Environmental Impact Assessment

Basic Assessment Report

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Ennerdale Extension 6 Erf 4625

GAUT 002/22-23/E3290

City of Johannesburg Metropolitan Municipality

Gauteng Province

Submitted To: PLAN ASSOCIATES DEVELOPMENT PLANNERS (PTY) LTD

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January 2023

setala

DISCLAIMER

The opinions expressed in this report have been based on the information supplied to Setala Environmental (Pty) Ltd (Setala). Setala has exercised all due care in reviewing the supplied information. The accuracy of the results and conclusions from the review are entirely reliant on the accuracy and completeness of the supplied data. Setala does not accept responsibility for any errors or omissions in the supplied information and does not accept any consequential liability arising from commercial decisions or actions resulting from them. Opinions presented in this report apply to the site conditions and features as they existed at the time of Setala's investigations, and those reasonably foreseeable. These opinions do not necessarily apply to conditions and features that may arise after the date of this report, about which Setala had no prior knowledge nor had the opportunity to evaluate.

DECLARATION

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) and the 2014 NEMA Environmental Impact Assessment (EIA) Regulations (as amended on 7 April 2017). I, Ria (MM) Pretorius, do hereby declare that I:

- Act as an independent Environmental Assessment Practitioner in compiling this report;
- Do not have any financial interests, or stand to gain in any way in the undertaking of this activity, other than remuneration for work performed;
- Do not have any vested interest in the proceeding activity or project;
- Have no, neither will engage in, conflicting interests in the undertaking of this activity;
- Undertake to disclose, to the competent authority, any material information that has, or may have, the potential to influence the decision of the competent authority or the objectivity of any report, plan or document required; and
- Will provide competent authority access to my information regarding the report and investigations, whether such information is favourable to the applicant or not.

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Acronyms

BAR	Basic Assessment Report
CBA	Critical Biodiversity Area
CMA	Catchment Management Agencies
COJ	City of Joburg
CR	Critically Endangered
DBAR	Draft Basic Assessment Report
DWS	Department of Water and Sanitation
EAP	Environmental Assessment Practitioner
ECA	Environment Conservation Act, 1989 (Act No. 73 of 1989)
EIA	Environmental Impact Assessment
EIAR	Environmental Impact Assessment Report
EMPr	Environmental Management Programme
EN	Endangered
ESA	Ecological Support Area
GDARD	Gauteng Department of Agriculture and Rural Development
IDP	Integrated Development Plan
HGM	Hydrogeomorphic
HIA	Heritage Impact Assessment
I&APs	Interested and Affected Parties
IBA	Important Bird Areas
IEM	Integrated Environmental Management
LT	Least Threatened
NEMA	National Environmental Management Act, 1998 (Act No. 107 of 1998)
NEMWA	National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)
NEMAQA	National Environment Management: Air Quality Act (No.39 of 2004)
NFEPA	National fresh water ecosystem priority areas
NPAES	National protected areas expansion strategy
NWA	National Water Act (Act 36 of 1998)
PDA	Primary Drainage Area
PES	Present Ecological State
PPP	Public Participation Process
PoS	EIA Plan of Study for Environmental Impact Assessment
QDA	Quaternary Drainage Areas
QDS	Quarter Degree Square
REMC	Recommended Ecological Management Class
SR	Scoping Report
SAHRA	South African Heritage Resources Agency
SWSA	Strategic water source areas of South Africa
VU	Vulnerable
WMA	Water Management Areas

Glossary of Terms

Activity (Development) – an action either planned or existing that may result in environmental impacts through pollution or resource use.

Alternative – a possible course of action, in place of another, of achieving the same desired goal of the proposed project. Alternatives can refer to any of the following but are not limited to: site alternatives, site layout alternatives, design or technology alternatives, process alternatives or a no-go alternative. All reasonable alternatives must be rigorously explored and objectively evaluated.

Applicant – the project proponent or developer responsible for submitting an environmental application to the relevant environmental authority for environmental authorisation.

Biodiversity – the diversity of animals, plants and other organisms found within and between ecosystems, habitats, and the ecological complexes.

Construction – means the building, erection or establishment of a facility, structure or infrastructure that is necessary for the undertaking of a listed or specified activity but excludes any modification, alteration or expansion of such a facility, structure or infrastructure and excluding the reconstruction of the same facility in the same location, with the same capacity and footprint.

Cumulative Impacts – impacts that result from the incremental impact of the proposed activity on a common resource when added to the impacts of other past, present or reasonably foreseeable future activities to produce a greater impact or different impacts.

Direct impacts – impacts that are caused directly by the activity and generally occur at the same time and at the same place of the activity. These impacts are usually associated with the construction, operation or maintenance of an activity and are generally quantifiable.

Ecosystem – a dynamic system of plant, animal (including humans) and micro-organism communities and their non-living physical environment interacting as a functional unit. The basic structural unit of the biosphere, ecosystems are characterised by interdependent interaction between the component species and their physical surroundings. Each ecosystem occupies a space in which macro-scale conditions and interactions are relatively homogenous.

Environment – In terms of the National Environmental Management Act (NEMA) (Act No 107 of 1998) (as amended), "Environment" means the surroundings within which humans exist and that are made up of:
a) the land, water and atmosphere of the earth;
b) micro-organisms, plants and animal life;
c) any part or combination of (i) of (ii) and the interrelationships among and between them; and
d) the physical, chemical, aesthetic and cultural properties and conditions of the foregoing that influence human health and wellbeing.

Environmental Assessment (EA) – the generic term for all forms of environmental assessment for projects, plans, programmes or policies and includes methodologies or tools such as environmental impact assessments, strategic environmental assessments and risk assessments.

Environmental Authorisation – an authorisation issued by the competent authority in respect of a listed activity, or an activity which takes place within a sensitive environment.

Environmental Assessment Practitioner – the individual responsible for planning, management and coordination of environmental impact assessments, strategic environmental assessments, environmental management programmes or any other appropriate environmental instrument introduced through the EIA Regulations.

Environmental Impact – a change to the environment (biophysical, social and/ or economic), whether adverse or beneficial, wholly or partially, resulting from an organisations, activities, products or services.

Environmental Impact Assessment (EIA) – the process of identifying, predicting, evaluating and mitigating the biophysical, social, and other relevant effects of development proposals prior to major decisions being taken and commitments made.

Environmental Issue – a concern raised by a stakeholder, interested or affected parties about an existing or perceived environmental impact of an activity.

Environmental Management - ensuring that environmental concerns are included in all stages of development, so that development is sustainable and does not exceed the carrying capacity of the environment.

Environmental Management Programme - A detailed plan of action prepared to ensure that recommendations for enhancing or ensuring positive impacts and limiting or preventing negative environmental impacts are implemented during the life cycle of a project. The EMPr focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.

Expansion - means the modification, extension, alteration or upgrading of a facility, structure or infrastructure at which an activity takes place in such a manner that the capacity of the facility or the footprint of the activity is increased.

Fatal Flaw – issue or conflict (real or perceived) that could result in developments being rejected or stopped.

General Waste – household water, construction rubble, garden waste and certain dry industrial and commercial waste which does not pose an immediate threat to man or the environment.

Hazardous Waste – waste that may cause ill health or increase mortality in humans, flora and fauna.

Indirect impacts – indirect or induced changes that may occur as a result of the activity. These types if impacts include all of the potential impacts that do not manifest immediately when the activity is undertaken or which occur at a different place as a result of the activity.

Integrated Environmental Management – a philosophy that prescribes a code of practice for ensuring that environmental considerations are fully integrated into all stages of the development and decision-making process. The IEM philosophy (and principles) is interpreted as applying to the planning, assessment, implementation and management of any proposal (project, plan, programme or policy) or activity – at local, national and international level - that has a potentially significant

effect on the environment. Implementation of this philosophy relies on the selection and application of appropriate tools for a particular proposal or activity. These may include environmental assessment tools (such as strategic environmental assessment and risk assessment), environmental management tools (such as monitoring, auditing and reporting) and decision-making tools (such as multi-criteria decision support systems or advisory councils).

Mitigate – the implementation of practical measures designed to avoid, reduce or remedy adverse impacts or enhance beneficial impacts of an action.

No-Go Option – in this instance the proposed activity would not take place, and the resulting environmental effects from taking no action are compared with the effects of permitting the proposed activity to go forward.

Open Space – environmentally sensitive areas which are not suitable for development and consist of watercourses, buffers, floodplains, steep slopes, sensitive biodiversity and/or areas of cultural or heritage significance.

Registered Interested and Affected Party – an interested and affected party whose name is recorded in the register opened for that application in terms of regulation 42.

Rehabilitation – a measure aimed at reinstating an ecosystem to its original function and state (or as close as possible to its original function and state) following activities that have disrupted those functions.

Scoping – the process of determining the spatial and temporal boundaries (i.e. extent) and key issues to be addresses in an environmental assessment. The main purpose of scoping is to focus the environmental assessment on a manageable number of important questions. Scoping should also ensure that only significant issues and reasonable alternatives are examined.

Sensitive environment – any environment identified as being sensitive to the impacts of the development.

Significance – significance can be differentiated into impact magnitude and impact significance. Impact magnitude is the measurable change (i.e. magnitude, intensity, duration and likelihood). Impact significance is the value placed on the change by different affected parties (i.e. level of significance and acceptability). It is an anthropocentric concept, which makes use of value judgements and science-based criteria (i.e. biophysical, social and economic).

Stakeholder engagement – the process of engagement between stakeholders (the proponent, authorities and I&APs) during the planning, assessment, implementation and/or management of proposals or activities.

Sustainable Development – development which meets the needs of current generations without hindering future generations from meeting their own needs.

Watercourse – means:
a) a river or spring;
b) a natural channel or depression in which water flows regularly or intermittently;
c) a wetland, lake or dam into which, or from which, water flows; and

d) 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 – means 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.

GAUTENG PROVINCE
AGRICULTURE AND RURAL DEVELOPMENT
REPUBLIC OF SOUTH AFRICA

Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended, and the Environmental Impact Assessment Regulations, 2014 (Version 1)

Kindly note that:

1. This Basic Assessment Report is the standard report required by GDARD in terms of the EIA Regulations, 2014.
2. This application form is current as of 8 December 2014. It is the responsibility of the EAP to ascertain whether subsequent versions of the form have been published or produced by the competent authority.
3. A draft Basic Assessment Report must be submitted, for purposes of comments within a period of thirty (30) days, to all State Departments administering a law relating to a matter likely to be affected by the activity to be undertaken.
4. A draft Basic Assessment Report (1 hard copy and two CD's) must be submitted, for purposes of comments within a period of thirty (30) days, to a Competent Authority empowered in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended to consider and decide on the application.
5. Five (5) copies (3 hard copies and 2 CDs-PDF) of the final report and attachments must be handed in at offices of the relevant competent authority, as detailed below.
6. The report must be typed within the spaces provided in the form. The size of the spaces provided is not necessarily indicative of the amount of information to be provided. The report is in the form of a table that can extend itself as each space is filled with typing.
7. Selected boxes must be indicated by a cross and, when the form is completed electronically, must also be highlighted.
8. An incomplete report may lead to an application for environmental authorisation being refused.
9. Any report that does not contain a titled and dated full colour large scale layout plan of the proposed activities including a coherent legend, overlain with the sensitivities found on site may lead to an application for environmental authorisation being refused.
10. The use of "not applicable" in the report must be done with circumspection because if it is used in respect of material information that is required by the competent authority for assessing the application, it may result in the application for environmental authorisation being refused.
11. No faxed or e-mailed reports will be accepted. Only hand delivered or posted applications will be accepted.
12. Unless protected by law, and clearly indicated as such, all information filled in on this application will become public information on receipt by the competent authority. The applicant/EAP must provide any interested and affected party with the information contained in this application on request, during any stage of the application process.
13. Although pre-application meeting with the Competent Authority is optional, applicants are advised to have these meetings prior to submission of application to seek guidance from the Competent Authority.

DEPARTMENTAL DETAILS

Gauteng Department of Agriculture and Rural Development
Attention: Administrative Unit of the of the Environmental Affairs Branch
P.O. Box 8769, Johannesburg, 2000
Administrative Unit of the Sustainable Utilisation of the Environment (SUE) Branch
Ground floor, Umnotho House, 56 Eloff Street, Johannesburg
Email Address: bongani.shabangu@gauteng.gov.za
Administrative Unit telephone number: (011) 240 3377/3051
Department central telephone number: (011) 240 2500

	(For official use only)
NEAS Reference Number:	
File Reference Number:	GAUT 002/22-23/E3290
Application Number:	
Date Received:	

If this BAR has not been submitted within 90 days of receipt of the application by the competent authority and permission was not requested to submit within 140 days, please indicate the reasons for not submitting within time frame.

N/A

Is a closure plan applicable for this application and has it been included in this report? N/A

if not, state reasons for not including the closure plan.

N/A

Has a draft report for this application been submitted to a competent authority and all State Departments administering a law relating to a matter likely to be affected as a result of this activity? Yes

Is a list of the State Departments referred to above attached to this report including their full contact details and contact person?

If no, state reasons for not attaching the list. Yes

N/A

Have State Departments including the competent authority commented? Yes

If no, why?

N/A

SECTION A: ACTIVITY INFORMATION

INTRODUCTION

Setala Environmental (Pty) Ltd was appointed by Plan Associates, on behalf of their client, City of Johannesburg Metropolitan Municipality, to submit an application for Environmental Authorisation for an integrated human settlements residential development on Erf 4625 Ennerdale Extension 6, City of Johannesburg Metropolitan Municipality, Gauteng Province.

This report sets out the methodology, findings and recommendations to inform the decision by the Provincial Authority to grant or refuse environmental authorisation for the proposed development.

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

Project title (must be the same name as per application form):

Ennerdale Extension 6 Erf 4625

Select the appropriate box

The application is for an upgrade of an existing development			The application is for a new development	X		Other, specify	

Does the activity also require any authorisation other than NEMA EIA authorisation?	YES X	NO

If yes, describe the legislation and the Competent Authority administering such legislation

National Heritage Resources Act: A Heritage Impact Assessment has been submitted to the South African Heritage Resources Agency.

If yes, have you applied for the authorisation(s)?	YES X	NO
If yes, have you received approval(s)? (attach in appropriate appendix)	YES	NO X pending

PROJECT DESCRIPTION

The Housing Development Agency (HDA) was appointed by the Gauteng Department of Human Settlements to undertake the necessary planning work on sites identified in Ennerdale Extension 6 (Phase 2). According to the Gauteng Provincial Department of Human Settlements, a total population of 106 091 has been registered on the National Housing Needs Register in the year 2017, comprising 2 713 people from Ennerdale and 7 978 people from Finetown. During this year various land parcels were identified for possible development to accommodate these beneficiaries. This proposed development with a potential yield of 2 693 units will address 25% of the 10 691 people registered in 2017.

This current application for Environmental Authorisation (EA) is for the construction of one of the identified sites, Erf 4625 Ennerdale Extension 6. The development of the mentioned property into an integrated human settlement mixed development is planned on approximately 7.6883 hectares.

The proposed township development and associated infrastructure on Erf 4625 Ennerdale X 6 will consist of the following land uses:

Zoning	No of erven / Units	Erf/Ptn No
Residential 1 (single storey)	232	1 to 232
Public Open Space	5	233 to 237
Streets	3	238 to 240
Total	240	

The subject property is currently vacant. Refer to *Appendix A1 and* Figure 1: Layout Plan.

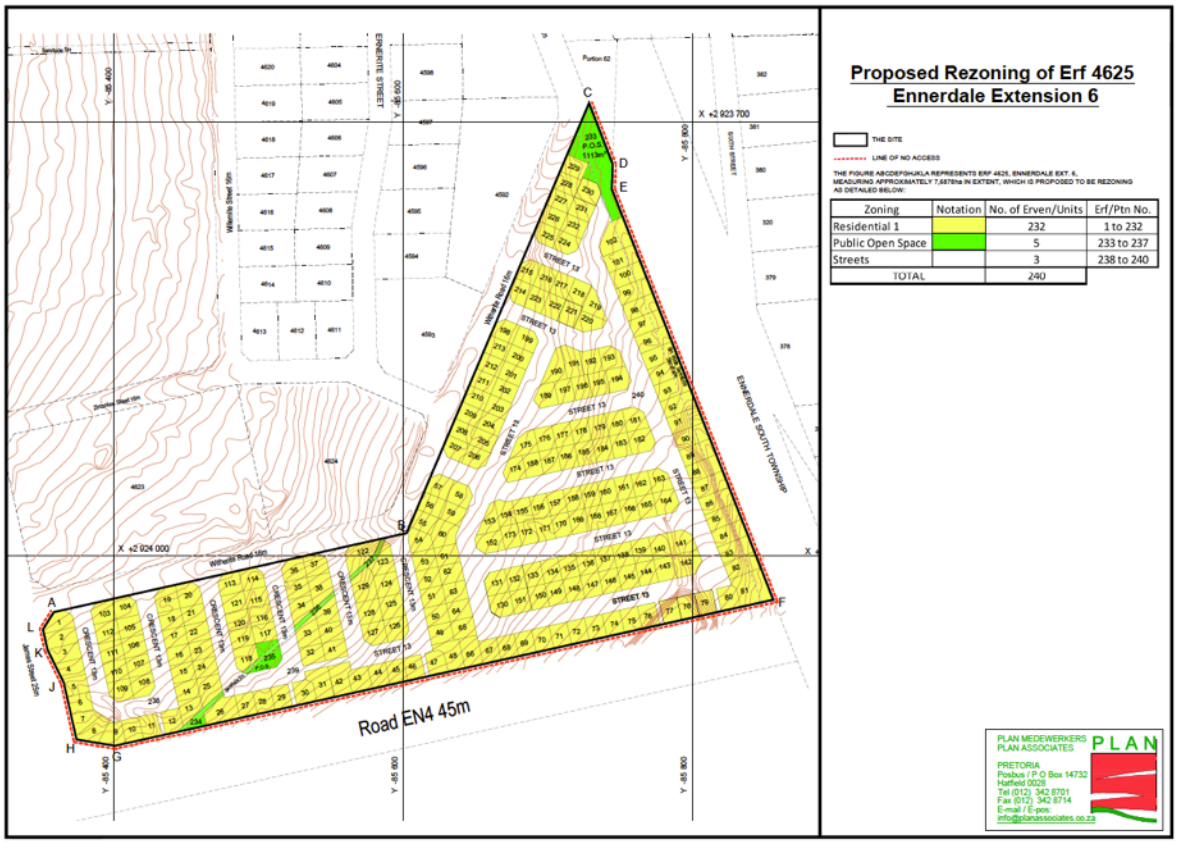

Figure 1: Layout Plan

Table 1: Application Site: Property description, ownership and extent

NO	DESCRIPTION	TITLE DEED	OWNER	EXTENT HA
1	Erf 4625 Ennerdale Extension 6	T5196/1987 (JHB) T7751/1987 (PTA)	City of Johannesburg Metropolitan Municipality	7,6883
Total:				**7,6883**

In addition to the environmental application, an application by Plan Associates Development Planners (Pty) Ltd is submitted to obtain the necessary approval for the following:

- Rezoning of Erf 4625 (proposed subdivided Portions 1 to 240) Ennerdale Extension 6. The application for rezoning is made in terms of Section 21 of the City of Johannesburg Municipal

Planning By-Law, 2016.
- A simultaneous subdivision (Erf 4625) application has been submitted in terms of Section 33(1)(a) of the City of Johannesburg Municipal Planning By-Law, 2016

The Application for rezoning is:
- From "Special" to 232 erven (proposed subdivided Portions 1 to 232) zoned "Residential 1",
- Five (5) erven (proposed subdivided Portions 233 to 237) zoned "Public Open Space" and
- Three (3) erven (proposed subdivided Portions 238 to 240) zoned "Proposed New Roads and Widenings".

PROJECT LOCALITY

The proposed project is located on Erf 4625 Ennerdale Extension 6 within the jurisdiction of the City of Johannesburg Metropolitan Municipality, Gauteng Province. The Surveyor-general reference number is T0IQ01040000462500000. The subject property is located in between Mid-Ennerdale and Finetown (Region G, Sub Area 8), south of the R558 Road, east along James Street and west of the Railway Line. The site is located south of Lenasia and directly north of Grasmere, approximately 2,3 km west of the Grasmere.
(Project indicated on the Site Location maps below).

Figure 2: Site Location

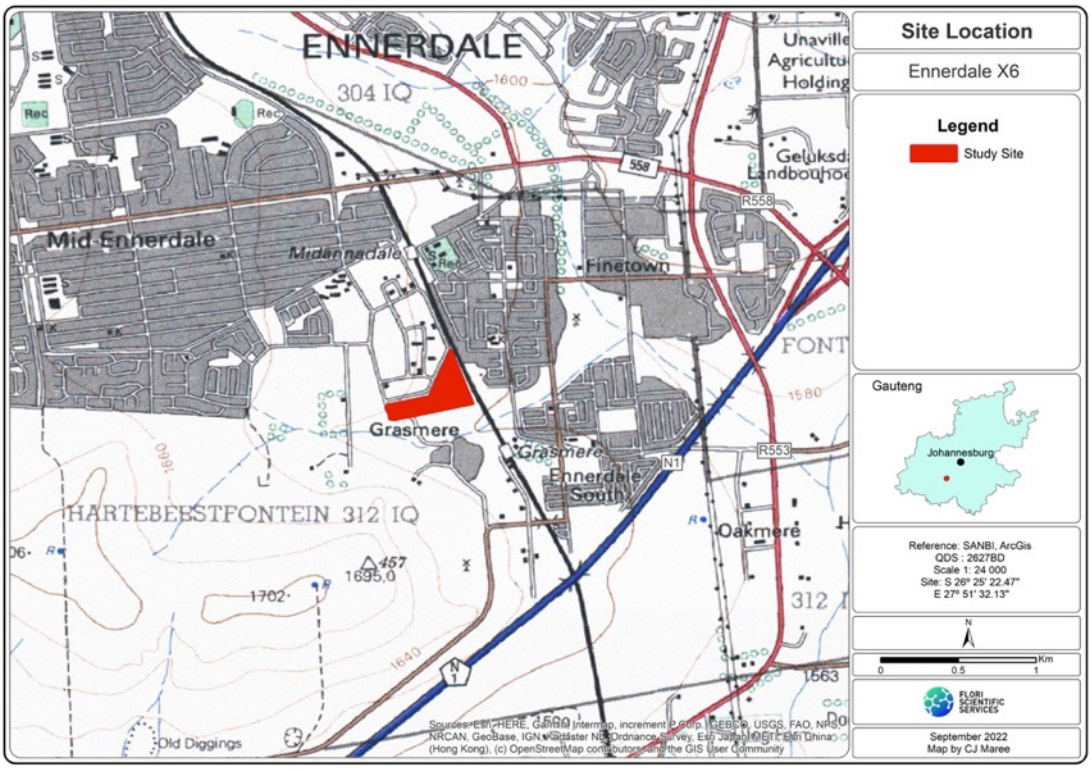

Figure 3: Site Location

Figure 4: Site Location Google Earth

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

- Approximate centre of study site: 26°25'22.47"S; 27°51'32.13"E.
- Quarter Degree Square (QDS): 2627BD.
- Quaternary Drainage Area (QDA): C22H.

PROPERTY DESCRIPTIONS

The proposed project is located on Erf 4625 Ennerdale Extension 6 within the jurisdiction of the City of Johannesburg Metropolitan Municipality, Gauteng Province.
The title deed number is T2366/2014 and the Surveyor-general reference number is T0IQ01040000462500000. T

2. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

List all legislation, policies and/or guidelines of any sphere of government that are applicable to the application as contemplated in the EIA regulations:

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	National & Provincial	1998
National Environmental Management: Waste Act (Act 59 of 2008) (as amended)	National & Provincial	2008
National Environmental Management: Air Quality Act (Act 39 of 2004)	National & Provincial	2004
National Water Act, 1998 (Act No. 36 of 1998)	National & Provincial	1998
National Heritage Resources Act (Act No 25 of 1999)	National & Provincial	1999
National Environmental Management: Biodiversity Act (Act 10 of 2004)	National & Provincial	2004
National Road Traffic Act (Act No 93 of 1996)	National & Provincial	1996
Occupational Health and Safety Act (Act No. 85 of 1993)	National & Provincial	1993
Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983) (as amended)	National & Provincial	1983
All relevant Provincial regulations and Municipal bylaws	Provincial & Local	

Description of compliance with the relevant legislation, policy or guideline:

Relevant notice	Act No	Listed Activity	Description of each listed activity
GNR 327	27	The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.	The construction of the proposed development will entail the clearance of approximately 7.6883 hectares of indigenous vegetation.
GNR 324	4	The development of a road wider than 4 metres with a reserve less than 13,5 metres. c. Gauteng iv. Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas	The site falls within a Critical Biodiversity Area (CBA). To make provision for the construction of the internal roads infrastructure, which will be single carriageway with widths of 6m wide

		(ESAs) in the Gauteng Conservation Plan or in bioregional plans.	according to JRA's specifications, within a CBA.
GNR 324	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. c. Gauteng ii Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans; or	The site falls within a Critical Biodiversity Area (CBA). The construction of the proposed development will entail the clearance of approximately 7.6883 hectares of indigenous vegetation.

3. ALTERNATIVES

Describe the proposal and alternatives that are considered in this application. Alternatives should include a consideration of all possible means by which the purpose and need of the proposed activity could be accomplished. The determination of whether the site or activity (including different processes etc.) or both is appropriate needs to be informed by the specific circumstances of the activity and its environment.

The no-go option must in all cases be included in the assessment phase as the baseline against which the impacts of the other alternatives are assessed. Do not include the no go option into the alternative table below.

Note: After receipt of this report the competent authority may also request the applicant to assess additional alternatives that could possibly accomplish the purpose and need of the proposed activity if it is clear that realistic alternatives have not been considered to a reasonable extent.

Please describe the process followed to reach (decide on) the list of alternatives below

No layout alternatives were investigated since the site sensitivity is low and there are no No-Go areas that influenced the layout options.

No off-site or other site location alternatives have been investigated due to the fact that this property is vested under the ownership of the City of Johannesburg Metropolitan Municipality against Title Deed Nos. T5196/1987 (JHB) and T7751/1987 (PTA). The limitations inherent in this scenario are understood. The site is currently vacant.

Activity Alternatives have been investigated and the preferred activity identified.

Provide a description of the alternatives considered

No.	**Alternative type**, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	**Description**
1	Layout Proposal	The Site sensitivity assessment, conducted to inform the layout options, took a number of issues into consideration. These include the terrestrial and the aquatic ecology of the site and immediate surrounding area; the conservation status of the vegetation type in which the study site is situated, which in this case is threatened veldtype/ecosystem with status of

		'vulnerable'; the presence of pristine veldtypes; the presence of red data fauna and flora species; and the presence of ideal habitats for priority species (which include, but are not limited to red data species), the presence of heritage resources etc. According to the analyses of the floristic, faunal and overall ecological sensitivities there are no high sensitivity areas or habitats. In other words, there are no 'No-Go' areas within the study area. According to the Gauteng Conservation Plan (C-Plan) version 3.3, the study area impacts on a demarcated Critical Biodiversity Areas (CBAs). The vegetation on the study site is a mix of moderately degraded to seriously degraded (in certain areas where there is lots of illegal dumping and high weed encroachment). There is no pristine vegetation on the study site. There are no watercourses on the site. The closest watercourse is a small seasonal unnamed stream and associated valley bottom wetlands that range from 100m to 150m south of the site. There are no ridges within a 500m radius of the study site and therefore, also no 200m buffer required as per Class 1 Ridges. No RDL fauna or floral species were observed on site during site investigations. There are also no protected trees on site. In summary, the site sensitivity is low and there are no No-Go areas that influenced the layout options. No layout alternatives were considered. Refer to App A1 for the Proposal.
2	Alternative Property	This property is vested under the ownership of the City of Johannesburg Metropolitan Municipality against Title Deed Nos. T5196/1987 (JHB) and T7751/1987 (PTA) and it is not feasible to consider other sites in terms of location alternatives. Alternative locations are therefore currently not available and would involve the lease or purchase of land / other sites.
3	Activity Proposal – Residential 1 development	The Gauteng Provincial Department of Human Settlements and the Housing Development Agency wishes to develop the site with approximately 232 Residential 1 single-storey units to accommodate beneficiaries registered on the National Housing Needs Register in the year 2017. The proposed development is in line with Johannesburg Metropolitan Municipality "Inclusionary Housing Policy" and the Joburg Growth and Development Strategy 2040 and JSDF2040. This activity alternative is regarded as the preferred alternative due to the need for housing in the area.
4	Activity Alternative 1 – Industrial Development	This alternative will not be acceptable as the area is located within an urban area that has a residential character. The increased noise and possible emissions associated with this alternative has rendered it unfeasible and therefore it is recommended that Activity Alternative 1 be implemented.
5	Alternative Energy Use	The proposed development must address efficiencies in relation to alternative energy sources. Sustainable design and conventional design alternatives are investigated. *Refer to Section D:4 Energy Efficient for full text.* Sustainable design criteria should include: i. Thermally Efficient Design ii. Sustainable building materials iii. Renewable energy options iv. Sustainable water and sanitation systems v. Waste minimisation and recycling <u>Thermally Efficient Design</u> ➢ Orientation and Placement of Windows

		➢ Appropriate Use of Thermal Mass <u>Sustainable Building Materials</u> Energy Efficiency Applications ➢ Ceilings ➢ Insulation ➢ Sky Lights ➢ Solar Blinds ➢ CFL Bulbs <u>Renewable energy applications</u> ➢ Solar Water Heaters ➢ Sustainable water and sanitation systems ➢ Waste Minimisation and Recycling In order to ensure a more sustainable development, sustainable design is regarded as the preferred alternative.

No-Go Alternative

It is suggested that to maintain the status quo is not the best option for the macro environment. The do-nothing ("no go") option would entail not using the site and maintaining the site as is.

The proposed development is a requirement of the Johannesburg Metropolitan Municipality towards its "Inclusionary Housing Policy" and is therefore implementing that requirement. The growing gap between income and the cost of housing does not affect only lower income households but also households with middle-range incomes that struggle to find affordable housing.

The proposed development proposes to address the need to initiate an upward mobility trend "Gap Housing" which addresses the gap between what middle income families earn and the affordability of housing offer. "Gap Housing" is therefore aimed at widening the availability of housing stock for lower income families. The proposed development commits itself to provide opportunities in the "gap housing" market — so named because it addresses the gap between what middle income families earn and what houses they can afford. This will be achieved by bridging the gap between the high- and low-income housing types.

The proposed development forms part of the densification strategy of the Greater Johannesburg Metropolitan Municipality, where development will be concentrated along well-planned transportation arteries. The Joburg Growth and Development Strategy 2040 and JSDF2040, focuses on Transit-Oriented Development with mixed use development such as higher density accommodation, supported by office buildings, retail developments and recreation along transport routes. The proposed development will encourage infill development.

The proposed development will also encourage infrastructure upgrades in the area as new bulk services will accompany the development and be integrated into the existing networks. The development of new infrastructure will also assist in maintenance of ageing infrastructure in surrounding neighbourhoods.

The proposed development will be demand driven and will meet the growing need/demand for sustainable human settlement, integrating housing with social, economic and environmental amenities.

The No-Go development alternative could therefore not be considered the responsible way to manage the site.

In the event that no alternative(s) has/have been provided, a motivation must be included in the table below.

N/A

4. PHYSICAL SIZE OF THE ACTIVITY

Indicate the total physical size (footprint) of the proposal as well as alternatives. Footprints are to include all new infrastructure (roads, services etc), impermeable surfaces and landscaped areas:

		Size of the activity:
Proposed activity *(Total environmental (landscaping, parking, etc.) and the building footprint)*		7,6883 ha/ 76 883 m^2
Alternatives:		
Alternative 1		7,6883 ha/ 76 883 m^2
Alternative 2 (if any)		N/A

or, for linear activities:

		Length of the activity:
Proposed activity		N/A
Alternatives:		
Alternative 1 (if any)		N/A
Alternative 2 (if any)		N/A

Indicate the size of the site(s) or servitudes (within which the above footprints will occur):

		Size of the site/servitude:
Proposed activity		7,6883 ha/ 76 883 m^2
Alternatives:		
Alternative 1		7,6883 ha/ 76 883 m^2
Alternative 2 (if any)		N/A

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?	YES X	NO
If NO, what is the distance over which a new access road will be built		m
Describe the type of access road planned:		
Access to the proposed township will be obtained directly from the existing Witherite Road on the northern boundary of the township. The internal roads for the proposed township will form part of the internal services road network. The proposed internal roads infrastructure for the Residential 1 erven to be developed will form part of the municipal road network once completed. The new roads will be single carriageway roads with widths of 6m wide according to JRA's specifications and requirements and will suite the prescribed road reserve widths. The intersections with the existing municipal roads will accommodate the required bell mouth radii and turning facilities (if required) as may be required.		

Include the position of the access road on the site plan (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

Alternative 1

Does ready access to the site exist, or is access directly from an existing road?	YES X	NO
If NO, what is the distance over which a new access road will be built		m
Describe the type of access road planned:		
Refer to above.		

Include the position of the access road on the site plan. (if the access road is to traverse a sensitive feature the impact thereof must be included in the assessment).

PLEASE NOTE: Points 6 to 8 of Section A must be duplicated where relevant for alternatives

Section A 6-8 has been duplicated		Number of times

(only complete when applicable)

6. LAYOUT OR ROUTE PLAN

A detailed site or route (for linear activities) plan(s) must be prepared for each alternative site or alternative activity. It must be attached to this document. The site or route plans must indicate the following:

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);
- The following should serve as a guide for scale issues on the layout plan:
  - A0 = 1: 500
  - A1 = 1: 1000
  - A2 = 1: 2000
  - A3 = 1: 4000
  - A4 = 1: 8000 (±10 000)
- shapefiles of the activity must be included in the electronic submission on the CD's;
- the property boundaries and Surveyor General numbers of all the properties within 50m of the site;
- the exact position of each element of the activity as well as any other structures on the site;
- the position of services, including electricity supply cables (indicate above or underground), water supply pipelines, boreholes, sewage pipelines, septic tanks, storm water infrastructure;
- servitudes indicating the purpose of the servitude;
- sensitive environmental elements on and within 100m of the site or sites (including the relevant buffers as prescribed by the competent authority) including (but not limited thereto):
  - Rivers and wetlands;
  - the 1:100 and 1:50 year flood line;
  - ridges;
  - cultural and historical features;
  - areas with indigenous vegetation (even if it is degraded or infested with alien species);
- Where a watercourse is located on the site at least one cross section of the water course must be included (to allow the position of the relevant buffer from the bank to be clearly indicated)

FOR LOCALITY MAP (NOTE THIS IS ALSO INCLUDED IN THE APPLICATION FORM REQUIREMENTS)

- the scale of locality map must be at least 1:50 000. For linear activities of more than 25 kilometres, a smaller scale e.g. 1:250 000 can be used. The scale must be indicated on the map;
- the locality map and all other maps must be in colour;
- locality map must show property boundaries and numbers within 100m of the site, and for poultry and/or piggery, locality map must show properties within 500m and prevailing or predominant wind direction;
- for gentle slopes the 1m contour intervals must be indicated on the map and whenever the slope of the site exceeds 1:10, the 500mm contours must be indicated on the map;
- areas with indigenous vegetation (even if it is degraded or infested with alien species);
- locality map must show exact position of development site or sites;
- locality map showing and identifying (if possible) public and access roads; and
- the current land use as well as the land use zoning of each of the properties adjoining the site or sites.

7. SITE PHOTOGRAPHS

Colour photographs from the center of the site must be taken in at least the eight major compass directions with a description of each photograph. Photographs must be attached under the appropriate Appendix**.** It should be supplemented with additional photographs of relevant features on the site, where applicable. *Refer to Appendix B.*

8. FACILITY ILLUSTRATION

A detailed illustration of the activity must be provided at a scale of 1:200 for activities that include structures. The illustrations must be to scale and must represent a realistic image of the planned activity. The illustration must give a representative view of the activity to be attached in the appropriate Appendix.

SECTION B: DESCRIPTION OF RECEIVING ENVIRONMENT

Note: Complete Section B for the proposal and alternative(s) (if necessary)

Instructions for completion of Section B for linear activities

1) For linear activities (pipelines etc) it may be necessary to complete Section B for each section of the site that has a significantly different environment.
2) Indicate on a plan(s) the different environments identified
3) Complete Section B for each of the above areas identified
4) Attach to this form in a chronological order
5) Each copy of Section B must clearly indicate the corresponding sections of the route at the top of the next page.

Section B has been duplicated for sections of the route	N/A	times

Instructions for completion of Section B for location/route alternatives

1) For each location/route alternative identified the entire Section B needs to be completed
2) Each alterative location/route needs to be clearly indicated at the top of the next page
3) Attach the above documents in a chronological order

Section B has been duplicated for location/route alternatives	0	times

(complete only when appropriate)

Instructions for completion of Section B when both location/route alternatives and linear activities are applicable for the application

Section B is to be completed and attachments order in the following way
All significantly different environments identified for Alternative 1 is to be completed and attached in a chronological order; then
All significantly different environments identified for Alternative 2 is to be completed and attached chronological order, etc.

Section B - Section of Route	0	(complete only when appropriate for above)

Section B – Location/route Alternative No.	0	(complete only when appropriate for above)

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	Erf 4625 Ennerdale Extension 6 within the jurisdiction of the City of Johannesburg Metropolitan Municipality, Gauteng Province

2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six

decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Proposed Alternative:	**Latitude (S):**	**Longitude (E):**
Site centre point	26°25'22.47"S	27°51'32.13"E
Alternative 1:	**Latitude (S):**	**Longitude (E):**
Site centre point	26°25'22.47"S;	27°51'32.13"E.

In the case of linear activities: **N/A**

Alternative:	Latitude (S):	Longitude (E):
Starting point of the activity	°	°
Middle point of the activity	°	°
End point of the activity	°	°

For route alternatives that are longer than 500m, please provide co-ordinates taken every 250 meters along the route and attached in the appropriate Appendix

Addendum of route alternatives attached	**N/A**

The 21-digit Surveyor General code of each cadastral land parcel

PROPOSAL	T	0	I	Q	0	1	0	4	0	0	0	0	4	6	2	5	0	0	0	0	0
ALT. 1	T	0	I	Q	0	1	0	4	0	0	0	0	4	6	2	5	0	0	0	0	0
etc.																					

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Flat	1:50 – 1:20	1:20 – 1:15	1:15 – 1:10	1:10 – 1:7,5	1:7,5 – 1:5	Steeper than 1:5

4. LOCATION IN LANDSCAPE

Indicate the landform(s) that best describes the site.

Ridgeline	Plateau	Side slope of hill/ridge	Valley	Plain	Undulating plain/low hills	River front

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

a) Is the site located on any of the following?

Shallow water table (less than 1.5m deep)	YES	NO
Dolomite, sinkhole or doline areas	YES	NO
Seasonally wet soils (often close to water bodies)	YES	NO
Unstable rocky slopes or steep slopes with loose soil	YES	NO
Dispersive soils (soils that dissolve in water)	YES	NO

Soils with high clay content (clay fraction more than 40%)	YES	NO
Any other unstable soil or geological feature	YES	NO
An area sensitive to erosion	YES	NO

(Information in respect of the above will often be available at the planning sections of local authorities. Where it exists, the 1:50 000 scale Regional Geotechnical Maps prepared by Geological Survey may also be used).

b) are any caves located on the site(s)	YES	NO
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Latitude (S):	Longitude (E):	
°	°	

c) are any caves located within a 300m radius of the site(s)	YES	NO
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Latitude (S):	Longitude (E):	
°	°	

d) are any sinkholes located within a 300m radius of the site(s)	YES	NO
If yes to above provide location details in terms of latitude and longitude and indicate location on site or route map(s)		
Latitude (S):	Longitude (E):	
°	°	

If any of the answers to the above are "YES" or "unsure", specialist input may be requested by the Department

6 AGRICULTURE

Does the site have high potential agriculture as contemplated in the Gauteng Agricultural Potential Atlas (GAPA 4)?	YES	NO

Please note: The Department may request specialist input/studies in respect of the above.

7. GROUNDCOVER

To be noted that the location of all identified rare or endangered species or other elements should be accurately indicated on the site plan(s).

Indicate the types of groundcover present on the site and include the estimated percentage found on site

Natural veld - good condition % = 0	Natural veld with scattered aliens % = 70	Natural veld with heavy alien infestation	Veld dominated by alien species % = 0	Landscaped (vegetation) % = 0

		% = 30		
Sport field % = 0	Cultivated land % = 0	Paved surface (hard landscaping) % = 0	Building or other structure % = 0	Bare soil % = 0

Note: The Groundcover categories do not give enough options. 100% of the study site is within degraded grassland.

Please note: The Department may request specialist input/studies depending on the nature of the groundcover and potential impact(s) of the proposed activity/ies.

Are there any rare or endangered flora or fauna species (including red list species) present on the site	YES	NO
If YES, specify and explain:		
• No RDL fauna or floral species were observed on site during site investigations. There are also no protected trees on site. • No orange data listed (ODL) plants were found on site, although it is still possible that a few *Hypoxis hemerocallidea* might be present.		

Are there any rare or endangered flora or fauna species (including red list species) present within a 200m (if within urban area as defined in the Regulations) or within 600m (if outside the urban area as defined in the Regulations) radius of the site.	YES	NO
If YES, specify and explain:		

Are there any special or sensitive habitats or other natural features present on the site?	YES	NO
If YES, specify and explain:		

- The study site is situated within the original extent of Soweto Highveld Grassland, which is a threatened veldtype / ecosystem with a status of 'vulnerable'.
- The vegetation on the study site is a mix of moderately degraded to seriously degraded (in certain areas where there is lots of illegal dumping and high weed encroachment). There is no pristine vegetation on the study site.
- There are no watercourses on the site. The closest watercourse is a small seasonal unnamed stream and associated valley bottom wetlands that range from 100m to 150m south of the site.
- There are no ridges within a 500m radius of the study site and therefore, also no 200m buffer required as per Class 1 Ridges.
- The study site is within a Critical Biodiversity Area (CBA) (CBA - Optimal). However, the site is within the Urban Development Zone (Zone 1) of the Gauteng EMF.
- It would appear as if these CBA areas are outdated as much of the area has either been urbanised or has been earmarked by the Gauteng EMF for urban development (Zone 1). The study site is also highly degraded and has no sensitive habitats or area worth protecting. Therefore, most of the site is calculated to have a sensitivity of 'Medium'.
- No RDL fauna or floral species were observed on site during site investigations. There are also no protected trees on site.
- No orange data listed (ODL) plants were found on site, although it is still possible that a few *Hypoxis hemerocallidea* might be present.
- There are no 'no-go zones' in the study site that might trigger a 'fatal flaw' in terms of the project brief and scope.
- There are no 'high sensitive' habitats on site.
- There are no obvious fatal flaws in terms of the natural environment.
- Taking all findings and recommendations into account it is the reasonable opinion of the author / specialist that the activity may be authorised. The project and related activities may proceed to the next phase.
- A 32m buffer zone from the outer edge of the wetland area has been delineated. No movement of construction vehicles, construction workers, access roads, or other activities may take place in this 'no-go' zone.
- There are no buffer zones within the boundaries of the study site / project site.

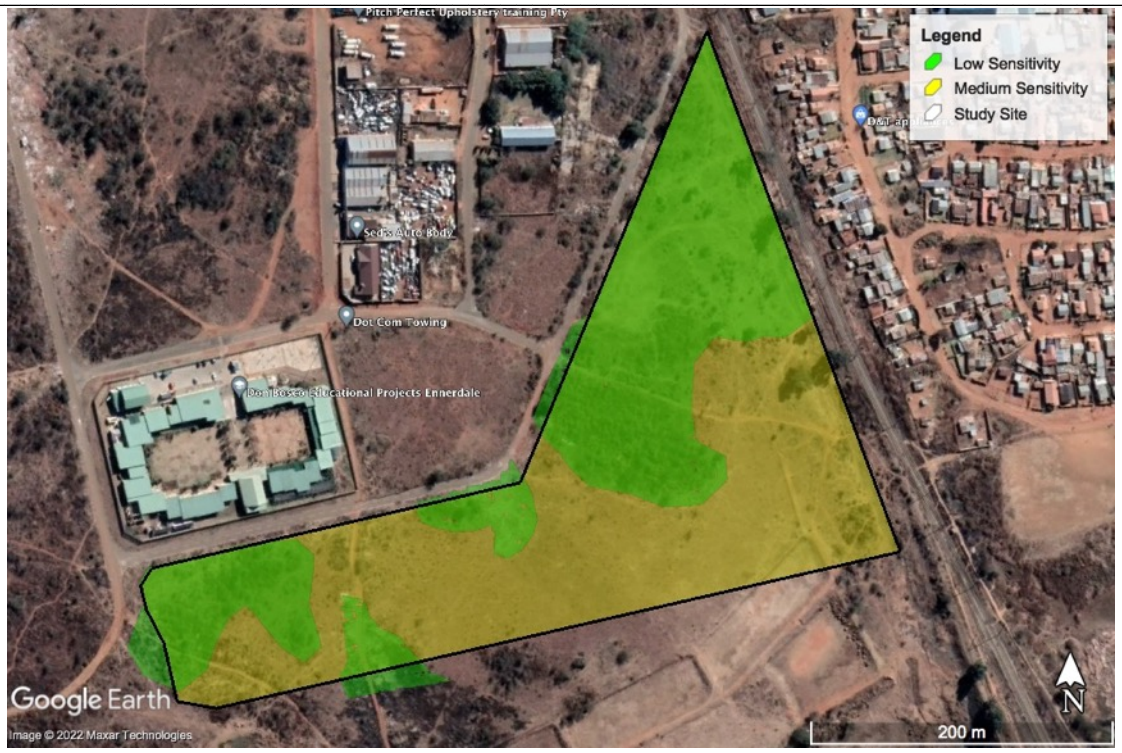

Figure 5: Sensitivity Map

Figure 6: Delineated Watercourses

Figure 7: Recommended Buffer zones

Refer to Appendix G1 for Biodiversity Assessment Report

Was a specialist consulted to assist with completing this section			YES	NO
If yes complete specialist details				
Name of the specialist:	Johannes O. Maree			
Qualification(s) of the specialist:	MSc; MBA, Pr.Sci.Nat.			
Postal address:	PO Box 7222; Modimolle			
Postal code:	0510			
Telephone:	082 564 1211	Cell:	082 564 1211	
E-mail:	Johannes@flori.co.za	Fax:	-	
Are any further specialist studies recommended by the specialist?			YES	NO
If YES, specify:				
If YES, is such a report(s) attached?			YES	NO
If YES list the specialist reports attached below				
Terrestrial Ecological and Aquatic Impact Assessments				
Signature of specialist:		Date:	11 October 2022	

Please note; If more than one specialist was consulted to assist with the filling in of this section then this table must be appropriately duplicated

8. LAND USE CHARACTER OF SURROUNDING AREA

Using the associated number of the relevant current land use or prominent feature from the table below, fill in the position of these land-uses in the vacant blocks below which represent a 500m radius around the site

The landuse or landcover of the study site is an open vacant plot of land, situated on the edge of Ennerdale, which is a high-density residential area within the City of Johannesburg Metro. Although the study site is vacant there is a lot of movement of people through it and a lot of illegal dumping occurring on the site, which has led to a degradation of the site.

1. Vacant land	2. River, stream, wetland	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	8. Low density residential	9. Medium to high density residential	10. Informal residential
11. Old age home	12. Retail	13. Offices	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial[AN]	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport[N]	23. Train station or shunting yard[N]	24. Railway line[N]	25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]	27. Landfill or waste treatment site[A]	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33.Spoil heap or slimes dam[A]	34. Small Holdings	
Other land uses (describe):	Veterinary			

NOTE: Each block represents an area of 250m X 250m, if your proposed development is larger than this please use the appropriate number and orientation of hashed blocks

NORTH						
WEST	9	9	9	9	9	EAST
	1, 9	1	9	9	9	
	1	1		9	9	
	1, 2	1, 2	1, 2	1, 2, 9	9	
	1	9	9	9	9	
SOUTH						

Note: More than one (1) Land-use may be indicated in a block

Please note: The Department may request specialist input/studies depending on the nature of the land use character of the area and potential impact(s) of the proposed activity/ies. Specialist reports that look at health & air quality and noise impacts may be required for any feature above and in particular those features marked with an "[A]" and with an "[N]" respectively.

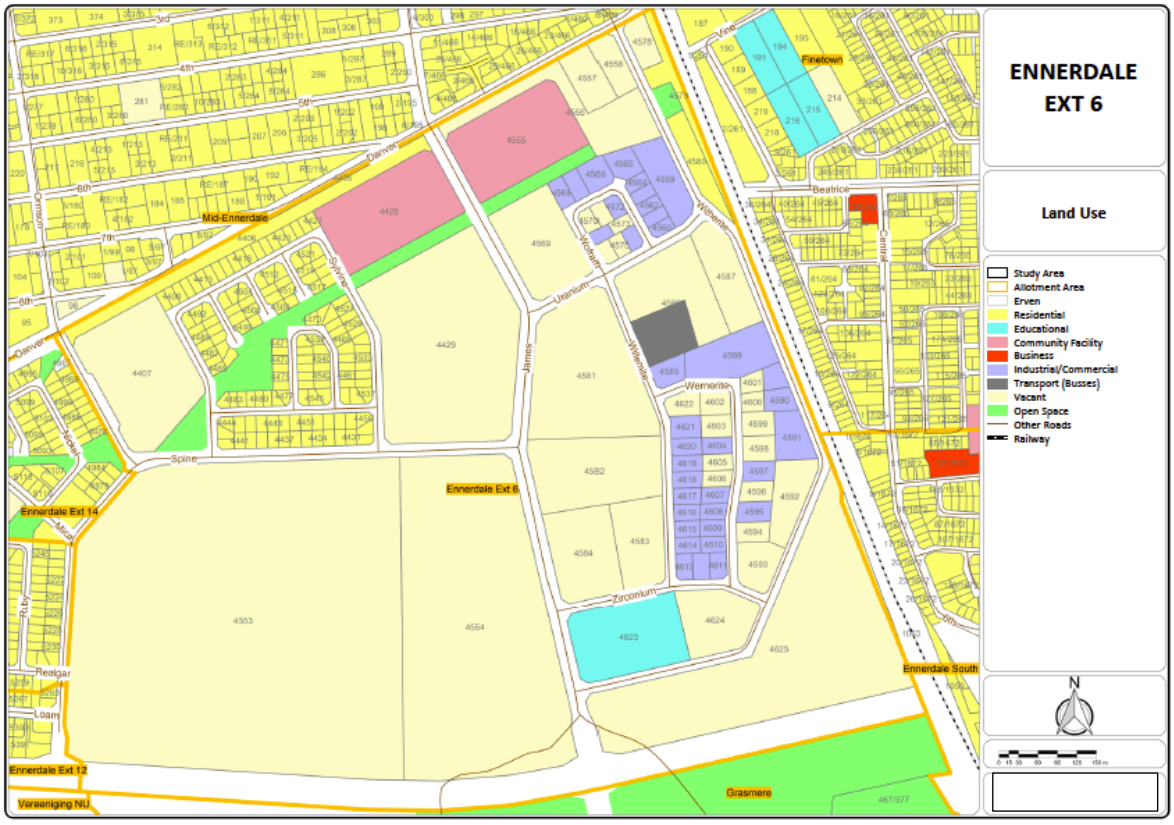

Figure 8: Land Use Map

Have specialist reports been attached	YES X	NO
If yes indicate the type of reports below		
Biodiversity Assessment Heritage Impact Assessment Civil Services Outline Scheme Report Traffic Impact Assessment		

9. SOCIO-ECONOMIC CONTEXT

Describe the existing social and economic characteristics of the area and the community condition as baseline information to assess the potential social, economic and community impacts.

According to the Gauteng Provincial Department of Human Settlements, a total population of 106 091 has been registered on the National Housing Needs Register in the year 2017, comprising 2 713 people from Ennerdale and 7 978 people from Finetown. During this year various land parcels were identified for possible development to accommodate these beneficiaries. This proposed development with a potential yield of 2 693 units will address 25% of the 10 691 people registered in 2017. This current application is for the construction of one of the identified sites, Erf 4625 Ennerdale Extension 6.

The site is currently vacant with vacant land to the north, south and west. There are also residential houses to the east, educational and auto repairs to the north.

Erf 4625 Ennerdale X 6 is situated in Region G, Sub Area 8, of the Johannesburg Metropolitan Municipality.

The Sub Area contains two landscapes. The North is mainly developed formal residential development of Ennerdale and Mid-Ennerdale and the East is predominantly informal settlements of Fine Town and Grasmere, further South. There is ample capacity for residential infill and densification to take place on various sites within the existing Ennerdale residential area. The Mid-Ennerdale and the Grasmere Station have been identified as Transit Oriented Development (TOD) priority infill development areas for the greater Region G as per the Lawley-Grasmere UDF. There are large pockets of vacant developable land within this area.

RSDF – _Region G Sub Area 8

While the Northern portion is well serviced in terms of clusters of community facilities such as sports fields, schools, medical clinics, police stations, etc. The same cannot be said of the South and East. Mid-Ennerdale, Fine Town and Grasmere have no formal open space and very few if any community facilities or economic opportunities. This has led to an increase in "illegal" uses within the area. Such uses mainly comprises of scrap yards and low-key/low intensity economic activities, taverns and other mainly informal trade activities.

Most of the main road networks in the Sub Area are tarred, but smaller roads are un-maintained gravel roads. The area is characterised by the absence of sidewalks, poor storm water, and water eroded roads. The overall urban structure of this North- West is much more organised than the informal settlement to the/ East and South of the sub-area.

The N1 and Golden Highway which both extend from the Johannesburg CBD and Southgate/Baralink to Vereeniging are the primary routes of high mobility providing regional connectivity with the broader urban fabric. The road infrastructure is characterised by narrow bus routes used beyond their capacity. The Sub Area boasts two rail stations, namely Mid-Ennerdale and Grasmere, and is thus identified as a Public Transport Priority Area and Marginalised Areas Priority Area in terms of the Growth Management Strategy.

Implications for development

The proposed development is a requirement of the Johannesburg Metropolitan Municipality towards its "Inclusionary Housing Policy" and is therefore implementing that requirement. The growing gap between income and the cost of housing does not affect only lower income households but also households with middle-range incomes that struggle to find affordable housing.

The proposed development proposes to address the need to initiate an upward mobility trend "Gap Housing" which addresses the gap between what middle income families earn and the affordability of housing offer. "Gap Housing" is therefore aimed at widening the availability of housing stock for lower income families. The proposed development commits itself to provide opportunities in the "gap housing" market — so named because it addresses the gap between what middle income families earn and what houses they can afford. This will be achieved by bridging the gap between the high- and low-income housing types.

The proposed development forms part of the densification strategy of the Greater Johannesburg Metropolitan Municipality, where development will be concentrated along well-planned transportation arteries. The Joburg Growth and Development Strategy 2040 and JSDF2040, focuses on Transit-Oriented Development with mixed use development such as higher density accommodation, supported by office buildings, retail developments and recreation along transport routes. The proposed development will encourage infill development.

The proposed development will also encourage infrastructure upgrades in the area as new bulk services will accompany the development and be integrated into the existing networks. The development of new infrastructure will also assist in maintenance of ageing infrastructure in surrounding neighbourhoods.

The proposed development will be demand driven and will meet the growing need/demand for sustainable human settlement, integrating housing with social, economic and environmental amenities.

The proposed development will have a positive impact on the surrounding area as it will provide employment opportunities for the immediate and close residents. The proposed development will generally be desired as it will imply additional investment and business opportunities in the area.

The proposed development can be considered in line with the Joburg SDF as it promotes residential densification as opposed to urban sprawl.

The proposed development represents an opportunity for this properties to be developed to its highest potential at an appropriate scale and in economically viable way.

The need for providing housing is undeniable at all levels of government. Improving the living standards of the community may contribute to a decrease in crime and improved safety in the area.

In conclusion, the proposed development will supply in the need for housing and job opportunities in the area. The proposed project will thus create positive social, economic and community impacts.

Visual Impact Assessment

Visual intrusion is defined as the level of compatibility or congruence of the project with the particular qualities of the area, or it's 'sense of place'. This is related to the idea of context and maintaining the integrity of the landscape or townscape.

- High visual intrusion – results in a noticeable change or is discordant with the surroundings.
- Moderate visual intrusion – partially fits into the surroundings, but clearly noticeable.
- Low visual intrusion – minimal change or blends in well with the surroundings.

The proposed development will change the scenic resources of the local area from an undeveloped area to a formal residential area. The visual intrusion is considered to be moderate as the proposed development will have minimal change and blends in with the surroundings.
The proposed development will require additional lighting on and in buildings and along roads. This will change the night landscape from unlit to lit.

Mitigation measures for the visual intrusion are included in the EMPr.

10. CULTURAL/HISTORICAL FEATURES

Please be advised that if section 38 of the National Heritage Resources Act 25 of 1999 is applicable to your proposal or alternatives, then you are requested to furnish this Department with written comment from the South African Heritage Resource Agency (SAHRA) – Attach comment in appropriate annexure

38. (1) Subject to the provisions of subsections (7), (8) and (9), any person who intends to undertake a development categorised as-
(a) the construction of a road, wall, powerline, pipeline, canal or other similar form of linear development or barrier exceeding 300m in length;
(b) the construction of a bridge or similar structure exceeding 50m in length;
(c) any development or other activity which will change the character of a site-
(i) exceeding 5 000 m2 in extent; or
(ii) involving three or more existing erven or subdivisions thereof; or

(iii) involving three or more erven or divisions thereof which have been consolidated within the past five years; or

(iv) the costs of which will exceed a sum set in terms of regulations by SAHRA or a provincial heritage resources

authority;

(d) the re-zoning of a site exceeding 10 000 m2 in extent; or

(e) any other category of development provided for in regulations by SAHRA or a provincial heritage resources authority, must at the very earliest stages of initiating such a development, notify the responsible heritage resources authority and furnish it with details regarding the location, nature and extent of the proposed development.

Are there any signs of culturally (aesthetic, social, spiritual, environmental) or historically significant elements, as defined in section 2 of the National Heritage Resources Act, 1999, (Act No. 25 of 1999), including archaeological or palaeontological sites, on or close (within 20m) to the site?	YES	NO
If YES, explain:		
N/A		

If uncertain, the Department may request that specialist input be provided to establish whether there is such a feature(s) present on or close to the site.
Briefly explain the findings of the specialist if one was already appointed:
Beyond Heritage was appointed to conduct a Heritage Impact Assessment (HIA). Refer to Appendix G2. Key findings of the assessment include: • The Project area is characterised by an open area with short grass cover and shrubs, the majority of the site has been disturbed and is characterised by illegal dumping and disused infrastructure and is considered to be of low archaeological potential; • This was confirmed during the field survey and no archaeological sites of significance were noted; • According to the SAHRA Paleontological sensitivity map the study area is of moderate to high paleontological significance and an independent study was conducted for this aspect. Bamford (2022) concluded that the project can continue and that a Fossil Chance Find Protocol should be added to the Environmental Management Programme (EMPr). Recommendations: The impact on heritage resources is considered to be low and the project can be authorised provided that the recommendations in this report are adhered to and based on the South African Heritage Resource Authority (SAHRA) 's approval. Mitigation: Monitoring of the study area during construction and if chance finds are encountered, the implementation of a Chance Find Procedure. *The HIA Report was submitted on the SAHRIS website on 25 October 2022. Still awaiting SAHRA's approval.*

Will any building or structure older than 60 years be affected in any way?	YES	NO
Is it necessary to apply for a permit in terms of the National Heritage Resources Act, 1999 (Act 25 of 1999)?	YES	NO
If yes, please attached the comments from SAHRA in the appropriate Appendix		

SECTION C: PUBLIC PARTICIPATION

1. PUBLIC PARTICIPATION PROCESS

The Environmental Assessment Practitioner must conduct public participation process in accordance with the requirement of the EIA Regulations, 2014.

2. LOCAL AUTHORITY PARTICIPATION

Local authorities are key interested and affected parties in each application and no decision on any application will be made before the relevant local authority is provided with the opportunity to give input. The planning and the environmental sections of the local authority must be informed of the application at least thirty (30) calendar days before the submission of the application to the competent authority.

Was the draft report submitted to the local authority for comment? *The Municipality is also the applicant.*	YES X	NO

If yes, has any comments been received from the local authority?	YES X	NO

If "YES", briefly describe the comment below (also attach any correspondence to and from the local authority to this application):

The following comments were received from City of Johannesburg, Environment & Infrastructure Services Department, Impact Management & Compliance Monitoring. *Refer to Appendix E:7 for correspondence.*

1. *It is the recommendation of this Department that the layout plan for the proposed development be amended to indicate the following:*
   - *a land use table for Public Open Space in m²/ ha with the additional social open space.*
   - *a site stormwater attenuation facility as stormwater needs to be attenuated on site by means of a fenced open pond system*

Response

- Please refer to the Layout Plan *(refer to Appendix A1 for the Layout Plan for the proposed Rezoning of Erf 4625)*, which indicates the Public Open Space Erven and sizes. 5 Public Open Space Erven had been provided. In order to allow for the maximum number of units in the CoJ Housing project the minimum open space areas could not be included in the development and CoJ Housing is willing to pay Park Contributions.

- *A Civil Services Report was compiled for the proposed Rezoning and Subdivision of the larger Ennerdale X 6 development, including Erven 4429, 4556 – 4558, 4569, 4581 – 4584, 4586 and 4625 (refer to Appendix G3).* Stormwater management and drainage for the proposed Residential 1 erven is proposed via conventional stormwater drainage practices. These include existing stormwater pipelines and new stormwater pipelines. In some instances, the existing stormwater network will have to be replaced and upgraded to accommodate the post-development run-off generated by development of the Residential 1 properties.
  It is proposed that the Residential 3 erven be provided with internal attenuation facilities as per the City's requirements.

  The attenuated post-development run-off from the Residential 3 erven will be discharged into the existing stormwater pipelines in a controlled manor. Portions of the existing network could be upgraded, or a parallel pipeline installed.

  On site, internal attenuation facilities will be constructed to manage and control the stormwater discharge from the erven. On site storage will also be provided attempting to ensure the following:
  - No increase in the in discharge for any event of any duration up to the 25-year RI event;
  - No increase in the volumes of run-off up to the 10-year rainfall;
  - No increase of run-off frequency for the 1-year RI event of any duration.

  The application of these parameters within the design of the attenuation facilities will ensure that the existing infrastructure can accommodate the pre-development run-off of the previously planned development. Additional attenuation could be required to ensure the existing stormwater networks are not incapacitated.

2. *A detailed stormwater management plan which is in line with the City's Stormwater Bylaw and the Draft Design Stormwater Management Manual must be submitted to JRA & EISD.*

Attention in this regard is brought to Clause 44 of the City of Johannesburg Stormwater Bylaw which states that the following requirements must, in addition to the requirements of section 38, be complied with if stormwater from any development site discharges directly, or indirectly across any intervening property, into a wetland:

- *The quantity and velocity of any stormwater discharge must be controlled and treated to the extent that such discharge attains a quality in compliance with the requirements of the National Water Act, 1998, the National Environmental Management Act, 1998 and any other applicable law;*
- *A stormwater discharge must maintain the frequency and flow of pre development conditions, to the extent necessary to protect the characteristic functions of the wetland. Prior to discharging to a wetland, any alternative discharge location, and any natural water storage infiltration opportunity outside the wetland, must be evaluated by a professional engineer and utilized for the stormwater discharge if reasonably practically possible.*
- *Further the stormwater measures must also address the water quality.*

Response
Noted. A detailed stormwater management plan will be compiled and submitted prior to the Site Development Plan approval.

3. *The proposed residential development will require a Water Use Licence in terms of Section 21 (c) and (i) of the National Water Act (Act 36 of 1998), as amended.*

Response
A Water Use License Application or General Authorisation Application in terms of Section 21 (c) and (i) of the National Water Act (Act 36 of 1998), as amended, will be submitted if required.

4. *The site shall be landscaped to the satisfaction of the COJ*

Response
Noted. A Landscape Development Plan will be submitted to CoJ for approval.

If "NO" briefly explain why no comments have been received or why the report was not submitted if that is the case.
N/A

3. CONSULTATION WITH OTHER STAKEHOLDERS

Any stakeholder that has a direct interest in the activity, site or property, such as servitude holders and service providers, should be informed of the application at least **thirty (30) calendar days** before the submission of the application and be provided with the opportunity to comment.

Has any comment been received from stakeholders?	YES X	NO

If "YES", briefly describe the feedback below (also attach copies of any correspondence to and from the stakeholders to this application):

Written comment was received in the notification phase from:

- Eskom Transmission is not affected by this application.
- Sasol Satellite Operations will not be affected by the project.

Refer to Appendix E6.

Written comment was received on the Draft BAR from the following parties:

- Cllr Amelia Zama

Cllr Zama requested more information on the development and requested a face to face session. She indicated that the majority of her community members don't have access to the internet. Setala Environmental tried to contact Ms. Zama telephonically to arrange a meeting but could not get hold of her. In addition, follow up emails were sent but no response was received from Cllr. Zama.

- DALRRD

Seeing that the property is situated within a town the provisions of the Subdivision of Agricultural Land, Act 70 of 1970 is not applicable.

- Eskom

Eskom Transmission is not affected by this application.

Refer to Appendix E7.

No comments were received from Department of Water and Sanitation.

If "NO" briefly explain why no comments have been received
N/a

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

The Environmental Assessment Practitioner must ensure that the public participation process is adequate and must determine whether a public meeting or any other additional measure is appropriate or not based on the particular nature of each case. Special attention should be given to the involvement of local community structures such as Ward Committees and ratepayers associations. Please note that public concerns that emerge at a later stage that should have been addressed may cause the competent authority to withdraw any authorisation it may have issued if it becomes apparent that the public participation process was flawed.

The EAP must record all comments and respond to each comment of the public / interested and affected party before the application report is submitted. The comments and responses must be captured in a Comments and Responses Report as prescribed in the regulations and be attached to this application.

Public Participation Activities Undertaken

Refer to table below for details of the public participation tasks that have been undertaken to date.

Activity	Description and Purpose
Pre-Application	
Preparation of a preliminary stakeholder database	A preliminary database has been compiled of authorities (local and provincial), Non-Governmental Organisations, neighbouring landowners and other key stakeholders (refer to *Appendix E9*). This database of registered I&APs will be maintained and updated during the ongoing BA process.
Preparation and Distribution of a Background Information Document (BID)	On 15/08/2022 BIDs were distributed via email to all I&APs on the database. See *Appendix E2* for proof of written submissions. The BID provides an introduction to the Project and the BA process.
Advertisement of the Project and Erection of Site Notices	The Project was advertised on 18/08/2022 in the newspaper, Rising Sun Lenasia. See proof of Advertisement in *Appendix E3*. Site notices have been placed on 2 locations on 10/08/2022. See proof of placement in *Appendix E1*. No comment was received from the residents/land users on the application site.
Development of an Initial Comments and Response Report	All comments received during the initial consultation period were recorded in a Comments and Response Report. See included in *Appendix E6*.
BA Phase	
Release of draft Basic Assessment Report (DBAR) for Public Comment	The DBAR was be released for a 30-day public comment period: 28/10/2022 to 28/11/2022. Notifications were sent to all stakeholders on the database. The report was submitted to all I&APs and electronic copies could be downloaded with a link from the Setala website.
Development of a Comments and Response Report	All comments received during the Notification consultation period and comments received on the Draft BAR were recorded into a Comments and Response Report. See included in *Appendix E6*.
Public Review	The I&APs were provided with various options to provide comment / request more information. In writing, via fax or email, and verbally, via telephone calls, text messages, WhatsApp, zoom or teams sessions. All comments received, along with responses are included in the final BAR in *Appendix E7 and* Comments and Response Report (*Appendix E6).*

Submission of final Basic Assessment Report to Environmental Authority	Subsequently the final BAR to be submitted to GDARD. The final BAR includes all concerns raised to the DBAR, and the responses thereto.
Environmental Decision	
Notification of Environmental Authorisation	I&APs will be notified of the Environmental Authorisation and the statutory appeal period.

5. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below:

Appendix 1 – Proof of site notice
Appendix 2 – Written notices issued as required in terms of the regulations
Appendix 3 – Proof of newspaper advertisements
Appendix 4 –Communications to and from interested and affected parties
Appendix 5 – Minutes of any public and/or stakeholder meetings
Appendix 6 - Comments and Responses Report
Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report
Appendix 8 –Comments from I&APs on amendments to the BA Report
Appendix 9 – Copy of the register of I&APs

SECTION D: RESOURCE USE AND PROCESS DETAILS

Note: Section D is to be completed for the proposal and alternative(s) (if necessary)

Instructions for completion of Section D for alternatives

1) For each alternative under investigation, where such alternatives will have different resource and process details (e.g. technology alternative), the entire Section D needs to be completed
2) Each alterative needs to be clearly indicated in the box below
3) Attach the above documents in a chronological order

Section D has been duplicated for alternatives	0	times

(complete only when appropriate)

Section D Alternative No.	Proposal and Alternative1	(complete only when appropriate for above)

1. WASTE, EFFLUENT, AND EMISSION MANAGEMENT

Solid waste management

Will the activity produce solid construction waste during the construction/initiation phase?	YES X	NO
If yes, what estimated quantity will be produced per month?	Not known at this stage m^3	
How will the construction solid waste be disposed of (describe)?		

- All measures regarding waste management shall be undertaken using an integrated waste management approach;
- Sufficient, covered waste collection bins (scavenger and weatherproof) shall be provided;
- A suitably positioned and clearly demarcated waste collection site shall be identified and provided;
- The waste collection site shall be maintained in a clean and orderly fashion;
- Waste shall be segregated into separate bins and clearly marked for each waste type;
- Staff shall be trained in waste segregation;
- Recycling of waste types shall be maximised;
- Bins shall be emptied regularly;
- General waste shall be disposed of at recognised and registered waste disposal sites/ recycling company;
- Hazardous waste shall be disposed of at a registered waste disposal site;
- Certificates of disposal for general, hazardous and recycled waste shall be maintained;
- Under no circumstances shall any waste be disposed of, burned or buried on site.

Where will the construction solid waste be disposed of (describe)?		
Waste generated during the construction activities will be collected by the trucks of the appointed contractor and disposed of at a Municipal landfill facility. A refuse area will be accommodated on site and waste will be disposed of at the municipal dumping site as per the requirements of the Municipal Health Bylaws.		

Will the activity produce solid waste during its operational phase?	YES X	NO
If yes, what estimated quantity will be produced per month?	222,72 m^3	

How will the solid waste be disposed of (describe)?	

Solid waste removal for the proposed township will be the responsibility of the CJMM. Removal from individual dwelling houses will be required and road widths and turning areas should be adequately designed for this purpose.		
Has the municipality or relevant service provider confirmed that sufficient air space exists for treating/disposing of the solid waste to be generated by this activity?	YES X	NO
Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?		
N/A		

Note: If the solid waste (construction or operational phases) will not be disposed of in a registered landfill site or be taken up in a municipal waste stream, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		
Can any part of the solid waste be classified as hazardous in terms of the relevant legislation?	YES	NO X
If yes, inform the competent authority and request a change to an application for scoping and EIA.		

Is the activity that is being applied for a solid waste handling or treatment facility?	YES	NO X
If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		

Describe the measures, if any, that will be taken to ensure the optimal reuse or recycling of materials:
Waste Minimisation and Recycling Waste separation and recycling can generate jobs as well as removing recyclable resources from landfill. Individuals and recycling cooperatives can collect and separate wastes and sell recyclable materials. Buyback centres can be established in neighbourhoods, where recyclers can buy recyclable materials for reprocessing. Organic materials can also be separated and made into compost, adding nutrients to soil for agricultural production and greening.

Liquid effluent (other than domestic sewage)

Will the activity produce effluent, other than normal sewage, that will be disposed of in a municipal sewage system?	YES	NO X
If yes, what estimated quantity will be produced per month?		N/A m^3
If yes, has the municipality confirmed that sufficient capacity exists for treating / disposing of the liquid effluent to be generated by this activity(ies)?	YES	NO

Will the activity produce any effluent that will be treated and/or disposed of onsite?	Yes	NO X
If yes, what estimated quantity will be produced per month?		N/A m^3

If yes describe the nature of the effluent and how it will be disposed.
N/A

Note that if effluent is to be treated or disposed on site the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA

Will the activity produce effluent that will be treated and/or disposed of at another facility?			YES	NO X
If yes, provide the particulars of the facility: N/A				
Facility name:				
Contact person:				
Postal address:				
Postal code:				
Telephone:		Cell:		
E-mail:		Fax:		
Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:				
N/A				

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?	YES X	NO
If yes, what estimated quantity will be produced per month?		3 480 m³
If yes, has the municipality confirmed that sufficient capacity exists for treating / disposing of the domestic effluent to be generated by this activity(ies)?	YES pending	NO

Will the activity produce any effluent that will be treated and/or disposed of onsite?	YES	NO X
If yes describe how it will be treated and disposed of.		
From the existing services information obtained from the Johannesburg Water it is evident that the application erven were provided with services sometime in the past. It is assumed that the erven were provided with sewer services for the originally intended land-uses. The current application land-uses are therefore assumed to be in exchange of and not in addition to the existing land-uses and the same approach was applied to the sewer flow. Currently the application erven have been provided with at least one connection point along the lowest erf boundary or in close proximity to the lowest point and boundary. Most of the existing pipelines are located along road reserves but are also located mid-block in existing townships surrounding the application erven. All of the sewer reticulation pipelines drain towards the east or south-east where the sewerage effluent is collected in a bulk sewer pipeline along the eastern boundary of Erf 4625.		

Emissions into the atmosphere

Will the activity release emissions into the atmosphere?	YES X	NO
If yes, is it controlled by any legislation of any sphere of government?	YES	NO X

If yes, the applicant should consult with the competent authority to determine whether it is necessary to change to an application for scoping and EIA.		
If no, describe the emissions in terms of type and concentration:		
Dust and emissions during construction generated by debris handling and debris piles, truck transport, bulldozing, general construction. ➢ Dust must be suppressed on the construction site and during the transportation of material during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off. ➢ Loads could be covered to avoid loss of material in transport, especially if material is transported off site. ➢ Dust and mud should be controlled at vehicle exit and entry points to prevent the dispersion of dust and mud beyond the site boundary. ➢ Facilities for the washing of vehicles should be provided at the entry and exit points. ➢ A speed limit of 40 km/hr should be set for all vehicles travelling over exposed areas. ➢ During the transfer of materials, drop heights should be minimised to control the dispersion of mater being transferred. ➢ The height of all stockpiles on site should be a maximum of 2m. ➢ Use of dust retardant road surfacing if made necessary due to the exceedance of Air Quality Guidelines.		

2. WATER USE

Indicate the source(s) of water that will be used for the activity

Municipal	Directly from water board	groundwater	river, stream, dam or lake	other	the activity will not use water
X					

From the existing services information obtained from the Johannesburg Water it is evident that the application erven were provided with services sometime in the past. It is assumed that the erven were provided with water services for the originally intended land-uses. The current application land-uses are therefore assumed to be in exchange of and not in addition to the existing land-uses and the same approach was applied to the water demand.

Currently the application erven are surrounded by and existing municipal water reticulation network of 110mm Ø pipelines. The pipelines are located along Danvers Street, James Street, Spinel Road and other roads along the application erf boundaries.

All of the application erven have a water pipeline along at least two of its boundaries and for some along three of the erf boundaries.

The internal water reticulation network of the proposed application erven will connect to the existing municipal water reticulation network as described above.

The internal water network will incorporate fire flow and include valves and fittings as per the City's and JW's requirements. Erven will be serviced with individual house connections that will need to be metered. The internal network will comprise of 110mm Ø Class 16 OPVC pipelines.

Table: Water Design Demands and Capacities

USE ZONE	AREA (M²)	DAILY WATER DEMAND (kl/unit/day)	NO OF ERVEN / UNITS	AADD (l/s)	AADD (kl/day)
Residential 1	76 878	0.6	232	1.61	139.2

If water is to be extracted from groundwater, river, stream, dam, lake or any other natural feature, please indicate	
the volume that will be extracted per month:	N/A liters

If Yes, please attach proof of assurance of water supply, e.g. yield of borehole, in the appropriate Appendix		
Does the activity require a water use permit from the Department of Water Affairs?	YES	NO X
If yes, list the permits required		
If yes, have you applied for the water use permit(s)?	YES	NO
If yes, have you received approval(s)? (attached in appropriate appendix) Application in process	YES	NO

3. POWER SUPPLY

Please indicate the source of power supply eg. Municipality / Eskom / Renewable energy source

Existing services are available at the boundary of the subject properties.

If power supply is not available, where will power be sourced from?
N/A

4. ENERGY EFFICIENCY

Energy Efficiency Applications

Some of the most common, cost effective energy efficiency applications are listed below.

Sustainable Building Materials

According to the Western Cape Human Settlement Strategy, building construction and operation results in 50% of all CO^2 emissions worldwide (Department of Local Government and Housing. 2007). The average middle income house uses five to ten tons of cement in the building process, and for every ton of cement manufactured, a ton of CO^2 is released.

Thermally efficient, low carbon emission, structurally sound and inexpensive building materials exist that have been used for centuries in household design. Hemp has huge potential in the building market, as do adobe, sand bag construction, cob, thatch, brick, stone and recycled materials. Other 'low cement' options, including SABS approved compressed earth blocks (CEBs) using 6% soil stabilisers, are currently being investigated and proposed in sustainable neighbourhood designs.

Appropriate Use of Thermal Mass

Thermal mass is the ability of a material to absorb heat energy. A great portion of heat energy is required to change the temperature of high density materials e.g. concrete, stone, brick and tiles. These materials are therefore considered to have high thermal mass. Lightweight materials such as timber have low thermal mass.

Through the correct application of thermal mass internal temperatures are moderated by averaging the day/ night extremes. This increases comfort and reduces energy costs. The ignorant use of thermal mass can exacerbate the worst extremes of the climate and can be a huge energy and comfort liability. To be effective, thermal mass must be integrated with sound passive design techniques. This means having appropriate areas of glazing facing appropriate directions with appropriate levels of shading, insulation and thermal mass.

The appropriate use of thermal mass can delay heat flow through the building envelope by as much as 10 to 12 hours producing a warmer house at night in winter and a cooler house during the day in summer. Building materials with high thermal mass include adobe brick, stone, brick, etc.

Ceilings

The benefits associated with ceiling installations include a reduction in expenditure on indoor heating, improved health as a result of improved air quality and more stable internal air temperatures (particularly in households which use paraffin, coal and other heating systems which damage respiratory health), increased productivity resulting from improved health and increased quality of life.

Heat loss through the roof is often greater than heat loss in other areas of the house, thus one of the most effective ways to insulate a house is to put in a ceiling. In cold climactic regions, or regions with cold winters, a ceiling can reduce space heating costs by up to 50 per cent. The Department of Housing's Draft Framework on Environmentally Efficient Housing has identified ceilings as an important intervention within the social housing frameworks.

Insulation

One of the best ways to make a house more efficient is to reduce the flow of heat into and out of the house. Ceiling and roof insulation serve to conserve heat in winter, and maintain cooler temperatures in summer. Climactic regions can make a difference in the level of insulation necessary for a comfortable living environment within a home.

Sky Lights

A skylight is a window placed in the roof of a building or in the ceiling of a room to admit light into the room. Designs include transparent roof plates, glass windows and plastic domes with a circular ducts connected to the room. Skylights should ideally be incorporated in the building design to keep the costs down, but can be retrofitted to existing buildings with significant contributions to increased light levels and accompanied energy savings.

Solar Blinds

When an existing building does not have an appropriate overhang, a solar blind can be fitted. These blinds block all the summer sun and let the majority of winter sun through. These fixed blinds let sunlight through and does not block the view since they are placed horizontally and are never closed or adjusted. They can be manufactured locally and are cost effective.

CFL Bulbs

The use of energy efficient lighting is one of the best and most cost effective ways of reducing energy consumption. Efficient lighting will reduce energy consumption and in particular peak demand, which will improve energy security, Eskom also recognizes that efficient lighting will play a major role in its demand side management (DSM) process.

Renewable energy applications

Solar Water Heaters

Lack of access to hot water can have negative safety and health impacts on low income households. SWHs can replace the use of "dirtier" fuels, such as paraffin, for water heating. Also, the time lost in heating water by using more 'traditional' fuels, such as wood, could be saved by using solar water heaters. Solar water heaters in the low income sector should become a stronger focus.

Sustainable water and sanitation systems

Water efficiency measures can include low flow fixtures in sinks and showers, dual flush systems in toilets, rain water harvesting and water recycling. Dry or urine diversion toilets can also reduce water consumption in households by approximately 40%. Urine diversion toilets also produce compost, which can be used in agricultural production. Grey water recycling in settlements can be inexpensive and can provide nutrients for agricultural production and greening. On-site sewage systems such as vertically integrated wetlands, membrane filtration systems, biolytix systems and biogas digestors can provide nutrients for agriculture, recycled water for toilet flushing and energy for household use.

Waste Minimisation and Recycling

Waste separation and recycling can generate jobs as well as removing recyclable resources from landfill. Individuals and recycling cooperatives can collect and separate wastes and sell recyclable materials. Buyback centres can be established in neighbourhoods, where recyclers can buy recyclable materials for reprocessing. Organic materials can also be separated and made into compost, adding nutrients to soil for agricultural production and greening.

In order to ensure a more sustainable development, sustainable design is regarded as the preferred alternative.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:
The following energy alternatives will be encouraged when the different housing units are built: ➢ Solar geysers ➢ Heat pumps ➢ Photovoltaic cells ➢ Gas stoves ➢ Gas push through geysers

SECTION E: IMPACT ASSESSMENT

The assessment of impacts must adhere to the minimum requirements in the EIA Regulations, 2014, and should take applicable official guidelines into account. The issues raised by interested and affected parties should also be addressed in the assessment of impacts as well as the impacts of not implementing the activity (Section 24(4)(b)(i).

1. ISSUES RAISED BY INTERESTED AND AFFECTED PARTIES

Summarise the issues raised by interested and affected parties.

Summary of main issues raised by I&APs	Summary of response from EAP
Eskom Transmission is not affected by this application.	Noted. Not affected.
Sasol Satellite Operations will not be affected by the project.	Noted. Not affected.

(A full response must be provided in the Comments and Response Report that must be attached to this report):

2. IMPACTS THAT MAY RESULT FROM THE PLANNING, CONSTRUCTION AND OPERATIONAL PHASE

Briefly describe the methodology utilised in the rating of significance of impacts

The potential impacts of the proposed development were identified through a desktop study, a site visit, specialist studies and comments received during the public participation process. It is evident that the biggest impact of the project on the environment is expected to occur during the construction phase. It is expected that with the proposed mitigation of impacts and the implementation of the Environmental Management Plan, the expected negative impact could be mitigated to acceptable measures.

SIGNIFICANCE DESCRIPTION METHODOLOGY

The potential environmental impacts associated with the project will be evaluated according to its nature, extent, duration, intensity, probability and significance of the impacts, whereby:

- **Nature:** A brief written statement of the environmental aspect being impacted upon by a particular action or activity.
- **Extent:** The area over which the impact will be expressed. Typically, the severity and significance of an impact have different scales and as such bracketing ranges are often required. This is often useful during the detailed assessment phase of a project in terms of further defining the determined significance or intensity of an impact. For example, high at a local scale, but low at a regional scale;
- **Duration:** Indicates what the lifetime of the impact will be;
- **Intensity:** Describes whether an impact is destructive or benign;
- **Probability:** Describes the likelihood of an impact actually occurring; and
- **Cumulative:** In relation to an activity, means the impact of an activity that in itself may not be significant but may become significant when added to the existing and potential impacts eventuating from similar or diverse activities or undertakings in the area.

TABLE 1: CRITERIA TO BE USED FOR RATING OF IMPACTS

Criteria	Description			
Extent	**National (4)** The whole of South Africa	**Regional (3)** Provincial and parts of neighbouring provinces	**Local (2)** Within a radius of 2 km of the construction site	**Site (1)** Within the construction site
Duration	**Permanent (4)** Mitigation either by man or natural	**Long-term (3)** The impact will continue or last for	**Medium-term (2)** The impact will last for the period of the	**Short-term (1)** The impact will either disappear

	process will not occur in such a way or in such a time span that the impact can be considered transient	the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of impact which will be non-transitory	construction phase, where after it will be entirely negated	with mitigation or will be mitigated through natural process in a span shorter than the construction phase
Intensity	**Very High (4)** Natural, cultural and social functions and processes are altered to extent that they permanently cease	**High (3)** Natural, cultural and social functions and processes are altered to extent that they temporarily cease	**Moderate (2)** Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	**Low (1)** Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected
Probability of occurrence	**Definite (4)** Impact will certainly occur	**Highly Probable (3)** Most likely that the impact will occur	**Possible (2)** The impact may occur	**Improbable (1)** Likelihood of the impact materialising is very low

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required. The total number of points scored for each impact indicates the level of significance of the impact.

TABLE 2: CRITERIA FOR THE RATING OF CLASSIFIED IMPACTS

Low impact (4 - 6 points)	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact (7 - 9 points)	Mitigation is possible with additional design and construction inputs.
High impact (10 - 12 points)	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact (13 - 20 points)	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a "very high impact" is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.
It is important to note that the status of an impact is assigned based on the status quo – i.e. should the project not proceed. Therefore not all negative impacts are equally significant.	

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the construction phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

2.1 PLANNING AND DESIGN PHASE

ALTERNATIVE PROPOSAL (RESIDENTIAL 1)				
DIRECT IMPACTS				
Potential Impacts	Significance Rating	Mitigation Measures	Significance rating of	Risk of the impact and mitigation

			impacts after mitigation	not being implemented
Impact on the Natural Habitat <u>Layout</u> Insensitive layout can cause a negative impact on the natural habitat of not only the site itself, but also on the surrounding natural environment. The context of the development site within the macro area in terms of conservation areas also plays a major role when suitable areas for development are being considered. The development site (or parts thereof) could form part of important ecological corridors and such corridors could be destroyed if the functioning thereof is not being supported by the development proposal. <u>The development site</u> A Biodiversity Impact Assessment concluded that there are no areas of typical Soweto Highveld Grassland present on site. The vegetation on the study site is a mix of moderately degraded to seriously degraded (in certain areas where there is lots of illegal dumping and high weed encroachment). There is no pristine vegetation on the study site.	NEGATIVE LOW	• Should any *Hypoxis hemerocallidea* plants be present it is recommended that these plants be lifted and relocated. • A specialist is required to lift and relocate any ODL plants on site. • Ensure a proper Stormwater Management Plan is compiled and implemented.	NEGATIVE LOW	LOW
Visual Impact (change of character and atmosphere of the area, change in land use) The visibility of the study area creates the opportunity to design a development that will enhance the "Sense of Place" of the study area and the surrounding area.	NEGATIVE MEDIUM	• Landscaping plays a crucial factor in reducing the visual impact of a development and proper planning is therefore required. The following guidelines should apply: • The general aim with landscaping should be to integrate it with the natural environment of the site and its surrounding area. Therefore, indigenous and generous landscaping, combined with the eradication of exotic vegetation, will conserve and enhance the natural character of the site and its surrounds. More detail with regards to landscaping principles and recommendations are stipulated in the Environmental Management Programme.	NEGATIVE LOW	LOW

Light Pollution • Wrong placement, excessive brightness and careless light direction of especially security lights could cause sky glow, glare and light trespass. There is a general perception that 'more and brighter are better', and that it will provide for improved security. This perception can have a severe negative impact on the adjacent properties and surrounding area. • Drivers could be severely affected should lights within the development be too bright and incorrectly directed at roads. The glare of these lights might impair drivers' vision and cause dangerous driving conditions.	NEGATIVE MEDIUM	In order to minimise light pollution and light nuisance, the following design principles should be adhered to when the lighting plan is finalised: • All lighting should have a clear purpose - avoid use of lights simply to create a `presence' at night. Unnecessary, obtrusive light will not be allowed. • Mount lights below the roof height of buildings and perimeter fencing and direct light downwards, to where it is needed. Lights can also be positioned so that they are shielded by buildings and trees in order to reduce overall visibility. • Avoid lights mounted on the side of buildings which shine directly out, dazzling adjacent residents as well as road users. • Fittings must be shielded or hooded to minimise sky glow by controlling upward light spillage. • Lights that minimise light spill are widely available and should be the only type of lights that are used. • Outside lighting should be designed to minimise impacts on fauna, reducing intensity of lights for nocturnal species and avoiding attraction / disruption of arthropod populations. Avoid fluorescent and mercury vapour lighting and use sodium vapour (yellow) lights.	NEGATIVE LOW	LOW
INDIRECT IMPACTS				
No indirect impacts were identified during the planning and design phase.				
CUMULATIVE IMPACTS				
No cumulative impacts were identified during the planning and design phase.				

ALTERNATIVE 1 (INDUSTRIAL)				
DIRECT IMPACTS				
Potential Impacts	Significance Rating	Mitigation Measures	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
Impacts as described under Proposal above are applicable to Alternative 1				
INDIRECT IMPACTS				
No indirect impacts were identified during the planning and design phase.				
CUMULATIVE IMPACTS				

No cumulative impacts were identified during the planning and design phase.				

NO GO ALTERNATIVE				
DIRECT IMPACTS				
Potential Impacts	Significance Rating	Mitigation Measures	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
No direct impacts were identified during the planning and design phase.				
INDIRECT IMPACTS				
No indirect impacts were identified during the planning and design phase.				
CUMULATIVE IMPACTS				
No cumulative impacts were identified during the planning and design phase.				

2.2 CONSTRUCTION PHASE

ALTERNATIVE PROPOSAL				
DIRECT IMPACTS				
Potential Impacts	Significance Rating	Mitigation Measures	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Loss of natural vegetation This impact is associated with disturbance to and/or destruction of the flora component. During construction the activities could cause a negative impact where insensitive clearing for construction and access purposes, etc. is required. Insensitive clearing can cause the destruction of habitat. Not only does vegetation removal represent a loss of seed and organic matter, but it is also a loss of protection to plants and small animals. Insensitive vegetation clearance can also cause erosion. Pressure on the natural environment will occur as a result of an influx of labourers into the area	NEGATIVE MEDIUM	Detail mitigation measures are stipulated in the EMP and include the following: • There are no protected trees or other RDL plant species on site. • The loss of vegetation needs to be offset with open green public spaces within the development area (Erf 4625). It is recommended that numerous locally indigenous trees (e.g. White stinkwood, karee, wild olive trees,) be planted in the green open spaces and along roads, etc. • A weed control programme should be implemented. This can form part of the routine maintenance programme for the road. • A site-specific rehabilitation plan is required for the project.	NEGATIVE MEDIUM	LOW

that could involve the collection of firewood and medicinal plants, as well as uncontrolled veld fires. <u>The development site</u> The vegetation on the study site is a mix of moderately degraded to seriously degraded (in certain areas where there is lots of illegal dumping and high weed encroachment). There is no pristine vegetation on the study site				
Loss or impact on fauna • Noise and vibration during construction • Loss of habitat <u>The Development site</u> No priority faunal species (which includes red data species) were encountered during field investigations	NEGATIVE MEDIUM	• Care must be taken not to interact directly with any wild life encountered. • Any bird nests encountered in the grass or trees must not be interfered with. If encountered must first be discussed with specialist as how best to proceed. This also applies to any active animal burrows encountered. • Landscaping using locally indigenous trees and plants will also create green habitats for numerous common species, including birds that will be able to traverse between these areas and other areas such as the wetland and ridge to the south of the study site.	NEGATIVE LOW	LOW
Fringe impacts Fringe impacts could arise from the construction activities	NEGATIVE LOW	• Due to the nature of the project the potential for any significant fringe impacts can be medium, but with proper mitigating measure and routine maintenance and upkeep of the site, fringe impacts will be low. • Care must be taken with heavy machinery used on the project. All access roads used during construction must be monitored and maintained. • Dust suppression must be implemented during construction. • Soils and stones excavated may be used on site as backfill, fixing of roads, filling of dongas, etc. • Excavated soils and rocks may not be simply dumped in any open veld or even on site. • All temporary access roads, laydown areas, temporary camps, site offices, etc. must be fully rehabilitated by the contractors prior to final signing	NEGATIVE LOW	LOW

		off of the construction phase of the project.		
Impact on Water Sources During construction, the risk of pollution of surface and groundwater can generally be related to diesel, oil and concrete spills that may result in a change in water quality with the associated negative impact on humans and the natural habitat. Groundwater pollution during the construction phase is also associated with poor construction techniques. Diesel, oil and lubricant spills are the main concern in respect of water pollution during construction together with organic pollution caused by inadequately managed facilities at the work sites. <u>The development site</u> There are no watercourses on site. This includes distinctive seasonal drainage lines and wetlands. There is a wetland situated to the south of the site.	NEGATIVE HIGH	Mitigation measures in the Environmental Management Plan include measures to ensure acceptable construction practices to minimise or avoid the risk of contamination of water sources. These include: Construction Site • No temporary facilities, temporary accommodation, temporary storage to be setup within 50m of any watercourse. • Encourage the construction contractor to employ local people as far as is reasonably practical and encourage the contractor to transport them daily to and from site. This would reduce solid and liquid waste production and water demand at the site camp. • During and after construction, stormwater control measures should be implemented especially around stockpiled soil, excavated areas, trenches etc. so that export of soil into any watercourse is avoided. Diesel, hydraulic fluid and lubricants • Minimise on-site storage of petroleum products; • Ensure measures to contain spills readily available on site (spill kits). • All petrochemical leaks and spills must be appropriately contained and disposed of at a licensed waste disposal site. Construction Vehicles • All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability. No repairs may be undertaken beyond the contractor laydown area. • Should any transfer of vehicle fuel take place on site, it is important to demarcate a specific area for this purpose. This area should be covered with an impermeable layer to prevent any penetration of fuel and oil spillage into the soil. The area could also be sloped towards an oil trap or sump to ease collection of spilled substances. • All construction vehicles should be serviced on a regular basis to minimise the risk of oil spillage on site. • Servicing of vehicles or equipment must take place off-site at appropriate workshop facilities. • When not in use, construction vehicles must be parked in an area provided	NEGATIVE MEDIUM	LOW

			with an impermeable layer to prevent leaks and spills from penetrating the substrate. Construction site domestic waste and sewage • Minimise on-site accommodation. • Deposit solid waste in containers and dispose at municipal waste disposal sites regularly. • Dispose of liquid waste (grey water) with sewerage. • Install appropriate ablution facilities. • Preferably utilise municipal systems or chemical toilets. Construction site inert waste (waste concrete, reinforcing rods, waste bags, wire, timber etc) • Ensure compliance with stringent daily clean up requirements on site. • Dispose at municipal waste disposal sites. Construction site hazardous waste • All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110% of the total volume of materials stored at any given time. • Material safety data sheets (MSDSs) are to be clearly displayed for all hazardous materials. • The integrity of the impervious surface and bunded area must be inspected regularly and any maintenance work conducted must be recorded in a maintenance report. • Employees should be provided with absorbent spill kits and disposal containers to handle spillages. • Train employees and contractors on the correct handling of spillages and precautionary measures that need to be implemented to minimise potential spillages. • Employees should record and report any spillages to the responsible person. • An Emergency Preparedness and Response Plan will be developed and implemented should and incident occur. • Access to storage areas on site must be restricted to authorised employees only. • Contractors will be held liable for any environmental damages caused by spillages.		
Geology Stability of structures and excavations.	NEGATIVE MEDIUM	• The foundation recommendations to be supplied by the geotechnical engineer must be implemented.	NEGATIVE LOW	LOW

		• The recommendations to be made in the Geotechnical report must be implemented and/or adhered too.		
Topographical Impacts Alteration of topography due to stockpiling of soil, building material and debris and waste material on site.	NEGATIVE MEDIUM	• All stockpiles must be restricted to designated areas and are not to exceed a height of 2 metres. • Stockpiles created during the construction phase are not to remain during the operational phase. • The contractor must be limited to clearly defined access routes to ensure that sensitive and undisturbed areas are not disturbed.	NEGATIVE LOW	LOW
Impact of erosion Unnecessary clearing of vegetation can result in exposed soil prone to erosive conditions. Insufficient soil coverage after placing of topsoil especially during construction where large surface areas are applicable could also cause erosion. To cause the loss of soil by erosion is an offence under the law. <u>The development site</u> The average slope across the site is between 1,5% to 1,9%. The general downward slope is from north to south, with the low point below the study site along the small, unnamed seasonal stream. Drainage is anticipated to occur in the same direction in the form of thorough flow, within the quaternary catchment C22H.	NEGATIVE MEDIUM	A combination of erosion prevention principles is discussed in detail in the EMPr. These include the use of mulch / fertiliser, matting, vegetation, retaining walls, topsoil coverage, diversion channels and berms, etc. Other factors which should be taken into account during the planning phase are the following: • Unnecessary clearing of flora resulting in exposed soil prone to erosive conditions should be avoided. • Land disturbance must be minimized in order to prevent erosion and run-off - this includes leaving exposed soils open for a prolonged period of time. As soon as vegetation is cleared (including alien) the area must be re-vegetated if it is not to be developed on in future. • Large exposed areas during the construction phases should be limited. Where possible areas earmarked for construction during later phases should remain covered with vegetation coverage until the actual construction phase. This will prevent unnecessary erosion and siltation in these areas. • The total area of exposed soil must be reduced during the rainy season. • Specifications for topsoil storage and replacement to ensure sufficient soil coverage as soon as possible after construction must be implemented. • All embankments must be adequately compacted and planted with grass to stop any excessive soils erosion and scouring of the landscape. • Any inlet to the piped stormwater system shall be fitted with a screen, or grating to prevent	NEGATIVE LOW	LOW

		debris and refuse from entering the stormwater system. This must be done immediately on installation of the piped system. • A storm water management plan must be compiled for the construction and operational phases of the proposed development. • Storm water diversion measures are recommended to control peak flows during thunder storms. • Proper stormwater infrastructure is part of the development and this will in itself improve the current situation on site, especially in the existing settlement in the north of the site. • Proper infrastructure will also ensure that there is minimal erosion and siltation. • Careful monitoring during the construction phase is essential to locate and mitigate any erosion observed. Investigations must be conducted after every rain downpour. Any problems need to be rectified immediately to avoid the problem escalating. • All work areas must be monitored at all times and maintained. • Channelled and piped stormwater must be released outside of all buffer zones.		
Soil Impacts Removal and compaction of soil during construction activities. Erosion, degradation and loss of topsoil due to construction activities as well as surface and stormwater run-off.	NEGATIVE MEDIUM	• Strip topsoil prior to any construction activities. • Reuse topsoil to rehabilitate disturbed areas. • Topsoil must be kept separate from overburden and must not be used for building purposes or maintenance or access roads. • Minimise the clearance of vegetation to avoid exposure of soil. • Protect areas susceptible to erosion with mulch or a suitable alternative. • Implement the appropriate topsoil and stormwater runoff control management measures as per the EMPr to prevent the loss of topsoil. • Topsoil should only be exposed for minimal periods of time and adequately stockpiled to prevent the topsoil loss and run-off.	NEGATIVE LOW	LOW
Air Quality Impacts Dust and emissions during construction generated by debris handling and debris piles, truck transport,	NEGATIVE MEDIUM	• Dust must be suppressed on the construction site and during the transportation of material during dry periods by the regular application of water. Water used for this purpose must be used in quantities that will not result in the generation of run-off.	NEGATIVE LOW	LOW

bulldozing, general construction.		• Loads could be covered to avoid loss of material in transport, especially if material is transported off site. • Dust and mud should be controlled at vehicle exit and entry points to prevent the dispersion of dust and mud beyond the site boundary. • Facilities for the washing of vehicles should be provided at the entry and exit points. • A speed limit of 40 km/hr should be set for all vehicles travelling over exposed areas. • During the transfer of materials, drop heights should be minimised to control the dispersion of mater being transferred. • The height of all stockpiles on site should be a maximum of 2m. • Use of dust retardant road surfacing if required due to the exceedance of Air Quality Guidelines.		
Impacts associated with construction activities such as noise, and safety The negative impact of noise, generally associated with construction activities, are temporary, occurring mostly during the construction phase. In terms of safety, it should be noted that the project involves deep excavations and open trenches. Excavations and open trenches can act as a trap for children (and also snakes, small mammals and lizards).	NEGATIVE MEDIUM	<u>Noise mitigation measures</u> • All construction activities should be undertaken according to daylight working hours between the hours of 07:00 – 17:00 on weekdays and 7:30 – 13:00 on Saturdays. • No construction activities may be undertaken on Sunday. • Provide all equipment with standard silencers. • Maintain silencer units in vehicles and equipment in good working order. • All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability. • Noise levels are to comply with ECA's 7dB rule i.e. cannot generate noise that increases the noise levels to 7db above the current ambient. • All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No. 85 of 1993). <u>Safety mitigation measures</u> • The area affected by construction must be fenced prior to any activities taking place. • All excavated areas must be clearly marked and barrier tape must be placed around them for safety purposes. • A Fire Management Plan has to be identified during the pre-construction phase and must be implemented throughout the construction and operation phases of the development	NEGATIVE MEDIUM	LOW

Traffic (construction vehicles) The construction phase is likely to generate additional traffic in terms of construction vehicles and heavy vehicles delivering materials to the site.	NEGATIVE MEDIUM	• The heavy construction vehicles should avoid the local roads during peak traffic times and large deliveries should also be scheduled outside the peak traffic times. • Signs should be erected in the vicinity of the site. • Construction vehicles are to avoid main roads during peak traffic hours. • All vehicles entering the Site are to be roadworthy. • When using heavy or large vehicles / equipment, "spotters" are to be present to assist the driver with his blind spots. • Any incident or damage to a vehicle must be reported immediately.	NEGATIVE MEDIUM	LOW
Traffic (road network) The proposed development could have a significant impact on the current road network when developed to its full potential	NEGATIVE HIGH	• The development trips to be generated by this development will have an insignificant effect on the external road network.	NEGATIVE MEDIUM	LOW
Impact of Labourers An uncontrolled influx of labourers with resulting increase in crime and squatting would place pressure on the natural environment (placement of snares, removal of trees for firewood, careless waste disposal, etc.). This could be severe, resulting in permanent damage to the environment if not mitigated properly.	NEGATIVE MEDIUM	• Mitigation measures to counter impact on the natural environment and limit potential for crime during the construction phase should include specifications in terms of control of construction workers (i.e. provision of toilet and cooking facilities, provision of either accommodation facilities or transport facilities, implementation of Environmental Educational Programmes, etc.). • Accommodation for labourers must either be limited to guarding personnel on the construction site (with labourers transported to and from existing neighbouring towns) or a separate fenced and controlled area where proper accommodation and relevant facilities are provided. • Part of the adjudication process for the successful contractor to undertake the civil works must be the use of casual and unskilled labour to stimulate local job creation through the use of labour intensive methods where possible. • If possible all labour should be sourced locally. • Contractors and their families may not stay on site. • No new informal settlements will be allowed.	NEGATIVE LOW	LOW
Safety Public safety during construction.	NEGATIVE MEDIUM	• Members of the public adjacent to the construction site should be notified of construction activities in order to limit unnecessary disturbance or interference.	NEGATIVE LOW	LOW

		• Construction activities will be undertaken during daylight hours and not on Sundays.		
Safety Construction staff safety during construction.	NEGATIVE MEDIUM	• Ensure the appointment of a Safety Officer to continuously monitor the safety conditions during construction. • All construction staff must have the appropriate PPE. • The construction staff handling chemicals or hazardous materials must be trained in the use of the substances and the environmental, health and safety consequences of incidents. • Report and record any environmental, health and safety incidents to the responsible person.	NEGATIVE MEDIUM	LOW
Impact on Cultural Heritage Resources No heritage resources were identified during the site visits. There is however always a probability that archaeological resources might be identified during excavations.	NEGATIVE LOW	• Monitoring of the study area by the ECO to implement a Chance Find Procedure in the case of chance finds. • Chance Find Procedure included in the EMPr.	NEGATIVE LOW	LOW
Existing services and infrastructure Damage to the existing services and infrastructure during the construction phase and disruptions in services (i.e. electricity, water, damage to Telkom cables) during the construction phase.	NEGATIVE LOW	• Determine areas where services will be upgraded and relocated well in advance; • Discuss possible disruptions with affected parties to determine most convenient times for service disruptions and warn affected parties well in advance of dates that service disruptions will take place.	NEGATIVE LOW	LOW
Waste Management <u>Builder's and domestic waste</u> The construction phase will create large quantities of builder's and domestic waste to be accommodated by local legal landfill sites.	NEGATIVE MEDIUM	• Prevent unhygienic usage on site and pollution of the natural assets. • Develop a central waste temporary holding site to be used during construction. (Near the access entrance). This site should comply with the following: • Skips for the containment and disposal of waste that could cause soil and water pollution, i.e. paint, lubricants, etc.; • Small lightweight waste items should be contained in skips with lids to prevent wind littering; • Bunded areas for containment and holding of dry building waste. • These areas shall be predetermined and located in areas that is already disturbed. • These areas shall not be in close proximity of any watercourse.	NEGATIVE LOW	LOW

<u>Sewage waste</u> Generation and disposal of sewage waste of temporary construction toilets.	NEGATIVE MEDIUM	• On-site chemical toilets will be provided for domestic purposes during construction phase. • The contractors will be responsible for the maintenance of the chemical toilets. • No temporary facilities or portable toilets to be setup within 50m of any watercourse. • Should any spills or incidents occur; the material will be cleaned up immediately and disposed of appropriately. • All incidents must be reported to the responsible site officer as soon as it occurs.	NEGATIVE LOW	LOW
Visual Impact Site clearing and removal of vegetation could partially alter the landscape as viewed from the surrounds of the site, with the emergence of exposed areas of bare soil.	NEGATIVE LOW	• Phased, rather than indiscriminate clearing of the site to be undertaken. • The architectural and landscape architectural guidelines for the proposed development will be developed to allow for a positive aesthetic influence on the surrounding environment. The guidelines will include aspects of finishes, lights pollution, colours to blend into the surrounding colours, heights of buildings, and roof finishes. Aesthetics and contextual appropriateness is to be a major aspect of these guidelines.	NEGATIVE LOW	LOW
Economic impacts Positive economic impacts are anticipated. The impact on employment would be positive, and although the impact is expected to be small; any contribution to more employment is an achievement in South Africa.	POSITIVE HIGH	Employment opportunities will be generated. • All labour (skilled and unskilled) and contractors should be sourced locally where possible. • A labour and recruitment policy must be developed, displayed and implemented by the contractor. • Recruitment at the construction site will not be allowed. • Where possible, labour intensive practices (as opposed to mechanised) should be practiced. • The principles of equality, BEE, gender equality and non-discrimination will be implemented.		
INDIRECT IMPACTS				
CUMULATIVE IMPACTS				
Visual Impact The development of the site would contribute to the cumulative effects of the gradual transformation of the area from an area with rural / part-natural		Refer to activity / phase specific mitigation measures above.		

landscape components to an area dominated by urban development.				

ALTERNATIVE 1				
DIRECT IMPACTS				
Potential Impacts	Significance Rating	Mitigation Measures	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
All impacts as described under Proposal above are also applicable to Alternative 1				
DIRECT IMPACTS				
No indirect impacts were identified during the construction phase.				

NO GO ALTERNATIVE				
DIRECT IMPACTS				
Potential Impacts	Significance Rating	Mitigation Measures	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
All the impacts outlined above will not apply to the No-Go alternative as the status quo will apply and the environment will remain as it is currently. However, it is important to note that the benefits associated with the development will also not materialise, and it must be noted that the majority of the impacts identified for the development were mitigated to a negative low or positive impact once the measures for mitigation were applied, indicating that maintaining the status quo is to lose the opportunity of a beneficial development with negligible environmental impacts.				
DIRECT IMPACTS				
No indirect impacts were identified during the construction phase.				
CUMULATIVE IMPACTS				
No cumulative impacts were identified during the construction phase.				

2.3 OPERATIONAL PHASE

ALTERNATIVE PROPOSAL				
DIRECT IMPACTS				
Potential Impacts	Significance Rating	Mitigation Measures	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Impact on the natural habitat Due to the present degraded state of the development site, the removal of alien invasive plants coupled with indigenous landscaping as proposed will have a positive effect on the biodiversity of not only the site itself, but also its surrounds.	POSITIVE HIGH	Landscaping guidelines as stipulated in the EMPr must be followed during the operational phase of the project.		
Impact on water resources The proposed development could have a negative impact on water resources. Increased coverage of paved/hardened surfaces may increase the volume and velocity of stormwater runoff.	NEGATIVE HIGH	Stormwater Management are addressed in the Environmental Management Programme (EMPr). A site specific stormwater management plan is required.	NEGATIVE MEDIUM	LOW
Hydrogeology Impacts Leaks of untreated water from pipelines may occur and impact on the groundwater quality.	NEGATIVE LOW	Any leaks should be fixed immediately and areas rehabilitated as needed.	NEGATIVE LOW	LOW
Traffic impact The proposed development could have a significant impact on the current road network when developed to its full potential.	NEGATIVE MEDIUM	The development trips to be generated by this development will have an effect on the external road network. The recommended road upgradings to be implemented.	NEGATIVE LOW	LOW
Lighting pollution	NEGATIVE MEDIUM	• Security lighting must be carefully planned. These lights must not spill into the eyes of oncoming traffic and must not shine into adjacent properties; • Interior lighting must be subtle and in order to prevent it from lighting up the sky and from using energy, the implementation of movement switches (especially for large glassed interior areas that are highly visible) should be considered; • Exterior lighting, especially the lighting in the vicinity of the	NEGATIVE LOW	LOW

		open space areas must be designed to shine downwards and the bulbs to be used should rather be "dim" that bright; • Prevent the implementation of exterior advertising signs and name boards that will flicker into the eyes of surrounding neighbours and into the eyes of oncoming traffic; • Obtain the necessary approvals for the erection of advertising and other signs.		
Socio-Economic Impact Provision of much needed housing.	POSITIVE HIGH			
Socio-Economic Impact The generation of rates and taxes will contribute to Municipal income regeneration while mitigating challenges faced by the municipality such as job creation, upgrading of infrastructure, SMME growth and social/human development.	POSITIVE HIGH			
Noise Impact Noise caused by movement of residents etc.	NEGATIVE LOW	• All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No. 85 of 1993).	NEGATIVE LOW	LOW
Availability of civil services The availability of civil and electrical services is confirmed.	POSITIVE HIGH			
Upgrading of existing infrastructure The proposed development will contribute to the upgrading of existing infrastructure.	POSITIVE HIGH			
Energy Energy consumption	NEGATIVE HIGH	• It is recommended that renewable energy options and/or alternative energy sources be used. • Sustainable design principles must be implemented	NEGATIVE LOW	LOW
Waste Impact Contamination of the surface and site with general waste. General waste produced on site includes:	NEGATIVE MEDIUM	• An adequate number of general waste receptacles, including bins must be arranged around the site to collect all domestic refuse, and to minimise littering. • Bins must be provided on site	NEGATIVE LOW	LOW

• Operational waste (clean steel, wood, glass); and • General domestic waste (food, cardboards, paper, bottles, tins).		for use by employees. • Bins should be clearly marked and lined for efficient control and safe disposal of waste. • Different waste bins, for different waste streams must be provided to ensure correct waste separation. • A fenced area must be allocated for waste sorting and disposal on the site. • Hazardous waste is not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site. • Under no circumstances is waste to be burnt or buried on site. • Waste bins should be cleaned out on a regular basis to prevent any windblown waste and/or visual disturbance. • All general waste must be removed from the site at regular intervals and disposed of in suitable waste receptacle.		
INDIRECT IMPACTS				
No indirect impacts were identified during the operational phase.				
CUMULATIVE IMPACTS				
Socio-Economic Impact The proposed development forms part of an integrated human settlement mixed development planned by the Housing Development Agency (HDA) and the Gauteng Department of Human Settlements in Ennerdale Extension 6.	POSITIVE HIGH			
Municipal Infrastructure The extra pressure that this development could place on the existing municipal infrastructure for waste and sewage disposal as well as water provisions could be significant when seen together with other developments within the greater municipal area.	NEGATIVE LOW	The availability of bulk water and sewer confirmed. Availability of electricity to be confirmed.	NEGATIVE LOW	LOW
Traffic The proposed development together with other developments in the region would have a significant	NEGATIVE MEDIUM	The development trips to be generated by this development will have an effect on the external road network.	NEGATIVE LOW	LOW

impact on the current road network.				
Noise Noise pollution from vehicles, noise associated with human habitation as well as domestic animals, dogs etc.	NEGATIVE MEDIUM	• All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No. 85 of 1993).	NEGATIVE LOW	LOW
Ecological Localised impacts on the site Impacts on the region and larger ecosystem	 NEGATIVE HIGH NEGATIVE MEDIUM			

ALTERNATIVE 1				
DIRECT IMPACTS				
Potential Impacts	Significance Rating	Mitigation Measures	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Impact on the natural habitat Due to the present degraded state of the development site, the removal of alien invasive plants coupled with indigenous landscaping as proposed will have a positive effect on the biodiversity of not only the site itself, but also its surrounds.	POSITIVE HIGH	Landscaping guidelines as stipulated in the EMPr must be followed during the operational phase of the project.		
Impact on water resources The proposed development could have a negative impact on water resources. Increased coverage of paved/hardened surfaces may increase the volume and velocity of stormwater runoff.	NEGATIVE HIGH	Stormwater Management are addressed in the Environmental Management Programme (EMPr). A site specific stormwater management plan is required.	NEGATIVE MEDIUM	LOW
Hydrogeology Impacts Leaks of untreated water from pipelines may occur and impact on the groundwater quality.	NEGATIVE LOW	Any leaks should be fixed immediately and areas rehabilitated as needed.	NEGATIVE LOW	LOW
Traffic impact The proposed development could have a significant impact on the current road network when developed to its full potential.	NEGATIVE MEDIUM	The development trips to be generated by this development will have an effect on the external road network. The recommended road upgradings to be implemented.	NEGATIVE LOW	LOW

Lighting pollution	NEGATIVE MEDIUM	• Security lighting must be carefully planned. These lights must not spill into the eyes of oncoming traffic and must not shine into adjacent properties; • Interior lighting must be subtle and in order to prevent it from lighting up the sky and from using energy, the implementation of movement switches (especially for large glassed interior areas that are highly visible) should be considered; • Exterior lighting, especially the lighting in the vicinity of the open space areas must be designed to shine downwards and the bulbs to be used should rather be "dim" that bright; • Prevent the implementation of exterior advertising signs and name boards that will flicker into the eyes of surrounding neighbours and into the eyes of oncoming traffic; • Obtain the necessary approvals for the erection of advertising and other signs.	NEGATIVE LOW	LOW
Socio-Economic Impact Provision of employment opportunities	POSITIVE HIGH			
Socio-Economic Impact The generation of rates and taxes will contribute to Municipal income regeneration while mitigating challenges faced by the municipality such as job creation, upgrading of infrastructure, SMME growth and social/human development.	POSITIVE HIGH			
Noise Impact Noise caused by industrial development could have a significant impact on surrounding residential areas.	NEGATIVE HIGH	• All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No. 85 of 1993).	NEGATIVE MEDIUM	LOW
Air Quality Impacts Air pollution due to an industrial activity.	NEGATIVE HIGH	• Air quality guidelines to be implemented.	NEGATIVE MEDIUM	MEDIUM

Availability of civil services The availability of civil and electrical services is confirmed.	POSITIVE HIGH			
Upgrading of existing infrastructure The proposed development will contribute to the upgrading of existing infrastructure.	POSITIVE HIGH			
Energy Energy consumption	NEGATIVE HIGH	• It is recommended that renewable energy options and/or alternative energy sources be used. • Sustainable design principles must be implemented	NEGATIVE LOW	LOW
Waste Impact Contamination of the surface and site with general waste. General waste produced on site includes: • Operational waste (clean steel, wood, glass); and • General domestic waste (food, cardboards, paper, bottles, tins). The industrial development could also produce hazardous waste.	NEGATIVE HIGH	• An adequate number of general waste receptacles, including bins must be arranged around the site to collect all domestic refuse, and to minimise littering. • Bins must be provided on site for use by employees. • Bins should be clearly marked and lined for efficient control and safe disposal of waste. • Different waste bins, for different waste streams must be provided to ensure correct waste separation. • A fenced area must be allocated for waste sorting and disposal on the site. • Hazardous waste is not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site. • Under no circumstances is waste to be burnt or buried on site. • Waste bins should be cleaned out on a regular basis to prevent any windblown waste and/or visual disturbance. • All general waste must be removed from the site at regular intervals and disposed of in suitable waste receptacle. • All hazardous substances must be stored on an impervious surface in a designated bunded area, able to contain 110% of the total volume of materials stored at any given time. • Material safety data sheets (MSDSs) are to be clearly displayed for all hazardous materials.	NEGATIVE MEDIUM	LOW

INDIRECT IMPACTS				
No indirect impacts were identified during the operational phase.				
CUMULATIVE IMPACTS				
Municipal Infrastructure The extra pressure that this development could place on the existing municipal infrastructure for waste and sewage disposal as well as water provisions could be significant when seen together with other developments within the greater municipal area.	NEGATIVE LOW	The availability of bulk water and sewer confirmed. Availability of electricity to be confirmed.	NEGATIVE LOW	LOW
Traffic The proposed development together with other developments in the region would have a significant impact on the current road network.	NEGATIVE MEDIUM	The development trips to be generated by this development will have an effect on the external road network.	NEGATIVE LOW	LOW
Noise Noise pollution from vehicles, noise associated with industrial development.	NEGATIVE MEDIUM	• All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No. 85 of 1993).	NEGATIVE LOW	LOW
Ecological Localised impacts on the site Impacts on the region and larger ecosystem	 NEGATIVE HIGH NEGATIVE MEDIUM			

NO GO ALTERNATIVE				
DIRECT IMPACTS				
Potential Impacts	Significance Rating	Mitigation Measures	Significance rating of impacts after mitigation	Risk of the impact and mitigation not being implemented
All the impacts outlined above will not apply to the No-Go alternative as the status quo will apply and the environment will remain as it is currently. However, it is important to note that the benefits associated with the development will also not materialise, and it must be noted that the majority of the impacts identified for the				

development were mitigated to a negative low or positive impact once the measures for mitigation were applied, indicating that maintaining the status quo is to lose the opportunity of a beneficial development with negligible environmental impacts.				
DIRECT IMPACTS				
No indirect impacts were identified during the operational phase.				
CUMULATIVE IMPACTS				
No cumulative impacts were identified during the operational phase.				

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

Biodiversity Assessment - Terrestrial and Aquatic Ecology
Heritage Investigation
Engineering Services

All of the above attached in Appendix G.

Describe any gaps in knowledge or assumptions made in the assessment of the environment and the impacts associated with the proposed development.

3. IMPACTS THAT MAY RESULT FROM THE DECOMISSIONING AND CLOSURE PHASE

Briefly describe and compare the potential impacts (as appropriate), significance rating of impacts, proposed mitigation and significance rating of impacts after mitigation that are likely to occur as a result of the decommissioning and closure phase for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

Due to the permanent nature of this development proposal, decommissioning is highly unlikely and decommissioning therefore does not form part of this project proposal.

List any specialist reports that were used to fill in the above tables. Such reports are to be attached in the appropriate Appendix.

N/A

Where applicable indicate the detailed financial provisions for rehabilitation, closure and ongoing post decommissioning management for the negative environmental impacts.

N/A

4. CUMULATIVE IMPACTS

Describe potential impacts that, on their own may not be significant, but is significant when added to the impact of other activities or existing impacts in the environment. Substantiate response:

Refer to *2: Impacts that may result from the construction and operational phase* for detailed information on the cumulative impacts.

5. ENVIRONMENTAL IMPACT STATEMENT

Taking the assessment of potential impacts into account, please provide an environmental impact statement that sums up the impact that the proposal and its alternatives may have on the environment after the management and mitigation of impacts have been taken into account with specific reference to types of impact, duration of impacts, likelihood of potential impacts actually occurring and the significance of impacts.

PLANNING & DESIGN PHASE (PROPOSAL)

Impact Description	Intensity	Extent	Duration	Probability Probability it would occur	Significance rating After Mitigation
Impact on Natural Habitat	1	2	2	1	Low
Visual Impact	1	2	2	1	Low
Impact of Storm water	3	2	2	2	Low
Light Pollution	2	2	2	1	Low

CONSTRUCTION PHASE (PROPOSAL)

Impact Description	Intensity	Extent	Duration	Probability Probability it would occur	Significance rating After Mitigation
Loss of Natural Vegetation	2	2	3	1	Medium
Loss or impact on fauna	1	1	3	1	Low
Impact on Water Resources	2	2	2	1	Low
Geology: Stability of structures	1	1	3	1	Low
Topographical Impacts	2	1	1	2	Low
Impact on Erosion	2	1	1	2	Low
Soil impacts	1	2	1	2	Low
Impact of Noise, Safety and Dust	2	2	2	2	Medium
Traffic Impact	2	2	2	2	Medium
Impact of Labourers	1	2	1	2	Low
Impact on Cultural Heritage Resources	1	1	2	1	Low
Existing Services and Infrastructure	1	2	2	1	Low
Waste Management	1	1	1	2	Low
Visual Impact	1	1	1	2	Low
Economic Impacts This will be a POSITIVE impact	3	2	2	3	High

OPERATIONAL PHASE (PROPOSAL)

Impact Description	Intensity	Extent	Duration	Probability Probability it would occur	Significance rating After Mitigation
Impact on Natural Habitat This will be a POSITIVE impact	2	2	3	3	High
Impact on water resources	2	2	2	1	Medium
Hydrogeology Impacts	1	1	3	1	Low
Traffic impact	1	2	2	1	Low
Lighting pollution	2	1	3	1	Low
Noise impacts	2	1	3	1	Low
Availability of services	2	2	3	3	High
Energy Consumption	1	3	3	2	Medium
Waste impact	1	1	3	1	Low
Socio-Economic Impacts: Provision of much needed housing This will be a POSITIVE impact	3	2	3	3	High
Socio-Economic Impacts: The generation of rates and taxes will contribute to Municipal income regeneration while mitigating challenges faced by the municipality such as job creation, upgrading of infrastructure, SMME growth and social/human development. This will be a POSITIVE impact	3	2	3	3	High
Upgrading of existing infrastructure This will be a POSITIVE impact	3	2	3	3	High

PLANNING & DESIGN PHASE (ALTERNATIVE 1)

Impact Description	Intensity	Extent	Duration	Probability Probability it would occur	Significance rating After Mitigation
Impact on Natural Habitat	1	2	2	1	Low
Visual Impact	1	2	2	1	Low
Impact of Storm water	3	2	2	2	Low
Light Pollution	2	2	2	1	Low

CONSTRUCTION PHASE (ALTERNATIVE 1)

Impact Description	Intensity	Extent	Duration	Probability Probability it would occur	Significance rating After Mitigation
Loss of Natural Vegetation	2	2	3	1	Medium

Loss or impact on fauna	1	1	3	1	Low
Impact on Water Resources	2	2	2	1	Low
Geology: Stability of structures	1	1	3	1	Low
Topographical Impacts	2	1	1	2	Low
Impact on Erosion	2	1	1	2	Low
Soil impacts	1	2	1	2	Low
Impact of Noise, Safety and Dust	2	2	2	2	Medium
Traffic Impact	2	2	2	2	Medium
Impact of Labourers	1	2	1	2	Low
Impact on Cultural Heritage Resources	1	1	2	1	Low
Existing Services and Infrastructure	1	2	2	1	Low
Waste Management	1	1	1	2	Low
Visual Impact	1	1	1	2	Low
Economic Impacts This will be a POSITIVE impact	3	2	2	3	High

OPERATIONAL PHASE (ALTERNATIVE 1)

Impact Description	Intensity	Extent	Duration	Probability Probability it would occur	Significance rating After Mitigation
Impact on Natural Habitat This will be a POSITIVE impact	2	2	3	3	High
Impact on water resources	1	2	2	1	Low
Hydrogeology Impacts	1	2	2	1	Low
Traffic impact	1	2	2	1	Low
Lighting pollution	2	1	3	1	Low
Noise impacts	2	1	3	1	Low
Availability of services	2	2	3	3	High
Energy Consumption	1	3	3	2	Medium
Waste impact	1	3	3	2	Medium
Air Quality Impacts	1	3	3	2	Medium
Socio-Economic Impacts: Provision of employment opportunities This will be a POSITIVE impact	3	2	3	3	High

NO-GO (Compulsory)
All the impacts outlined above will not apply to the No-Go alternative as the status quo will apply and the environment will remain as it is currently. However, it is important to note that the benefits associated with the development will also not materialise, and it must be noted that the majority of the impacts identified for

the development were mitigated to a negative low or positive impact once the measures for mitigation were applied, indicating that maintaining the status quo is to lose the opportunity of a beneficial development with negligible environmental impacts.

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

In accordance with GN No. 982, the Environmental Impact Phase is aimed at identifying and assessing potential impacts caused by the proposed development. The ability to mitigate any of the identified impacts are also addressed and summarised into a working / dynamic Environmental Management Programme (EMPr) for consideration by the GDARD.

Comments and/or concerns identified by Interested and Affected Parties (I&APs) during the review period of the Draft Basic Assessment will be incorporated into the Final Basic Assessment to be submitted to the GDARD for consideration.

Having assessed all the potential environmental impacts associated with the proposed development it is the opinion of the EAP that the proposed development on Erf 4625 Ennerdale X 6 is issued with a positive Authorisation from the GDARD for the following reasons:

The Housing Development Agency (HDA) was appointed by the Gauteng Department of Human Settlements to undertake the necessary planning work on sites identified in Ennerdale Extension 6 (Phase 2). According to the Gauteng Provincial Department of Human Settlements, a total population of 106 091 has been registered on the National Housing Needs Register in the year 2017, comprising 2 713 people from Ennerdale and 7 978 people from Finetown. During this year various land parcels were identified for possible development to accommodate these beneficiaries. This proposed development with a potential yield of 2 693 units will address 25% of the 10 691 people registered in 2017. This current application for Environmental Authorisation (EA) is for the construction of one of the identified sites, Erf 4625 Ennerdale Extension 6. The development of the mentioned property into an integrated human settlement mixed development is planned on approximately 7.6883 hectares.

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

According to the analyses of the floristic, faunal and overall ecological sensitivities there are no high sensitivity areas or habitats. In other words, there are no 'No-Go' areas within the study area. According to the Gauteng Conservation Plan (C-Plan) version 3.3, the study area impacts on a demarcated Critical Biodiversity Area (CBA). However It would appear as if these CBA areas are outdated as much of the area has either been urbanised or has been earmarked by the Gauteng EMF for urban development (Zone 1). The study site is also highly degraded and has no sensitive habitats or area worth protecting. Therefore, most of the site is calculated to have a sensitivity of 'Medium'.

There are no watercourses on the site. The closest watercourse is a small seasonal unnamed stream and associated valley bottom wetlands that range from 100m to 150m south of the site.

There are no ridges within a 500m radius of the study site and therefore, also no 200m buffer required as per Class 1 Ridges.

No heritage resources were identified on the site.

The need for providing housing is undeniable at all levels of government. Improving the living standards of the community may contribute to a decrease in crime and improved safety in the area.

The proposed development will supply in the need for housing and job opportunities in the area. The proposed project will thus create positive social, economic and community impacts.

Although a number of potential negative biophysical, socio economic and cumulative impacts were identified, there are no fatal flaws that should prevent the development from proceeding. It was demonstrated that most of these impacts can also be mitigated effectively in order to reduce the significance.

For alternative:

An industrial development will not be compatible with the surrounding residential land uses and is not in line with the Joburg SDF. In addition, an industrial development will not address the need for housing in the area as illustrated in the large number of people registered on the National Housing Needs Register.

Activity Alternative 1 (Industrial development) is not the preferred option.

Having assessed the significance of impacts of the proposal and alternative(s), please provide an overall summary and reasons for selecting the proposal or preferred alternative.

The significance of impacts for the Proposal and Activity Alternative 1 are very similar during the planning and construction phases. However, the Proposal have more positive socio economic impacts during the operational phase.

For both the Proposal and the Alternative, the majority of the negative environmental impacts will be experienced during the construction phase. The majority of these impacts will have a LOW significance. It is envisaged that these impacts can be easily mitigated and satisfactorily managed. The management of the impacts identified in the BAR for the construction and operational phases, are outlined in the technical specialist report recommendations and the EMPr.

It is the opinion of Setala Environmental that there are presently no environmental impacts emanating from the proposed activity that cannot be adequately managed. The management of the negative impacts will require the implementation of the necessary mitigatory measures detailed in the Environmental Management Programme (EMPr, refer to Appendix H) of this report.

Based on the assumption that the mitigation measures will be effectively implemented for the proposed development on Erf 4625 Ennerdale X 6 and its associated infrastructure and that no fatal flaws have been identified to date, it is the opinion of the EAP that this activity should be authorized to proceed to the final stages of decision making.

7. SPATIAL DEVELOPMENT TOOLS

Indicate the application of any spatial development tool protocols on the proposed development and the outcome thereof.

Spatial development tools used included ArcGIS v.10.2; Google Earth Professional; SANBI's BGIS MapViewer (www.bgis.sanbi.org) and Garmin Maps.

These tools, along with relevant datasets such as vegetation types, rivers, GDARD's C-Plan datasets, etc. were used in the desktop assessment as well as the final biodiversity specialist reports. ArcGIS as well as

Google Earth Professional were used to produce the detailed maps used in the reports.
The outcome is that these spatial development tools give accurate layouts and positions of important data such as Critical Biodiversity Areas. The tools are also used to create accurate and visual maps showing floodlines, watercourses, sensitive areas, etc.

Gauteng Environmental Management Framework

The Gauteng Environmental Management Framework (EMF) is a legal instrument in terms of the Environmental Management Regulations Framework (2010). The objective of the EMF is to protect Critical Biodiversity Areas (CBAs) and properly integrate Ecological Support Areas (ESAs) as defined in the C-Plan, within urban and rural areas. The study area was assessed in terms of the EMF (2014 & 2018), with focus on biodiversity, current land use, hydrology and other environmental factors. An environmental sensitivity assessment was conducted and sensitivity delineations done in terms of Conservation status, Conservation priorities, Ridges, Surface hydrological features and current land use. EMF Zones 1 & 5 have been updated in terms of Government Gazette 41473, Notice 164 of 2 March 2018.

According to the Environmental Management Zones of the EMF, the study site is situated within Zone 1: Urban Development Zone. Refer to Figure 7 and *Appendix A7* for a map of the GEMF zone.

Part of the land use zoning that also needs to be considered during proposed development is the compatibilities between the various EMF Management Zones, as shown in the table below.

Table: Land use zone compatibility matrix

Category	Development or Landuses	Zones that are compatible with development or landuse	Zones that are Conditionally compatible with developments of landuse	Zones that are not compatible with development or landuse
Residential	Accommodation est. temporary or transient formal residential.	1	5	2, 3, and 4
	Multiple residential.	1	5	2, 3, and 4
	Single residential.	1	5	2, 3, and 4
	Transitional residential settlement area.	1	5	2, 3, and 4
	Dispersed residential.	1	5	2, 3, and 4
	Farm worker accommodation.	3 and 4	5	1 and 2
	Living accommodation for domestic workers.	1	5	2, 3 and 4
	Holiday housing	1 and 4	3	2 and 5
	Rural residential development nodes (not dispersed residential).	-	4	1, 2, 3 and 5
	Life style estates [2].	-	1 and 5	2, 3, and 4

Zone 1 is dominated by residential uses. The site is therefore compatible with the land use (single residential) of the EMF.

Figure 7: Gauteng EMF Zones

Gauteng Conservation Plan (C-Plan v.3.3)

Critical biodiversity areas (CBAs) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services (SANBI, 2007).

According to Gauteng C-Plan v3.3., Critical Biodiversity Areas (CBAs) in the C-Plan contain three types of areas:

- Irreplaceable areas, which are essential in meeting targets set for the conservation of biodiversity in Gauteng.
- Areas that are important for the conservation of biodiversity in Gauteng.
- Conserved areas, which include all existing level 1 and 2 protected areas.

Level 1 protected areas are proclaimed in terms of relevant legislation specifically for the protection of biodiversity (or for the purposes of nature conservation) AND are subject to an ecological management plan with conservation of biodiversity as the primary management objective.

Level 2 protected areas are proclaimed in terms of relevant legislation specifically for the protection of biodiversity (or for the purposes of nature conservation) OR are subject to an ecological management plan with conservation of biodiversity as the primary management objective.

Ecological Support Areas (ESAs) are an imperative part of the C-Plan, to ensure sustainability in the long term. A conservation plan that does not include ESAs would not be sustainable, as it would assume a static (as opposed to a dynamic) environment. ESAs are part of the entire hierarchy of biodiversity, but it is not possible to include all biodiversity features. Landscape features associated with ESAs (termed spatial surrogates for ESAs) that are essential for the maintenance and generation of biodiversity in sensitive areas and that require sensitive management were incorporated into C-Plan 3. Spatial surrogates included dolomite, rivers, wetlands, pans, corridors for climate change and species migration, ridges and low cost areas for Johannesburg MM and Tshwane MM (Gauteng C-Plan v.3.3).

According to the Gauteng Conservation Plan (C-plan) version 3.3, the study site is a Critical Biodiversity Area (CBA - Optimal).It would appear as if these CBA areas are outdated as much of the area has either been urbanised or has been earmarked by the Gauteng EMF for urban development (Zone 1). The study site is also highly degraded and has no sensitive habitats or area worth protecting.

Critical biodiversity areas (CBAs) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services (SANBI, 2007). These form the key outputs of a systematic conservation assessment and are the biodiversity sectors inputs into multi-sectoral planning and decision-making tools. CBAs are areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services (SANBI).

Ecological Support Areas (ESAs) are areas that are often seen as buffer areas for CBAs as well as corridors and connective areas between CBAs and/or other priority areas. ESAs are also often designated buffer and support areas along rivers and streams. Refer to *Appendix A5* for a map showing the Critical Biodiversity Areas.

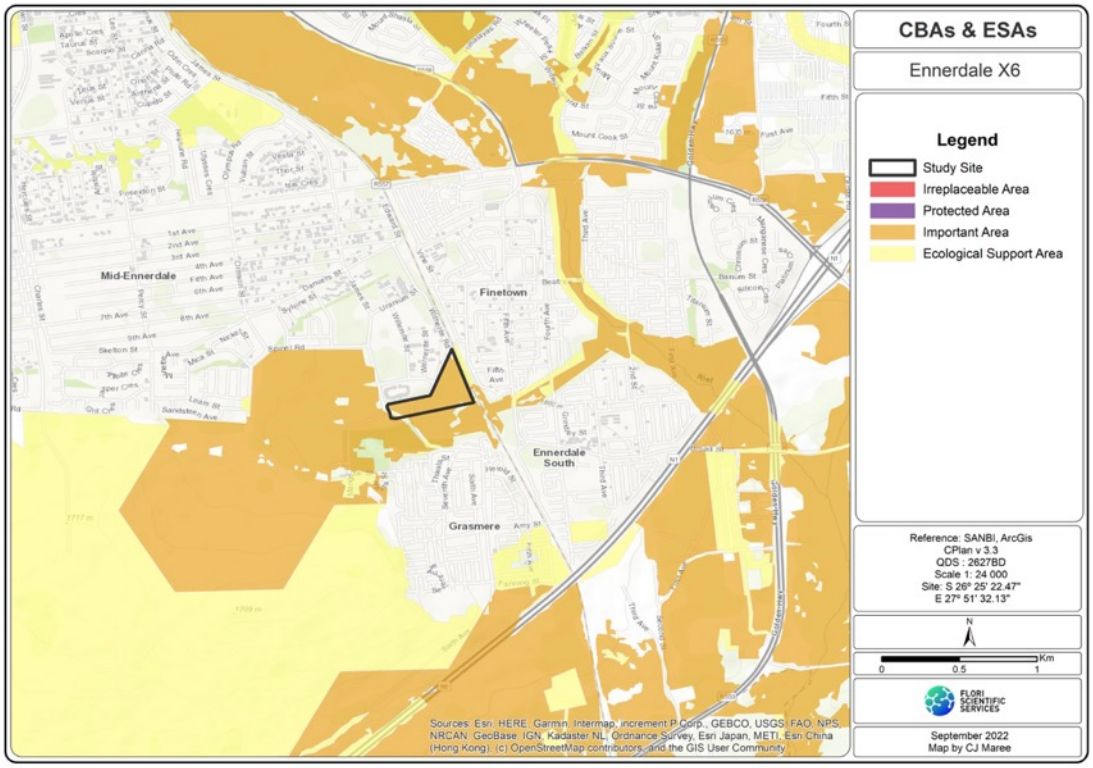

Figure: CBAs and ESAs

National Environmental Screening Tool

The National Web based Environmental Screening Tool is a geospatial web-enabled application providing for screening of sites for environmental sensitivity and the placement of proposed developments in relation to the impact avoidance hierarchy. It produces the report required in terms of regulation 16(1)(v) of the EIA regulations.

The Environmental Assessment Practitioner (EAP) consulted the DEA Screening Tool to inform on the environmental sensitivity of the proposed development site. The following summary of the site environmental sensitivities is identified. Only the highest environmental sensitivity is discussed. The footprint environmental sensitivities for the proposed development footprint as identified, are indicative only. Refer to the screening report attached as *Appendix I3.*

Environmental Sensitivity of study site according to the Environmental Screening Report:

Animal species theme: High & Medium.
Aquatic biodiversity combined sensitivity: High and Low.
Plant species theme: Low and Medium.
Terrestrial biodiversity combined sensitivity: Very High.

The Table below, shows the maps as obtained from the DEA Screening Tool.

Table: Maps from DEA Screening Tool

Aquatic Biodiversity Sensitivity	Plant Species Theme	Terrestrial Biodiversity Sensitivity
		
Blue Marked Area: Study Site. Sensitivity: Low (Green) : Medium (Yellow) : High (Red)		

During field investigations the DEA Screening Tool assessment, was verified (ground-truthed). The Biodiversity specialist disputes the accuracy of all of the assessments / findings.

During site investigations the various biodiversity sensitivities were assessed and verified. The site investigations affirmed most of the sensitivity ratings as shown in the screening tool assessment, with the exception of the terrestrial biodiversity theme. The terrestrial biodiversity theme was only found to be 'Medium' in reality and not 'very high' as per the screening tool. The reasons for the 'Medium' sensitivity are found throughout the Biodiversity Assessment Report.

<u>Specialist assessments identified in Screening Tool</u>

Based on the selected classification, and the environmental sensitivities of the proposed development footprint, the following list of specialist assessments have been identified for inclusion in the assessment report:

1. Landscape/Visual Impact Assessment
   Refer to Section 9, Socio-Economic Context, p34
2. Archaeological and Cultural Heritage Impact Assessment
   Refer to Appendix G2
3. Palaeontology Impact Assessment
   Refer to Appendix G2
4. Terrestrial Biodiversity Impact Assessment
   Refer to Appendix G1
5. Aquatic Biodiversity Impact Assessment
   Refer to Appendix G1
6. Socio-Economic Assessment
   Refer to Section 9. Socio-Economic Context, p31
7. Plant Species Assessment
   Refer to Appendix G1
8. Animal Species Assessment
   Refer to Appendix G1

8. RECOMMENDATION OF THE PRACTITIONER

Is the information contained in this report and the documentation attached hereto sufficient to make a decision in respect of the activity applied for (in the view of the Environmental Assessment Practitioner as bound by professional ethical standards and the code of conduct of EAPASA).	YES X	NO

If "NO", indicate the aspects that require further assessment before a decision can be made (list the aspects that require further assessment):

If "YES", please list any recommended conditions, including mitigation measures that should be considered for inclusion in any authorisation that may be granted by the competent authority in respect of the application:

The findings conclude that there are no environmental fatal flaws that could prevent the proposed development if the recommended mitigation and management measures contained in the BAR and EMPr (*Appendix H)* are implemented.

In order to achieve appropriate environmental management standards and ensure that the findings of the environmental studies are implemented through practical measures, the recommendations from this BAR are included within an EMPr *(Appendix H)*.

In addition, the following key conditions should be included as part of the authorisation:

- The EMPr *(attached in Appendix H)* must be implemented and complied with to ensure the minimisation, control and mitigation of construction phase impacts.
- Compliance with the EMPr should be evaluated and audited by an independent, appropriately qualified and experienced ECO, on a monthly basis, as a minimum.
- The implementation of a site-specific Stormwater Management Plan that had been approved by the local Municipality.
- Rehabilitation must be done correctly and on time, particularly in terms of erosion control and the prevention of exposed soils.
- If during construction any new evidence of archaeological sites or artefacts, paleontological fossils, graves or other heritage resources are found, the operations must be stopped and a qualified archaeologist or SAHRA must be contacted immediately for an assessment of the find.
- A Geotechnical Investigation must be conducted prior to construction.
- The availability of electricity to be confirmed.
- All recommendations made by the specialists in reports compiled for this development should be adhered to at all times.

9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT

(as per notice 792 of 2012, or the updated version of this guideline)

The proposed development is a requirement of the Johannesburg Metropolitan Municipality towards its "Inclusionary Housing Policy" and is therefore implementing that requirement. The growing gap between income and the cost of housing does not affect only lower income households but also households with middle-range incomes that struggle to find affordable housing.

The proposed development proposes to address the need to initiate an upward mobility trend "Gap Housing" which addresses the gap between what middle income families earn and the affordability of housing offer. "Gap Housing" is therefore aimed at widening the availability of housing stock for lower income families. The proposed development commits itself to provide opportunities in the "gap housing" market — so named because it addresses the gap between what middle income families earn and what houses they can afford. This will be achieved by bridging the gap between the high- and low-income housing types.

The proposed development forms part of the densification strategy of the Greater Johannesburg Metropolitan Municipality, where development will be concentrated along well-planned transportation arteries. The Joburg Growth and Development Strategy 2040 and JSDF2040, focuses on Transit-Oriented Development with mixed use development such as higher density accommodation, supported by office buildings, retail developments and recreation along transport routes. The proposed development will encourage infill development.

The proposed development will also encourage infrastructure upgrades in the area as new bulk services will accompany the development and be integrated into the existing networks. The development of new infrastructure will also assist in maintenance of ageing infrastructure in surrounding neighbourhoods.
The proposed development will be demand driven and will meet the growing need/demand for sustainable human settlement, integrating housing with social, economic and environmental amenities.
The proposed development will have a positive impact on the surrounding area as it will provide employment opportunities for the immediate and close residents. The proposed development will generally be desired as it will imply additional investment and business opportunities in the area.

The proposed development can be considered in line with the Joburg SDF as it promotes residential densification as opposed to urban sprawl.
The proposed development represents an opportunity for this properties to be developed to its highest potential at an appropriate scale and in economically viable way.
The application is desirable, in that it ties in with the vision of the City of Johannesburg Metropolitan Municipality. The shift in the planning paradigm is to provide in essence for a more compact, effective and sustainable city.
The proposed development will have a positive impact on the surrounding area as it will provide employment opportunities for the immediate and close residents. The proposed development will generally be desired as it will imply additional investment and business opportunities in the area.
The proposed development is in line with the guiding principles set out in the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED

(consider when the activity is expected to be concluded)

10 years

11. ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

(must include post construction monitoring requirements and when these will be concluded.)

If the EAP answers "Yes" to Point 7 above then an EMP is to be attached to this report as an Appendix

EMPr attached	YES X

SECTION F: APPENDIXES