DRAFT BASIC ASSESSMENT REPORT

FOR

PROPOSED SOUTH GERMISTON EXT 25

(A PART OF PORTION 103 OF THE FARM DRIEFONTEIN 87 IR)

REF NR: 002/17-18/E0070

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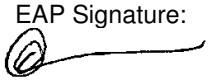
Date Modified: 21/06/2017	EAP Signature: 
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Definitions

Activity (Development)	An action either planned or existing that may result in environmental impacts through pollution or resource use. For the purpose of this report, the terms 'activity' and 'development' are freely interchanged.
Alternatives	Different means of meeting the general purpose and requirements of the activity, which may include site or location alternatives; alternatives to the type of activity being undertaken; the design or layout of the activity; the technology to be used in the activity and the operational aspects of the activity.
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	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 Impact	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.
Decommissioning	The demolition of a building, facility, structure or infrastructure.
Derelict Land	means abandoned land or property where the lawful/legal land use right has not been exercised during the preceding ten year period (Regulation R982 of NEMA, 1998 (Act No. 107 of 1998));
Direct Impact	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) (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	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 (EAP)	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 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 (EMPr)	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. This EMPr focuses on the construction phase, operation (maintenance) phase and decommissioning phase of the proposed project.
Environmental Impact	Change to the environment (biophysical, social and/ or economic), whether adverse or beneficial, wholly or partially, resulting from an organisation's activities, products or services.
Environmental Issue	A concern raised by a stakeholder, interested or affected parties about an existing or perceived environmental impact of an activity.
Fatal Flaw	Issue or conflict (real or perceived) that could result in developments being rejected or stopped. In the context of an environmental impact assessment a fatal flaw can be termed as an environmental issue that cannot be mitigated by any means
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.
Groundwater	Water in the ground that is in the zone of saturation from which wells, springs, and groundwater run-off are supplied.
Hazardous Waste	Waste that may cause ill health or increase mortality in humans, flora and fauna.
Hydrology	The science encompassing the behaviour of water as it occurs in the atmosphere, on the surface of the ground, and underground.
Important Areas	Sites that are important for the conservation of biodiversity in Gauteng; (Gauteng C-Plan Version 3)
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).
Interested and Affected Party (I&AP)	Any person, group of persons or organisation interested in or affected by an activity; and any organ of state that may have jurisdiction over any aspect of the activity.
Irreplaceable Areas	Sites, which are essential in meeting targets set for the conservation of biodiversity in Gauteng; (Gauteng C-Plan Version 3)
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.
Public Participation Process	A process in which potential interested and affected parties are given an opportunity to comment on, or raise issues relevant to, specific matters.
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.
Sensitive Environments	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.
Undeveloped	means that no facilities, structures or infrastructure have been effected upon the land or property during the preceding 10 years.
Urban Areas	means areas situated within the urban edge (as defined or adopted by the competent authority), or in instances where no urban edge or boundary has been defined of adopted, it refers to areas situated within the edge of built-up areas (Regulation R984 of NEMA,1998 (Act No. 107 of 1998));
Vacant	Means not occupied for the purpose of its lawful land use during the preceding ten year period.
Virgin Soil	means land not cultivated for the preceding 10 years. (Regulation R984 of NEMA,1998 (Act No. 107 of 1998);
Watercourse	Means (a) a river or spring; (b) a natural channel in which water flows regularly or intermittently; I a wetland, pan, lake or dam into which, or from which, water flows; and any collection of water which the Minister may, by notice in the Gazette, declare to be a watercourse as defined in the National Water Act, 1998 (Act No. 36 of 1998) and a reference to a watercourse includes, where relevant, its bed and banks. (Regulation R983 of NEMA, 1998 (ACT NO. 107 OF 1998).;
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. (Regulation 983 of NEMA,1998 (ACT NO. 107 OF 1998).

Abbreviations

BAR	Basic Assessment Report
BID	Background Information Document
BSc	Bachelor of Science
CC	Close Corporation
C- Plan	Gauteng Conservation Plan Version 3
DEA	Department of Environmental Affairs
DWS	Department of Water and Sanitation
GDARD	Gauteng Department of Agriculture and Rural Development
GPEMF	Gauteng Provincial Environmental Management Framework
EAP	Environmental Assessment Practitioner
EIA	Environmental Impact Assessment
EMM	Ekurhuleni Metropolitan Municipality
EMPr	Environmental Management Programme
Ha	Hectares
HIA	Heritage Impact Assessment
HWC	Hot Water Cylinder
I & AP's	Interested and Affected Parties
IDP's	Integrated Development Plans
Km	Kilometres
LDO	Land Development Objectives
m	Meters
NEMA	National Environmental Management Act
NGO's	Non-Governmental Organisations
OHSA	Occupational Health and Safety Act
PES	Present Ecological State
PPE	Personal Protective Equipment
PPP	Public Participation Process
Pr.Sci.Nat	Professional Natural Scientist
(Pty) Ltd	Proprietary Limited
PHRA-G	Provincial Heritage Resources Authority – Gauteng
SAHRA	South African Heritage Resources Agency
SAPS	South African Police Service
WRC	Water Research Commission

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 of the Environmental Affairs Branch
Ground floor Diamond Building
11 Diagonal Street, Johannesburg

Administrative Unit telephone number: (011) 240 3377
Department central telephone number: (011) 240 2500

(For official use only)

NEAS Reference Number:						
File Reference Number:						
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? **NO**

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

The Activity applied for does not relate to the decommissioning or closure of a facility and it is not envisaged that the developed will be decommissioned.

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? **YES**

If no, state reasons for not attaching the list.

Please refer to Appendix I

Have State Departments including the competent authority commented? **NO**

If no, why?

Ekhurhuleni's Department of Environmental Resource Management provided comment on 13/06/2017. The comment from the Competent Authority is still awaited.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

South Germiston Ext 25

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	~~NO~~

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

An application has been made in terms of Section 96(1)(a) of the Town Planning and Townships Ordinance, 15 of 1986, for the establishment of a township over a part of Portion 103 of the Farm Driefontein 87 IR.

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

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
Biodiversity Act, 2004 and Regulations Thereto (Act 10 of 2004)	**National Department of Environmental Affairs**	**2007**
Conservation of Agricultural Resources Act (Act 43 of 1983)	**Department of Agriculture**	**1983**
Ekurhuleni Biodiversity and Open Space Strategy (EBOSS) **Open Space Ekurhuleni Biodiversity and Open Space Strategy (EBOSS), 2009. The purpose of the Ekurhuleni Biodiversity and Open Space Strategy (EBOSS) report is to provide an action-based strategy for transforming planning and policies into physical action. The objectives set out in the EBOSS report are as**	**Ekurhuleni Metropolitan Municipality**	**2009**

follows: • **Meet the open space needs of the population of Ekurhuleni in a way that will ensure adequate access to a variety of types of open spaces in Ekurhuleni that will fulfil the physical and psychological needs of the community;** • **Meet the national biodiversity targets for vegetation types in the area in an appropriate manner that focuses on attainable priorities;** • **Consider and integrate the conservation plan needs of the province in a practical way;** • **Consider and take land needed for development into account in an objective and equitable manner;** • **Contribute as an integrated element in the proper functioning of Ekurhuleni as a city;** • **Set implementation targets in a manner that is realistic, affordable and achievable; and** • **Provide objective implementation performance measures that will accurately indicate performance and ensure accountability of officials. EBOSS identified and delineated the open space within the municipality.** **The different types of open space nodes that were delineated, are defined as:** • **Metropolitan open space nodes: open space areas that have a distinct character, that are meant for the use or enjoyment by all persons in the metropolitan area and even beyond;** • **Local open space nodes: open space areas that have a distinct character, that**		

are meant primarily for use or enjoyment by specific communities; • **Corridors: open space areas that form part of the hydrological system are natural areas that are shallowly undermined or areas with high quality natural vegetation that link different nodes to each other;** • **Other/neighbourhood natural open spaces: natural areas that should remain as open spaces, but do not constitute nodes or corridors, which should be incorporated in the planning and development of neighbourhoods;** • **Mining belt open space: undeveloped land in undermined areas that can be used for open space purposes; and** • **Existing Parks: municipal open spaces and active open spaces. Critical Issues Identified The following critical issues were identified in the Ekurhuleni Biodiversity and Open Space Strategy report:** **Ekurhuleni comprises a vast hydrological network. The presence of the Ramsar Site in the Blesbokspruit is a key element in the hydrological network.** • **The EMM possesses a variety of urban open spaces that include urban parks and sports fields.** • **Municipal and other services servitudes and significant surface areas of shallowly undermined areas have potential to provide important links in the open space system.** • **There are significant physical constraints to development that are advantageous for the development of an open space system in the area that include elements such as**		

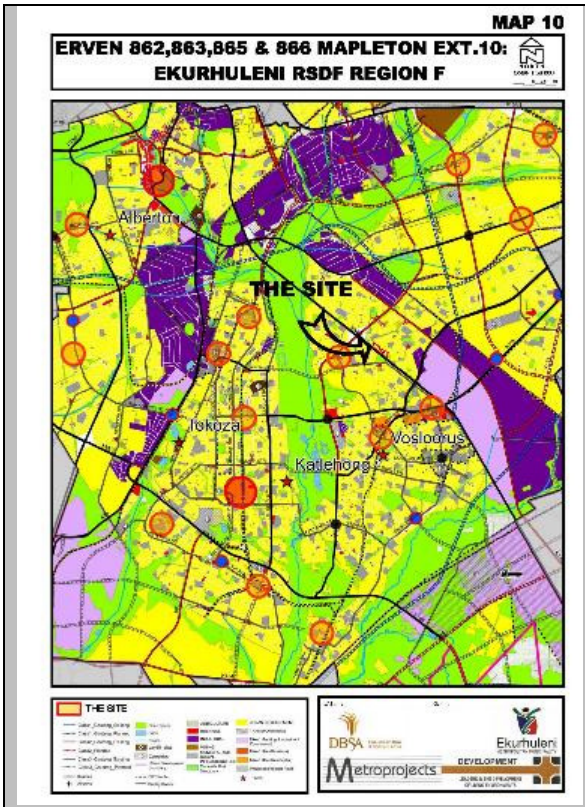
shallow undermined areas, dolomite and wetlands. • **Land within the urban areas of Ekurhuleni is scarce and fierce competition for the utilisation of the land between different sectors can be expected.** • **Most of the natural open space that remains in Ekurhuleni is privately owned (at least 80%) and not necessarily easily available for use as public open space and consequently for the protection of biodiversity.** • **Significant parts of open space, especially the rivers in the area, are polluted or degraded and may require significant investment to return them to an acceptable state.** • **Natural open space elements are often fragmented and in some places it will be difficult to establish adequate links.** • **Due to the land use patterns that emerged during the apartheid era, the population of Ekurhuleni is distributed in a way that limits access to open space for poor communities while disproportionate access opportunities exists to open space (in many cases private open space) for affluent communities.** • **The dispersed nature of the Ekurhuleni spatial structure poses specific challenges to the formulation of an open space system.**		
Ekurhuleni Bio-Regional Plan **Subsequent to the approval of the EBOSS, the guidelines for the compilation of bioregional plans were done in terms of the National Environmental Management: Biodiversity Act. EMM together with the South African**	**Ekurhuleni Metropolitan Municipality**	**2014**

Biodiversity Institute (SANBI) and the Gauteng Department of Agriculture and Rural Development (GDARD) developed the EMM Bioregional Plan. The purpose of the bioregional plan is to inform land-use planning, environmental assessment and authorisations, and natural resource management, by a range of sectors whose policies and decisions impact on biodiversity. This is done by providing biodiversity priority areas, referred to as critical biodiversity areas and ecological support areas, with accompanying land use planning and decision-making guidelines. **Critical Issues Identified** **Critical biodiversity areas within the bioregion are the portfolio of sites that are required to meet the region's biodiversity targets, and need to be maintained in the appropriate condition for their category. The Ekurhuleni Metropolitan Municipality Bioregional Plan identified the following categories:** **Critical Biodiversity Area One;** • **Critical Biodiversity Area Two;** • **Ecological Support Area One;** • **Ecological Support Area Two;** • **Protected areas;** • **Other natural areas; and** • **No natural areas.**		
Ekurhuleni Environmental Management Framework (EMF) **The aim of the EMF for the EMM is to provide a framework that identifies and illustrates the general environmental characteristics of the municipality. In so doing, the EMF determines**	**Ekurhuleni Metropolitan Municipality**	**2007**

environmental opportunities and constraints for the development of the municipality. **The critical issues within the EMF are the identification of constraint zones and geographical areas. The development constraint zones within the EMF refer to the environmental suitability of land parcels for various types of land uses or activities. The types of development constraint zones identified in the EMF include:** • **Low to no-constraint zone;** • **Agricultural constraint zone;** • **Geotechnical constraint zone;** • **Hydrological constraint zone; and** • **Ecological constraint zone.**		
Ekurhuleni Growth and Development Strategy 2025 **The GDS is a strategy, not a policy document, for all sectors of society. It is not just a local government strategy, but is intended to build a common vision and purpose across traditional barriers between government, the private sector and civil society. The GDS provides a framework and point of reference for all the EMM's plans, policies and strategies in its various areas of operation. The broad development strategies and targets contained in the GDS will be further contextualised and refined in the IDP and in the various sectoral strategies and policies of the Metro.** **The Strategy speaks to the regeneration of the city and communities. It speaks to infill development and densification as a priority development strategy.**	**Ekurhuleni Metropolitan Municipality**	**2005**
Ekurhuleni Metropolitan Municipality 2016/17-2018/19 Integrated Development Planning	**Ekurhuleni Metropolitan**	**2016/17-2018/19**

The mandate for local government is succinctly contained in the preamble to the Local Government: Municipal Structures Act, 1998 (Act 117 of 1998) as: a vision of democratic and developmental local government in which municipalities fulfil their constitutional obligations to ensure sustainable, effective and efficient municipal services, promote social and economic development, encourage a safe and healthy environment by working with communities in creating environments and human settlements in which all our people can lead uplifted and dignified lives.	**Municipality**	
Ekurhuleni Metropolitan Municipality By Laws	**Ekurhuleni Metropolitan Municipality**	**2013**
Ekurhuleni Metropolitan Spatial Development Framework: 2015 **The Ekurhuleni Metropolitan Municipality (EMM) approved the Metropolitan Spatial Development Framework (MSDF) for Ekurhuleni in April 2011 in accordance with the provisions of Section 26(e) of the Municipal Systems Act 32 of 2000. In terms of the above-mentioned act, a metropolitan municipality also needs to prepare Regional Spatial Development Frameworks (RSDFs), for its area of jurisdiction, to facilitate the development of the metropolitan municipality as envisaged in the MSDF. This revision of the 2011 MSDF, is the result of the RSDFs for the regions of Ekurhuleni having been completed since 2011.** **This revision of the 2011 MSDF thus provides some improved local information for refinement of the MSDF. Events such as the Ekurhuleni Growth and Development Strategy 2055 (EGDS) and the preparation of the short-**	**Ekurhuleni Metropolitan Municipality**	**2015**

term Aerotropolis Development Plan have also provided important inputs towards a progressive and action-oriented MSDF. **The purpose of the MSDF is to indicate to members of the public and others with an interest in the city, the desired long-term proposals that will affect the spatial form of the Ekurhuleni metropolitan area and to:** • **Provide a long-term vision of the desired spatial form and structure of the EMM;** • **Align the EMMs spatial development goals, strategies and policies with relevant national and provincial spatial principles, strategies and policies;** • **Spatially co-ordinate, prioritise and align public investment in the municipality;** • **Direct private investment by identifying areas that are suitable for urban development, areas where the impacts of development need to be managed, and areas that are not suited for urban development;** • **Identify strategies to prevent loss and degradation of critical biodiversity areas, and ensure the necessary level of protection for the remaining areas; and** • **Provide policy guidance to direct decision-making on the nature, form, scale and location of urban development, land-use change, infrastructure development and environmental resource protection.**		
Ekurhuleni Regional Spatial Development Framework **In terms of the RSDF for Region F the site is earmarked for Urban Development.**	**Ekurhuleni Metropolitan Municipality**	**2015**

 **Figure 1: Ekurhuleni RSDF**		
Gauteng Agriculture Potential Atlas	**Gauteng Department of Agriculture and Rural Development**	**2002**
Gauteng Conservation Plan (C-Plan Version 3.3) **GDARD's (Gauteng Department of Agriculture and Rural Development) C-Plan (Gauteng Conservation Plan Version 3.3) was used to determine the sensitivities of the site and is provided below in Figure 1.** **Conservation planning was started in Gauteng in the year 2000 and the aim was to revise the C-Plan at least every 5 years. C-Plan Version 1 was produced in 2001 and was followed by version 2 in 2005. Version 2 was refined in 2007 and was named Version 2.1. The small size of the province made it feasible to conduct an extensive biodiversity survey, named BGAP, which aimed to provide the information on spatial occurrence of biodiversity necessary for rigorous conservation planning. C-Plan 3 represents**	**Gauteng Department of Agriculture and Rural Development**	**2011**

priority areas for biodiversity conservation in the Gauteng province.

C-Plan 3 is based on the systematic conservation protocol developed by Margules & Pressey (2000) and is based on the principles of complementarity, efficiency, defensibility and flexibility, irreplaceability, retention, persistence and accountability. Systematic conservation planning is an iterative process.

Knowledge of the distribution of biodiversity, the status of species, approaches for dealing with aspects such as climate change, methods of data analysis, and the nature of threats to biodiversity within a planning region are constantly changing, especially in the Gauteng province which is developing at an extremely rapid rate. This requires that the conservation plan be treated as a living document with periodic review and updates.

In terms of the C-Plan the site is not deemed sensitive.

Figure 2: C-Plan of the site		

Gauteng Environmental Management Framework
 	
The guiding objectives that emerged during the course of the developed of the GEMF are:
• **To facilitate the optimal use of current industrial, mining land and other suitable derelict land for the development of non-polluting industrial and large commercial developments.**
• **To protect Critical Biodiversity Areas (CBAs as defined in C-Plan 3.3) within urban and rural environments.**
• **To ensure the proper integration of Ecological Support Areas (ESAs as defined in C-Plan 3.3) into rural land use change and development.**
• **To use ESAs as defined in municipal bioregional plans in spatial planning of urban open space corridors and links within urban areas.**
• **To focus on the sustainability of development through the implementation of initiatives such as:**
  • **Energy efficiency programmes, plans and designs;**
  • **Waste minimisation, reuse and recycling;**
  • **Green infrastructure in urban areas; and**
  • **Sustainable Drainage Systems (SuDS).**
 	
The Environmental Management Zones (EMZ) were derived from the desired state, the environmental sensitivity as well the unique control areas as identified in sections 1, 2 and 3. The EMZs were also presented to the Gauteng Planning Forum 6 where it was generally accepted as a suitable contribution to facilitate appropriate development in Gauteng. The EMZs also took the Gauteng Growth and Management Perspective, 2014, into account and is therefore aligned to the general development policy for Gauteng.
 	
Five EMZs were identified and overlaying those a further six Special Management Areas were identified where specific planning and policy measures are necessary to achieve the development objective of those areas.
	Gauteng Department of Agriculture and Rural Development	**May 2015**

The site falls in Zone 1 Urban Development Zone.		
Gauteng Planning and Development Act, 2003 **"The Act was created to provide for a single system of development, planning and land management in the Province; to set out principles for planning and development in the Province; to establish planning bodies and to provide for appeals to the Appeal tribunal; to create a framework for the preparation of development plans and frameworks; to provide for the creation of zoning schemes; to create unified procedures for development applications; to provide for the repeal of legislation and transitional measures; to provide for general matters such as enforcement procedures; and to provide for matters connected herewith."** **It is the intention to promote more compact development of urban areas and the limitation of urban sprawl and the protection of agricultural resources. Further, the development of land that optimised the use of existing resources such as engineering services and social facilities are encouraged.** **The site is situated in an urban area.**	**Gauteng Provincial Legislature**	**2003**
Gauteng Spatial Development Framework, 2012 **The GSDF are in pursuit of planning for shared, equitable, sustainable and inclusive growth and development in the country. The Gauteng Provincial Government (GPG) seeks to:** • **provide a clear future provincial spatial structure that is robust to accommodate growth and sustainability;** • **specify a clear set of spatial objectives for municipalities to achieve in order to ensure realisation of the future provincial spatial structure;** • **propose a set of plans that municipalities have to prepare in their pursuit of these objectives;** • **provide a common language and set of shared planning constructs for municipalities to use in their planning**	**Gauteng Department of Economic Development**	**2011**

processes and plans; and • **enable and direct growth.** **The Gauteng City Region aims to develop as a significant emerging conurbation based on sustainable principles:** • **significantly reducing reliance on private mobility in favour of safe, convenient and affordable public transport and non-motorised transport;** • **significantly reducing present rates of non-renewable energy usage;** • **reducing the rates of energy expended in the manufacture of goods, the delivery of these goods to the market and the importation of goods;** • **integrating open space systems into the city region and providing sustainable ecosystems, urban agriculture and quality of life as a fundamental of the province's development patterns;** • **increasing the intensity of urban form and the complexity of mixed-use development with a view to restricting, as far as possible, the options to extend the present footprint of the province's urban spread; and** • **promoting a democratic urban order in terms of access to opportunity for all.** **The proposed development of the site with subservient uses will not take place in contrast with or opposing any of the principles of the GSDF.** **The existing resource of land being located in close proximity to existing residential development and public transport facilities will ensure that people do not have to make use of private transport.** **No scarce agricultural resources will be affected.**		
GDARD Requirements for Biodiversity Assessments (Version 3)	**Gauteng Department of Agriculture and Rural Development**	**2014**
National Environmental Management, 1998 (Act 107 of 1998) as amended.	**National & Provincial**	**1998**
National Development Plan, 2030	**National Planning Commission**	**2011**

The National Development Plan (NDP) offers a long-term perspective. It defines a desired destination and identifies the role different sectors of society need to play in reaching that goal. **As a long-term strategic plan, it serves four broad objectives:** • **Providing overarching goals for what the nation want to achieve by 2030.** • **Building consensus on the key obstacles to us achieving these goals and what needs to be done to overcome those obstacles.** • **Providing a shared long-term strategic framework within which more detailed planning can take place in order to advance the long-term goals set out in the NDP.** • **Creating a basis for making choices about how best to use limited resources.** **The Plan aims to ensure that all South Africans attain a decent standard of living through the elimination of poverty and reduction of inequality. The core elements of a decent standard of living identified in the Plan are:** • **Housing, water, electricity and sanitation** • **Safe and reliable public transport** • **Quality education and skills development** • **Safety and security** • **Quality health care** • **Social protection** • **Employment** • **Recreation and leisure** • **Clean environment** • **Adequate nutrition**		
National Heritage Resources Act, 1999 (Act 25 of 1999)	**SAHRA**	**1999**
NEMA EIA Regulations, 2014 (Government Notice Nos. GN R982, R983, R984, R985) **Activity listed under Government Notice No. R983:** **Activity 19 - The infilling or depositing of any**	**National Department of Environmental Affairs and GDARD**	**2014**

material of more than 5 cubic metres into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 5 cubic metres from – (i) a watercourse. **Activity 27 – The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation.**		
National Environmental Management: Waste Act, 2008 (Act 59 of 2008) (NEM:WA)	**National Department of Environmental Affairs and GDARD**	**2008**
National Road Traffic Act, 1996 (Act 93 of 1996)	**National Department of Transport**	**1996**
National Water Act, 1998 (Act 36 of 1998)	**Department of Water and Sanitation**	**1998**
Occupational Health & Safety Act, 1993 (Act 85 of 1993) (OHSA) as amended in July 2001, Including Major Hazard Installation Regulation, GNR 692, 30 July 2001.	**National Government**	**2001**
Reconstruction and Development Programme	**National & Provincial**	**1995**
Red Data Plant Policy	**GDARD**	**2001**

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

The Human Settlement Department of Ekurhuleni received an allocated R1 billion for 2017/18 and R3.4 billion over the MTREF for urban renewal, mega projects, social housing and serviced stands in order to alleviate the housing need in Ekurhuleni. (source : www.ekurhuleni.gov.za/thecouncil/news/press-releases/ekurhuleni-2017-18-budget-highlights)

In order to comply with their mandate for housing delivery, owners of large vacant areas in the Ekurhuleni area, was approached and if willing, a feasibility study was

undertaken by various specialists to advise if the site is feasible for housing development.

Portions 103 and 106 of the farm Driefontein 87 I.R. were investigated during June 2013 for Residential Development Potential as per Figure 3 below.

Figure 3: Sites investigated for housing purposes

Portion 103 of the farm Driefontein 87 I.R was earmarked for development and the site is located north east and parallel to the railway line of Kutalo Station and between Kutalo Road in the north and Henderson Street in the south, Germiston, within the jurisdiction of the Ekurhuleni Metropolitan Municipality. Tide Street/Lower Boksburg Road is 300m to the north of the site. Please refer to Figure 4 below.

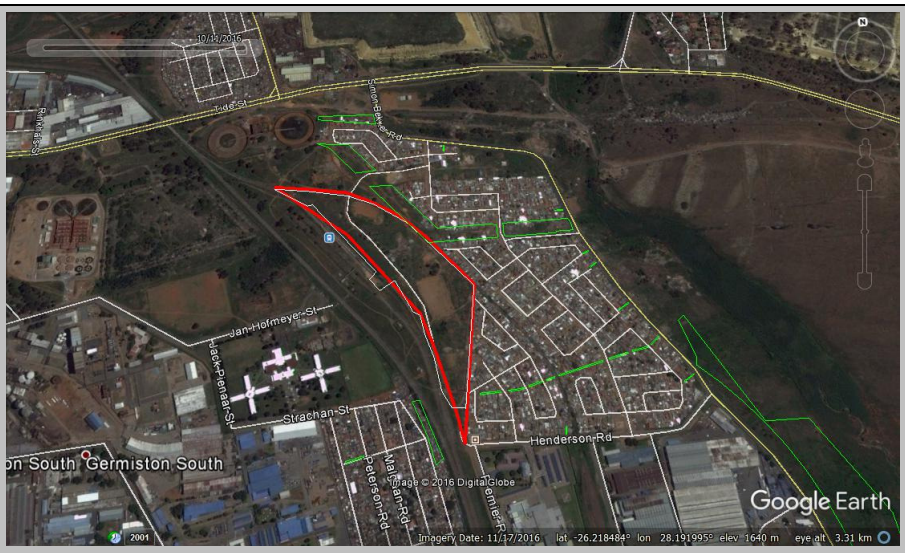


Figure 4: Locality of the site

The site

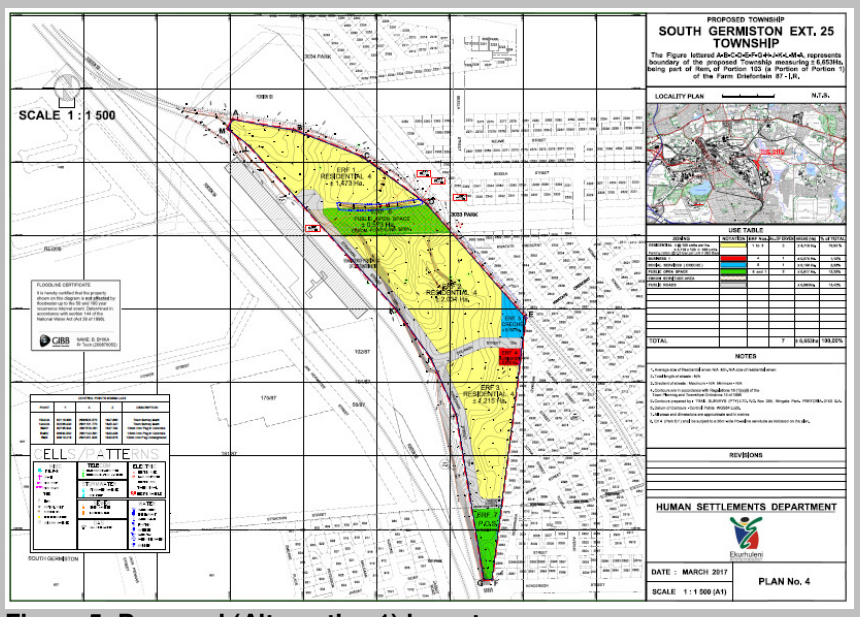
The area directly east of the site is developed for residential purposes and the areas to the north and south are industrial and mining related. A railway line forms the western boundary of the site.

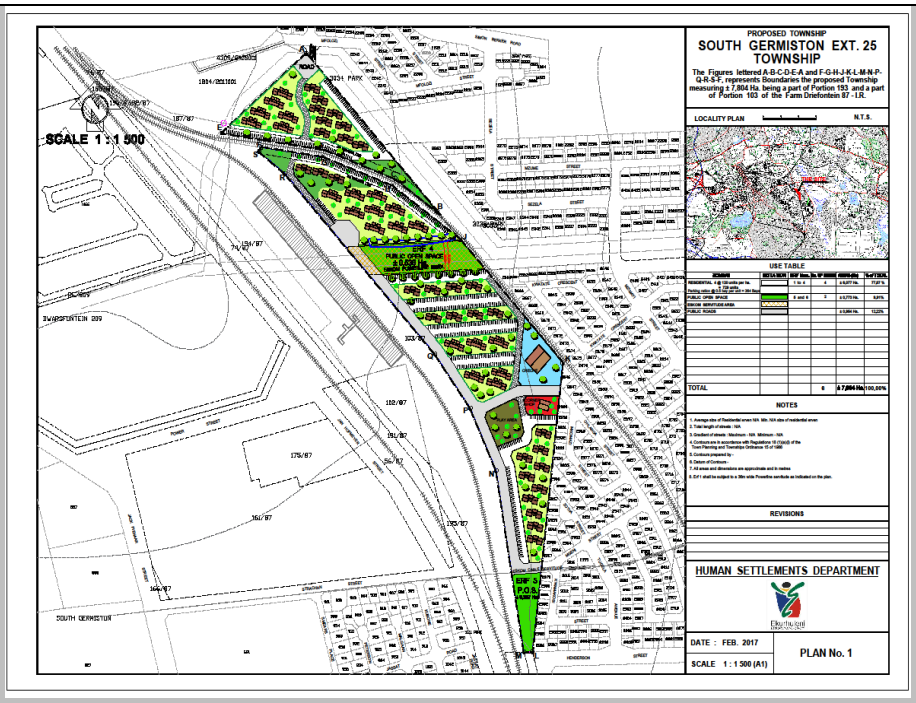
The site is bounded by the following:

- **The existing township of Germiston South to the east;**
- **Portion 193 of the Farm Driefontein 87-IR to the north west;**
- **Kutalo Station to the west.**

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	**Proposal**	**The project entails the development of a low cost high density residential township with associated uses to be situated on a portion of Portion 103 of the Farm Driefontein 87 IR.** **The proposed development is to include the following uses.** • **"Residential 4" at 120 units per ha** • **Public Open Space**

		The entire project is to take place on an area measuring ± 6.65ha extent as per the Layout plan on Figure 5 below.  **Figure 5: Proposal (Alternative 1) layout** **Erven 1 to 3 have been allocated for "Residential 4" uses with a total of 120 units per ha. A total of 566 units are estimated. Three or four storey walk ups/residential blocks are proposed.** **A total of 283 parking bays will be provided.** **The "Open Space" area has been assigned to erven 6 and 7 covering a space of ± 0.817ha.** **Erf 5 is to accommodate a Crèche.** **The proposed development will be provided with the necessary services such as water, electricity, storm water reticulation, sewage reticulation. etc.**
2	**Alternative 1**	**Alternative 2 entails the development of a ±7.80ha site for "Residential" 4 uses. A total of 729 units will be developed on ±6.77ha of the site.** **A total area of ± 0.773ha has been provisioned for "Open Space". (Please refer to Figure 6 Below)**

		 **Figure 6: Alternative 2 layout**
3	**Alternative 2**	**Alternative 3 differs from the proposal (Alternative 1) and Alternative 2 as it makes provision for "Educational" uses to be situated on the southern portion of the site (Please refer to Figure 7 below).** **A total area of ± 3.98ha will be developed for "Residential 4" and ± 1.42ha will be developed for "Open Space".**

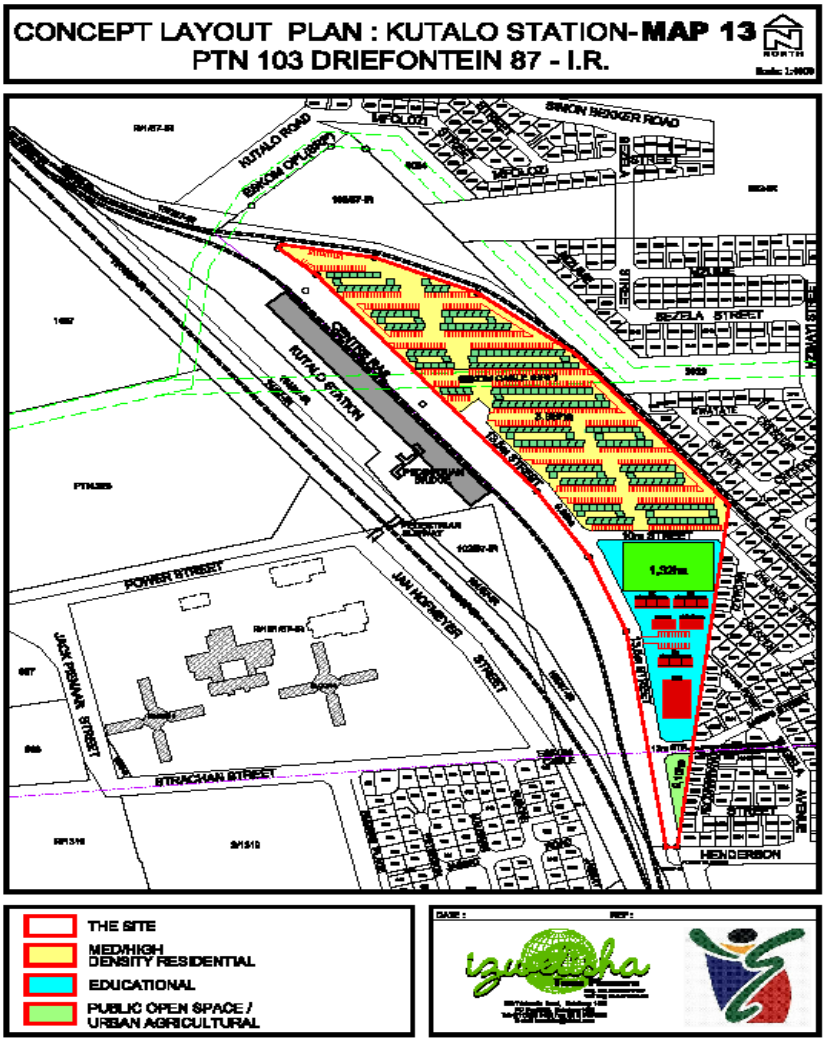


Figure 7: Alternative 3 layout

	Etc.	

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

a) The type of activity;

No alternatives in terms of the type of activity to be undertaken were investigated as the site falls within Region A in terms of the Regional Spatial Development Framework (RSDF). The RSDF earmarks the site as a Transient-oriented development (TOD) Mixed Use. This is a mixed residential and commercial area to maximise access to public transport. Higher densities are supported within a TOD.

b) The property on which or location where it is proposed to undertake the activity;

The objective of the Gauteng Provincial Environmental Management Framework, 2015 (GPEMF, 2015) is to guide sustainable land use management within the Gauteng Province. The GPEMF, inter alia, serve the following purposes:

- **To provide a strategic and overall framework for environmental management in Gauteng;**

- **Align sustainable development initiatives with the environmental resources, developmental pressures, as well as the growth imperatives of Gauteng;**
- **Determine geographical areas where certain activities can be excluded from an EIA process; and**
- **Identify appropriate, inappropriate and conditionally compatible activities in various Environmental Management Zones in a manner that promotes proactive decision-making.**

According to the Gauteng Provincial Environmental Management Framework, 2015 (GPEMF, 2015) the site is identified as Environmental Management Zone 1: Urban development zone. The intention for zone 1 is described as follows:

<u>Zone 1: Urban Development Zone:</u>
The intention with zone 1 is to streamline urban development activities in it and to promote development infill, densification and concentration of urban development within urban development zones as defined in the Gauteng Spatial Development Framework (GSDF), in order to establish a more effective and efficient city region that will minimize urban sprawl into rural areas.

<u>Conditions falling within the Zone 1: Urban Development Zone are as follows:</u>
- **Development in this area must be sustainable in respect to the capacity of the environment and specifically the hydrological system to absorb additional sewage and storm water loads as a result of increased densities;**
- **Existing open spaces and urban parks should be retained as open space to cater for the open space needs of the foreseen increased densities; and**
- **Storm water drainage must be in accordance with the Water Research Commission Report, 2012 and the South African Guidelines for Sustainable Drainage Systems.**

The proposed residential development is compatible with the intention of Zone 1. It is for this reason that no further site alternatives were investigated.

Figure 8: The site in terms of the GPEMF, 2015
The site

c) Sustainability Alternatives (these include green building concepts such as energy conservation, design requirements, and rainwater harvesting);

The following sustainability alternatives have been assessed for the proposed development.

Energy alternatives: Compact Fluorescents (CFLs) and Light Emitting Diodes (LEDs) lights are to be used instead of the traditional incandescent light bulbs as they have been found to use less energy according to the table below:

Table 1: LEDs versus Incandescent light bulbs versus CFLs

Energy Efficiency and Energy Costs	Light Emitting Diodes (LEDs)	Incandescent Light Bulbs	Compact Fluorescents (CFLs)
Life Span	50 000 hours	1200 hours	8000 hours
Watts of electricity used (equivalent to 60Watt bulb)	6-8 Watts	60 Watts	13-15 Watts

The use of Passive Infra Reds switches (PIRs) to switch off lighting when areas are unoccupied such as toilets and corridors.

Geysers are to be placed near hot points to ensure that water does not get a chance to cool as it travels from the geyser to the tap. This will enhance geyser efficiency.

A geyser timer will ensure that the geyser is only switched on just before the hot water is required, i.e. for a few hours in the morning and then again in the evening.

Design requirements:
In the southern hemisphere, houses should be oriented to face north. The windows facing the north should be larger for heat gain during winter but not too large because this will result in increased heat losses in winter and heat gains in summer. Windows facing south should be smaller to prevent heat loss during winter.

The design of appropriate overhangs above the windows will allow the winter sun to enter into the building and will block the summer sun.

Rain water harvesting:
Rain water harvesting is a technique used for collecting, storing and using rainwater. The water can be used for toilet flushing, washing machines, dishwashers, garden irrigation, car washings and the swimming pool. This can be achieved by constructing the roof in such a manner that allows for the capturing of rain water, piped into a single or large tanks and a pressure booster pump supplies the water to tap points or an irrigation system. The collection and use of rain water will supplement non-potable water needs and assist to alleviate the pressure on the water supply.

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)***	**6.653ha**
Alternatives:	
Alternative 1 (if any)	**7.804ha**
Alternative 2 (if any)	**5.4ha**
	Ha/ m^2

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**
	m/km

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

	Size of the site/servitude:
Proposed activity	**11.4134ha**
Alternatives:	
Alternative 1 (if any)	**11.4134ha**
Alternative 2 (if any)	**11.4134ha**
	Ha/m^2

5. SITE ACCESS

Proposal

Does ready access to the site exist, or is access directly from an existing road?	**YES**	NO
If NO, what is the distance over which a new access road will be built		m

Describe the type of access road planned:

Main Access to the site is from Sezela Street that links to Simon Bekker Road (M39).

Access to the northern portion of the development will be at an existing access point on Ohlanga Street, please refer to Figure 9 below. A double lane line road is proposed for a short distance into the township to accommodate sufficient stacking at peak times.

Access to the southern portion of the development will be via Mgeni Rd.

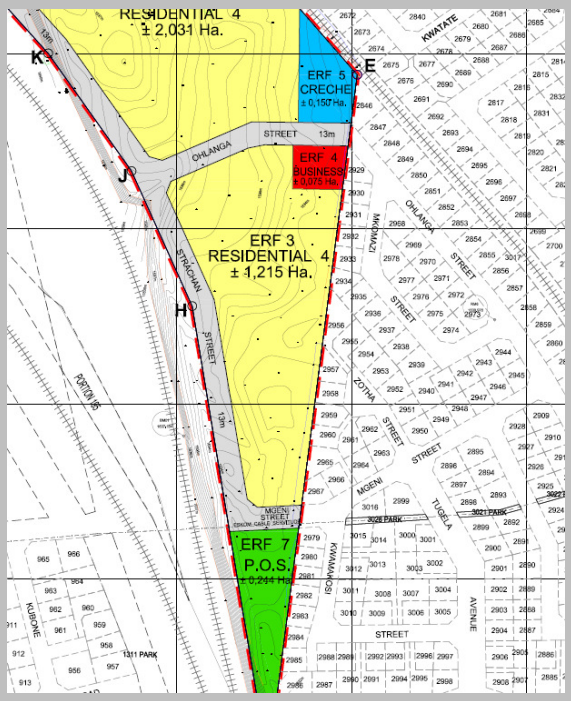


Figure 9: Access to the site

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**	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 site is from Sezela Street that links to Simon Bekker Road (M39).

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 2

Does ready access to the site exist, or is access directly from an existing road?	**YES**	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 site is from Sezela Street that links to Simon Bekker Road (M39).

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	**0**	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.

Refer to Appendix A for the Site Plans.

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 for the Photographs.

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.

The housing module proposed consists of a (42m^2) 2 bedroom unit in a 3 storey walk-up typology with open parking adjacent to the building on a relatively flat site.

Figure 10: Proposed housing typology

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 | **0** | 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 | **N/A** | (complete only when appropriate for above)

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

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	**A portion of Portion 103 of the Farm Driefontein 87 IR.**

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.

Alternative:	**Latitude (S):**	**Longitude (E):**
	-26.218161°	**28.191075°**

In the case of linear activities:

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

The 21 digit Surveyor General code of each cadastral land parcel

PROPOSAL	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**7**	**0**	**0**	**1**	**0**	**3**
ALT. 1	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**7**	**0**	**0**	**1**	**0**	**3**
ALT. 2	**T**	**0**	**I**	**R**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**8**	**7**	**0**	**0**	**1**	**0**	**3**
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).

A Feasibility Geotechnical investigation was undertaken by Relly, Milner and Shedden Consulting Earth Scientists. The purpose of the study was to provide generalized information regarding the feasibility of developing housing on the proposed site. The geology, nature of the shallow soils and their geotechnical properties were considered.

<u>Geology</u>

According to the 1:250 000 Geological Map, Sheet No. 2628 East Rand, the site is underlain by sediments of the Central Rand Group of the Witwatersrand Supergroup. The sediments comprise quartzite, conglomerate and sandy shale of the Turfontein Subgroup.

The hard rock geology is blanketed by a variable thickness of colluvial and residual soils.

<u>Geotechnical</u>

The site is underlain by soils derived from the weathering of quartzite. An overburden soil profile is likely to be one of sandy colluviums overlying residual silty sand/sandy silt. The cover of soil blanketing shale is usually fairly thin with bedrock often intersected in the top 0.75m of the ground profile.

The following paragraphs describe the geotechnical conditions that may

impact on any residential development:

Collapsible soils:
The quartzite weathers to sand which often results in a cover of potentially collapsible material blanketing the bedrock. Shale does not weather deeply and the cover of soil is generally fairly thin.

Seepage (perched water table):
Ferricrete, in the form of hardpan, is often well-developed in the residual soil. Perched water tables are often associated with these hardpan horizons. The sandy nature of the colluvial and residual soil favours the development of short duration perched water tables that reach maximum development at the end of a wet season. Significant perched water tables should not be expected in dry winter months. No evidence of surface seepage was observed during a "ride-over" site visit.

Active Soil (expansive clay):
Active clay is not a weathering product of quartzite or shale. Consequently, expansive residual soils should not be expected on the site.

Highly compressible soil (normal settlement):
Compressible soils may develop in areas where sandy soils have high moisture contents that favour immediate settlement of lightly loaded structures. These conditions may occur where thick deposits of sandy colluviums or residuum have developed. The piles of waste scattered throughout the site would require removal before construction of housing takes place. The flattening of the waste piles should not be considered as foundations are often located on top of these layers with disastrous consequences.

Erodibility of soil:
The erodibility of a soil in this context is the ability (or inability) of the clay (colloidal) fraction to de-flocculate and go into suspension. Residual quartzite is unlikely to be susceptible to dispersion.

Excavation properties:
The site would probably be classified as soft to intermediate excavation. A TLB should be able to excavate to depths of at least 2.0m below surface without too much difficulty except where well-developed layers of hardpan ferricrete have developed or where shallow quartzite bedrock occurs.

Undermining:
The site is possibly undermined at depth since numerous gold-bearing reefs are present within the Turfontein Subgroup of the Central Rand Group. The establishment of South Germiston Ext 8 and 9 immediately south and east of the sites would suggest that shallow undermining is not present. The reefs dip

steeply towards the south to a depth of about 150m before they flatten out. Any shallow undermining would extend in an east-west direction since the strike of the sediments is generally east-west. The development of South Germiston Ext 8 would have been adversely influenced by shallow undermining if present.

Dolomite:
The site is defined as *non-dolomitic*. There is no risk of dolomite instability.

Steep Slopes:
No steep slopes occur on the site.

Unstable Natural Slopes:
No unstable natural slopes occur on the site.

Seismicity:
The natural seismic intensity of the site lies between V and VI on the modified Mercali scale (MMS) with a 90% probability of the intensity not being exceeded in a 100 year period.

An earthquake with an intensity of V on the MMS may be described as having the following characteristics:

- **Felt outdoors**
- **Sleepers weekend**
- **Liquids disturbed, some spilled**
- **Small unstable objects displaced or upset**
- **Doors swing, close, open**
- **Shutters, pictures move**
- **Pendulum clocks stops, start or change rate**

An earthquake with an intensity of VI maybe described as follows:

- **Felt by all**
- **Many frightened and run outdoors**
- **People walk unsteadily**
- **Windows, dishes, glassware broken**
- **Furniture moved or overturned**
- **Trees, bushed shaken visibly**

Peak horizontal and vertical acceleration values at these intensities range 32 to 56cm/s^2 (horizontal) and from 9 to 18cm/s^2 (vertical). These values indicate a low intensity of natural seismic activity and no special seismic design measures are required.

Mining induced seismicity cannot be excluded in this area as it has been extensively mined over the last century.

Flooding:

No drainage features cross the site. The risk of extensive flooding is not regarded as a problem on the site.

In conclusion, there are no significant geotechnical conditions that are evident that may prevent the township establishment on the proposed portion of land. Collapsible soils can be fairly easily overcome by a combination of ground improvement and use of concrete reinforced rafts. In general, the site may be regarded as a favourable in terms of geotechnical constraints. The abundance of dumped waste may impact on access and will ultimately require costly removal.

Conclusion and recommendation

The site was completely degraded and the habitat not suitable for any of the Red List or Orange List plant species known to occur in the 2628AA q.d.s. The drainage line should be incorporated into the storm water management system of the site. No other exclusion of land is proposed and the site is deemed suitable for development through the limited investigation. Further investigation into the biodiversity of the site should not reveal new sensitivities and no extra biodiversity studies should be required by GDARD.

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 % =~~	~~Natural veld with scattered aliens % =~~	~~Natural veld with heavy alien infestation % =~~	**Veld dominated by alien species % = 97**	~~Landscaped(vegetation) % =~~
~~Sport field % = 10~~	~~Cultivated land % =~~	~~Paved surface (hard landscaping) % = 40~~	~~Building or other structure % =~~	**Bare soil % =3%**

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.

GDARD requires shapefiles (WGS84 datum; geographic co-ordinate system) of the application site to be sent to their Biodiversity Information Service in order to determine whether biodiversity assessments will be necessary and if so, which specialist studies should be conducted.

The shapefiles were submitted to GDARD on 15 February 2017 and their response was obtained on 16 February 2017 as follows:

"No specialist biodiversity studies are required to be investigated. The absence of wetlands on site should be verified. Should a wetland be located, a wetland specialist study will be required."

Galago Environmental provided a survey for the vegetation, mammals, herpetofauna and avifauna of the site during March 2017.

The Flora habitat can found that the study site comprises very disturbed alien dominated vegetation. Two cleared areas are used as sports fields and a few *acacia karoo* trees occur.

The mammal study found that no sensitive or important feature occurs on the study site.

Endangered mammal species treat the site as part of their home ranges// territories. Most of these species include bats, which move over huge distances, and a shrew specie or two. It is very difficult to confirm whether any of these species are present on any study site, but there is a possibility that some individuals of these two groups of species do occur on this particular site.

The removal of exotic trees and planting of indigenous trees will increase the quality of habitat.
From a mammal perspective, the site has a low sensitivity.

The avifaunal study found that the study area does not offer suitable habitat for Red Data avifaunal species recorded for the 2628AA q.b.g.c. These Red Data avifaunal species are habitat specific and unable to adapt to areas changed by man. In general the reporting rate of all Red Data avifaunal species recorded for the q.b.g.c is very low at 1% and less and they are unlikely to make use of the habitat systems in the study

area. The entire study site and study area can be regarded as low sensitive and a full avifaunal survey is not deemed necessary.

The herpetological study found that no important topographical feature occurs on the study site. No Red Data herpetofauna should be found on the site, but removal of invasive plants, rubbish and building rubble will greatly improve the area. From a herpetological perspective the site has a low sensitivity.

The wetland study found no wetland indicators on the study site, but a channeled valley bottom wetland was however observed within the 500m extended study area. A drainage line was found from the Kutalo Station into the site. This drainage line must be incorporated into the storm water design.

The biodiversity studies have shown that the study site has a low sensitivity in terms of biodiversity as a result of the disturbance that took place on site in the past and present.

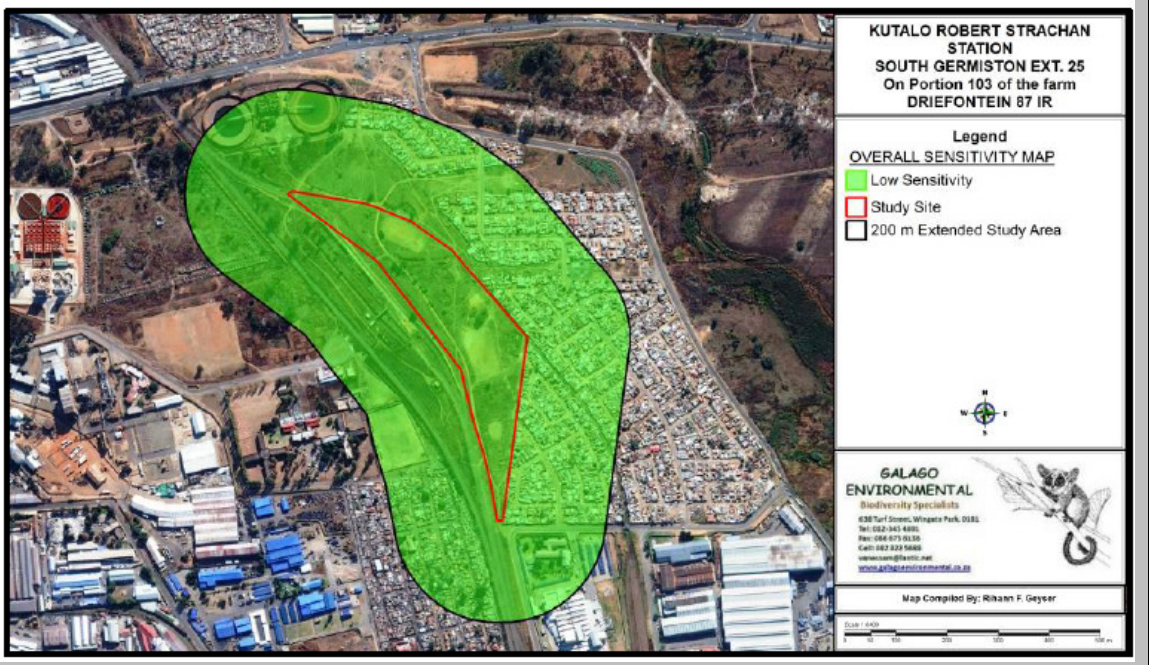


Figure 11: Combined Environmental Sensitivity

All of the above mentioned ecological scans concluded that the site has a low sensitivity. Please refer to Appendix G for the reports.

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**

No rare or endangered species were observed on site or expected to be present on site.

The habitat of the site was not suitable for any of the Red List or Orange List species known to occur in the quarter degree square.

If YES, specify and explain:

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**

No rare or endangered species were observed on site or is expected to be present on site.

If YES, specify and explain:

Are there any special or sensitive habitats or other natural features present on the site?		~~NO~~

If YES, specify and explain:

According to the Environmental Feasibility Study by Galago Environmental a drainage line runs parallel to the power line and continues south of, and parallel to, Sezela Street towards the wetland that flows into the Elsburg wetland, and subsequent river system (Figure 12).

This drainage line is not considered a wetland due to a lack of wetland requirements. This area should not be destroyed but rather incorporated into the layouts as part of the storm water infrastructure.

Figure 12: Aquatic ecosystems of the study site

Was a specialist consulted to assist with completing this section	YES	**NO**

If yes complete specialist details

Name of the specialist:

Table 2: List of Specialists

Specialists	Aspect Investigated	Qualifications	Prof. Registration	Date of Field Survey
Van Wyk, J.C.P.	Herpetology & Mammology	M.Sc. (Zoology)	Pr.Nat.Sci.	14 March 2017
Geyser, R.	Avifauna		Pending	9 March 2017
Lemmer, P.	Botany	B.Sc.	Pr.Sci.Nat	9 March 2017
Fourie, A.J.	Wetland	M.Sc. Aquatic Sciences	Cert.Sci.Nat	March 2017
Kemp, A.C.	Avifauna review	Ph.D.	Pr.Nat.Sci.	
Marais, V.	Environmental Impacts and maps	BL Landscape Architecture		14 March 2017

Qualification(s) of the specialist:	**See above**		
Postal address:			
Postal code:			
Telephone:	**012 - 345 4891**	Cell:	
E-mail:	**vanessam@lantic.net**	Fax:	**086 675 6436**

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		

Signature of specialist:	**See attached report (Appendix G)**	Date:	**March 2017**

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

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. Informal 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):	**35. Mining**			

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

16	9, 24	9, 14	9	1
1	24	35	9	9
20	1,8 23,24		9	1
15	24	24	9	9
9	9, 24	24	16	16

WEST

EAST

SOUTH

=Site

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.

Have specialist reports been attached	**YES**	~~NO~~

If yes indicate the type of reports below

1. **Air Quality Baseline Assessment**
2. **Environmental Noise Impact Assessment**

1. Air Quality Baseline Assessment

Rayten Engineering Solutions were appointed to conduct an Air Quality Baseline Assessment for the proposed residential development at the Kutalo Robert Strachan site, located in Ekurhuleni, Gauteng. The main objectives of the Air Quality Baseline Assessment were to:

a) Present the baseline ambient concentrations of the criteria air pollutants (air pollutants that are known to have a negative impact on human health and environmental well-being) using available data from a nearby monitoring station;

b) Determine the frequency of exceedance of the air pollutants in line with the South African National Ambient Air Quality Standards;

c) Present the baseline dust fallout rates surrounding the proposed development site using available monitoring data; and

d) Identify existing sources of emissions surrounding the proposed development site through a desktop exercise.

The main conclusions based on the information obtained during the Baseline Assessment can be summarised as follows: The proposed Kutalo Station residential development is located within the Ekurhuleni Metropolitan Municipality (EMM) which falls within the Highveld Priority Area (HPA). Land use immediately surrounding the proposed residential development site is

predominantly used for mining, industry and residential settlements. Mining activities are predominantly located in the north-east, south-east and north-west quadrants from the project site while industrial activities surround the proposed site within a 10-km buffer. Kutalo Train Station, Rand Airport and OR Tambo International Airport are located in close proximity to the project site.

Existing key sources of air pollution surrounding the project site have been identified to be:

- **Potential domestic fuel burning;**
- **Industrial Activity;**
- **Manufacturing Faculties;**
- **Waste Treatment Plants;**
- **Vehicle exhaust emissions and vehicle dust entrainment;**
- **Wind erosion from exposed areas (e.g. tailings, open veld, open degraded/eroded areas, etc.); and**
- **Mining activity.**

Meteorological data were obtained from the OR Tambo International Airport weather station for the period January 2013 to December 2016. Based on the prevailing wind fields for the period, emissions from surrounding sources are likely transported towards the southern, south-eastern and south-south-eastern regions. The Kutalo Station site is downwind from mining, industrial and business/commercial activities. Moderate to fast wind speeds observed may result in effective dispersion and dilution of emissions. However, moderate to fast wind speeds may also facilitate dust emissions from open storage piles and exposed areas surrounding the site. Removal of pollutants via wet depositional processes would be evident during the spring and summer seasons, thus lower ambient concentrations of pollutants (particularly dust) are expected during these seasons. Elevated levels of pollutants would be expected during the autumn and winter seasons due to reduced wet depositional process. Higher ambient concentrations of pollutants would also be evident during the autumn and winter seasons due to reduced vertical dispersion of pollutants as a result of the winter inversion layers.

Ambient air quality standards have been developed for eight criteria air pollutants in South Africa. These pollutants are considered to be harmful to human health. People who are exposed to pollutant concentrations that frequently exceed the acceptable ambient air quality standards, are considered to be vulnerable to potential health risks. South Africa has also developed Dust Control Regulations which provide acceptable dust fallout limits for residential and non-residential areas. High dust fallout rates can act as a nuisance and damage property or crops and can also create irritation of the skin, eyes, nose and throat in people. In order to assess the existing air quality situation and establish whether the criteria air pollutants and dust fallout rates fall within the acceptable limits, air quality monitoring data is required. These data are usually obtained from permanent ambient air quality monitoring stations and dust fallout networks operated within close proximity to the project site.

The Germiston Ambient Air Quality Monitoring Station (hereafter Germiston

Station) is the closest station to the project site where data is available on the SAAQIS. The Germiston Station is situated approximately <2 km west-south-west of the Kutalo Station proposed residential development site. Baseline concentrations for CO, NO2, PM10 and SO2 were assessed for the period January 2011 to December 2016. Dust fallout rates for seven sites located <5 km from the proposed residential site were also provided by Ekurhuleni Metropolitan Municipality for the period July 2015 – October 2016.

The baseline air quality data can be summarised as follows:

- **There was only 12% data availability for C6H6 (Benzene) concentrations and 2% data availability for O3 (Ozone) concentrations. Therefore, no analysis was conducted with these parameters.**
- **Annual average NO2 and SO2 concentrations were below the acceptable standards of 21 and 19 ppb for the period, respectively.**
- **There was no exceedance of the daily limit of 48 ppb for SO2 concentrations.**
- **No exceedances of the NO2 and SO2, hourly standards of 106 and 134 ppb, respectively, were observed for the monitoring period.**
- **Exceedances of the hourly limit of 26 ppm were recorded for CO concentrations.**
- **Exceedances of both the daily (75 ppb) and annual (40 ppb) limits were recorded for PM10 concentrations.**
- **Diurnal variation is observed for CO, NO2 and SO2 concentrations. Concentrations typically increase during the morning and evening periods. Higher concentrations of gaseous pollutants are also observed over the autumn and winter seasons compared to the summer and spring seasons. People in the area will likely be exposed to higher concentrations of pollutants during these periods.**
- **Exceedances of the short term (hourly) CO standards were recorded; suggesting that people in the area could potentially be exposed to future high concentrations, and may represent a concern for human health and environmental impacts. However, the NO2 and SO2 concentrations in the area are expected to be in compliance for most of the time based on the data provided.**
- **Exceedances of daily and annual PM10 concentrations are a result of the surrounding mining activities (quarries, tailings, etc.), industrial activities and informal settlements (immediately east of the project site). Mining and industrial activity, wind erosion from exposed surfaces and domestic fuel burning are all key sources of particulate matter, thus, accounting for the high concentrations of PM10 recorded over the monitoring period.**
- **Exceedances of the short term (daily) and long term (annual) PM10 standards; suggest that people in the area will likely be exposed to future high concentrations, and may represent a concern for human health and environmental impacts.**
- **There was no data available for PM2.5 concentrations for the Germiston Station.**
- **The site is also located in the HPA; which is associated with relatively**

poor air quality where PM10 and PM2.5 concentrations frequently exceed ambient air quality standards (DEA 2011).

- **Dust fallout rates, one exceedance of the residential limit of 600 mg/m2/day was recorded at site 1 during 2015 (July 2015 to December 2015). There were no exceedances of the non-residential limit of 1200 mg/m2/day during the 2015 monitoring period for the seven buckets located in close proximity to the project site. During the 2016 monitoring period (January 2016 – October 2016) dust fallout rates fell below the residential limit (600 mg/m2/day) and non-residential limit (1200 mg/m2/day) for the seven buckets located in close proximity to the project site.**

- **Based on the data provided for the 2016 monitoring period, the dust fallout rates for the seven sites which are in close proximity to the Kutalo Station do not exceed the acceptable applicable limits.**

<u>Conclusion and General recommendations:</u>
The ambient concentrations of CO and PM10 from surrounding sources represent a concern for human health and environmental nuisance, due to hourly, daily and annual exceedances recorded for the monitoring period, suggesting that people in the area of the Kutalo Station site could potentially be exposed to future high concentrations (based on the acceptable applicable limits for these criteria pollutants).

Due to the project site being predominantly surrounded by mining activity (quarries, tailings, etc.), industrial activity and informal settlements (domestic fuel burning), which are considered key sources of particulate matter, people residing in this area may likely be exposed to above standard concentrations of both PM10 and PM2.5 on a regular basis (this is based on available monitoring data and data from other nearby monitoring stations). Further monitoring will need to be conducted in order to determine the ambient concentrations of PM2.5, O3, benzene and lead.

Air pollution is controlled at the emission source by standard practice, however, some general measures can be considered to try reduce exposure to air pollutants in terms of the building design. These can include:
- **Automated entrance and exit doors**

This would ensure that doors will remain closed at all times to reduce the amount of airborne dust entering the buildings.
- **Climate control with filtration system**

Climate control with a filtration ventilation system would ensure that windows do not need to be left open, while ensuring air circulation. This will reduce the amount of dust from entering the building as well as dilution of potential radon gas and dust particles.
- **Exterior wind breaks**

These would be in the form of indigenous hedges and/or trees to act as a dust trap as well as a wind break to minimize dust onto the site.

Please refer to Appendix G for the report.

2. Environmental Noise Impact Assessment

dBAcoustics was appointed to determine the prevailing noise levels in the vicinity of the proposed residential development west of an existing residential

area and east of a railway line/industrial area.

The noise survey was done to identify noise sources in and around the proposed development, which may have an impact on the proposed development and to recommend mitigatory measures for compliance to the Noise Control Regulations and the South African National Standards SANS 10103 of 2008 - The measurement and rating of environmental noise with respect to annoyance and to speech communication.

The noise level in the vicinity of the proposed development was 43.8dBA to 51.5dBA. The noise level increased to 56.4dBA during the time an aircraft flew over the residential area. The railway line was higher than the proposed development and a finite type noise was created each time a train passed the measuring point. There were more trains during peak periods in the morning and afternoon after which the prevailing ambient noise level was created by distant industrial activities, traffic and domestic type noises. The peak value was from the locomotive, the wagons and then the prevailing ambient noise level is maintained. The noise levels measured was at 30m from the train.

The calculations to determine the noise level from the additional traffic, when the project is completed, will be based on a total of 100 vehicles during the morning peak period and 100 vehicles during the afternoon peak period. The number of heavy-duty vehicles which will visit the site will be 5% of the total of the traffic volume per period. The traffic noise predictions according to SANS 10210 of 2004, the national standard for the calculating and predicting of road traffic noise was used to calculate the noise level to be generated by the traffic along the proposed road. The calculation of the noise levels along the abutting roads were based on a speed of 80km/h.

The following noise mitigatory measures are recommended for the proposed residential development:
o Construction activities may only take place during the day time and a noise survey must be carried out should it be required to work after hours;
o The residential properties along the western side of the proposed development must be situated not closer than 30m from the rail line.

Please refer to Appendix G for the report.

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.

Germiston is a city in the East Rand of the Gauteng province in South Africa. Germiston is the seat of the Ekurhuleni Metropolitan Municipality which was established in 2000.

It was established in the early days of the gold rush when two prospectors, John Jack from the farm of Germiston near Glasgow and August Simmer from Vacha in Germany, struck paydirt of the farm Elandsfontein.

According to the 2001 census, the population of Germiston consisted of 139 710 people living in 49, 062 households and its land area was 129km^2. Of this population, 49.8% described themselves as white, 46.8% Black African, 1.9% as Coloured and 1, 5% as Indian or Asian.

The economically active people constitute 41.5% of the population. The area contributes approximately 6.1% to the national production. Over the period 1996 to 2011, Ekurhuleni's economy grew by an estimated average of 3.2% per annum (Source: IHS Global Insight Rex v 655).

South Africa's largest railway hub is in Ekurhuleni (Germiston) and links it to all the major population centres and ports in the Southern African region. A number of South Africa's modern freeways and expressways connect Ekurhuleni to other cities and provinces. The Maputo corridor development, South Africa's most advanced spatial development initiative, connects Ekurhuleni with the capital of Mozambique and the largest South African Indian Ocean port. Direct rail, road and air links connect Ekurhuleni to Durban, the biggest and busiest port within South Africa. The OR Tambo International Airport has been identified, as the nucleus for the development of the Aerotropolis, which is one of the flagship projects of the municipality to stimulate growth and job creation.

Source: *https://en.wikipaedia.org/wiki/Germiston*

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? If YES, explain:	~~YES~~	**NO**

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:

Heritage Contracts and Archaeological Consulting CC (HCAC) was appointed to conduct a <u>Heritage Impact Assessment</u> for the Germiston South X25 development.

The aim of the study is to survey the proposed development footprint to identify cultural heritage sites, document, and assess their importance within local, provincial and national context. It serves to assess the impact of the proposed project on non-renewable heritage resources, and to submit appropriate recommendations with regard to the responsible cultural resources management measures that might be required to assist the developer in managing the discovered heritage resources in a responsible manner. It is also conducted to protect, preserve, and develop such resources within the framework provided by the National Heritage Resources Act of 1999 (Act No 25 of 1999). The report outlines the approach and methodology utilized before and during the survey, which includes: Phase 1, review of relevant literature; Phase 2, the physical surveying of the area on foot and by vehicle; Phase 3, reporting the outcome of the study.

During the survey, no heritage sites were identified. General site conditions and features on sites were recorded by means of photographs, GPS locations, and site descriptions. Possible impacts were identified and mitigation measures are proposed in the following report. SAHRA as a commenting authority under section 38(8) of the National Heritage Resources Act, 1999 (Act No. 25 of 1999) require all environmental documents, complied in support of an Environmental Authorisation application as defined by NEMA EIA Regs section 40 (1) and (2), to be submitted to SAHRA. As such the Basic Assessment report and its appendices must be submitted to the case as well as the EMPr, once it's completed by the Environmental Assessment Practitioner (EAP).

A <u>Palaeontological desktop study</u> was undertaken by Dr L. Rossouw and the report found that the site is underlain by palaeontologically insignificant quartzites and conglomerates of the Turfontein Subgroup (Central Rand, Witwatersrand Supergroup) (Jonathan 1990; Johnson *et al*. 2006). There is currently no record of Quaternary vertebrate fossils or sites found in the overlying superficial sediments (colluvium, residual soils) in and around the area and the likelihood of impact on such remains resulting from the proposed development is considered to be very low. As far as the palaeontological heritage is concerned, the proposed development may proceed with no further palaeontological assessments required. If, in the unlikely event that localized fossil material is discovered within the overlying superficial sediments during the construction phase of the project, it is

recommended that a professional palaeontologist be called in immediately to record and rescue the fossils where necessary.

Refer to Please refer to Appendix G for the report. for the Heritage Impact Study and Palaeontological Study

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)? If yes, please attached the comments from SAHRA in the appropriate Appendix	~~YES~~	**NO**

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

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

1. 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?	**YES**	~~NO~~
If yes, has any comments been received from the local authority?	**YES**	~~NO~~

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

Ekurhuleni Metropolitan Municipality: Environmental Resource Department provided comment on 13 June 2017.

The following issue needs to be addressed:

1. **It is indicated on pages 46 and 47 of the Draft report that, there are no water lines with sufficient capacity and outfall sewer close to the site to serve the proposed development. The Civil Services Report for the proposed development has been forwarded to the Department of Water and Sanitation of the EMM for comment and the response will be forwarded as soon as it is received.**

Should the proposed application be approved, the following conditions must be complied with during implementation of the proposed use:

2. **Recommendations made in the specialists' reports conducted for this project must form part of the mitigation measures, be implemented and adhered to at all times.**
3. **Recommendations made in the geological study conducted for this development and all relevant precautionary measures must be implemented and adhered to.**
4. **Mitigation measures contained in the Environmental Management Programme (EMPr) attached as Appendix H must be implemented and adhered to at all times.**
5. **Site preparation should be as minimal as possible and construction activities be confined to the proposed site to prevent negative impact of the surrounding vegetation cover. Furthermore, inadequate management of exposed surfaces may result in dust pollution and soil erosion occurring from the site, therefore adequate measures such as the use of dust suppression techniques must be employed to minimize the occurrence of these potential impacts.**
6. **Re-vegetation of cleared surfaces and landscaping of the area must be done with the use of indigenous vegetation. A list of suitable indigenous plants for use in Ekurhuleni can be obtained from the Department on request. The use of environmentally friendly fertilizers and pesticides is recommended during maintenance of the area.**

7. **Maintenance plan must be developed for continuous monitoring and eradication of weeds, alien and invasive species on the property.**
8. **Trees found on the property forming the character of the area should where possible not be removed but be incorporated into the site development plan.**
9. **Should paving be seen as an alternative cover of surfaces, the Department recommends the use of porous blocks to ensure seepage of water on site, thus minimizing surface runoff which might occur as a result of paved surfaces.**
10. **All types of waste generated during each stage of the development from site preparation to final construction must be disposed of at a licensed disposal site. Should the disposal of waste be the responsibility of the applicant, a safe disposal certificate should be obtained from the waste disposal company to indicate that the waste has been disposed of at the correct waste site. Dumping of waste on open spaces is strictly prohibited.**
11. **All types of waste generated during operation of the proposed use must be disposed of in accordance with the municipal waste disposal requirements. The Department recommends implementation of integrated waste management approach which incorporates waste reduction, reuse and recycling where appropriate in order to prolong the life span of landfill sites. Proper recycling containers should be provided and be appropriately marked in such a way that users can easily identify them.**
12. **Hazardous waste generated on the property must be properly handled and disposed of at an appropriate landfill site designated for such type of waste.**
13. **Storm water management plan must be in place to ensure that surface run-off from hard-surfaced areas is adequately managed. The said plan must be compiled by Storm water. Competent professional engineer to the satisfaction of the Department of Roads and Storm water of the EMM and be designed in such a way that polluted water from the proposed development is separated from the storm water runoff.**
14. **A monitoring and maintenance programme must be developed for management of storm water features (e.g. silt, sand and litter traps, gabions, weirs etc.) constructed as part of mitigation measures for management of storm water runoff.**
15. **An emergency response plan must be developed for accidental incidences/emergencies which may occur. The said plan should clearly outline corrective actions to be undertaken and prevention of recurrence thereof.**
16. **The Emergency Services Bylaws of the EMM and any other related code or regulations for the proposed project must be complied with.**
17. **Connection of storm water outlets/drains to discharge into sewer lines is strictly prohibited.**
18. **Provincial noise regulations as outlined in Provincial Notice No. 5479 of 1999: Gauteng Noise Control Regulations must be complied with at all times. Noise must not constitute a nuisance to the neighbourhood during operational phase, particularly from the proposed dog kennels. During construction phase, construction equipment may only operate between the hours of 08h00 and 17h00 on weekdays, 08h00 and 13h00 on Saturdays, with operation being prohibited on Sundays and Public Holidays.**
19. **Energy and water usage saving techniques are recommended where practical during both construction and operational phases to prevent depletion of non-renewable natural resources.**

20. The Traffic Impact Assessment Report must be approved by the Department of Roads and Storm water of the EMM. **21. All activities to be undertaken on the property must be in accordance with the applicable By-Laws, policies and requirements of the municipality.** **22. In addition to the above, all relevant legislation and requirement of other government Departments (i.e. National, Provincial), in particular Section 28 (duty of care) of NEMA, must be complied with. "Duty of care" to the environment, means that every person has the duty to avoid pollution and environmental degradation.**

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

2. 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** ~~NO~~

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

Entity	Date of comment	Comment
Egoli Gas (C. Moremong)	**8 March 2017**	• **Egoli Gas will not be affected by the proposed development.**
Transnet pipelines (T. Hadebe)	**6 March 2017**	• **Transnet pipelines will not be affected by the proposed development.**
Dark Fibre Africa (S. Madia)	**6 March 2017**	**Dark Fibre Services are affected by the proposed development.** • **A DFA Optical route is indicated on an attached drawing which they have provided. The "exact position" of the route cannot be guaranteed.** • **Should DFA suffer damage and/or loss as a result of works, DFA shall hold the applicant liable for such damage and/or loss.** • **It is to be noted that DFA network is live and carries traffic for numerous of subscribers. If the network is damaged, the subscribers will have a claim against DFA for which the applicant will also be liable.** • **The applicant or employed contractor must contact DFA Preventative Maintenance at least 5 working days prior to commencement of work to arrange a site/kick off meeting.**

Mobile Telephone Networks (MTN) (C. Rahatji)	**8 March 2017**	**The proposed construction affects and is in close proximity to the following of MTN's services:** • **Telecommunication cables on the indicated route map, the exact positions cannot be guaranteed.** • **Telecommunication fibre cables at 1metre depths.** • **Should a period of 6 months expire, without any construction taking place, anew request will have to be submitted.** • **The applicant must contact MTN services at least 5 working days, prior to commencement of work.**

If "NO" briefly explain why no comments have been received

3. 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.

Comments were received and captured in the Comments and Issues report. Please refer to Section F, Appendix E, Appendix 6.

4. 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
4) Each alterative needs to be clearly indicated in the box below
5) 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.	0	(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	~~NO~~
If yes, what estimated quantity will be produced per month?	4800m^3	

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

The building rubble and solid construction waste (such as sand, gravel, concrete and waste material) that cannot be used for filling and rehabilitation and other litter and waste generated during the construction phase will be removed from site and be disposed of safely and responsibly at a licensed landfill site, i.e. a landfill licensed in terms of Section 20 of the Environmental Conservation Act, 1989 (Act No. 73 of 1989).

Where will the construction solid waste be disposed of (describe)?

The solid waste will be transported to the solid waste disposal site of the Ekurhuleni Metropolitan Municipality either by a private contractor or by the municipality.

Will the activity produce solid waste during its operational phase?	YES	~~NO~~
If yes, what estimated quantity will be produced per month?	6500m3	

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

Waste will be collected and stored separately according to the specific requirements of the waste type. The solid waste will be transported to the solid waste disposal site of the Ekurhuleni Metropolitan Municipality either by a private contractor or by the municipality.

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~~	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

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**

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:

Recycling at source.

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**
If yes, what estimated quantity will be produced per month?		m^3
If yes, has the municipality confirmed that sufficient capacity exist 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 on site?	~~Yes~~	**NO**
If yes, what estimated quantity will be produced per month?		m^3

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

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**

If yes, provide the particulars of the facility:

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:

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?	**YES**	~~NO~~
If yes, what estimated quantity will be produced per month?	**13000m3**	
If yes, has the municipality confirmed that sufficient capacity exist for treating / disposing of the domestic effluent to be generated by this activity(ies)?	~~YES~~	**NO**

Will the activity produce any effluent that will be treated and/or disposed of on site?	~~YES~~	**NO**

If yes describe how it will be treated and disposed off.

Emissions into the atmosphere

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

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:

No gaseous emissions apart from dust and smoke during construction phase are expected.

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~~

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: 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**

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)	~~YES~~	~~NO~~

According to the Civil Services Report (Appendix G) there is no water on the site and no significant municipal water lines with sufficient capacity to serve the site.

An existing 450mm diameter line runs on the western side of the site. This waterline runs from Germiston Primrose Reservoir/Russel Road Reservoir. The static head of this line is 60.5m and a peak head of 36.6m. The peak flow is 87.5l/s with a peak velocity of 0.6m/s. the capacity of this line should be verified by the Ekurhuleni Master planners, GLS.

<u>Bulk Water Supply</u>
The development will connect to the Germiston Primrose Reservoir/Russel Reservoir supply line.

The average annual daily demand for the proposed development was calculated at 7.29l/s. The peak hourly flow for the development was calculated as 26.25l/s.

A 250mm connection is proposed. This will deliver water for the whole development.

<u>Internal Water Reticulation</u>
The internal water reticulation is designed to maintain a minimum head of 24 meters. The water pressure can drop to 5 meters under fire flow conditions.

<u>Sewer reticulation</u>
The development drains towards the Germiston-Waterval Dakema Rondebult Sewer System.

There is no outfall sewer close to the site where the development can connect into. There is a 750mm line on the eastern side of the site. The line as a capacity of 824.9l/s and a max flow of 244.3l/s. The line connects to the Germiston Watervall WWTP sewer works. The line connecting to the works is a 1200mm with a capacity 2604.2l/s and a max flow 626l/s.

The sewage reticulation will be taken over by EMM after construction.

The minimum pipe diameter will be 200 uPVC with a minimum slope of 1:200.

The site drains from north to south. It is proposed that the site connects to the existing sewer system on its eastern boundary.

Conclusion

From a services point of view, the proposed development can be serviced and therefore the development should be supported.

The following decisions must be taken by Ekurhuleni Metropolitan Municipality:

- **To approve the services report of Portion 103 of the farm Driefontein 87 IR**
- **To connect directly into the Germiston Primrose/Russel Road Reservoir supply line**
- **To connect directly into the Germiston-Waterval Dekema Rondebult sewer system.**

3. POWER SUPPLY

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

Municipality

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

A Preliminary Services Report was conducted by Nortle & Associates Consulting Electrical Engineers during 2013 attached as Appendix G.

The Kutalo Station provides for ± 1000 residential units. Based on the existing requirements of 3kVA per unit and other requirements like schools and community facilities, the total capacity required will vary between 4.2MVA and 5MVA. This will be determined by the final Township Establishment Conditions.

Bulk Supply

The primary distribution voltage in the area is 33kV and the secondary distribution voltage is 6.6kV. The required capacity cannot be made available at this stage. There are two possible points of supply for the required capacity (Germiston South Ext 8 Substation and Johnson Matthey Substation). Germiston South Ext 8 Substation is supplied at 33kV on the Germiston 2nd Input substation network and Johnson Matthey Substation is supplied at 33kV on the Germiston North Input substation network.

Either one of these substations needs to be upgraded to be able to provide the required capacity. At this stage it is not clear whether only the 33/6.6kV transformers and associated switchgear needs to be upgraded or whether the 33kV supply to either of these substations will also require upgrading.

The area is known for illegal electrical connections and cable theft is also a high risk, therefore any upgrading, especially on the 33kV cable network will have to be handled with care and proper protective measures instituted to prevent loss or damage to the cable network.

The required capacity is not available immediately but there are possibilities which

are being investigated (upgrading, phasing etc).

Internal Reticulation

Internal MV reticulation will most probably be done with 70 or 95 mm^2 3-core, Cu, PILC cable rated at 11 KV (although the supply voltage will only be at 6.6kV) all internal MV rings will be supplied from one of the mentioned 33/6.6kV supply substations. All transformers and miniature substations to be installed must be 6 600/420 V. internal networks will be taken over by EMM as the township is completed and section 82 certificates are issue.

Depending on the stand sizes, the individual connections on high density stands will either be a LV connection at 420V, 3-phase or a MV supply at 6.6kV. Then a private substation or private miniature substation can be build/installed to provide sufficient capacity for the individual customer needs. Individual full title stands will each be provided with a 242V, single phase supply via a 10mm^2 Airdac cable with communication cores for pre-paid meter installation.

4. ENERGY EFFICIENCY

Describe the design measures, if any, that have been taken to ensure that the activity is energy efficient:

The installation and promotion of technologically advanced energy efficient systems, components and upgrades, as well as the innovative use of recycled building materials, is strongly encouraged throughout the development.

Solar water heater: As regular heaters are the biggest consumers of domestic electricity. Solar hot water cylinders can remain connected to the electricity supply in case of back up required over cloudy or very cold periods. The electrical back up should be managed with a timer switch. Unsightly storage tanks can be hidden in the roof void and need not be visible.

Gas: Although not a renewable it is less polluting and recommended for cooking and heating. Electric stoves use a huge amount of electricity.

Floor Insulation and Roof / Ceiling Insulation: Up to 15% of the energy used to heat up residences in winter is lost through the floor. 30 mm of high density polystyrene below the concrete of a new house will reduce the heat loss through the floor significantly. Up to 35% of the energy used to heat up residences in winter is lost through the roof.

Roof insulation will ensure comfort by reducing heat loss in winter and keeping the heat out in summer.

Lighting - Low energy lamps will be used for interior and exterior lighting, with timers or light sensors for switching where necessary.

Describe how alternative energy sources have been taken into account or been built into the design of the activity, if any:

The skillful integration of solar water and energy panels, wind generators, hot water

storage tanks and rainwater harvesting elements into the building design is of prime importance. Design solutions are encouraged to incorporating environmentally conscious building techniques and sustainable high-tech elements, as well as the innovative use of recycled building materials.

Utilities & Services

- **Position of 'wet areas' (bathroom, kitchen etc.) to be positioned in close proximity to HWC and/or energy tower as applicable.**
- **Efficient water usage systems including dual flush cisterns, water-saving shower roses and grey water recycling systems are highly encouraged.**
- **On-site black- and grey-water waste treatment systems (such as Biolytix® or equal approved) subject to review panel approval.**
- **Waste-water, soil and air-conditioning pipes and conduits to be concealed.**
- **Air-conditioning condenser units to be screened from public realm.**
- **Aerial and satellite dishes to be positioned below roof line or concealed within tower structure – no branding permitted.**
- **The use of energy saving products and appliances is further recommended.**
- **Gas for cooking purposes generally encouraged.**
- **Geothermal heating/cooling systems subject to approval and confirmation by Structural Eng.**

Backup Power

- **Photovoltaic panel and battery bank systems preferred in favour of diesel generators.**
- **Requirement and positioning of PV panels as per Solar HWC.**
- **Super silent generators may be permitted at max. 60 decibels at 7.0m. Position and housing of backup generator subject to approval.**

Materials

- **Use of energy efficient, sustainable and environmentally-friendly building materials and products is highly recommended. This includes:**
  - **Non-toxic paints**
  - **Low volatile organic compounds (V.O.C) coatings and materials**
  - **Locally sourced and/or produced materials**
  - **Limited use of energy intensive building materials such as concrete, aluminum etc.**
  - **Use of exotic timber is generally discouraged unless FSC certified from a sustainably harvested source**

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.

The following comments were received regarding services affected by the proposed development.

Transnet Pipelines:

- **Will not be affected by the proposed development.**

Egoli Gas

- **Will not be affected by the proposed development.**

DFA-Open Access Network:

- **The proposed work affects Dark Fibre Africa Optical Fibre Infrastructure.**
- **The applicant or employed contractor must contact DFA preventative maintenance at least 5 working days prior to commencement of work to arrange a site/kick off meeting.**

Mobile Telephone Networks (MTN):

The proposed construction affects and is in close proximity to the following of MTN's services:

- **Telecommunication cables on the indicated route map, the exact positions cannot be guaranteed.**
- **Telecommunication fibre cables at 1metre depths.**
- **The applicant must contact MTN services at least 5 working days, prior to commencement of work.**

Summary of response from the practitioner to the issues raised by the interested and affected parties (including the manner in which the public comments are incorporated or why they were not included).

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

Table 3: Comments and responses

Entity	Response
DFA-Open Access Network	Note is taken of all the comments made with regards to affected services and they will be adhered to.
MTN	

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

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

Criteria used to determine the Consequence of an Impact

Table 4: Methodology

Rating	Definition of Rating	Score
A. Extent – *the area in which the impact will be expected*		
None		**0**
Local	**Confined to project or study area or part thereof (e.g. site)**	**1**
Regional	The region, which may be defined in various ways, e.g. Cadastral, catchment, **topographic**	**2**
(Inter) national	**Nationally or beyond**	**3**
B. Intensity – *the magnitude or size of the impact*		
None		**0**
Low	**Natural and/or social functions and processes are negligibly altered**	**1**
Medium	**Natural and/or social functions and processes continue albeit in a modified way**	**2**
High	**Natural and/or social functions or processes are severely altered**	**3**
C. Duration – *the time frame for which the impact will be experienced*		
None		**0**
Short term	**Up to 2 years**	**1**
Medium term	**2 – 15 years**	**2**
Long Term	**More than 15 years**	**3**

The combined score of these three criteria corresponds to a Consequence Rating, as set out in Table below:

Table 5: Method used to determine the consequence score

Combined score (A+B+C)	**0 - 2**	**3 - 4**	**5**	**6**	**7**	**8-9**
Consequence Rating	Not **significant**	**Very low**	**Low**	**Medium**	**High**	**Very high**

Once the consequence is derived, the probability of the impact occurring is considered, using the probability classifications indicated in table below:

Table 6: Probability classification

Probability of impact – the likelihood of the impact occurring	
Improbable	**< 40% chance of occurring**
Possible	**40% - 70% chance of occurring**
Probable	**> 70% - 90% chance of occurring**
Definite	**> 90% chance of occurring**

The overall significance of impacts is determined by considering consequence and probability using the rating system indicated in table below:

Table 7: Impact significance rating

Significance Rating	Consequence		Probability
Insignificant	**Very low**	**&**	**Improbable**
	Very low	**&**	**Possible**
Very Low	**Very low**	**&**	**Probable**
	Very low	**&**	**Definite**
	Low	**&**	**Improbable**
	Low	**&**	**Possible**
Low	**Low**	**&**	**Probable**
	Low	**&**	**Definite**
	Medium	**&**	**Improbable**
	Medium	**&**	**Possible**
Medium	**Medium**	**&**	**Probable**
	Medium	**&**	**Definite**
	High	**&**	**Improbable**
	High	**&**	**Possible**
High	**High**	**&**	**Probable**
	High	**&**	**Definite**
	Very high	**&**	**Improbable**
	Very high	**&**	**Possible**
Very High	**Very high**	**&**	**Probable**
	Very high	**&**	**Definite**

In conclusion the impacts are also considered in terms of their status (positive or negative impact) and the confidence in the ascribed impact significance rating. The prescribed system for considering impacts status and confidence (in assessment) is indicated in table below.

Table 8: Impact status and confidence classification

Status of Impact	
Indication of where the impact is adverse (negative) or beneficial (positive)	**+ ve (positive – a 'benefit')**
	- ve (negative – a 'cost')
	Neutral
Confidence of assessment	
The degree of confidence in predictions based on available information, EAP's **judgement and/or specialist knowledge**	**Low**
	Medium
	High

The impact significance rating should be considered by GDARD in their decision-making process based on the implications of ratings ascribed below:

- **Insignificant: the potential impact is negligible and will not have an influence on the decision regarding the proposed activity / development;**
- **Very low: the potential impact should not have any meaningful influence on the decision regarding the proposed activity / development;**
- **Low: the potential impact may not have any meaningful influence on the decision regarding the proposed activity / development;**
- **Medium: the potential impact should influence the decision regarding the proposed activity / development;**
- **High: the potential impact will affect the decision regarding the proposed activity / development;**
- **Very high: The proposed activity should only be approved under special circumstances.**

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.

Table 9: Impact assessment - Construction phase
Proposal (Alternative 1)

Potential Impact	Extent A	Intensity B	Duration C	Consequence A+B+C	Probability	Impact Significance	Status	Confidence
1. ISSUE: AIR QUALITY								
1.1 Dust/Air pollution - The generation of fugitive dust associated with construction activities & earthworks.	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Definite**	**Low & Definite = Low**	**-ve**	**High**
2. ISSUE:VISUAL IMPACTS								
2.1 Visual Intrusion and Light Pollution –. Lights from the contractor's camp and construction site could be visually intrusive.	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Probable**	**Low & Probable = Low**	**-ve**	**High**
3. ISSUE: GEOLOGY AND SOILS								
3.1 Soil erosion, loss of topsoil, deterioration of soil quality	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Probable**	**Low & Probable = Low**	**-ve**	**High**
3.2 Soil pollution	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Probable**	**Low & Probable = Low**	**-ve**	**High**
3.3 Geotechnical constraints	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Probable**	**Low & Probable = Low**	**-ve**	**High**
4. ISSUE: FAUNA AND FLORA								
4.1 Degradation, destruction of habitats/ ecosystem	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Definite**	**Low & definite = Low**	**-ve**	**High**
4.2 Impacts on fauna and flora	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low(5)**	**Probable**	**Low & Probable = Low**	**-ve**	**High**
5. ISSUE: HYDROLOGY								
5.1 Storm water flow and drainage- Developments cause the modification of drainage patterns. Storm water may be concentrated at certain points, increasing the	**Regional (2)**	**High (2)**	**Medium term (2)**	**Medium (6)**	**Probable**	**Medium& Probable = Medium**	**-ve**	**High**

Potential Impact	Extent A	Intensity B	Duration C	Consequence A+B+C	Probability	Impact Significance	Status	Confidence
velocity of flow in one area and reducing flow in another. This may contribute to flooding, soil erosion, and sedimentation.								
SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT								
6. ISSUE: AESTHETICS, SITE CHARACTER AND SENSE OF PLACE								
6.1 Noise/ vibration	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Definite**	**Low & Definite = Low**	**-ve**	**High**
7. ISSUE: SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT								
7.1 Safety and Security	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Probable**	**Low & Probable = Low**	**-ve**	**High**
7.2 Job opportunities	**Regional (2)**	**High (3)**	**Medium term (2)**	**High (7)**	**Definite**	**High & Definite = High**	**+ve**	**Medium**
7.3 Hygiene	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Possible**	**Low & Probable = Low**	**-ve**	**Medium**
8. ISSUE HISTORICAL ENVIRONMENT								
8.1 Destruction of cultural / heritage sites	**None**	**None**	**None**	**Not significant (0)**	**Improbable**	**Not significant & Improbable = Insignificant**	**-ve**	**Medium**
9. ISSUE INFRASTRUCTURE AND SERVICES/WASTE								
9.1 Waste	**Local (1)**	**Medium (2)**	**Medium term (2)**	**Low (5)**	**Probable**	**Low & Definite = Low**	**-ve**	**High**
9.2 Pressure on existing infrastructure and services	**Regional (2)**	**High (3)**	**Medium term (2)**	**High (7)**	**Probable**	**High & Probable = High**	**-ve**	**High**
9.3Potential damage to, DFA and MTN networks	**Regional (2)**	**High (3)**	**Medium term (2)**	**High (7)**	**Probable**	**High& Probable = High**	**-ve**	**High**
10. ISSUE: TRAFFIC								
10.1 Traffic-Construction vehicles	**Regional (2)**	**Medium (2)**	**Medium term (2)**	**Medium (6)**	**Probable**	**Medium & Probable = Medium**	**-ve**	**High**

Alternative 2

Table 10: Impact assessment - Construction phase

The impacts for Alternative 2 (construction phase) are similar to that of the Proposal and Alternative 3, however the destruction/degradation of habitat is greater than that of the Proposal (Alternative 1) and Alternative 3

Table 11: Impact assessment - Construction phase

Potential Impact	Extent A	Intensity B	Duration C	Consequence A+B+C	Probability	Impact Significance	Status	Confidence
1. ISSUE: FAUNA & FLORA								
4.1 Degradation, destruction of habitats/	**Local (1)**	**High (3)**	**Medium term (2)**	**Medium (6)**	**Definite**	**Medium & Definite = Medium**	**-ve**	**High**

ecosystem								

Table 12: Significance rating Alternative 1, 2 and 3

Significance rating of impacts for the Proposal (Alternative 1), Alternative 2 and Alternative 3 as the impacts are similar.

Potential impacts:	Significance rating of impacts:	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
1. ISSUE: AIR QUALITY				
1.1 Dust/Air pollution - The generation of fugitive dust associated with construction activities & earthworks.	**Low**	• **Dust generation should be kept to a minimum.** • **Dust must be suppressed on access roads and construction areas during dry periods by the regular application of water or a biodegradable soil stabilisation agent.** • **Speed limits must be implemented in all areas, including public roads and private property to limit the levels of dust pollution.** • **It is recommended that the clearing of vegetation from the site should be selective and done just before construction so as to minimise erosion and dust.** • **All materials transported to site must be transported in such a manner that they do not fly or fall off the vehicle. This may necessitate covering or wetting friable materials.** • **No burning of refuse or vegetation is permitted.**	**Very low**	**Low**
2. ISSUE: VISUAL IMPACTS				
2.1 Visual Intrusion and Light Pollution -Lights from the contractor's camp and construction site could be visually intrusive.	**Low**	• **The construction camp must be located as far from other properties as possible.** • **Light pollution should be minimised.** • **The construction foot print must be minimised.** • **Construction / management activities must be limited to the daylight hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays.** • **Lighting on site is to be sufficient for safety and security purposes, but shall not be intrusive to neighbouring residents, disturb wildlife, or interfere with road traffic.** • **Should overtime/night work be authorized, the**	**Very low**	**Low**

		Contractor shall be responsible to ensure that lighting does not cause undue disturbance to neighbouring residents. • In this situation low flux and frequency lighting shall be utilised.		
3. ISSUE: GEOLOGY AND SOILS				
3.1 Soil erosion, loss of topsoil, deterioration of soil quality	**Low**	• Appropriate erosion and storm water management structures must be installed around the construction site. • All excavations and foundations must be inspected regularly. • No open trenches to be left. No mounds of soils created during construction to be left on site.	**Very Low**	**Low**
3.2 Soil pollution	**Low**	• Ensure correct position of construction caps, equipment yards, refueling depot, concrete batching plant etc. to avoid areas susceptible to soil pollution. • Fuels and chemicals must be stored in adequate storage facilities that are secure, enclosed and bunded. • Drip trays are to be utilized during daily greasing and re-fueling of machinery and to catch incidental spills and pollutants. • Drip trays are to be inspected daily for leaks and effectiveness, and emptied when necessary. This is to be closely monitored during rain events to prevent overflow. • All construction vehicles, plant, machinery and equipment must be properly maintained to prevent leaks. • Plant and vehicles are to be repaired immediately upon developing leaks. Drip trays shall be supplied for all repair work undertaken on machinery on site or campsite area. • Ensure appropriate handling of hazardous substances. • Remediate polluted soil. • An emergency response plan must be developed for accidental incidences/emergencies which may occur on site. This plan should clearly outline corrective actions to be undertaken and prevention of recurrence thereof	**Very low**	**Low**

3.3 Geotechnical constraints	**Low**	• **Adherence to the recommendation measures provided by the Feasibility Study:**
		• **<u>Highly compressible soil (normal settlement):</u>**
		  • **Compressible soils may develop in areas where sandy soils have high moisture contents that favour immediate settlement of lightly loaded structures. These conditions may occur where thick deposits of sandy colluvium or residuum have developed.**
		  • **The piles of waste scattered throughout the site would require removal before construction of housing takes place**
		  • **The flattening of waste piles should not be considered, as foundations are often located on top of these layers with disastrous consequences.**
			Very low	**Low**

4. ISSUE: FAUNA AND FLORA				
4.1 Degradation, destruction of habitats/ ecosystem	**Low**	• **Very poor quality of habitat due to the degraded nature of the site however:** • **Site clearing is to be limited to only the area necessary for carrying out the specified works.** • **No littering by construction workers is permitted. Any litter will be collected and removed off site to a registered waste site.** • **Alien and invasive plants must be removed.** • **Alien vegetation re-growth must be controlled throughout the entire site during the construction period.** • **Only existing roads to be used by vehicles during construction. Roads to be rehabilitated after construction by contractors.** • **Disturbed surface areas to be rehabilitated.** • **Bare areas to be rehabilitated with locally indigenous grass species.**	**Very Low**	**Low**
4.2 Impacts on fauna and flora	**Low**	• **The site is highly degraded however:** • **Cleared indigenous vegetation can be stockpiled for possible reuse in later rehabilitation or landscaping, or as a brush pack for erosion**	**Very Low**	**Low**

		prevention. • Stockpiles of vegetation are only to be located in areas approved by the ECO, and may not exceed 2 m in height. Methods of stacking must take cognisance of the possible creation of a fire hazard. • No burning of stockpiled vegetation is permitted. • The illegal hunting or capture of wildlife will not be tolerated. Such matters will be handed over to the relevant authorities for prosecution • Disturbance to birds, animals and reptiles and their habitats should be prevented at all times. • Indigenous trees to be planted in open spaces.		
5. ISSUE: HYDROLOGY				
5.1 Storm water flow and drainage line.	**Medium**	• A comprehensive storm water management plan must be compiled and approved by local authority and implemented. • The drainage line must be treated as sensitive and be incorporated into the storm water management plan. • It is important to ensure vegetation cover as widely as possible, to improve the potential water quality emanating from the site. • Care must be taken to ensure that the connection of storm water outlets/drains to discharge into sewer lines does not take place. • The use of porous blocks to ensure seepage of water on site is recommended to minimise surface runoff which might occur as a result of paved surfaces.	**Low**	**Low**
SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT				
6. ISSUE: AESTHETICS, SITE CHARACTER AND SENSE OF PLACE				
6.1 Noise/ vibration	**Low**	**Noise Pollution** • Noise levels shall be kept within acceptable limits, and construction crew must abide by National Noise Laws and local by-laws regarding noise. • If work is to be undertaken outside of normal work hours permission, must be obtained. Prior to commencing any such activity the Contractor is also to advise the potentially affected neighbouring residents. Notification could include letter-drops. • No sound amplification	**Very low**	**Low**

		equipment such as sirens, loud hailers or hooters are to be used on site except in emergencies and no amplified music is permitted on site. • Construction / management activities involving use of the service vehicle, machinery, hammering etc, must be limited to the hours between 7:00am and 5:30pm weekdays; 7:00am and 1:30pm on Saturdays; no noisy activities may take place on Sundays or Public Holidays. • Activities that may disrupt neighbours (e.g. delivery trucks, excessively noisy activities etc) must be preceded by notice being given to the affected neighbours at least 24 hours in advance. • Equipment that is fitted with noise reduction facilities (e.g. side flaps, silencers etc) must be used as per operating instructions and maintained properly during site operations.		
7.ISSUE: SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT				
7.1 Safety and Security	**Low**	• Signs should be erected on all entrance gates indicating that no temporary jobs are available, thereby limiting opportunistic labourers and crime. • The site and crew are to be managed in strict accordance with the Occupational Health and Safety Act (Act No. 85 of 1993) and the National Building Regulations. • All structures that are vulnerable to high winds must be secured (including toilets). • Potentially hazardous areas such as trenches are to be cordoned off and clearly marked at all times. • The Contractor is to ensure traffic safety at all times, and shall implement road safety precautions for this purpose when works are undertaken on or near public roads. • Necessary Personal Protective Equipment (PPE) and safety gear appropriate to the task being undertaken is to be provided to all site personnel (e.g. hard hats, safety boots, masks etc.). • All vehicles and equipment	**Very Low**	**Low**

		used on site must be operated by appropriately trained and / or licensed individuals in compliance with all safety measures as laid out in the Occupational Health and Safety Act (Act No. 85 of 1993) (OHSA). • **An environmental awareness training programme for all staff members shall be put in place by the Contractor. Before commencing with any work, all staff members shall be appropriately briefed about the EMP and relevant occupational health and safety issues.** • **All construction workers shall be issued with ID badges and clearly identifiable uniforms.** • **Access to fuel and other equipment stores is to be strictly controlled.** • **Emergency procedures must be produced and communicated to all the employees on site. This will ensure that accidents are responded to appropriately and the impacts thereof are minimised. This will also ensure that potential liabilities and damage to life and the environment are avoided.** • **Adequate emergency facilities must be provided for the treatment of any emergency on the site.** • **The nearest emergency service provider must be identified during all phases of the project as well as its capacity and the magnitude of accidents it will be able to handle. Emergency contact numbers are to be displayed conspicuously at prominent locations around the construction site and the construction crew camps at all times.** • **The Contractor must have a basic spill control kit available at each construction crew camp and around the construction site.**		
7.2 Job opportunities	**High positive**	• **Make use of local citizens for construction.** • **Provide clear and realistic information regarding employment opportunities and other opportunities for local communities in order to prevent unrealistic expectations.**	**High**	**High**

7.3 Hygiene	**Low**	• **The Contractor shall make available safe drinking water fit for human consumption at the site offices and all other working areas.** • **Washing and toilet facilities shall be provided on site and in the Contractors camp.** • **Adequate numbers of chemical toilets must be maintained in the Contractors camp to service the staff using this area. At least 1 toilet must be available per 20 workers using the camp. Toilet paper must be provided.** • **The chemical toilets servicing the camp must be maintained in a good state, and any spills or overflows must be attended to immediately.** • **The chemical toilets must be emptied on a regular basis.** • **The Contractors site must be located on the high side of the site so any leakages or spillages will be contained on site.** • **HIV AIDS awareness and education should be undertaken by all Contractor staff.**	**Very low**	**Low**
8.ISSUE: HISTORICAL ENVIRONMENTAL				
8.1 Destruction of cultural / heritage sites	**Insignificant**	• **No specific mitigation measures are needed; however a chance find procedure should be implemented and or adhered to.** • **If during the pre-construction phase, construction, operations or closure phases of this project, any person employed by the developer, one of its subsidiaries, contractors and subcontractors, or services provider, finds any artefact of cultural significance or heritage site, this person must cease work at the site of the find and report this find to their immediate supervisor, and through their supervisor to the senior on-site manager.** • **It is the responsibility of the senior on-site Manager to make an initial assessment of the extent of the find, and confirm the extent of the work stoppage in that area.** • **The senior on-site Manager will inform the ECO of the chance find and its**	**Insignificant**	**Insignificant**

		immediate impact on operations. The ECO will then contact a professional archaeologist for an assessment of the finds who will notify the SAHRA.		
9.ISSUE: INFRASTRUCTURE AND SERVICES/WASTE				
9.1 Waste	**Low**	• **Waste dumped on site to be removed.** • **The site must be managed appropriately and all rubbish and rubble removed to a recognized waste facility.** • **No burning of waste.** • **Hazardous waste must be properly handled and disposed of at an approved landfill site designated for such type of waste.** • **All types of waste generated during each stage of the development from sites preparation to final construction must be disposed of at a licensed disposal site. Should the disposal of waste be the responsibility of the applicant, a safe disposal certificate should be obtained from the waste disposal company to indicate that the waste has been disposed of at the correct waste site. Dumping of waste on open spaces is strictly prohibited.**	**Very low**	**High if dumped waste present on site is not removed properly**
9.2 Pressure on existing infrastructure and services	**High**	• **Ensure that services are not adversely affected.**	**Medium**	**High if EMM cannot provide services to site**
9.3 Potential damage DFA and MTN network	**High**	• **Adherence to the wayleave conditions.**	**Medium**	**Low**
10.ISSUE: TRAFFIC				
10.1 Traffic – Construction vehicles	**Medium**	• **The contractor is to ensure traffic safety at all times and shall implement road safety precautions.** • **Construction vehicles to use public roads outside peak hours.** • **Adherence to the EMPr.**	**Low**	**Low**

No Go

Potential impacts:	**Significance rating of impacts (positive or negative):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
Job opportunities	**High negative**	**No mitigation possible in the No- go option**	**High**	**High**

Proposal

Table 13: Impact assessment-Operational phase

Potential Impact	Extent A	Intensity B	Duration C	Consequence A+B+C	Probability	Impact Significance	Status	Confidence
1. ISSUE VISUAL IMPACTS								
1.1 Visual Intrusion and Light Pollution – from Railway and Industrial area	**Local (1)**	**Medium (2)**	**Long term (3)**	**Medium (6)**	**Probable**	**Medium & Probable = Medium**	**-ve**	**high**
2. ISSUE GEOLOGY AND SOILS								
2.1 Soil erosion, loss of topsoil, deterioration of soil quality	**Local (1)**	**Medium (2)**	**Long term (3)**	**Medium (6)**	**Probable**	**Medium& Probable = Medium**	**-ve**	high
2.2. Geotechnical constraints	**Local (1)**	**Medium (2)**	**Long (3)**	**Medium (6)**	**Probable**	**Medium& Probable = Medium**	**-ve**	**high**
3. ISSUE FAUNA AND FLORA								
3.1 Degradation, destruction of habitats/ ecosystem	**Local (1)**	**Low (1)**	**Long term (3)**	**Low (5)**	**Improbable**	**Low & Improbable = Very Low**	**-ve**	**high**
4. ISSUE HYDROLOGY								
4.1 Storm water flow and drainage- Developments cause the modification of drainage patterns. Storm water may be concentrated at certain points, increasing the velocity of flow in one area and reducing flow in another.	**Local (1)**	**Medium (2)**	**Long term (3)**	**Medium (6)**	**Probable**	**Medium & Probable= Medium**	**-ve**	**High**
SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT								
5. ISSUE AESTHETICS, SITE CHARACTER AND SENSE OF PLACE								
5.1 Noise	**Local (1)**	**High (3)**	**Long term (3)**	**High (7)**	**Probable**	**High& Probable = High**	**-ve**	**high**
6. ISSUE SOCIAL WELL-BEING AND QUALITY OF THE ENVIRONMENT								
6.1 Safety and Security	**Local (1)**	**Low(1)**	**Long term (3)**	**Low (5)**	**Probable**	**Low & probable = Low**	-ve	**high**
6.2 Job opportunities	**Region (2)**	**Medium (2)**	**Long term (3)**	**High (7)**	**Definite**	**High &Definite = High**	+ve	**Medium**
6.3 Hygiene	**Local (1)**	**Low(1)**	**Long term (3)**	**Low (5)**	**Probable**	**Low & Probable= Low**	-ve	**Medium**
6.4 Sense of Place	**Local (1)**	**Low(1)**	**Long term (3)**	**Low (5)**	**Probable**	**Low & Probable= Low**	-ve	**Medium**
6.5 Health of residents due to air quality	**Local (1)**	**High (3)**	**Long term (3)**	**High (7)**	**Probable**	**High& Probable = High**	**-ve**	**high**
6.6 Security of Tenure	**Local (1)**	**High (3)**	**Long term (3)**	**High (7)**	**Probable**	**High& Probable = High**	**+ve**	**high**
7. ISSUE HISTORICAL ENVIRONMENT								
7.1 Destruction of cultural / heritage sites	**None**	**None**	**None**	**Not significant (0)**	**Improbable**	**Not significant & improbable =**	**-ve**	**medium**

						Insignificant		
8. ISSUE: TRAFFIC								
8.1 Traffic – Construction vehicles	**Regional (2)**	**Low (1)**	**Long term (3)**	**Medium (6)**	**Definite**	**Medium & Definite= Medium**	**-ve**	**high**
INFRASTRUCTURE, SERVICES AND WASTE								
9. ISSUE: INFRASTRUCTURE AND WASTE								
9.1 Waste	**Local (1)**	**Medium (2)**	**Long term (3)**	**Medium (6)**	**Definite**	**Medium & Definite= Medium**	**-ve**	**high**
9.2 Pressure on existing infrastructure and services	**Region (2)**	**Low (1)**	**Long term (3)**	**Medium (6)**	**Probable**	**Medium & probable = Medium**	**-ve**	**Medium**
10. ISSUE: COMPATIBILITY WITH LAND USE DEVELOPMENT MANAGEMENT POLICIES								
10.1 Gauteng Environmental Management Framework 2015	**Region (2)**	**Low (1)**	**Long term (3)**	**Medium (6)**	**Definite**	**Medium &Definite = Medium**	**+ve**	**medium**
10.2 Regional Spatial Development Framework for Region 2	**Region (2)**	**Low (1)**	**Long term (3)**	**Low (5)**	**Definite**	**Low & Definite = Low**	**+ve**	**high**

Table 14: Significance rating for the Operational phase for Alternative1, 2 and 3

Significance rating of impacts for the Operational Phase for Proposal (Alternative 1), Alternative 2 and Alternative 3 as the impacts are similar.

Potential impacts:	**Significance rating of impacts:**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
ISSUE: AIR QUALITY				
1.1 Dust/Air pollution - The quality of air associated with adjacent industries and mine.	**High**	• **Further monitoring will need to be conducted in order to determine the ambient concentrations of PM2.5, O3, benzene and lead.**	**Uncertain as further studies are required in order to determine**	**Uncertain as further studies are required**
ISSUE: VISUAL IMPACTS				
2.1 Visual Intrusion and Light Pollution –Railway and Industrial area.	**Medium**	**Residents will need to install curtains where required**	**Medium**	**Medium**
SOCIO-ECONOMIC AND CULTURAL HISTORICAL ENVIRONMENT				
ISSUE: AESTHETICS, SITE CHARACTER AND SENSE OF PLACE				
3.1 Noise/ vibration	**High**	• **A buffer between units and the railway to be provided**	**Medium**	**High**
3.2 Security of tenure	**High positive**		**High positive**	**N/A**

No Go				
Potential impacts:	**Significance rating of impacts (positive or**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being**

	negative):			**implemented**
Security of tenure	**High negative**	**No mitigation possible for this Option if housing is not provided**		

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

- **Ecological report**
- **Geotechnical Feasibility Investigation**
- **Civil Services Report**
- **Noise Impact Study**
- **Air Quality Baseline Assessment**
- **Heritage and Paleontological report**

Please refer to Appendix G for the specialist reports.

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

No impact assessment can be completely certain of the exact nature and extent of the various impacts that would result from a given development activity. However, this assessment strives to limit any uncertainties by optimising the collection of base data, and by following a rigorous impact assessment methodology. Consequently, it can be stated that the uncertainty in this study would be limited to changes in the development circumstances at a scale that is beyond the locally focussed impact assessment exercise such a drastic change to the economic climate that alters the viability of the proposal.

In addition to the above, the specialists noted the following assumptions and limitations:

- **Air Quality Baseline Assessment**

The following key assumptions and limitations of the study are given below:

I Data provided for the Germiston Ambient Air Quality Monitoring Station and for the dust fallout sampling sites were assumed to be correct;

II The nearest Weather Station to the project site where data were available for the required parameters was the OR Tambo International Airport. This weather station is located approximately 8.45 km from the proposed residential development site. The meteorological conditions may vary slightly between the two sites.

III The air pollutant concentrations in the ambient air could only be assessed based on the data that is available from the nearby monitoring station, Germiston; and

IV The ambient pollutant concentrations for some of the criteria air pollutants such as PM2.5, O3, benzene and lead could not be determined; as there was poor data capture or no data available for these pollutants at the nearest monitoring station.

- **Ecological Report**

Galago Biodiversity and Aquatic Specialists are committed to the conservation of biodiversity but concomitantly recognise the need for economic development. Even though they appreciate the opportunity to learn through the processes of constructive criticism and debate, they reserve the right to form and hold their own opinions and therefore will not willingly submit to the interest of other parties or change statements to appease them.

Even though every care is taken to ensure the accuracy of this report, environmental assessment studies are limited in scope, time and budget. To some extent, conclusions are drawn and proposed mitigation measures suggested based on reasonable and informed assumptions built on *bone fide* information sources, as well as deductive reasoning. Deriving a 100% factual report based on field collecting and observations can only be done over several years and seasons to account for fluctuating environmental conditions and migrations. Since environmental impact studies deal with dynamic natural systems, additional information may come to light at a later stage. Galago Biodiversity and Aquatic Specialists can therefore not accept responsibility for conclusions drawn and mitigation measures suggested in good faith based on own databases or on the information provided at the time of the directive. This report should therefore be viewed and acted upon with these limitations in mind.

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.

Proposal

Potential impacts:	Significance rating of impacts(positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
Waste (Rubble)	High	Rehabilitation plan	Medium	Pollution and environmental degradation due to poor methods of waste disposal
Visual	Medium	Rehabilitation plan	Low	Visual nuisance to neighbouring land owners
Dust	High	Rehabilitation plan	Medium	Negative impact to the ambient air quality of the area.
Noise	High	Rehabilitation plan	Medium	Nuisance to the neighbouring landowners of the area
Sense of place	Low	Rehabilitation plan	Low	Loss of sense of place

Alternative 1

Potential impacts:	Significance rating of impacts(positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
The impacts are similar to that of the proposal.				

Alternative 2

Potential impacts:	Significance rating of impacts (positive or negative):	Proposed mitigation:	Significance rating of impacts after mitigation:	Risk of the impact and mitigation not being implemented
The impacts are similar to that of the proposal.				

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

None

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

The cost for decommissioning a residential development is in the range of R60mil and this includes the rehabilitation of the affected area.

Post closure management includes 6 monthly monitoring of the regrowth of vegetation and erosion control for a period of 2 years.

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:

Cumulative impacts:

Construction Impacts

- **Construction impacts may further lead to nuisance noise impacts, the transformation of the general ambience, quality of the site and surroundings and visual concerns may also be impacted on.**
- **The EMPr for the construction phase should therefore be implemented to minimise the impact of construction activities on the environment.**

Surface Water Pollution

- **Spillages of oil, lubricants and fuel from construction vehicles, plant and machinery has the potential to contaminate surface water bodies.**

Increased run off of Water

- **Storm water runoff has the potential to erode the topsoil and result in sedimentation of water bodies if not controlled.**

Ground Water Pollution

- **The construction phase could result in increased infiltration of contaminants into the ground water and soil.**
- **The clearing of the site could result in exposed soil surfaces which may be prone to erosion, creation of dust and sedimentation of water bodies.**
- **Cement mixing and the storage of fuel must be conducted so as to prevent contamination of the soil and groundwater.**

Socio Economic
- **Job creation.**
- **Security of tenure**
- **Increase in job seekers in the area**

Impact on services
- **The proposed development will add additional pressure to services in the area.**

Waste
- **The construction and subsequent operational activities will be the source of various waste streams which must be managed appropriately.**

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.

Proposal (Alternative 1)

As a necessary part of infrastructure, this development is bound to have a positive effect on the surrounding area in terms of comparative land use and economic opportunities.

The assessment of the individual impacts indicates that there are no sensitive land uses adjacent to the site. The development can therefore proceed from an environmental perspective.

Overall the proposed activity has a low to very low impact score during the Construction phase, with the only impacts of high significance being the impact on Job opportunities and the impact on the DFA and MTN network lines and impacts of medium significance being the impacts on storm water and the impact on services and infrastructure. These impacts can however be managed through the implementation of the proposed mitigation measures and proper planning measures.

The impacts associated with the Operational Phase relate to the Health of the new residents in that they might be affected by the air quality of the area as a result of the emissions from the adjacent industrial area and informal settlement.

Please see below a summary of the identified impacts and their pre-mitigation and post-mitigation impact significance rating scores.

Table 15: Summary of the identified impacts and their pre-mitigation and post mitigation

impact significance rating score

Potential impacts (Construction)	Significance rating of impacts before mitigation	Significance rating of impacts after mitigation
1.1 Dust/Air pollution - The generation of fugitive dust associated with construction activities & earthworks.	Low	Very low
2.1 Visual Intrusion and Light Pollution -Lights from the contractor's camp and construction site could be visually intrusive.	Low	Very low
3.1 Soil erosion, loss of topsoil, deterioration of soil quality	Low	Very low
3.2 Soil pollution	Low	Very low
4.1 Degradation, destruction of habitats/ ecosystem (Kliprivier Highveld Grassland / Soweto Highveld Grassland) (No pristine grassland is present. No areas within the study site retain resemblance of vegetation that has characteristics of the grassland veldtype of the area.)	Low	Very low
4.2 Impacts on fauna and flora	Low	Very low
5.1 Storm water flow and drainage- Developments cause the modification of drainage patterns. Storm water may be concentrated at certain points, increasing the velocity of flow in one area and reducing flow in another. This may contribute to flooding, soil erosion and sedimentation.	Medium	Low
6.1 Noise/ vibration	Low	Very low
7.1 Safety and Security	Low	Very low
7.2 Job opportunities	High	High
7.3 Hygiene	Low	Very low
8.1 Destruction of cultural / heritage sites	Insignificant	Insignificant
9.1 Waste	Low	Very low
9.2 Pressure on existing infrastructure and services	High	Medium
9.3 DFA and MTN network lines.	High	Medium

Table 8: Summary of the identified impacts and their pre-mitigation and post mitigation impact significance rating score – Operational Phase

Potential impacts (Operational)	Significance rating of impacts before mitigation	Significance rating of impacts after mitigation

1.1 Dust/Air pollution -	**Unknown as further studies are required**	**Unknown as further studies are required**
2.1 Visual Intrusion and Light Pollution.	**Medium**	**Low**
3.1 Security of Tenure	**High Positive**	**High Positive**

Alternative 2

Alternative 2 will have similar impacts to that of the Proposal (Alternative 1).

Alternative 3

Alternative 3 will have similar impacts to that of the Proposal (Alternative 1) and that of Alterative 2.

No-go (compulsory)

The do-nothing (no-go) option would entail not using the site and leaving is as it is. This will involve no development of any infrastructure and will present both direct and indirect negative environmental and socio-economic impacts such as:

- **Loss of investment.**
- **No employment/economic opportunities will be created.**
- **Unemployment will result in high levels of crime in the area.**
- **No access to basic services.**
- **Delayed delivery of housing opportunities.**
- **The site could be infiltrated by informal settlement dwellers.**
- **Loss of security of tenure**

6. IMPACT SUMMARY OF THE PROPOSAL OR PREFERRED ALTERNATIVE

For proposal:

The proposal is preferred. The impacts of the proposed development have been summarised under paragraph 5.

For alternative:

The potential impacts for Alternative 2 and Alternative 3 are similar to that of the proposal except that there will be greater area/ portion of land developed in terms of Alternative 2 thus the impact significance for the degradation of habitats is of medium significance instead of a low significance as it is the case for the proposal (Alternative 1) and alternative 3.

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.

From a geotechnical point of view there are no significant geotechnical conditions that may prevent the township establishment.

No buildings, structures and or other features of cultural or heritage significance will be impacted upon, however a chance find procedure will be implemented in the Environmental Management Programme.

From a biophysical point the following have been concluded for the site:
Flora Habitat Scan
The site is disturbed and not considered sensitive
Mammal Habitat Scan
No sensitive or important topographical features occur on site. From a mammal

point of view the site has a low sensitivity.
Avifauna Habitat Scan
The study area does not offer suitable habitat for Red Data avifaunal species. From an avifaunal point of view the site is has a low sensitive.
Herpetofauna Habitat Scan
No sensitive areas or Red Data herpetofauna were found on site. From herpetological point of view the site is has a low sensitive.
Wetland verification study
No wetland conditions were observed on site

According to the wetland verification study only the drainage line is regarded as a sensitive area. The drainage line has been incorporated into the proposal (Alternative 1) layout as such.

The proposed residential development will be situated adjacent an existing residential area situated to the east of the site and as such this development will not impact negatively on the existing residential uses.

Furthermore the proposal (Alternative 1) layout has incorporated the Eskom powerline servitude which runs from the west to the east through the centre of the site of which Alternative 2 and 3 had not incorporated.

The overall impact significance of the proposed development is of low to very low significance. Impacts having high impact significance can be easily mitigated and as such the proposal is preferred.

However in order to ascertain the impacts of the ambient air quality on the area from the existing industries further passive sampling, of SO_2/NO_2, BTEX and Ozone are required over a 12 month period to determine the baseline ambient concentrations at the Site.

7. SPATIAL DEVELOPMENT TOOLS

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

One of the strategic objectives of the Ekurhuleni Metropolitan Spatial Development Framework is Economic growth and development and job creation.

The proposed development will create job opportunities thus positively influencing Economic growth and development.

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	**NO**

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

Passive sampling of SO2/NO2, BTEX and Ozone are required over a 12 month period to determine the baseline ambient concentrations at the Site.

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:

9. THE NEEDS AND DESIRABILITY OF THE PROPOSED DEVELOPMENT (as per notice 792 of 2012, or the updated version of this guideline)

Need and desirability of the proposed development

- **Housing needs are met by the proposed development**
- **Security of tenure**

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED *(CONSIDER WHEN THE ACITIVTY IS EXPECTED TO BE CONCLUDED)*

Medium term (2-15 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	**No**

SECTION F: APPENDIXES

The following appendixes must be attached as appropriate (this list is inclusive, but not exhaustive):

It is required that if more than one item is enclosed that a table of contents is included in the appendix

Appendix A: Site plan(s) – *(must include a scaled layout plan of the proposed activities overlain on the site sensitivities indicating areas to be avoided including buffers)*

Appendix B: Photographs

Appendix C: Facility illustration(s)

Appendix D: Route position information

Appendix E: Public participation information

Appendix F: Water use license(s) authorisation, SAHRA information, service letters from municipalities, water supply information

Appendix G: Specialist reports

Appendix H: EMPr

Appendix I: Other information

CHECKLIST

To ensure that all information that the Department needs to be able to process this application, please check that:

- Where requested, supporting documentation has been attached;
- All relevant sections of the form have been completed.