal roads and spaced according to topography and catchment size. Storm water lines are accommodated mostly in road reserves and these lines will be designed to also accommodate water runoff from higher lying adjacent townships.

It is not foreseen that any problems will be encountered to accommodate the 1:2 (residential) and 1:5 year (business) return period storms on the roads and sub-surface conduits. Street levels will be designed in such a way that streets act as storm water collectors. Storm water inlets will be placed in such a way that access to the stands is not compromised.



## Storm Water Routing

The safe routing of storm water within the development will receive special attention. A retention pond will be considered for this development and the collected water distributed to the agricultural holdings. This requirement for a retention pond shall be in accordance with the bylaws of the Local Authority and shall be provided at the detail design phase. The Emakhazeni Local Municipality's requirements will be adhered to during the construction of roads and storm water infrastructure.

## 5.1.2 Water Services

### Bulk Water Availability

The impact of this development on the existing bulk water infrastructure will be quantified once the Design Engineer has been appointed for the detail design phase of both the bulk and network water services. The reservoir that supplies Belfast is situated approximately 1.6km north of the proposed development. After liaising with the Local Authority the following information was made available:

Table 2: Available water capacity of the reservoir

Technical Parameter	Estimated value
Capacity of reservoir	4Mℓ/day
Current daily output	3.5 Mℓ/d
Available capacity for the proposed development	0.5 Mℓ/d

It is estimated that the proposed development will require the following demand of water:

Table 3: Required water capacity

Technical Parameter	Estimated value
Estimated total daily demand	0.427 Mℓ/d
Estimated peak flow rate based on a peak factor of 8	39 ℓ/s

It is therefore clear that the existing capacity will meet the demand of the proposed development.

A new pump line will be designed and installed in the existing servitude from the reservoir to the proposed development. The water will be pumped from the main reservoirs by means of a submersible pump that will be installed in the reservoir. The approximate length of the new pipe line is 1.6 km.

The construction of a new reservoir of approximately 1.3Mℓ will be considered on the property to ensure a three day supply of potable and fire water. It was indicated by the Emakhazeni Local Municipality that the intention is to construct a new reservoir site for the possible future High Altitude Training Centre. The reservoir site will be situated at a higher level and closer to the proposed development site, which will enable Emakhazeni Local Municipality to connect the water supply to the new reservoirs site. The current situation in terms of water is, however, adequate for the proposed development.

### Internal Water Layout

The layout of the proposed development provides sufficient servitudes for an internal water network. The network will be designed and constructed according to municipal and national standards. All stands will be equipped with separate connections that will allow for internal fire systems as well. Fire water will also be accommodated according to national and municipal standards.

### 5.1.3 Sewerage

#### Bulk Sewer Conveying Availability

Taking the contours and watershed into account, the internal water reticulation will be determined. Pump stations will be considered during the detailed design phase to pump sewage to the Municipal Sewage Treatment Works. An onsite sewage package plant will no longer be utilised.

### 5.1.4 Electricity

The proposed development lies within the Eskom distribution area and therefore does not require the provision of electricity from the Local Authority. The appointed Electrical Engineers, RDV Consulting, submitted an application to Eskom for the interim MV load of 1 200 kVA, which is currently available on the Eskom distribution network in the area.

If additional load is required, it would require the upgrade of the Eskom substation in Belfast. RDV Consulting discussed this with Eskom and accepted the offer to take the available 1 200 kVA until such time that the additional capacity is required. When the additional capacity becomes necessary an additional application will be lodged to Eskom. The estimated demand of Phase 1 of the proposed development is calculated as follow:

Table 4: Electricity Load Estimate - Phase 1

Proposed use	Area	Units	Loading
Shopping Centre	3.6493 Ha	1	500 kVA
Mixed use (50 kVA each)	4.3082 Ha	7	350 kVA
Medium Density Residential (5 kVA each)	1.6251 Ha	31	155 kVA
<b>TOTAL</b>	<b>9.5826 Ha</b>	<b>39</b>	<b>1 005 kVA</b>

The estimated demand for Phase 2 of the proposed development will be calculated and an application submitted to Eskom, as mentioned previously.

Once the proposed development is approved, a service report will be prepared in order to allow the finalisation of the services agreement. Electrical Contractors will then be appointed to supply and install the municipal and consumer's electrical networks. The Electrical Engineering Report is attached under Appendix D.

### 5.1.5 Traffic

WSP SA Civil and Structural Engineers (Pty) Ltd was appointed to conduct the Traffic Impact Study. Based on the traffic count, a common peak hour (busiest hour) was determined for each counted period and was found to be the following:

- Friday AM peak hour: 08h00 – 09h00
- Friday PM peak hour: 16h00 – 17h00

The estimated trip generation for the proposed development is summarised below:

Table 5: Estimated Trip Generation

Land Use	Weekday AM peak	Weekday PM peak
Industrial	0.80 trips per 100 m <sup>2</sup> GLA	0.80 trips per 100 m <sup>2</sup> GLA
Single Dwelling	1.00 trip per dwelling	1.00 trip per dwelling
Apartment / Flat	0.65 trips per unit	0.65 trips per unit
Pre-school	1.00 trip per pupil	0.80 trips per pupil
Business Centre	1.5 trips per 100 m <sup>2</sup> GLA	1.5 trips per 100 m <sup>2</sup> GLA

Land Use	Weekday AM peak	Friday PM peak	Saturday Peak
Shopping Centre	0.60 trips per 100m <sup>2</sup> GLA	3.4 trips per 100m <sup>2</sup> GLA	4.5 trips per 100 m <sup>2</sup> GLA

The proposed development is estimated to generate a maximum of 1 052 trips during the Friday AM peak hour and a maximum of 1 887 trips during the Friday PM peak hour.

The Traffic Impact Assessment has detailed the following required upgrades to certain intersections in the vicinity of the site:

- Road D1477 and N4 off-ramp: This intersection needs to be signalised;
- Belfast 1 Stop: This intersection needs to be signalised;
- Road D1477 and R33: This intersection will form the main access to the proposed development and it is proposed that the intersection should be traffic circle controlled; and
- Road D1477 and Site Access 2: This intersection will form the secondary access to the proposed development and it is proposed that it will be priority stop controlled.

It is also recommended that a pair of lay-bys be positioned along Road D1477 at the main access. Furthermore, it is proposed that surfaced pedestrian sidewalks should be provided along the site frontage to facilitate pedestrian movement to and from the site. An on-site multi-modal public transport facility and paved sidewalks along R33/Road D1477 and pedestrian crossings at the N4/R33/Road D1477 and N4/Belfast One-Stop interchange are also proposed.

## 5.2 Listed Activities triggered by the proposed development

The following listed activities are triggered by the proposed development and therefore require Environmental Authorisation, in terms of the Environmental Impact Assessment Regulations of 4 December 2014, as amended:

Table 6: Listed activity/activities triggered by the proposed development

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
Government Notice R983 (Listing Notice 1) Activity No. 12	<p>The development of-</p> <p>(i) dams or weirs, where the dam or weir, including infrastructure and water surface area, exceeds 100 square metres; or</p> <p>(ii) infrastructure or structures with a physical footprint of 100 square metres or more;</p> <p>where such development occurs-</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p> <p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse;-</p> <p>excluding-</p> <p>(aa) the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(bb) where such development activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such development occurs within an urban area;</p> <p>(ee) where such development occurs within existing roads, road reserves or railway line reserves; or</p> <p>(ff) the development of temporary infrastructure or structures where such infrastructure or structures will be removed within 6 weeks of the</p>	<p>As part of the proposed development, one or more of the following will be developed within/across a watercourse, in front of a development setback and/or within 32 metres of a watercourse:</p> <ul style="list-style-type: none"> <li>• canals exceeding 100 square metres in size;</li> <li>• channels exceeding 100 square metres in size;</li> <li>• bridges exceeding 100 square metres in size;</li> <li>• dams, where the dam, including infrastructure and water surface area, exceeds 100 square metres in size;</li> <li>• weirs, where the weir, including infrastructure and water surface area, exceeds 100 square metres in size;</li> <li>• bulk storm water outlet structures exceeding 100 square metres in size;</li> <li>• buildings exceeding 100 square metres in size;</li> <li>• boardwalks exceeding 100 square metres in size; and</li> <li>• infrastructure or structures with a physical footprint of 100 square metres or more.</li> </ul> <p>The detailed architectural designs for the development will stipulate the structures or infrastructure that will be built within/across or within 32 metres of the dams and valley head seep wetlands onsite.</p>

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
	commencement of development and where indigenous vegetation will not be cleared.	
Government Notice R983 (Listing Notice 1) Activity No. 24	The development of a road- (i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity 18 in Government Notice 545 of 2010; or (ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road- (a) which is identified and included in activity 27 in Listing Notice 2 of 2014; (b) where the entire road falls within an urban area; or (c) which is 1 kilometre or shorter.	The development of an access road to the development, as well as internal roads. The roads will vary between 5.5m and 10m in width, with street reserves of between 10.5m and 30m in width. It is expected that the roads will be longer than 1km in total.
Government Notice R983 (Listing Notice 1) Activity No. 28	Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or (ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes.	Residential, mixed use, retail, commercial, industrial and institutional erven will form part of the proposed development. Part of the proposed development will be built on land that was used for agricultural activities. More than 1ha of such land will be used and the project properties are situated outside of an urban area.
Government Notice R983 (Listing Notice 1) Activity No. 45	The expansion of infrastructure for the bulk transportation of water or storm water where the existing infrastructure- (i) has an internal diameter of 0,36 metres or more; or (ii) has a peak throughput of 120 litres per second or more; and (a) where the facility or infrastructure is expanded by more than 1 000 metres in length; or	Existing bulk water and storm water infrastructure to the project properties will be expanded upon by more than 1 000 metres. It is likely that the existing bulk infrastructure has an internal diameter of 0.36 metres or more and/or a peak throughput of 120 litres per second or more.

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
	<p>(b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more; excluding where such expansion-</p> <p>(aa) relates to transportation of water or storm water within a road reserve or railway line reserve; or</p> <p>(bb) will occur within an urban area.</p>	
<p>Government Notice R983 (Listing Notice 1) Activity No. 46</p>	<p>The expansion and related operation of infrastructure for the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes where the existing infrastructure-</p> <p>(i) has an internal diameter of 0,36 metres or more; or</p> <p>(ii) has a peak throughput of 120 litres per second or more; and</p> <p>(a) where the facility or infrastructure is expanded by more than 1 000 metres in length; or</p> <p>(b) where the throughput capacity of the facility or infrastructure will be increased by 10% or more; excluding where such expansion-</p> <p>(aa) relates to the bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes within a road reserve or railway line reserve; or</p> <p>(bb) will occur within an urban area.</p>	<p>Existing bulk sewage infrastructure to the project properties will be expanded upon by more than 1 000 metres. It is likely that the existing bulk infrastructure has an internal diameter of 0.36 metres or more and/or a peak throughput of 120 litres per second or more.</p>
<p>Government Notice R983 (Listing Notice 1) Activity No. 48</p>	<p>The expansion of-</p> <p>(i) infrastructure or structures where the physical footprint is expanded by 100 square metres or more; or</p> <p>(ii) dams or weirs, where the dam or weir, including infrastructure and water surface area, is expanded by 100 square metres or more; where such expansion occurs-</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback; or</p>	<p>As part of the proposed development, one or more of the following may be expanded upon by 100m<sup>2</sup> or more, within/across a watercourse, in front of a development setback and/or within 32 metres of a watercourse:</p> <ul style="list-style-type: none"> <li>• canals;</li> <li>• channels;</li> <li>• bridges;</li> <li>• dams;</li> </ul>

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
	<p>(c) if no development setback exists, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding-</p> <p>(aa) the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour;</p> <p>(bb) where such expansion activities are related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies;</p> <p>(cc) activities listed in activity 14 in Listing Notice 2 of 2014 or activity 14 in Listing Notice 3 of 2014, in which case that activity applies;</p> <p>(dd) where such expansion occurs within an urban area; or</p> <p>(ee) where such expansion occurs within existing roads, road reserves or railway line reserves.</p>	<ul style="list-style-type: none"> <li>• weirs; and</li> <li>• bulk storm water outlet structures.</li> </ul> <p>The detailed architectural designs for the development will stipulate the structures or infrastructure that will be expanded upon within/across or within 32 metres of the dams and valley head seep wetlands onsite.</p>
Government Notice R983 (Listing Notice 1) Activity No. 56	<p>The widening of a road by more than 6 metres, or the lengthening of a road by more than 1 kilometre-</p> <p>(i) where the existing reserve is wider than 13,5 meters; or</p> <p>(ii) where no reserve exists, where the existing road is wider than 8 metres; excluding where widening or lengthening occur inside urban areas.</p>	<p>Existing gravel roads on the project properties will be widened by more than 6 metres and lengthened by more than 1 kilometre. The roads will vary between 5.5m and 10m in width, with street reserves of between 10.5m and 30m in width.</p>
Government Notice R983 (Listing Notice 1) Activity No. 67	<p>Phased activities for all activities-</p> <p>(i) listed in this Notice, which commenced on or after the effective date of this Notice or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices; excluding the following activities listed in this Notice- 17(i)(a-d); 17(ii)(a-d); 17(iii)(a-d); 17(iv)(a-d); 17(v)(a-d); 20; 21; 22; 24(i); 29; 30; 31; 32; 34; 54(i)(a-d); 54(ii)(a-d); 54(iii)(a-d); 54(iv)(a-d); 54(v)(a-d); 55; 61; 64; and 65; or</p> <p>(ii) listed as activities 5, 7, 8(ii), 11, 13, 16, 27(i) or 27(ii) in Listing Notice 2 of 2014 or similarly listed in any of the previous NEMA notices, which commenced on or after the effective date of such previous NEMA Notices;</p>	<p>The proposed development will be undertaken in two phases.</p>

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
	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.	
Government Notice R984 (Listing Notice 2) Activity No. 6	The development of facilities or infrastructure for any process or activity which requires a permit or licence or an amended permit or licence in terms of national or provincial legislation governing the generation or release of emissions, pollution or effluent, excluding- (i) activities which are identified and included in Listing Notice 1 of 2014; (ii) activities which are included in the list of waste management activities published in terms of section 19 of the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) in which case the National Environmental Management: Waste Act, 2008 applies; (iii) the development of facilities or infrastructure for the treatment of effluent, polluted water, wastewater or sewage where such facilities have a daily throughput capacity of 2 000 cubic metres or less; or (iv) where the development is directly related to aquaculture facilities or infrastructure where the wastewater discharge capacity will not exceed 50 cubic metres per day.	The proposed development will require a Water Use Licence application, in terms of the National Water Act, 1998, for one or more of the following proposed water use activities: <ul style="list-style-type: none"> <li>• Section 21(a);</li> <li>• Section 21(b);</li> <li>• Section 21(c); and</li> <li>• Section 21(i).</li> </ul>
Government Notice R984 (Listing Notice 2) Activity No. 15	The clearance of an area of 20 hectares or more of indigenous vegetation, excluding where such clearance of indigenous vegetation is required for- (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	53.9048ha of vegetation will be cleared for the proposed development.
Government Notice R985 (Listing Notice 3) Activity No. 2	The development of reservoirs, excluding dams, with a capacity of more than 250 cubic metres. <b>f. Mpumalanga</b> ii. Outside urban areas:	A new 1 300m <sup>3</sup> water reservoir will be built.



Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
	(dd) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	The project properties are outside of an urban area. According to the Mpumalanga Biodiversity Sector Plan, the project properties lie in an area that is designated as a "Critical Biodiversity Area (CBA) Optimal".
Government Notice R985 (Listing Notice 3) Activity No. 4	The development of a road wider than 4 metres with a reserve less than 13,5 metres. <b>f. Mpumalanga</b> i. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.	The development of an access road to the development, as well as internal roads. The roads will vary between 5.5m and 10m in width, with street reserves of between 10.5m and 30m in width.  The project properties are outside of an urban area. According to the Mpumalanga Biodiversity Sector Plan, the project properties lie in an area that is designated as a "Critical Biodiversity Area (CBA) Optimal".
Government Notice R985 (Listing Notice 3) Activity No. 6	The development of resorts, lodges, hotels, tourism or hospitality facilities that sleeps 15 people or more. <b>f. Mpumalanga</b> i. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans; (hh) Areas within a watercourse or wetland, or within 100 metres of a watercourse or wetland.	A lodge will form part of the proposed development and will be able to accommodate more than 15 people.  The project properties are outside of an urban area. According to the Mpumalanga Biodiversity Sector Plan, the project properties lie in an area that is designated as a "Critical Biodiversity Area (CBA) Optimal".  The proposed lodge may be located within 100 metres of watercourses (wetlands) onsite.
Government Notice R985 (Listing Notice 3) Activity No. 12	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. <b>f. Mpumalanga</b> ii. Within critical biodiversity areas identified in bioregional plans.	53.9048ha of vegetation will be cleared for the proposed development.  The project properties are outside of an urban area. According to the Mpumalanga Biodiversity Sector Plan, the project properties lie in an area that is designated as a "Critical Biodiversity Area (CBA) Optimal".
Government Notice R985 (Listing Notice 3) Activity No. 14	The development of- (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or	As part of the proposed development, one or more of the following will be developed within/across a watercourse, in front of a development setback and/or within 32 metres of a watercourse: <ul style="list-style-type: none"> <li>• canals exceeding 10 square metres in size;</li> </ul>

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
	<p>(ii) infrastructure or structures with a physical footprint of 10 square metres or more; where such development occurs-</p> <p>(a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p><b>f. Mpumalanga</b> i. Outside urban areas: (ff) Critical biodiversity areas or ecosystem service areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p>	<ul style="list-style-type: none"> <li>• channels exceeding 10 square metres in size;</li> <li>• bridges exceeding 10 square metres in size;</li> <li>• dams, where the dam, including infrastructure and water surface area, exceeds 10 square metres in size;</li> <li>• weirs, where the weir, including infrastructure and water surface area, exceeds 10 square metres in size;</li> <li>• bulk storm water outlet structures exceeding 10 square metres in size;</li> <li>• buildings exceeding 10 square metres in size;</li> <li>• boardwalks exceeding 10 square metres in size; and</li> <li>• infrastructure or structures with a physical footprint of 10 square metres or more.</li> </ul> <p>The detailed architectural designs for the development will stipulate the structures or infrastructure that will be built within/across or within 32 metres of the dams and valley head seep wetlands onsite.</p> <p>The project properties are outside of an urban area. According to the Mpumalanga Biodiversity Sector Plan, the project properties lie in an area that is designated as a "Critical Biodiversity Area (CBA) Optimal".</p>
<p>Government Notice R985 (Listing Notice 3) Activity No. 18</p>	<p>The widening of a road by more than 4 metres, or the lengthening of a road by more than 1 kilometre.</p> <p><b>f. Mpumalanga</b> i. Outside urban areas: (ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p>	<p>Existing gravel roads on the project properties will be widened by more than 4 metres and lengthened by more than 1 kilometre. The roads will vary between 5.5m and 10m in width, with street reserves of between 10.5m and 30m in width.</p> <p>The project properties are outside of an urban area. According to the Mpumalanga Biodiversity Sector Plan, the project properties lie in an area that is designated as a "Critical Biodiversity Area (CBA) Optimal".</p>

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
Government Notice R985 (Listing Notice 3) Activity No. 23	<p>The expansion of-</p> <p>(i) dams or weirs where the dam or weir is expanded by 10 square metres or more; or</p> <p>(ii) infrastructure or structures where the physical footprint is expanded by 10 square metres or more; where such expansion occurs-</p> <p>(a) within a watercourse;</p> <p>(b) in front of a development setback adopted in the prescribed manner; or</p> <p>(c) if no development setback has been adopted, within 32 metres of a watercourse, measured from the edge of a watercourse; excluding the expansion of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.</p> <p><b>f. Mpumalanga</b></p> <p>i. Outside urban areas:</p> <p>(ee) Critical biodiversity areas as identified in systematic biodiversity plans adopted by the competent authority or in bioregional plans.</p>	<p>As part of the proposed development, one or more of the following may be expanded upon by 10m<sup>2</sup> or more, within/across a watercourse, in front of a development setback and/or within 32 metres of a watercourse:</p> <ul style="list-style-type: none"> <li>• canals;</li> <li>• channels;</li> <li>• bridges;</li> <li>• dams;</li> <li>• weirs;</li> <li>• bulk storm water outlet structures;</li> <li>• buildings;</li> <li>• boardwalks; and</li> <li>• infrastructure or structures.</li> </ul> <p>The detailed architectural designs for the development will stipulate the structures or infrastructure that will be expanded upon within/across or within 32 metres of the dams and valley head seep wetlands onsite.</p> <p>The project properties are outside of an urban area. According to the Mpumalanga Biodiversity Sector Plan, the project properties lie in an area that is designated as a "Critical Biodiversity Area (CBA) Optimal".</p>
Government Notice R985 (Listing Notice 3) Activity No. 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-</p>	<p>The proposed development will be undertaken in two phases.</p>

Government Notice and Activity Number	Wording as per the Listing Notice	Description as per the project description relating to each listed activity
	<p>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;-                      excluding the following activities listed in this Notice-                      7; 8; 11; 13; 20; 21; and 24.</p>	

### 5.3 Water Use Licence Activities

The following proposed water uses require Water Use Registration and/or Licence applications in terms of Chapter 4 of the National Water Act, 1998 (Act No. 36 of 1998):

- Section 21(a): Taking water from a water resource – potential abstraction of groundwater from boreholes;
- Section 21(b): Storage of water – the storage of clean water in a 1.3Mℓ reservoir;
- Section 21(c): Impeding or diverting the flow of water in a watercourse – development/construction within 500m from the boundary of one or both of the two wetlands; and
- Section 21(i): Altering the bed, banks, course or characteristics of a watercourse - development/construction within 500m from the boundary of one or both of the two wetlands.

The required Water Use Registration and/or Licence application will be submitted to the Department of Water and Sanitation in due course.

### 5.4 Environmental sensitivity overlay map - Map at an appropriate scale that superimposes the proposed activity, its associated structures, and infrastructure on the environmental sensitivities of the preferred site, indicating any areas that should be avoided, including buffers.

Please refer to *Figure 3* and *Figure 4* below.



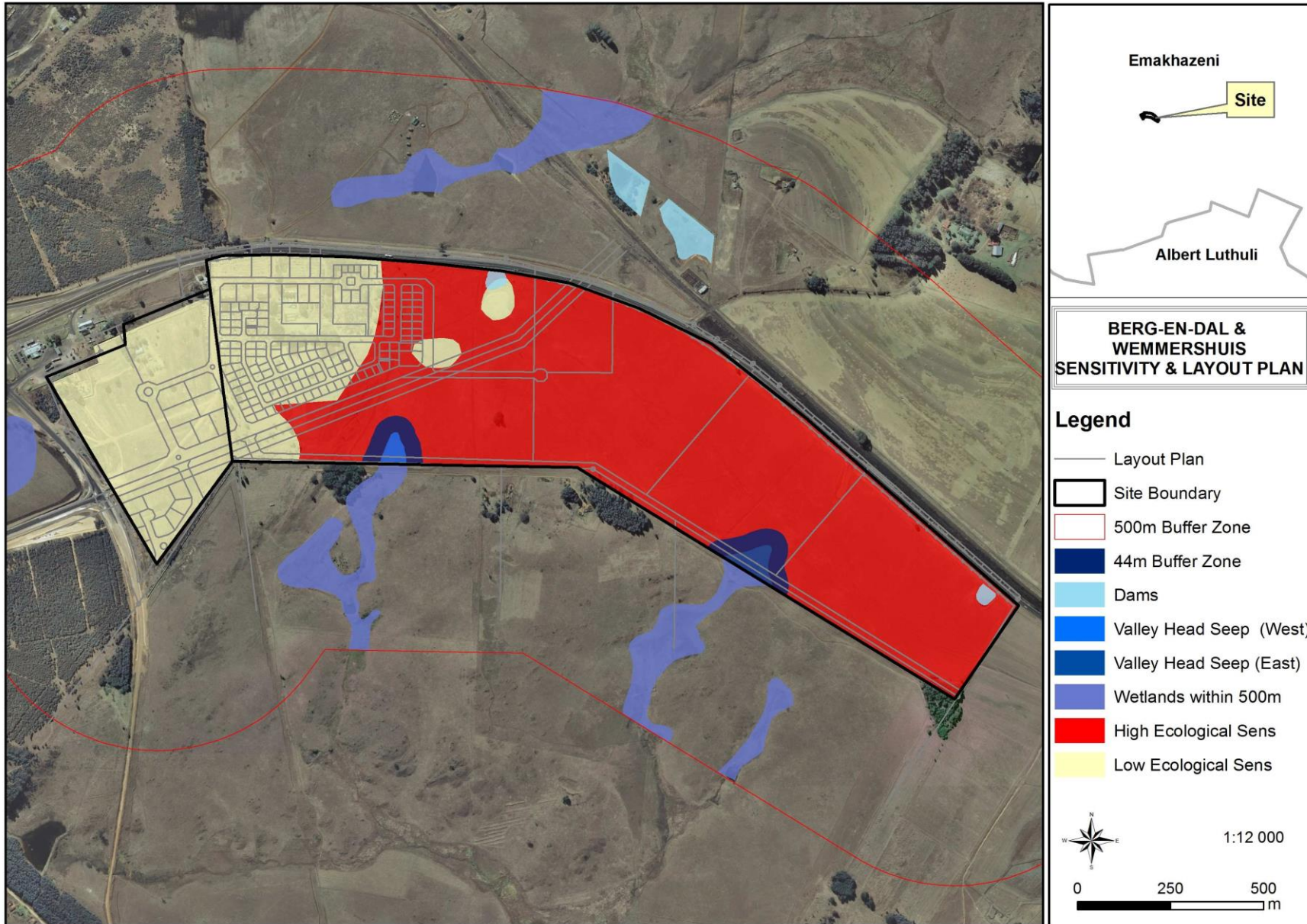


Figure 3: Ecological sensitivity map



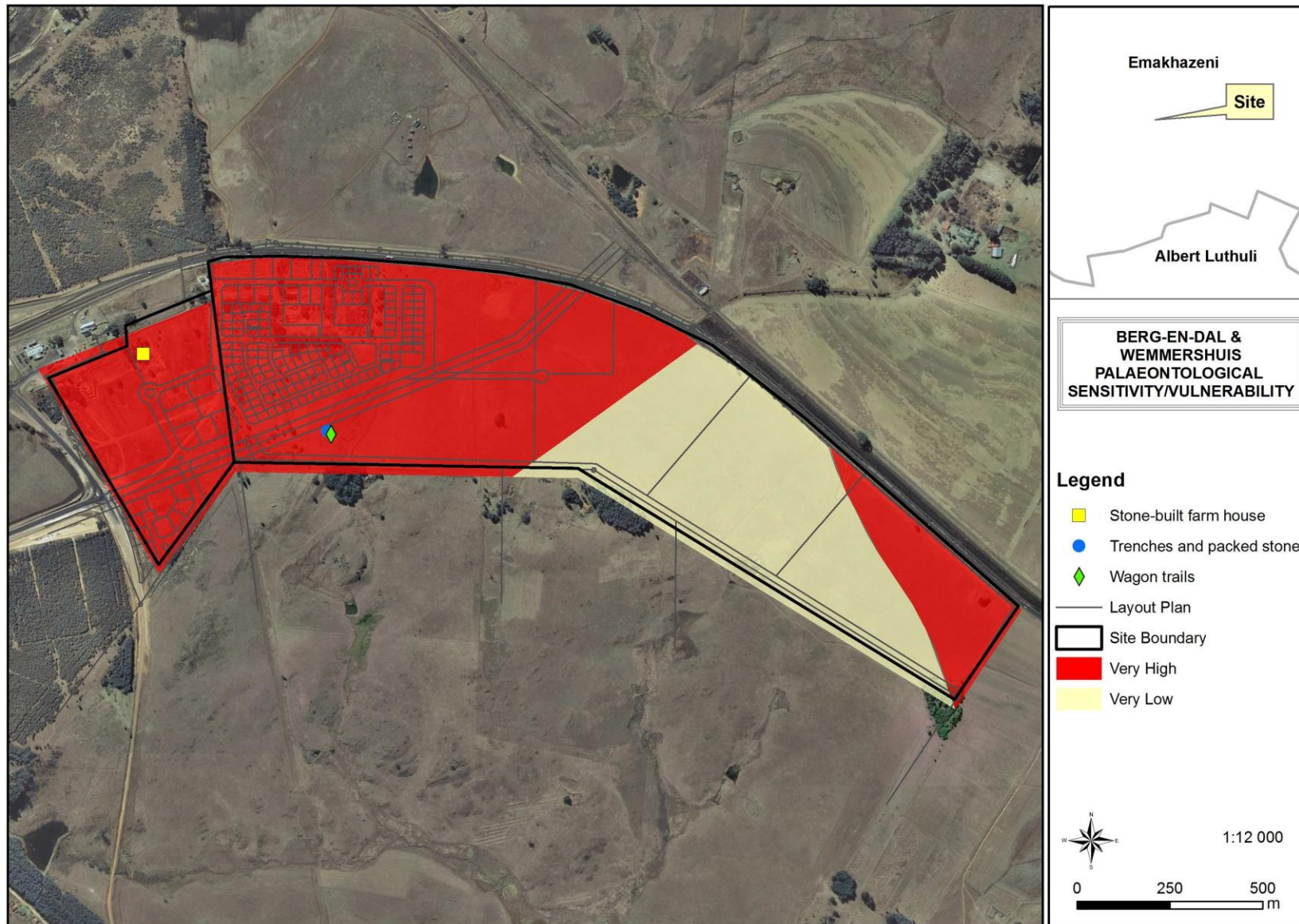


Figure 4: Heritage and Palaeontological sensitivity map

## **6. POLICY AND LEGISLATIVE CONTEXT OF THE APPLICATION**

The following legislation, policies, plans, guidelines, spatial tools, municipal development planning frameworks and instruments are applicable to the proposed development and have been considered in this Environmental Impact Assessment process. The mitigation measures proposed in this Environmental Management Programme are also aligned with the provisions of the relevant sections of legislation.

### **Legislation**

- The Constitution of South Africa, 1996 (Act No. 108 of 1996), as amended
- The National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended
- The Environmental Impact Assessment Regulations of 4 December 2014
- The National Water Act, 1998 (Act No. 36 of 1998), as amended
- The National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004), as amended
- The National Heritage Resources Act, 1999 (Act No. 25 of 1999), as amended
- The National Appeal Regulations – Government Notice No. R.993 of 8 December 2014

### **Plans**

- The Mpumalanga Biodiversity Conservation Plan

### **Guidelines**

- Guideline on Need and Desirability in terms of the Environmental Impact Assessment (EIA) Regulations, 2010

### **Spatial tools**

- SANBI Biodiversity GIS Database

### **Municipal development planning frameworks**

- Emakhazeni Local Municipality – Spatial Development Framework Final Report - January 2015
- Environmental Management Framework for Emakhazeni Local Municipality in terms of Section 24(3) of NEMA and NEMA EIA Regulations 69 to 72 - 2009
- Emakhazeni Local Municipality – Reviewed Integrated Development Plan 2016/2017



## 7. DESCRIPTION OF IMPACT MANAGEMENT OUTCOMES, MANAGEMENT STATEMENTS AND IMPACTS AND RISKS THAT NEED TO BE AVOIDED, MANAGED AND/OR MITIGATED

### 7.1 Impact Management Outcomes

Please refer to *Table 7* under Section 8 below.

### 7.2 Impact Management Statements

The applicant, Mlangeni Family Trust, commits to implementing the mitigation actions contained in this Environmental Management Programme in order to ensure that the environmental impacts from the proposed development are minimised.

### 7.3 Impacts and risks that need to be avoided, managed and/or mitigated

The following impacts and risks have been identified for the preferred alternative and need to be avoided, managed and/or mitigated:

#### Planning and Design Phase

- Inadequate planning and design of the Mall and Mixed Use Development that could result in environmental impacts that could have been avoided.

#### Pre-construction Phase

- Unsafe working conditions.
- Workers being unaware of the dangers of working at the construction site, resulting in a risk to their safety.

### Wetlands

#### Construction and Operational Phases

- Changing the quantity and fluctuation properties of the watercourse by, for example, storm water input, or restricting water flow. The sources of this impacts include:
  - Development within watercourse, thereby diverting or impeding flow;
  - Vehicles driving in/through the watercourse; and
  - Lack of adequate rehabilitation resulting in invasion by invasive plants.
- Changing the amount of sediment entering the water resource and associated change in turbidity (increasing or decreasing the amount). Construction, operational and decommissioning activities will result in earthworks and soil disturbance as well as the removal of natural vegetation. This could result in the loss of topsoil, sedimentation of the wetland and increase the turbidity of the water. Possible sources of the impacts include:
  - Earthwork activities when constructing;
  - Clearing of surface vegetation will expose the soils, which in rainy events would wash through the watercourse, causing sedimentation. In addition, indigenous vegetation communities are unlikely to colonise eroded soils successfully and seeds from proximate alien invasive trees can spread easily into these eroded soil;
  - Disturbance of soil surface;
  - Disturbance of slopes through the creation of roads and tracks adjacent to the watercourse; and
  - Erosion (e.g. gully formation, bank collapse).
- Invasions of alien plants can impact on hydrology, by reducing the quantity of water entering a wetland, and outcompeting natural vegetation, decreasing the natural biodiversity. Once in a system, alien invasive plants can

spread through the catchment. If allowed to seed before control measures are implemented, alien plants can easily colonise and impact on downstream users.

- Loss and disturbance of wetland habitat and fringe vegetation due to direct development on the wetland as well as changes in management, fire regime and habitat fragmentation.
- Construction, operational and decommissioning activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands and a reduction in wetland function as well as human and animal waste. This could possibly impact on groundwater.

#### **Post-construction and Rehabilitation Phase**

None anticipated.

#### **Cumulative**

- The upgrade of the wetland system is likely to improve some aspects of the wetland system.
- Should mitigation measures not be implemented, changes made to the bed or banks of watercourse channels will cause unstable channel conditions leading to erosion, meandering, increased potential for flooding and movement of bed material that will result in property damage adjacent to and downstream of the site.

### **Surface and Groundwater**

#### **Construction Phase**

- Pollution of surface and/or groundwater resources due to the incorrect management of concrete mixing.

#### **Construction and Operational Phases**

- Pollution of surface and/or groundwater resources due to the incorrect management and potential release of pollutants, such as chemical substances and dangerous goods.
- Pollution of surface and/or groundwater resources due to poor waste management (general waste).
- Pollution of surface and/or groundwater resources due to poor waste management (hazardous waste).
- Pollution of surface and/or groundwater resources due to runoff of contaminated stormwater.

#### **Operational Phase**

- Pollution of surface and/or groundwater resources due to the potential release of wastewater (sewage and wash water).

#### **Post-construction and Rehabilitation Phase**

None anticipated.

#### **Cumulative**

None anticipated.

### **Fauna**

#### **Construction Phase**

- Avian habitat loss associated with construction activities: Avian habitats will be lost in the areas cleared for buildings, roads and other infrastructure associated with the proposed project. This impact will mainly affect the western portion of the site, which is of lower sensitivity than the rocky grasslands to the east. The footprint of this impact will presumably be greater than the area occupied by the development itself, on account of additional areas cleared for access, vehicle parking, construction activities and housing construction workers.

- Disturbance associated with construction activities: The presence of vehicles and construction workers will cause disturbance to avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on birds. In addition, the presence of construction workers will increase the probability of activities such as the illegal hunting of birds.
- Pollution associated with construction activities: Pollution associated with construction activities (e.g. fuel spills, the use of cleaning chemicals) could have serious negative impacts on avifauna if such chemicals were to enter the dams on the site, and/or make their way into the drainage lines and wetlands located immediately to the north or south of the site. Given the importance of this area for threatened birds associated with wetland habitats, this impact needs to be taken very seriously and carefully mitigated.

### **Construction and Operational Phases**

- Habitat loss: Avian habitats in the areas where buildings, roads and other infrastructure, as well as agricultural activities are located will be permanently lost.
- Disturbance associated with increased human presence in the area: The permanent presence of a much larger number of people than presently occur at the site will result in greater disturbance of birds that use the area for foraging and breeding. This impact will be manifested, for example, by residents and their pets walking in the area.
- Collision risk associated with vehicular traffic: Higher numbers of vehicles driving on the site, together with an increase in their average speed on account of the presence of surfaced roads, will lead to an increase in the risk of birds being killed or injured via collisions. However, this impact will remain very minor compared to the mortality risk associated with vehicles travelling at high speed on the adjacent N4 highway.
- Disturbance or death of herpetofauna species.

### **Operational Phase**

- Electrocutation and collision hazards: Electrical infrastructure such as transmission lines, as well as electric fences, pose a potential collision risk to flying birds, and a potential electrocution risk to perching birds. The magnitudes of these risks are much lower than the corresponding risks associated with large overhead transmission lines.

### **Post-construction and Rehabilitation Phase**

None anticipated.

### **Cumulative**

- The potential contribution of the proposed development to cumulative avian habitat loss in the Steenkampsberg Important Bird and Biodiversity Area (IBA).

## Flora

### Construction Phase

- Loss of vegetation from the following vegetation units/ecosystems:
  - Transformed vegetation;
  - Primary Grassland (western part of the project site);
  - Primary Grassland (eastern part of the project site);
  - Rocky Outcrops;
  - Indigenous species; and
  - Alien plant species.

### Operational Phase

- Invasion by alien invasive plant species.

### Post-construction and Rehabilitation Phase

None anticipated.

### Cumulative

None anticipated.

## Heritage Resources

### Construction and Operational Phases

- Disturbance or destruction of cultural and heritage resources.

### Post-construction and Rehabilitation Phase

None anticipated.

### Cumulative

Disturbance or destruction of cultural and heritage resources onsite resulting in a decline in the overall cultural and heritage value of the greater area.

## Palaeontological resources

### Construction Phase

- There is a very high possibility that significant fossil assemblages will be present in all outcrops of the site. If deep excavation is envisaged for the construction procedures, the excavation material will potentially contain significant fossil rich material and the development will most likely have a very significant impact on the Palaeontological Heritage of the region.

### Operational Phase

None anticipated.

### Post-construction and Rehabilitation Phase

None anticipated.

## **Cumulative**

Disturbance or destruction of significant fossil assemblages onsite resulting in a decline in the palaeontological value of the greater area.

## **Air Quality and Noise**

### **Construction Phase**

- Generation of dust.
- Release of vehicle emissions from construction vehicles.
- Generation of nuisance and noise.

### **Operational Phase**

None anticipated.

### **Post-construction and Rehabilitation Phase**

None anticipated.

## **Land and land use**

### **Construction and Operational Phases**

The disturbance of potentially productive agricultural land, including arable and grazing land, through the establishment of the proposed development. This could render the potentially productive agricultural land permanently unsuitable for agricultural production and could thereby decrease the food production potential of the area. This has a negative implication for food security in South Africa.

## **Soil**

### **Construction Phase**

- Soil erosion due to the clearance of vegetation.
- Soil compaction to create foundations for buildings and other associated infrastructure.
- Soil pollution due to potential spillages from chemical toilets.
- Soil pollution due to the incorrect management of concrete mixing.

### **Construction and Operational Phases**

- Soil pollution due to the incorrect management of chemical substances and dangerous goods.
- Soil pollution due to poor waste management (general waste).
- Soil pollution due to poor waste management (hazardous waste).
- Soil pollution due to the runoff of contaminated stormwater.

### **Post-construction and Rehabilitation Phase**

- Soil erosion due to inefficient rehabilitation of construction areas.

## **Cumulative**

None anticipated.

## **Socio-economic**

### **Construction Phase**

- Potential increase in crime due to the influx of workers, especially during the construction phase.

### **Construction and Operational Phases**

- Generation of a large number of job opportunities.
- Stimulation of the local economy, especially the tourism sector.

### **Post-construction and Rehabilitation Phase**

None anticipated.

### **Cumulative**

None anticipated.

## **Traffic**

### **Construction and Operational Phases**

- Increase in traffic volumes to the site.

### **Post-construction and Rehabilitation Phase**

- Increase in traffic volumes to the site.

### **Cumulative**

None anticipated.

## **8. DESCRIPTION OF PROPOSED IMPACT MANAGEMENT ACTIONS (ENVIRONMENTAL MANAGEMENT PROGRAMME ACTIONS)**

### **8.1 Impact Management Outcome and Action Table**

Please refer to *Table 7* below.

Table 7: Environmental Management Programme - Impact Management Outcome and Action Table

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
<b>Planning and Design Phase</b>					
Planning and design of the Mall and Mixed Use Development.	Inadequate planning and design of the Mall and Mixed Use Development that could result in environmental impacts that could have been avoided.	To effectively plan and design the Mall and Mixed Use Development in order to minimise operational impacts.		<ul style="list-style-type: none"> <li>Restrict the planned agricultural practice in the eastern grassland to grazing, based on an ecologically based management plan.</li> <li>Keep the major rocky outcrops natural and protected in open space areas.</li> <li>For the old farm house built in stone with modern alterations, a Phase 2 HIA and recording should be undertaken and should the site be impacted on by the development, a demolition permit should be applied for.</li> <li>For the trenches located around the small hill, and most likely related to the Anglo-Boer War (1899-1902) Battle of Berg-en-Dal/Dalmanutha: Should the site be impacted on by the proposed development, it should be mitigated by detailed mapping and drawing and also historical-archaeological excavations before destruction.</li> <li>For the sections of the old wagon route identified: Mapping and drawing should be done before destruction, should the site be impacted upon by the proposed development.</li> <li>The area cleared for the proposed project must be kept to a minimum. The eastern portion of the site is currently zoned for agriculture. However, given the presence of the natural grasslands and the obstacles to agriculture posed by the rocky nature of this area, it is recommended that it be left in its current state. As noted elsewhere, the cumulative impact of avian habitat losses in this Important Bird and Biodiversity Area must be borne in mind.</li> <li>Every effort should be made to retain the linear integrity, flow dynamics and water quality of the drainage lines and dams. Storm water from the new township must be managed in such a way that it simulates natural flow patterns.</li> <li>No activities should take place in the watercourses and associated buffer zones. Where the above is unavoidable, only the construction footprint and no access roads can be considered. This is subjected to authorisation by means of a Water Use License.</li> <li>Prevent pedestrian and vehicular access into the watercourse and buffer areas.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Engineer</li> </ul>
<b>Pre-Construction Phase</b>					
Construction site establishment.	Unsafe working conditions.	To ensure that the construction site is operated in a safe and responsible manner for the duration of the construction phase.		<ul style="list-style-type: none"> <li>The construction site must be demarcated (fenced or delineated with danger tape). As the project properties are fenced, public access to construction areas will be limited.</li> <li>A site plan must be drawn up by the construction contractor and kept on file. The site plan must show proposed stockpile areas, waste storage areas and ablution facilities.</li> <li>Signage indicating that the site is a "Construction Site" and indicating the risks associated with the site must be displayed. Emergency numbers, "No-smoking" signs and "No Open Flame" signs must also be displayed at the construction site.</li> <li>Fire-fighting equipment must be placed at the construction site and must be easily accessible.</li> <li>The fire-fighting equipment must be maintained on a yearly basis.</li> <li>Welding, hot-work and flame-cutting may not be conducted close to fuel storage tanks.</li> <li>Where welding, hot-work and flame-cutting activities are undertaken, fire-fighting equipment must be at hand.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Appointment of workers (employees and contractors) to commence construction activities onsite.	Workers being unaware of the impact that their activities may have on the environment.	To adequately educate workers (employees and contractors) regarding environmental awareness.		<ul style="list-style-type: none"> <li>Before any employees or contractors commence work at the Mall and Mixed Use Development, each individual must undergo an Induction Training session that will cover the aspects as detailed in the Environmental Awareness Plan (contained in this EMPr). Attendance registers must be completed and kept on file.</li> <li>Employees and contract workers must be issued with suitable Personal Protective Equipment (PPE), as applicable to each persons' job onsite.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Wetlands</b>					
<b>Construction and Operational Phases</b>					
Changing the quantity and fluctuation properties of the watercourse.	Changing the quantity and fluctuation properties of the watercourse by, for example, storm water input, or restricting water flow. The sources of this impacts include:	To minimise and avoid changes to the quantity and fluctuation properties of the watercourses onsite.		<ul style="list-style-type: none"> <li>No activities should take place in the watercourses and associated buffer zone. Where the above is unavoidable, only the construction footprint and no access roads can be considered. This is subjected to authorisation by means of a Water Use License.</li> <li>Construction must be restricted to the dryer winter months.</li> <li>A temporary fence or demarcation must be erected around the works area to prevent access to the adjacent portions of the watercourse. The works areas generally include the servitude, construction camps, areas where material is stored and the actual footprint of proposed development.</li> <li>Prevent pedestrian and vehicular access into the watercourse and buffer areas.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>

Aspect	Impact and Nature	Impact Outcomes	Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
	<ul style="list-style-type: none"> <li>• Development within the watercourse, thereby diverting or impeding flow;</li> <li>• Vehicles driving in/through the watercourse; and</li> <li>• Lack of adequate rehabilitation resulting in invasion by invasive plants.</li> </ul>			
<p>Changing the amount of sediment entering water resource and associated change in turbidity (increasing or decreasing the amount).</p>	<p>Construction, operational and decommissioning activities will result in earthworks and soil disturbance as well as the removal of natural vegetation. This could result in the loss of topsoil, sedimentation of the wetland and increase the turbidity of the water. Possible sources of the impacts include:</p> <ul style="list-style-type: none"> <li>• Earthwork activities when constructing;</li> <li>• Clearing of surface vegetation will expose the soils, which in rainy events would wash through the watercourse, causing sedimentation. In addition, indigenous vegetation communities are unlikely to colonise eroded soils successfully and seeds from proximate alien invasive trees can spread easily into these eroded soil;</li> <li>• Disturbance of the soil surface;</li> <li>• Disturbance of slopes through the creation of roads and tracks adjacent to the watercourse; and</li> <li>• Erosion (e.g. gully formation, bank collapse).</li> </ul>	<p>To prevent changes to the amount of sediment entering the water resources onsite.</p>	<ul style="list-style-type: none"> <li>• Water is expected to seep into any area of trenching and earthworks. It is likely that water will be contaminated within these earthworks and should thus be cleaned or dissipated into a structure that allows for additional sediment input and slows down the velocity of the water, thereby reducing the risk of erosion. Structures such as boulder weirs should be considered for their ability to absorb excess sediment as well as dissipating the water over a larger area.</li> <li>• Construction in and around watercourses must be restricted to the dryer winter months.</li> <li>• A temporary fence or demarcation must be erected around the works area to prevent water runoff and erosion of the disturbed or heaped soils into watercourse areas.</li> <li>• Formalise access roads and make use of existing roads and tracks where feasible, rather than creating new routes through naturally vegetated areas.</li> <li>• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area (DWAF, 2005).</li> <li>• A vegetation rehabilitation plan should be implemented. Grassland can be removed as sods and stored within transformed vegetation. The sods must preferably be removed during the winter months and be replanted by latest springtime. The sods should not be stacked on top of each other or within sensitive environs. Once construction is completed, these sods should be used to rehabilitate the disturbed areas from where they have been removed. In the absence of timely rainfall, the sods should be watered well after planting and at least twice more over the next 2 weeks.</li> <li>• Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.</li> <li>• Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction.</li> <li>• Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.</li> <li>• During the construction phase, measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation.</li> <li>• Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.</li> <li>• Runoff from the construction area must be managed to avoid erosion and pollution problems.</li> <li>• Implementation of best management practices.</li> <li>• Source-directed controls.</li> <li>• Buffer zones to trap sediments.</li> <li>• Active rehabilitation.</li> </ul>	<ul style="list-style-type: none"> <li>• Applicant</li> <li>• Construction contractor</li> </ul>
<p>Introduction and spread of alien vegetation.</p>	<p>Invasions of alien plants can impact on hydrology, by reducing the quantity of water entering a wetland, and by outcompeting natural vegetation, decreasing the natural biodiversity. Once in a system, alien invasive plants can spread through the</p>	<p>To prevent the introduction and spread of alien vegetation.</p>	<ul style="list-style-type: none"> <li>• Implement weed control.</li> <li>• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction/earthworks in that area and returning it where possible afterwards.</li> <li>• Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.</li> <li>• Rehabilitate or re-vegetate disturbed areas.</li> </ul>	<ul style="list-style-type: none"> <li>• Applicant</li> <li>• Construction contractor</li> </ul>



Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
	catchment. If allowed to seed before control measures are implemented, alien plants can easily colonise and impact on downstream users.				
Loss and disturbance of wetland habitat and fringe vegetation.	Loss and disturbance of wetland habitat and fringe vegetation due to direct development on the wetland as well as changes in management, fire regime and habitat fragmentation.	To minimise the impact on wetland habitat and fringe vegetation.		<ul style="list-style-type: none"> <li>The development footprint should be designed around current wetlands and wetland buffers.</li> <li>Where construction occurs in the demarcated wetlands and buffer areas, extra precautions should be implemented to so as to minimise wetland loss.</li> <li>Where wetlands are lost, compensation should be made to protect the remaining wetlands and their catchments, increase their buffers and rehabilitate their condition and functionality.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Potential discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage.	Construction, operational and decommissioning activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands and a reduction in wetland function as well as human and animal waste. This could possibly impact on groundwater.	To minimise the impact from the potential discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage.		<ul style="list-style-type: none"> <li>Other than approved and authorised structures, no other development or maintenance infrastructure is allowed within the delineated watercourse or associated buffer zones.</li> <li>Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas.</li> <li>Implement weed control in buffer zones.</li> <li>Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed.</li> <li>Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish.</li> <li>Operational activities should not take place within watercourses or buffer zones, nor should edge effects impact on these areas.</li> <li>Operational activities should not impact on rehabilitated or naturally vegetated areas.</li> <li>Rehabilitate the functioning of disturbed wetlands.</li> </ul>	
<b>Post-construction and Rehabilitation Phase</b>					
Post-construction and rehabilitation activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Cumulative Impacts</b>					
Upgrade to the wetland system.	The upgrade of the wetland system is likely to improve some aspects of the wetland system.	This is a positive impact and no mitigation measures are therefore required.			<ul style="list-style-type: none"> <li>Not applicable.</li> </ul>
Inefficient implementation of mitigation measures.	Should mitigation measures not be implemented, changes made to the bed or banks of watercourse channels will cause unstable channel conditions leading to erosion, meandering, increased potential for flooding and movement of bed material that will result in property damage adjacent to and downstream of the site.	To ensure that mitigation measures are implemented.		<ul style="list-style-type: none"> <li>Implement the mitigation measures as provided under the construction and operational phases.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> </ul>
<b>Surface and Groundwater Construction Phase</b>					
Construction activities.	Pollution of surface and/or groundwater resources due to the incorrect management of concrete mixing.	To prevent the contamination of water during to concrete mixing.		<ul style="list-style-type: none"> <li>Concrete should ideally be mixed on an impermeable surface such as a concrete slab.</li> <li>Cement bags (new and used) must be stored under roof or in closed containers where they will not be exposed to rain.</li> <li>Dry concrete must be removed and disposed of together with other building rubble.</li> <li>Ready-mix concrete trucks may clean chutes into foundations, but not elsewhere onsite.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Construction and Operational Phases</b>					
Construction and operational activities.	Pollution of surface and/or groundwater resources due to the incorrect management and potential	To prevent the release of pollutants, chemical substances and dangerous		<ul style="list-style-type: none"> <li>A register must be compiled of all chemical substances and dangerous goods used onsite.</li> <li>MSDS' (Material Safety Data Sheets) must be maintained for all chemical substances and dangerous goods. The MSDS' must also be displayed onsite.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
	release of pollutants, such as chemical substances and dangerous goods.	goods, such as fuels, into the environment.		<ul style="list-style-type: none"> <li>The chemical substances and dangerous goods must be stored safely and as per the requirements of the MSDS for each chemical substance and dangerous good. Locked storage areas are preferable.</li> <li>Drip trays must be readily available onsite and used for any repair work, maintenance work of refuelling undertaken onsite.</li> <li>Vehicles should regularly be inspected to ensure that any fuel or oil leaks are repaired.</li> <li>Spill kits must be readily available onsite and personnel must be trained on the appropriate procedures to clean hydrocarbon spillages.</li> <li>No wastewater or wash water may be released into the environment from construction activities.</li> </ul>	
Construction and operational activities.	Pollution of surface and/or groundwater resources due to poor waste management.	To ensure that waste (construction waste, general waste and hazardous waste) is managed in an environmentally responsible manner.		<ul style="list-style-type: none"> <li>Waste must be managed according to its hazard classification (i.e. general vs. hazardous waste). General and hazardous waste streams should not be mixed.</li> <li>Waste stored onsite must be kept in appropriate containers with lids that can be closed.</li> <li>Waste must be taken to appropriately licensed facilities for reuse, recycling, recovery or disposal. Safe Disposal Certificates must be obtained and kept on record.</li> <li>Any soil that has been contaminated by oil, diesel or petrol must be regarded as hazardous and disposed of at an appropriately licensed facility. Safe Disposal Certificates must be obtained and kept on record.</li> <li>No waste may be stored on open soil or within wetlands and/or watercourses.</li> <li>Sufficient ablution facilities must be provided.</li> <li>Chemical toilets must be serviced regularly and must be provided with toilet paper at all times.</li> <li>Any spillages from the chemical toilets must immediately be cleaned and the contaminated soil disposed of as hazardous waste.</li> <li>Construction waste must be stored in a designated area.</li> <li>Building rubble must be stored separately from domestic waste and may be stored on bare soil as it is inert in nature. It must, however, be ensured that other waste (general and/or hazardous waste) is not mixed together with the building rubble.</li> <li>Refuse bins must be provided for domestic waste.</li> <li>Large volumes of waste may not accumulate onsite.</li> <li>No waste may be burnt or buried onsite.</li> <li>Building rubble must be kept clean of plastic and brick ties.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Runoff of contaminated stormwater.	Pollution of surface and/or groundwater resources.	To prevent the contamination of storm water.		<ul style="list-style-type: none"> <li>Storm water must be diverted around areas where there are pollution sources.</li> <li>Storm water drainage infrastructure must be regularly inspected for obstructions.</li> <li>No contaminated storm water may be released into the environment from the construction activities.</li> <li>Washing or cleaning of equipment and machinery must occur in a designated area and the contaminated wash water must be contained. Such an area could be a plastic drum, a leak-proof container or a plastic lined pit.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Operational Phase</b>					
Potential release of wastewater (sewage and wash water).	Pollution of surface and/or groundwater resources.	To prevent the release of wastewater into the environment.		<ul style="list-style-type: none"> <li>All wastewater (sewage and wash water) must be collected in appropriate sumps/holding tanks/conservancy tanks and may not come into contact with the environment prior to being pumped to the Municipal Sewage Treatment Works.</li> <li>The integrity of the sewage conveyance system components, such as tanks and pumps, must be checked at a frequency as determined by the suppliers. Inspection and maintenance must also be conducted on sewage pipelines.</li> <li>Any leaking pipelines must immediately be repaired.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Post-construction and Rehabilitation Phase</b>					
Post-construction and rehabilitation activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Cumulative Impacts</b>					
None anticipated.	None anticipated.	Not Applicable.			Not Applicable.
<b>Fauna</b>					
<b>Construction Phase</b>					

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
Construction activities.	Avian habitat loss associated with construction activities: Avian habitats will be lost in the areas cleared for buildings, roads and other infrastructure associated with the proposed project. This impact will mainly affect the western portion of the site, which is of lower sensitivity than the rocky grasslands to the east. The footprint of this impact will presumably be greater than the area occupied by the development itself, on account of additional areas cleared for access, vehicle parking, construction activities and housing construction workers.	To prevent avian habitat loss.		<ul style="list-style-type: none"> <li>The spatial extent of construction activities must be minimised, and as far as possible must be restricted to the areas on which buildings, roads etc. will actually be located. Particular care must be taken to minimise activities in the areas of natural grasslands in the eastern half of the site.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Construction activities.	Disturbance associated with construction activities: The presence of vehicles and construction workers will cause disturbance to avifauna, with the movement and activities of personnel on site and the associated noise, pollution and litter all having a negative effect on birds. In addition, the presence of construction workers will increase the probability of activities such as the illegal hunting of birds.	To prevent disturbance to avifauna.		<ul style="list-style-type: none"> <li>Movement of construction vehicles and workers in the natural grasslands in the eastern part of the site must be minimised. In addition, workers must be instructed to minimise disturbance of birds at all times and steps must be taken to ensure that no illegal hunting occurs.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Construction activities.	Pollution associated with construction activities: Pollution associated with construction activities (e.g. fuel spills, the use of cleaning chemicals) could have serious negative impacts on avifauna if such chemicals were to enter the dams on the site, and/or make their way into the drainage lines and wetlands located immediately to the north or south of the site. Given the importance of this area for threatened birds associated with wetland habitats, this impact needs to be taken very seriously and carefully mitigated.	To prevent pollution associated with construction activities (e.g. fuel spills, the use of cleaning chemicals)		<ul style="list-style-type: none"> <li>Great care must be taken that no pollutants enter local water systems during the construction phase. Measures to rapidly deal with spills of fuel, cleaning chemicals or any other potential pollutants must be put in place before construction commences. Construction workers must be suitably trained to deal with any such spills.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Construction and Operational Phases</b>					
Operational activities.	Habitat loss: Avian habitats in the areas where buildings, roads and other infrastructure, as well as agricultural activities are located will be permanently lost.	To prevent the loss of avian habitats.		<ul style="list-style-type: none"> <li>The area cleared for the proposed project must be kept to a minimum. The eastern portion of the site is currently zoned for agriculture. However, given the presence of the natural grasslands and the obstacles to agriculture posed by the rocky nature of this area, it is recommended that it be left in its current state. As noted elsewhere, the cumulative impact of avian habitat losses in this Important Bird and Biodiversity Area must be borne in mind.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
Operational activities.	Disturbance associated with increased human presence in the area: The permanent presence of a much larger number of people than presently occur at the site will result in greater disturbance of birds that use the area for foraging and breeding. This impact will be manifested, for example, by residents and their pets walking in the area.	To minimise and prevent the disturbance of birds through human activities.		<ul style="list-style-type: none"> <li>Furthermore, every effort should be made to retain the linear integrity, flow dynamics and water quality of the drainage lines and dams. Storm water from the new township must be managed in such a way that it simulates natural flow patterns.</li> <li>Disturbance of birds breeding and foraging in the area should be minimised. For instance, residents walking in the area should be required to keep dogs on leashes at all times. The use of noisy vehicles (e.g. off-road motorcycles) should be prohibited. Given the current trend for so-called “eco-estates”, one possibility worth considering is designating the eastern portion of the site as a green zone and emphasising its ecological and conservation value to residents. Activities such as illegal hunting must be strictly prohibited.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Operational activities.	Collision risk associated with vehicular traffic: Higher numbers of vehicles driving on the site, together with an increase in their average speed on account of the presence of surfaced roads, will lead to an increase in the risk of birds being killed or injured via collisions. However, this impact will remain very minor compared to the mortality risk associated with vehicles travelling at high speed on the adjacent N4 highway.	To minimise the collision hazard for birds.		<ul style="list-style-type: none"> <li>No specific mitigation measures are required, beyond enforcement of speed limits appropriate for residential areas.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Operational activities.	Disturbance or death of herpetofauna species.	To prevent the disturbance or death of herpetofauna species.		<ul style="list-style-type: none"> <li>If the coppery grass lizard, large-scaled grass lizard or any herpetological species are encountered or exposed during the construction phase, they should be removed and relocated to natural areas in the vicinity. This remediation requires the employment of a herpetologist to oversee the removal of any herpetofauna during the initial ground clearing phase of construction (i.e. initial ground-breaking by earthmoving equipment). The contractor must ensure that no herpetofauna species are disturbed, trapped, hunted or killed during the construction phase. Any herpetofauna that are inadvertently killed during earthmoving operations should be preserved as museum voucher specimens. Conservation-orientated clauses should be built into contracts for construction personnel, complete with penalty clauses for non-compliance.</li> <li>Alien and invasive plants must be removed.</li> <li>When holes or trenches are dug, construction must be completed as quickly as possible; otherwise such holes may act as death traps for herpetofauna.</li> <li>During the construction phase there will be increased surface water runoff and a decreased water quality (with increased silt load and pollution). Completing construction during the winter months would mitigate the environmental impact.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Operational Phase</b>					
Operational activities.	Electrocution and collision hazards: Electrical infrastructure such as transmission lines, as well as electric fences, pose a potential collision risk to flying birds and a potential electrocution risk to perching birds. The magnitudes of these risks are much lower than the corresponding	To minimise the electrocution and collision hazard for birds.		<ul style="list-style-type: none"> <li>Assuming that the electrical infrastructure comprising part of the proposed development is typical of residential estates and business parks, no specific mitigation measures are required.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
	risks associated with large overhead transmission lines.				
<b>Post-construction and Rehabilitation Phase</b>					
Post-construction and rehabilitation activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Cumulative Impacts</b>					
Development associated with the proposed project.	The potential contribution of the proposed development to cumulative avian habitat loss in the Steenkampsberg Important Bird and Biodiversity Area (IBA).	To minimise the cumulative impact of the proposed development.		<ul style="list-style-type: none"> <li>Implement the mitigation measures as provided under the construction and operational phases.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> </ul>
<b>Flora</b>					
<b>Construction Phase</b>					
Site clearance.	Loss of vegetation from the following vegetation units/ecosystems: <ul style="list-style-type: none"> <li>Transformed vegetation;</li> <li>Primary Grassland (western part of the project site);</li> <li>Primary Grassland (eastern part of the project site);</li> <li>Rocky Outcrops;</li> <li>Indigenous species; and</li> <li>Alien plant species.</li> </ul>	To minimise the extent of vegetation removal and the impact of removal that cannot be prevented.		<ul style="list-style-type: none"> <li>Restrict the planned agricultural practice in the eastern grassland to grazing, based on an ecologically based management plan.</li> <li>Keep the major rocky outcrops natural and protected in open space areas.</li> <li>Avoid any form of erosion and rehabilitate where needed.</li> <li>Use only indigenous plant species for gardens and rehabilitation.</li> <li>Remove all alien woody species.</li> <li>If needed, rescue red data listed and protected species, and replant at suitable places (e.g. gardens) within the development.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Operational Phase</b>					
Invasion by alien invasive plant species.	Increase in alien invasive plant species and densities on the site.	To prevent the establishment and spread of alien invasive plant species.		<ul style="list-style-type: none"> <li>All alien seedlings and saplings must be removed as they become evident.</li> <li>Manual/mechanical removal is preferred to chemical control.</li> <li>Dispose of eradicated plant material at an approved solid waste disposal site.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> </ul>
<b>Post-construction and Rehabilitation Phase</b>					
Post-construction and rehabilitation activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Cumulative Impacts</b>					
None anticipated.	None anticipated.	Not Applicable.			Not Applicable.
<b>Heritage Resources</b>					
<b>Construction and Operational Phase</b>					
Construction and operational activities.	Disturbance or destruction of cultural and heritage resources.	To prevent the disturbance or destruction of cultural and heritage resources.		<ul style="list-style-type: none"> <li>For the old farm house built in stone with modern alterations, a Phase 2 HIA and recording should be undertaken and should the site be impacted on by the development, a demolition permit should be applied for.</li> <li>For the trenches located around the small hill, and most likely related to the Anglo-Boer War (1899-1902) Battle of Berg-en-Dal/Dalmanutha: Should the site be impacted on by the proposed development, it should be mitigated by detailed mapping and drawing and also historical-archaeological excavations before destruction.</li> <li>For the sections of the old wagon route identified: Mapping and drawing should be done before destruction, should the site be impacted upon by the proposed development.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Post-construction and Rehabilitation Phase</b>					
Rehabilitation activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Cumulative Impacts</b>					



Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
Construction and operational activities.	Disturbance or destruction of cultural and heritage resources onsite resulting in a decline in the overall cultural and heritage value of the greater area.	To prevent the disturbance or destruction of cultural and heritage resources.		<ul style="list-style-type: none"> <li>Mitigation measures detailed for the construction phase must be implemented.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> </ul>
<b>Palaeontological Resources</b>					
<b>Construction Phase</b>					
Construction activities, if deep excavation is envisaged.	There is a very high possibility that significant fossil assemblages will be present in all outcrops of the site. If deep excavation is envisaged for the construction procedures, the excavation material will potentially contain significant fossil rich material and the development will most likely have a very significant impact on the Palaeontological Heritage of the region.	To prevent the unregulated/uncontrolled destruction of fossil assemblages.		<p><b>As required by the South African Heritage Resources Agency (SAHRA):</b></p> <ul style="list-style-type: none"> <li>The EAP as well as the ECO for this project must be made aware of the fact that the Vryheid Formation of the Ecca Group is Highly significant for fossil remains of plant and trace fossils, albeit mostly where good outcrops are available for inspection.</li> <li>In areas that are allocated a Very High Palaeontological sensitivity and specifically where deep excavation into bedrock is envisaged (&gt;1.5m, following the geotechnical investigation), or where fossils are recorded during the geotechnical investigations, a qualified palaeontologist must be appointed to assess and record fossils at specific footprints of infrastructure developments (Phase 1 PIA).</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Operational Phase</b>					
Operational activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Post-construction and Rehabilitation Phase</b>					
Rehabilitation activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Cumulative Impacts</b>					
Construction and operational activities.	Disturbance or destruction of significant fossil assemblages onsite resulting in a decline in the palaeontological value of the greater area.	To minimise the loss of significant fossil assemblages.		<ul style="list-style-type: none"> <li>Mitigation measures detailed for the construction phase must be implemented.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> </ul>
<b>Air Quality and Noise</b>					
<b>Construction Phase</b>					
Construction activities.	Generation of dust.	To prevent the generation of dust.		<ul style="list-style-type: none"> <li>Implement dust suppression techniques.</li> <li>Limit vegetation clearance until it is necessary for soil stripping.</li> <li>A complaints register must be kept onsite and be easily accessible to any party who wishes to lodge a complaint. The complaints register must include the following fields: <ul style="list-style-type: none"> <li>The date of the complaint;</li> <li>The name and surname of the person lodging the complaint;</li> <li>Details of the complaint; and</li> <li>How and when the complaint was addressed.</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Construction activities.	Release of emissions from construction vehicles.	To minimise emissions from construction vehicles.		<ul style="list-style-type: none"> <li>Regular maintenance of vehicles to minimise the release of emissions.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Construction activities.	Generation of nuisance and noise from construction vehicles and equipment/machinery.	To prevent the generation of excessive noise.		<ul style="list-style-type: none"> <li>Noisy activities must be scheduled during times of the day that will result in the least disturbance to adjacent sensitive receptors.</li> <li>Noisy work must be avoided on weekends and public holidays.</li> <li>No amplified music is allowed onsite.</li> <li>Sirens and/or hooters may only be used during emergencies and drills.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>



Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
				<ul style="list-style-type: none"> <li>• Vehicles must not be left idling unnecessarily.</li> <li>• All vehicles must be regularly maintained.</li> <li>• A complaints register must be kept onsite and be easily accessible to any party who wishes to lodge a complaint. The complaints register must include the following fields:               <ul style="list-style-type: none"> <li>▪ The date of the complaint;</li> <li>▪ The name and surname of the person lodging the complaint;</li> <li>▪ Details of the complaint; and</li> <li>▪ How and when the complaint was addressed.</li> </ul> </li> </ul>	
<b>Operational Phase</b>					
Operational activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Post-construction and Rehabilitation Phase</b>					
Rehabilitation activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Cumulative Impacts</b>					
Construction and operational activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Land and land use</b>					
<b>Construction and Operational Phase</b>					
Construction and operational activities.	The disturbance of potentially productive agricultural land, including arable and grazing land, through the establishment of the proposed development. This could render the potentially productive agricultural land permanently unsuitable for agricultural production and could thereby decrease the food production potential of the area. This has a negative implication for food security in South Africa.	To minimise the impact on potentially productive agricultural land, including arable and grazing land.		<ul style="list-style-type: none"> <li>• Sites with an agricultural potential greater than “moderate” are not present at the project site. The area is therefore not economically viable for the production of anything other than low intensity grazing. It is further believed that an economically successful agricultural development would not be viable under dryland conditions. The land that is designated as “poor” or “unsuitable” for agricultural production (51ha) should be left for conservation or as wetlands (where relevant). The areas that have a land capability of “moderate grazing” could be cropped to grasses for animal food production. This should be used as a guideline and is subject to the relative economic merits of the different cropping systems with respect to limited size of the area.</li> <li>• Soil salinity/sodicity is a potential problem. Sites that have restricted drainage should be monitored on a regular basis, particularly on the grey/pale and darker clay rich soils, if they are to be developed. All sensitive and/or hazardous soils must be excluded from the development, as far as possible.</li> <li>• All sensitive sites should be excluded from any development, as far as possible.</li> </ul>	<ul style="list-style-type: none"> <li>• Applicant</li> <li>• Construction contractor</li> </ul>
<b>Post-construction and Rehabilitation Phase</b>					
Rehabilitation activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Cumulative Impacts</b>					
Construction and operational activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Soil</b>					
<b>Construction Phase</b>					
Site clearance during the construction phase.	Soil erosion due to the clearance of vegetation.	To prevent erosion during site clearance.		<ul style="list-style-type: none"> <li>• Limiting vegetation clearance until it is necessary for soil stripping.</li> <li>• Implement adequate erosion prevention measures, such as measures to dissipate runoff water velocities.</li> <li>• Implement adequate storm water management measures.</li> <li>• Topsoil and subsoil must be stored on separate stockpiles.</li> <li>• Cover topsoil stockpiles to prevent the soil being washed away during rainfall events.</li> <li>• Topsoil must be replaced during rehabilitation and landscaping.</li> </ul>	<ul style="list-style-type: none"> <li>• Applicant</li> <li>• Construction contractor</li> </ul>

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
Construction activities.	Soil compaction to create foundations for buildings and other associated infrastructure.	To prevent soil compaction.		<ul style="list-style-type: none"> <li>The development footprint must be optimised to minimise the area that will be compacted during the construction activities.</li> <li>Soil should be moved when dry, as far as possible.</li> <li>Excessively heavy vehicles should not be used for earthmoving activities. This will minimise compaction of the soil.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Spillages from chemical toilets.	Soil pollution.	To prevent spillages from chemical toilets and ensure that any spillages are cleaned effectively.		<ul style="list-style-type: none"> <li>Sufficient ablution facilities must be provided.</li> <li>Chemical toilets must be serviced regularly and must be provided with toilet paper at all times.</li> <li>Any spillages from the chemical toilets must immediately be cleaned and the contaminated soil disposed of as hazardous waste. Safe Disposal Certificates must be obtained and kept on record.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
The mixing of concrete.	Soil pollution.	To prevent the contamination of soil during to concrete mixing.		<ul style="list-style-type: none"> <li>Concrete should ideally be mixed on an impermeable surface such as a concrete slab.</li> <li>Cement bags (new and used) must be stored under roof or in closed containers where they will not be exposed to rain.</li> <li>Dry concrete must be removed and disposed of together with other building rubble.</li> <li>Ready-mix concrete trucks may clean chutes into foundations, but not elsewhere onsite.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Construction and Operational Phase</b>					
Construction activities.	Soil pollution due to the incorrect management of chemical substances and dangerous goods.	To prevent the release of pollutants, chemical substances and dangerous goods, such as fuels, into the environment.		<ul style="list-style-type: none"> <li>Drip trays must be readily available onsite and used for any repair work, maintenance work of refuelling undertaken onsite.</li> <li>Vehicles should regularly be inspected. Immediately repair any leaking machinery or vehicles.</li> <li>Place oil drums on impermeable surfaces or plastic liners.</li> <li>Immediately clean any hydrocarbon spillages and dispose of as hazardous waste.</li> <li>No wastewater or wash water may be released into the environment from construction activities.</li> <li>Spill kits must be readily available onsite and personnel must be trained on the appropriate procedures to clean hydrocarbon spillages.</li> <li>A register must be compiled of all chemical substances and dangerous goods used onsite.</li> <li>MSDS' (Material Safety Data Sheets) must be maintained for all chemical substances and dangerous goods. The MSDS' must also be displayed onsite.</li> <li>The chemical substances and dangerous goods must be stored safely and as per the requirements of the MSDS for each chemical substance and dangerous good. Locked storage areas are preferable.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Construction activities.	Soil pollution due to poor waste management (general and hazardous waste).	To ensure that waste (construction waste, general waste and hazardous waste) is managed in an environmentally responsible manner.		<ul style="list-style-type: none"> <li>Waste must be managed according to its hazard classification (i.e. general vs. hazardous waste). General and hazardous waste streams should not be mixed.</li> <li>Waste stored onsite must be kept in appropriate containers with lids that can be closed.</li> <li>Waste must be taken to appropriately licensed facilities for reuse, recycling, recovery or disposal. Safe Disposal Certificates must be obtained and kept on record.</li> <li>Any soil that has been contaminated by oil, diesel or petrol must be regarded as hazardous and disposed of at an appropriately licensed facility. Safe Disposal Certificates must be obtained and kept on record.</li> <li>No waste may be stored on open soil or within wetlands and/or watercourses.</li> <li>Construction waste must be stored in a designated area.</li> <li>Building rubble must be stored separately from domestic waste and may be stored on bare soil as it is inert in nature. It must, however, be ensured that other waste (general and/or hazardous waste) is not mixed together with the building rubble.</li> <li>Refuse bins must be provided for domestic waste.</li> <li>Large volumes of waste may not accumulate onsite.</li> <li>No waste may be burnt or buried onsite.</li> <li>Building rubble must be kept clean of plastic and brick ties.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
Runoff of contaminated stormwater.	Soil pollution.	To prevent the contamination of storm water.		<ul style="list-style-type: none"> <li>Storm water must be diverted around areas where there are pollution sources.</li> <li>Storm water drainage infrastructure must be regularly inspected for obstructions.</li> <li>No contaminated storm water may be released into the environment from the construction activities.</li> <li>Washing or cleaning of equipment or machinery must occur in a designated area and the contaminated wash water must be contained. Such an area could be a plastic drum, a container or a plastic lined pit.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Post-construction and Rehabilitation Phase</b>					

Aspect	Impact and Nature	Impact Outcomes	Management	Impact Management Actions and Statements in order to avoid, modify, remedy, control or stop pollution or environmental degradation	Responsible party/person(s)
Rehabilitation activities.	Soil erosion due to inefficient rehabilitation of construction areas.	To prevent soil erosion.		<ul style="list-style-type: none"> <li>Rehabilitation must already be initiated during the construction phase, where possible.</li> <li>Areas for rehabilitation must be cleared of any building rubble and/or debris before rehabilitation is commenced with.</li> <li>Soil should be moved when dry, as far as possible.</li> <li>Weeds must be removed prior to soil replacement.</li> <li>Areas under rehabilitation must be cordoned off to prevent pedestrian and vehicular access.</li> <li>Re-vegetation must be undertaken using indigenous species, <b>as far as possible</b>.</li> <li>Areas under rehabilitation must be monitored to ensure successful vegetation establishment. Organic fertilizers and topsoil should be added to areas where vegetation establishment is not effective.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Cumulative Impacts</b>					
Construction and operational activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Socio-economic Construction Phase</b>					
Construction activities.	Potential increase in crime due to the influx of workers.	To prevent an increase in incidents of crime in die area.		<ul style="list-style-type: none"> <li>Reference checks should be conducted on all workers before they are appointed.</li> <li>Workers should not be allowed to leave the construction site during the day and should be transported to and from the site on a daily basis.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Construction and Operational Phase</b>					
Construction activities.	Generation of a large number of job opportunities.	This is a positive impact and no mitigation measures are therefore required.			Not applicable.
Construction activities.	Stimulation of the local economy, especially the tourism sector.	This is a positive impact and no mitigation measures are therefore required.			Not applicable.
<b>Post-construction and Rehabilitation Phase</b>					
Rehabilitation activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Cumulative Impacts</b>					
Construction and operational activities.	None anticipated.	Not Applicable.			Not Applicable.
<b>Traffic Construction Phase</b>					
Construction actives.	Increase in traffic volumes to the site.	To minimise the effect of an increase in traffic volumes.		<ul style="list-style-type: none"> <li>Ensure that construction vehicles are roadworthy and that drivers comply with road rules.</li> <li>Loads must be securely fastened and may not exceed the tonnage limitations for each vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Operational Phase</b>					
Operational activities.	Increase in traffic volumes to the site.	To minimise the effect of an increase in traffic volumes.		<ul style="list-style-type: none"> <li>Ensure that construction vehicles are roadworthy and that drivers comply with road rules.</li> <li>Loads must be securely fastened and may not exceed the tonnage limitations for each vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> </ul>
<b>Post-construction and Rehabilitation Phase</b>					
Rehabilitation activities.	Increase in traffic volumes to the site.	To minimise the effect of an increase in traffic volumes.		<ul style="list-style-type: none"> <li>Avoid using access roads during peak times, as far as possible.</li> <li>Ensure that construction vehicles are roadworthy and that drivers comply with road rules.</li> <li>Loads must be securely fastened and may not exceed the tonnage limitations for each vehicle.</li> </ul>	<ul style="list-style-type: none"> <li>Applicant</li> <li>Construction contractor</li> </ul>
<b>Cumulative Impacts</b>					
Construction and operational activities.	None anticipated.	Not Applicable.			Not Applicable.

## 8.2 Applicable Environmental Management Standards and Practices

No dust or water monitoring is required as part of this EMPr.

## 8.3 Applicable provisions of the NEMA, 1998, as amended, regarding closure

The provisions of NEMA, 1998, pertaining to closure are not applicable to this proposed development as the development does not include the prospecting, exploration or extraction of a mineral or petroleum resource.

## 8.4 Applicable provisions of the NEMA, 1998, as amended, regarding financial provision for rehabilitation

The provisions of NEMA, 1998, pertaining to financial provision for rehabilitation are not applicable to this proposed development as the development does not include the prospecting, exploration or extraction of a mineral or petroleum resource.

## 8.5 Method of monitoring the implementation of the impact management actions

### Construction Phase

An independent Environmental Control Officer (ECO) must be appointed to conduct monthly compliance audits during the construction phase of the proposed development. The audits must verify compliance with the Environmental Authorisation and this Environmental Management Programme and a formal report must be compiled after each audit. The reports must be submitted to the Competent Authority. Once the construction phase has been completed, a post-construction audit must be conducted by the independent ECO and the report also submitted to the Competent Authority.

### Operational Phase

An internal ECO must be appointed to conduct monthly compliance audits during the operational phase of the proposed development and to ensure that corrective actions are implemented where required. Reports resulting from these audits do not need to be submitted to the Competent Authority.

An independent ECO must be appointed to conduct annual compliance audits during the operational phase of the proposed development. The audits must verify compliance with the Environmental Authorisation and this Environmental Management Programme and must comply with the requirements of Appendix 7 of the Environmental Impact Assessment Regulations of 2014, as amended. A formal report must be compiled after each audit and the reports must be submitted to the Competent Authority.

## 8.6 The frequency of monitoring the implementation of the impact management actions

### Construction Phase

Monthly independent ECO compliance audits.

### Operational Phase

Monthly internal ECO compliance audits and annual external ECO compliance audits.

## 8.7 Persons who will be responsible for the implementation of the impact management actions

The applicant is ultimately responsible for the implementation of the impact management actions, during all phases of the development, even where the implementation of the actions may be contracted out to a third party. During the construction phase, sub-contractors will for the most part be carrying out the required impact management actions and these actions

should therefore be adequately communicated to the contractors. It is recommended that this document forms part of the tender documentation and contract documentation for all contractors. During the operational phase, the applicant will mostly be responsible for carrying out the required impact management actions.

The applicant must appoint a designated person for the function of internal/in-house ECO and an external, suitably qualified Environmental Assessment Practitioner for the function of external, independent ECO.

## 8.8 Time periods within which the impact management actions must be implemented

### Planning and Design Phase

The management actions for the Planning and Design Phase must be completed before the Pre-construction Phase is commenced with.

### Pre-construction Phase

The management actions for the Pre-construction Phase must be completed before the Construction Phase is commenced with.

### Construction Phase

The management actions for the Construction Phase must be completed prior to the completion of the Construction Phase (i.e. before the Operational Phase is commenced with).

### Operational Phase

The management actions for the Operational Phase must be implemented during the Operational Phase, on a continual basis.

### Post-construction and Rehabilitation Phase

The management actions for the Post-construction and Rehabilitation Phase must be completed within one year from the completion of the Construction Phase.

## 8.9 Mechanism for monitoring compliance with the impact management actions

Please refer to Sections 8.5 and 8.6 of this EMPr.

## 8.10 Program for reporting on compliance, taking into account the requirements as prescribed by the EIA Regulations, 2014, as amended

Table 8: Reporting program

Type of reporting	Reporting Frequency	Authority to report to
<b>Construction Phase</b>		
Monthly independent ECO compliance audits	Monthly, for the duration of the construction phase	Competent Authority (MDARDLEA)
Post-construction phase independent ECO compliance audit	Once-off, upon completion of the construction phase	Competent Authority (MDARDLEA)
<b>Operational Phase</b>		
Monthly independent ECO compliance audits	N/A – Internal reporting	N/A – Internal reporting
Annual external ECO compliance audits	Yearly	Competent Authority (MDARDLEA)

## 9. ENVIRONMENTAL AWARENESS PLAN

The applicant will ensure that its employees are adequately informed of the environmental risks that may result from work that they conduct onsite and how these risks must be dealt with in order to avoid pollution or the degradation of the environment, through the implementation of this Environmental Awareness Plan.

The Environmental Awareness Plan for the Belfast Mall and Mixed Use Development project consists of two parts, namely, initial Induction Training and ongoing job-specific, Toolbox-talk Training. The same training material will be utilised during both the Induction Training and Toolbox-talk Training.

### Induction Training

Before any employees or contactors commence work at the Mall and Mixed Use Development, each individual must undergo an Induction Training session. This is required during the following phases of the proposed project:

- Pre-Construction phase;
- Construction phase;
- Post-construction and rehabilitation phase; and
- Operational phase.

An attendance register must be kept by Mlangeni Family Trust and each individual who has completed the Induction Training must complete the attendance register. This will also function as an acknowledgement that each individual has understood the training received.

### Toolbox-talk Training

Toolbox-talk Training must be conducted biannually during the operational phase of the proposed development and all operational employees must attend these sessions. An attendance register must be kept by Mlangeni Family Trust and each individual who has completed the Toolbox-talk Training must complete the attendance register. This will also function as an acknowledgement that each individual has understood the training received.

### Training Material

The same material will be used for both the Induction Training and Toolbox-talk Training sessions and will cover the following topics:

- What is meant by the term “environment”;
- Why the environment requires protection;
- The environmental risks that may result from work that is performed at the Mall and Mixed Use Development, during the above mentioned phases of the project;
- How the identified risks may impact upon the environment;
- How the identified risks can be mitigated;
- The protection of workers who refuse to do environmentally hazardous work, as provided for in the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended;
- Environmental Management Programme conditions that are specifically applicable to employee’s work onsite;
- Fire-fighting procedures; and
- Hydrocarbon spill response procedure, including spill kit usage training.

The training can be presented in a verbal format if required.

## 10. SPECIFIC INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

No specific information has been required by the Competent Authority at this stage of the application process.