BASIC ASSESSMENT FOR THE PROPOSED KAALFONTEIN EXTENSION 24 MIXED USE DEVELOPMENTS IN THE CITY OF JOHANNESBURG METROPOLITAN MUNICIPALITY, GAUTENG PROVINCE

GDARD Ref: GAUT 002/18-19/E2205

DRAFT BASIC ASSESSMENT REPORT

Review Period:

29 May 2018 to 02 July 2018

COMPILED BY:
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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.

Not Applicable

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.

There are currently no plans to decommission

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? **No**

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

Refer to Appendix E9 – IAP Register

If no, state reasons for not attaching the list.

Not Applicable

Have State Departments including the competent authority commented? **N/A**

If no, why?

This information will be available after DBAR has been reviewed

PROJECT DETAILS

GDARD Ref:		GAUT 002/18-19/E2205
Title	:	Environmental Impact Assessment Process The proposed Kaalfontein Extension 24 Mixed Use Developments in the City of Johannesburg Metropolitan Municipality, Gauteng Province
Report compiled by	:	Company Name: Envirolution Consulting Contact person: Ms Sheila Bolingo Postal Address: P.O.Box 1898, Sunninghill, 2157 Telephone Number: 0861 44 44 99 Fax Number: 0861 62 62 22 Email: sheila@envirolution.co.za
Client	:	Nompilo Occupational Health Services
Report Status	:	Draft Basic Assessment Report for Public Review
Review period		**The 30-day period for review is from** **29 May 2018 to 02 July 2018**

TABLE OF CONTENTS

LIST OF APPENDICES:

Appendix A: Site plan(s)

- Appendix A1: Locality Map
- Appendix A2: Sensitivity Maps
- Appendix A3: Layout Plan (overlain on site sensitivity)

Appendix B: Photographs

Appendix C: Facility illustration

Appendix D: Route position information (N/A)

Appendix E: Public participation information

- Appendix E1: Proof of site notice
- Appendix E2: Proof of Stakeholder Notifications
- Appendix E3: Proof of newspaper advertisements
- Appendix E4: Authority Consultation
- Appendix E5 – Minutes of any public and/or stakeholder meetings
- Appendix E6 - Comments and Responses Report
- Appendix E7 –Comments from I&APs on Draft Basic Assessment (BA) Report
- Appendix E8 –Comments from I&APs on amendments to the BA Report **(N/A)**
- Appendix E9 - I&APs and Registered I&APs Database
- Appendix E10 – Comments from I&APs on the application

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

Appendix G: Specialist reports

- Appendix G1: Wetland Assessment
- Appendix G2: Wetland rehabilitation and monitoring plan
- Appendix G3 - Vegetation Assessment
- Appendix G4 - Fauna Assessment
- Appendix G5 - Heritage Assessment
- Appendix G6 - Hydropedology study

Appendix H: EMPr

Appendix I: Other information

- Appendix I1: EAP CVs and Declaration
- Appendix I2: Geotech Investigation
- Appendix I3: Traffic Impact Assessment

PUBLIC REVIEW OF THE DRAFT BASIC ASSESSMENT REPORT

The Draft Basic Assessment Report (BAR) has been prepared by Envirolution Consulting (Pty) Ltd in order to assess the potential environmental impacts associated with the proposed Kaalfontein Extension 24 Mixed Use Developments project. The report is made available for public review for 30-day review period from **29 May 2018 to 02 July 2018** at the following places:

- Yarona (Councillor's Office) at the Shoprite Centre.

In order to obtain further information, register on the project database or submit your written comment to:

Environmental Assessment Practitioner

Name:	Sheila Bolingo
Physical Address:	Vista Place, Suite 1a & 2, No 52, Cnr Vorster Avenue & Glen Avenue, Glenanda
Postal Address:	PO Box 1898, Sunninghill, 2157
Telephone Number:	(0861) 44 44 99
Fax Number:	(0861) 62 62 22
E-mail:	sheila@envirolution.co.za

The due date for comments on the Draft Basic Assessment Report is 02 July 2018

EXECUTIVE SUMMARY

Nompilo Occupational Health Services is proposing the development of the Kaalfontein Extension 24 Mixed Use Developments in the City of Johannesburg Metropolitan Municipality (refer to Figure 1). The proposed site is approx. 13.5ha and located on Portion 57 of the Farm Kaalfontein 13- IR at the corner of Dale Road and Archerfish Drive in Kaalfontein Extension 24 as shown in the Figure below.

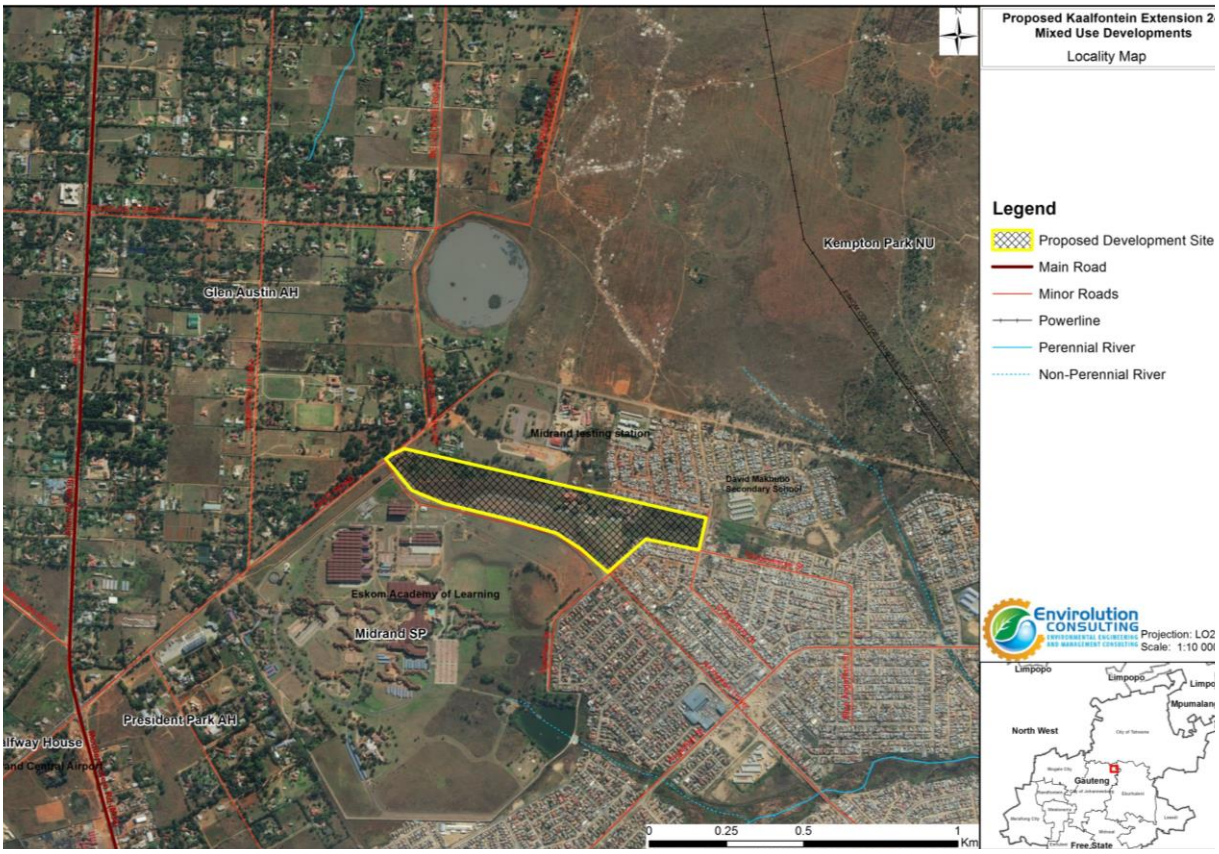


Figure 1: Locality map showing the proposed developable area for the Kaalfontein Ext 24 mixed used development (refer to **Appendix A** for A3 maps).

According to the Regional Spatial Development Framework (RSDF) of the city, Kaalfontein forms part of marginalized areas together with Diepsloot Greater Ivory Park and RabieRidge). The RSDF states that in Region A, the greatest housing backlogs are in Diepsloot, and Ivory Park. Ivory Park is situated within a 4km radius of the subject property. The proposed development therefore aims to address one of the Regional Spatial Development Framework (RSDF) goals

In order to adequately identify and assess potential environmental impacts associated with each of the above mentioned concepts as proposed rehabilitation measures, several specialist studies have been conducted in support of the Basic Assessment process and Water Use License application:

- Wetland Assessment
- Vegetation Assessment
- Fauna Impact Assessment
- Heritage Assessment
- Hydropedology study

Public participation has been conducted in line with the NEMA requirements; engagement through public meetings, site notices, newspaper advert and email correspondence with authorities and interested and affected members from the community. A Water Use License Application will be submitted together with the Final Basic Assessment to the Department of Water and Sanitation (DWS).

The assessment concludes that the overall significance impacts of the construction phase are of more or less in the mid-range of Medium-LOW. The "without mitigation" scores are of medium low category, and these are potentially modified to scores of low significance if proposed mitigation measures are implemented, approaching a negligible level of impact in some cases. While it is generally presumed that construction activities are damaging to the environment, the state of disturbance of the site with the extensive cover of alien species, loss of historic wetlands, and the severe degradation of the watercourse there has been some debate whether much of the construction activities will be detectable in the baseline conditions of the site. Secondly, once established the operational conditions are overall positive. The e overall development is a remain Moderate Positive and Low Negative

I

There are no insurmountable environmental or social constraints that prevent the establishment of the Kaalfontein Extension 24 Mixed Use Developments in the City of Johannesburg. Therefore, it is **recommended that the proposed development be considered for approval** subject to the application of the suggested mitigation measures.

SECTION A: ACTIVITY INFORMATION

1. PROPOSAL OR DEVELOPMENT DESCRIPTION

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

1.1 Project Title

The proposed Kaalfontein Extension 24 Mixed Use Developments in the City of Johannesburg Metropolitan Municipality, Gauteng Province

1.2 Project Background

Envirolution Consulting was appointed by Triviron Project Management (Pty) Ltd (Triviron) on behalf of **Nompilo Occupational Health Services** to undertake a Basic Assessment process and Water Use License for the proposed Kaalfontein Extension 24 Mixed Use Developments in the City of Johannesburg Metropolitan Municipality (refer to Figure 1). The proposed site is approx. 13.5ha and located on Portion 57 of the Farm Kaalfontein 13- IR at the corner of Dale Road and Archerfish Drive in Kaalfontein Extension 24.Various land uses including residential units, private school, and healthcare facilities are proposed, to be referred to as "Mixed Used Development" in this report.

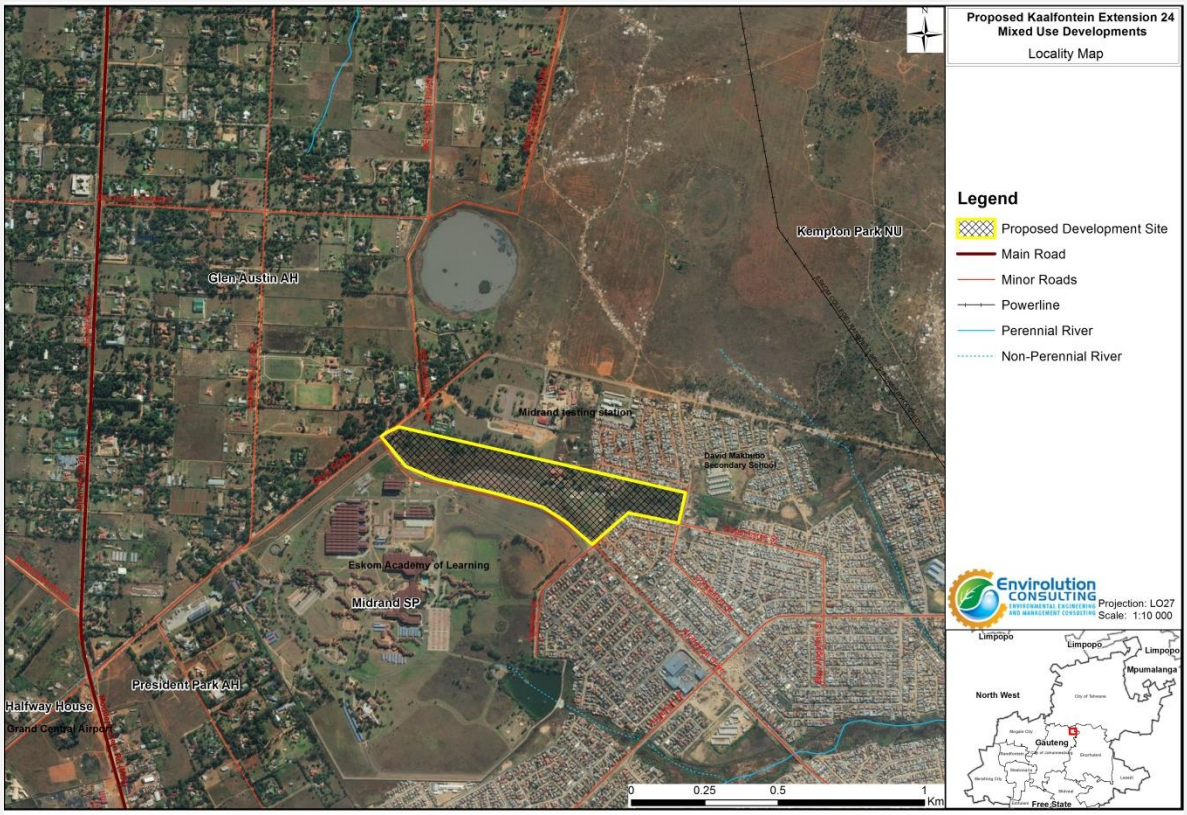


Figure 1: Locality map showing the proposed developable area for the Kaalfontein Ext 24 mixed used development (refer to **Appendix A** for A3 maps).

In terms of the Regional Spatial Development Framework (RSDF) of the city, Kaalfontein forms part of marginalized

areas together with Diepsloot Greater Ivory Park and RabieRidge). The RSDF states that in Region A, the greatest housing backlogs are in Diepsloot, and Ivory Park. Ivory Park is situated within a 4km radius of the subject property.

The marginalized areas of Diepsloot and Greater Ivory Park require integration into the broader urban network. The most prominent needs arising from these marginalized areas encompass employment opportunities, business sites and local retail, which has resulted in large scale, unregulated informal trade. Increased densities and pressure for development in many parts of the region are causing infrastructure capacity constraints and a threat to the biodiversity of the environment.

The Gauteng Provincial strategic plan of November 2016, indicates that the 20 Year Review confirms that the demand for housing in Gauteng remains{high It must also be noted that the figures on the Housing Demand Database excludes those who do not qualify for housing subsidies but are still in need of housing. The available figures on current demand for housing per municipality in Gauteng shows a total housing backlog of 687015.City of Johannesburg housing demand /backlog are 256,480; the Demand Database has over 800000 applicants. According to the Kaalfontein Market study "Between 2018 and 2023 an estimated **43 921 households** will seek accommodation in the target geographic market area, resulting in an annual growth in demand of approximately **8 784 units" this demand for housing provides the impetus for the project**

1.3 Project description

The proponent, **Nompilo Occupational Health Services,** proposes a mixed development with associated infrastructure on Portion 57 of the Farm Kaalfontein 13- IR consisting of residential units, institutional and healthcare facilities with a total area covering approximately 6.9 ha. The proposed residential development can be divided into the following land uses:

Phase 1: Subsided/Social Housing to be zoned as Residential 2 covering a total floor area of 2.7ha (39% of total development) that will be developed for apartments and will be located in the north-eastern area of the site with a density of 410 units planned

Phase 2: Includes Social and GAP Housing with public open space, this area is zoned as Residential 2 covering a total floor area of 2.1ha (30% of total development) that will be developed is located on the northern boundary of the site with a density of 314 units planned

Phase 3&4: Mixed Use, comprising retail (9500 m2) and residential of 315 units planned. The business node will be located along Archer Road off Dale Road; the proposed location of the business area will facilitate traffic congestion to the remaining development, as well as ensure easy access from the main road therefore broadening the clientele basis. Total extent of this area is 2.1ha (31%) and is zoned as Business 1.

1.4 Requirement for a Basic Assessment Process

In terms of sections 24(2) and 24D of the National Environmental Management Act (Act No. 107 of 1998), as read with the Environmental Impact Assessment (EIA) Regulations of GNR 982 to R985 (as amended 07 April 2017 (GNR 326)), a Basic Assessment process is required for the proposed project. **Table 1** contains the listed activities in terms of the EIA Regulations and includes a description of those project activities which relate to the applicable listed activities.

Table 1: Listed Activities Applicable applied for to be authorise

Listed activities	Description of project activity that triggers listed activity
Activity 27 of Listing Notice (LN) 1 of GNR 983 2014: The clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation.	An area of 1 hectare or more (but less than 20 hectares) of indigenous vegetation will be cleared for the proposed mixed used development.
Activity 28 of Listing Notice (LN) 1 of GNR 983 2014: The Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development: (i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares	The proposed mixed used development will occur in the Kaalfontein area (i.e. inside an urban area) and the total land to be developed is bigger than 5 hectares
Activity 12 of GNR R.985: The clearance of an area of 300 square metres or more of indigenous vegetation **(c) In Gauteng:** (ii) Within Critical Biodiversity Areas or Ecological Support Areas identified in the Gauteng Conservation Plan or bioregional plans.	The project is proposed within the Critical Biodiversity Areas /Ecological Support Areas identified in the Gauteng Conservation Plan.

The above listed activities have triggered a Basic Assessment Process, these activities may not commence without an environmental authorization from the competent Authority. The aim of the Environmental Impact Assessment is to ensure that:

- The potential environmental impacts associated with the proposed project are taken into consideration
- Public Participation Process is conducted i.e. to afford any Interested and or Affected parties (I&AP) sufficient opportunity: to provide comments
- Sufficient information is provided to decision markers in order to ensure an informed decision making.

The nature and extent of the proposed project are explored in more detail in this Basic Assessment Report. This report has been compiled in accordance with the requirements of the EIA Regulations and includes details of the activity description; the site, area and property description; the public participation process; the impact assessment; and the recommendations of the Environmental Assessment Practitioner.

1.5 Details of Environmental Assessment Practitioner and Expertise to conduct the Basic Assessment

Envirolution Consulting (Pty) Ltd was contracted by Triviron on behalf of Nompilo Occupational Health Services as the independent environmental consultants to undertake the Environmental Basic Assessment Process for the proposed project. Envirolution is not a subsidiary or affiliated neither Triviron Johannesburg Road Agency nor Nompilo Occupational Health Services. Furthermore, Envirolution Consulting does not have any interests in secondary developments that may arise out of the authorisation of the proposed project. Envirolution Consulting is a specialist environmental consulting company providing holistic environmental management services, including environmental

impact assessments and planning to ensure compliance with environmental legislation and evaluate the risk of development; and the development and implementation of environmental management tools Envirolution Consulting benefits from the pooled resources, diverse skills and experience in environmental field held by its team. We offer solutions to environmental issues that are key during our clients' planning and decision-making processes. The Envirolution Consulting team have considerable experience in environmental impact assessments and environmental management, and have been actively involved in undertaking environmental studies, for a wide variety of projects in South Africa, including those associated with linear developments.

The EAPs from Envirolution Consulting who are responsible for this project are (refer to **Appendix I** for CV's):

- Cheda Sheila Bolingo, the principle author of this Basic Assessment holds an Honours Bachelor degree in Environmental Management and 7 years of experience in the consulting field. Her key focus areas are on strategic environmental assessment and advice on environmental impact assessments; public participation; environmental management programmes, and mapping through ArcGIS for variety of environmental projects. She is currently involved in several diverse projects across the country.
- Gesan Govender, the project manager and Environmental Assessment Practitioner (EAP) responsible for this project, is a registered Professional Natural Scientist and holds an Honours degree in Botany. He has over 15 years of experience within the field of environmental management. His key focus is on strategic environmental assessment and advice; management and co-ordination of environmental projects, which includes integration of environmental studies and environmental processes into larger engineering-based projects and ensuring compliance to legislation and guidelines; compliance reporting; the identification of environmental management solutions and mitigation/risk minimising measures; and strategy and guideline development. He is currently responsible for the project management of EIA's for several diverse projects across the country.

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

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

The site is located within a 500 m radius from the delineated boundary (extent) of any wetland or pan. Therefore activities within 500m from the watercourse triggers section 21 c and i of the NWA and requires a WULA for following specific water uses:

- Section 21(i): altering the bed, banks, course or characteristics of a watercourse; and
- Section 21(c): impeding or diverting the flow of water in a watercourse

It is for such reasons that a Water Use License has to be undertaken for the development.

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

The Department of Water affairs and Sanitation (DWS) are on the project database and have been notified of this development, and the intention to submit a WULA to them. The application for water use license will be submitted to the Department of Water affairs and Sanitation (DWS) in parallel with the submission of the FBAR to GDARD.

Note that timeframes for obtaining a WUL from DWS is not specified in the GDARD.

2. APPLICABLE LEGISLATION, POLICIES AND / OR GUIDELINES

Table 2: 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 (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	National		
National Environmental Management Act (Act No. 107 of 1998)	» NEMA requires, inter alia, that: ∗ Development must be socially, environmentally, and economically sustainable." ∗ Disturbance of ecosystems and loss of biological diversity are avoided, or, where they cannot be altogether avoided, are minimised and remedied." ∗ A risk-averse and cautious approach is applied, which takes into account the limits of current knowledge about the consequences of decisions and actions." » EIA Regulations have been promulgated in terms of Chapter 5. Activities which may not commence without an environmental authorisation are identified within these Regulations. » In terms of S24(1) of NEMA, the potential impact on the environment associated with these listed activities must be considered, investigated, assessed and reported on to the competent authority charged by NEMA with granting of the relevant environmental authorisation.	» National Department of Environmental Affairs » Gauteng Department of Agriculture and Resource Development	» In terms of sections 24(2) and 24D of the National Environmental Management Act (No 107 of 1998), as read with the EIA Regulations 2014 of GN R983 and R985; a Basic Assessment process is required to be undertaken for the proposed project.
National Environmental Management Act (Act No. 107 of 1998)	» A project proponent is required to consider a project holistically and to consider the cumulative effect of potential impacts.	» National Department of Environmental Affairs » Gauteng Department of Agriculture	» While no permitting or licensing requirements arise directly, the holistic consideration of the potential impacts of the

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	» In terms of the Duty of Care provision in S28(1) the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to ensure that any pollution or degradation of the environment associated with a project is avoided, stopped or minimised.	and Resource Development	proposed project has found application in the EIA Phase. » The implementation of mitigation measures are included as part of the Draft EMPr and will continue to apply throughout the life cycle of the project.
National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008)	» The Minister may by notice in the Gazette publish a list of waste management activities that have, or are likely to have, a detrimental effect on the environment. » In terms of the regulations published in terms of this Act (GN 921 of November 2013), a Basic Assessment or Environmental Impact Assessment is required to be undertaken for identified listed activities. » Any person who stores waste must at least take steps, unless otherwise provided by this Act, to ensure that (a) The containers in which any waste is stored, are intact and not corroded or in any other way rendered unlit for the safe storage of waste; (b) Adequate measures are taken to prevent accidental spillage or leaking; (c) The waste cannot be blown away; (d) Nuisances such as odour, visual impacts and breeding of vectors do not arise; and (e) Pollution of the environment and harm to health are prevented.	» National Department of Environmental Affairs (hazardous waste) » Gauteng Department of Agriculture and Resource Development (general waste)	» In terms of GNR921, no waste license is required for the project » Waste handling, storage and disposal during construction and operation is required to be undertaken in accordance with the requirements of this Act, as detailed in the applicable EMPr, as well as in accordance with the relevant Norms and Standards.
National Environmental Management: Air Quality Act (Act No. 39 of 2004)	» S18, S19 and S20 of the Act allow certain areas to be declared and managed as “priority areas”. » Dust control regulations promulgated in November 2013 may require the implementation of a dust management plan.	» National Department of Environmental Affairs » City of Johannesburg Metropolitan Municipality	» Reporting in terms of compliance to GNR831 will be required. » While no permitting or licensing requirements arise from this legislation, this Act will find application during the

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
			construction phase of the project. The Air Emissions Authority (AEL) may require the compilation of a dust management plan.
National Water Act (Act No. 36 of 1998)	» Under S21 of the Act, water uses must be licensed unless such water use falls into one of the categories listed in S22 of the Act or falls under the general authorisation. » In terms of S19, the project proponent must ensure that reasonable measures are taken throughout the life cycle of this project to prevent and remedy the effects of pollution to water resources from occurring, continuing, or recurring.	» National Department of Water Affairs » Gauteng Department of Agriculture and Resource Development	» the proposed development requires a Water Use License as per the following regulations: • Section 21(c): impeding or diverting the flow of water in a watercourse and; • Section 21 (i): altering the bed, banks, course or characteristics of a watercourse. » Requirements set by S19 will apply throughout the life-cycle of the project.
Environment Conservation Act (Act No. 73 of 1989)	» National Noise Control Regulations (GN R154 dated 10 January 1992)	» National Department of Environmental Affairs » Gauteng Department of Agriculture and Resource Development » Local Authorities	There is no requirement for a noise permit in terms of the legislation.
National Heritage Resources Act (Act No. 25 of 1999)	» S38 states that Heritage Impact Assessments (HIAs) are required for certain kinds of development including: » The construction of a road, powerline, pipeline, canal or other similar linear development or barrier exceeding 300 m in length; » Any development or other activity which will change the character of a site exceeding 5 000 m^2 in extent » The relevant Heritage Authority must be notified of developments such as linear developments (i.e. roads and power lines), bridges exceeding 50 m, or any development or other activity which will change the	» South African Heritage Resources Agency	» The proposed development exceeds5 000 m2 in extent » Heritage Assessment has been undertaken as part of this Basic Assessment (refer to **Appendix G3**). » Due to the density of the urban development in the region, it is very unlikely that any sites or features dating to the pre-colonial history of the region would still exist in the study area. However, isolated objects such as Stone Age artefacts might be exposed in areas close to stream beds.

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	character of a site exceeding 5 000 m^2; or the re-zoning of a site exceeding 10 000 m^2 in extent. This notification must be provided in the early stages of initiating that development, and details regarding the location, nature and extent of the proposed development must be provided. » Stand-alone HIAs are not required where an EIA is carried out as long as the EIA contains an adequate HIA component that fulfils the provisions of S38. In such cases only those components not addressed by the EIA should be covered by the heritage component.		» Some smaller, informal burial sites occur in the larger region, but would not be impacted on by the proposed development. » Should heritage features, archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.
National Environment Management Protected Areas Act, 2003 (Act No. 57 of 2003).	» Wetlands and other critical Biodiversity areas are regulated under the NEM:BA. Activities that fall within the parameters of these areas require specialist assessment to determine the impacts and the residual effects of mitigation measures	» National Department of Environmental Affairs	» Ecologist specialists were appointed to determine any critical biodiversity areas. No permitting requirements were triggered by the activities.
Conservation of Agricultural Resources Act (Act No 43 of 1983).	Regulation 15 of GNR1048 provides for the declaration of weeds and invader plants, and these are set out in Table 3 of GNR1048. Declared Weeds and Invaders in South Africa are categorised according to one of the following categories: » Category 1 plants: are prohibited and must be controlled. » Category 2 plants: (commercially used plants) may be grown in demarcated areas providing that there is a permit and that steps are taken to prevent their spread. » Category 3 plants: (ornamentally used plants) may no longer be planted; existing plants may remain, as long as all reasonable steps are taken to prevent the	» Department of Agriculture, Forestry and Fisheries (DAFF)	» An alien species management plan to be included in the requirements of the EMPr.

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	spreading thereof, except within the floodline of watercourses and wetlands.		
Provincial			
The Gauteng Conservation Plan (Version 3.3) (GDARD, 2011)	» The plan has classified areas within the province on the basis of its contribution to reach the conservation targets within the province. Critical Biodiversity Areas (CBAs) contain irreplaceable, important and protected areas (terms used in C-Plan 2) and are areas needed to reach the conservation targets of the Province. In addition 'Ecological Support Areas' (ESAs), mainly around riparian areas and other movement corridors were also classified to ensure sustainability in the long term. Landscape features associated with ESAs is essential for the maintenance and generation of biodiversity in sensitive areas and requires sensitive management where incorporated into C-Plan 3.	Gauteng Department of Agriculture and Resource Development	On the study site, the sections associated with the watercourse are classified while the rest of the areas remain unclassified. The areas associated with the watercourse are classified as Ecological Support Areas
Regional Spatial Development Framework (RSDF) 2010/2011- Administrative Region A	The site falls within Administrative Region A, of the City of Johannesburg Metropolitan Municipality, Gauteng Province. Region A is the northern gateway to the city, combining the best of urban and rural living. The region borders Centurion (part of the Tshwane Metropolitan Municipality) to the north and Mogale City (Krugersdorp) to the west. The region is ideally placed for metropolitan economic development. The western part of the region is predominantly made up of agricultural holdings and large tracts of undeveloped land. An array of land uses can be found in close proximity to the site, including uses associated mainly with commercial uses such as shops, offices, churches, schools, etc. Residential areas include both formal and informal settlements. Commercial interests are concentrated in Kya Sand,	City of Johannesburg Metropolitan Municipality	According to the Regional Spatial Development Framework (RSDF) of the city, Kaalfontein forms part of marginalized areas together with Diepsloot Greater Ivory Park and RabieRidge). The RSDF states that in Region A, the greatest housing backlogs are in Diepsloot, and Ivory Park. Ivory Park is situated within a 4km radius of the subject property. The proposed development therefore aims to address one of the Regional Spatial Development Framework (RSDF) goals

Title of legislation, policy or guideline (Promulgation Date)	Applicable Requirements	Administering Authority	Description of compliance
	Lanseria and Fourways. The area still has plenty of developmental opportunities.		

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

Provide a description of the alternatives considered

Table 3: Description of the alternatives considered

Alternative type, either alternative: site on property, properties, activity, design, technology, energy, operational or other(provide details of "other")	**Description**
Site alternatives	No site alternatives have been investigated for the proposed development for the following reasons: • The Kaalfontein development site is located within an area identified as a development node by the RSDF. • Based on the findings of the Market Study (Appendix J3), the proposed site is considered highly favourable and most suitable for this development due to demand for this type of development within the region and lack of available land. • The landowner is proposing the development, hence land will be readily available **Thus only one site is deemed feasible and practicable for the proposed development.**
Layout alternatives	**Proposed Layout: Mixed use development** (Private School and private health care facility with a Residential component) • The site is well positioned to accommodate urban infill development. The affordable residential market continues to perform well in former township areas –

	with property price growth of more than double the growth rate observed in the most major metros. • The site does, however, align with the Social Housing Regulatory Authority's (SHRA) considerations with regard to infill development, proximity to main routes and public transport networks, coupled with proximity to urban nodes and urban amenities. • Considering site size, compounded by environmental restrictions, a higher density development would be required to render the project financially viable – i.e. 100 to 150+ units per hectare walk-ups, as opposed to 20 to 40 units per hectare individual stands. • The private healthcare industry is vibrant in township environments and a number of operators are actively pursuing opportunities in these localities. If site size is limited, private healthcare might yield an attractive proposition. • Private education, although a viable proposition, should only be considered if sufficient land is available once the other two components have been accommodated. **The proposed Layout is the preferred option in view of site dynamics, market realities and environmental considerations** *Source: Demacon, Kaalfontein Market study (2018)*
	Layout Alternative 1: Social housing • Albeit that sizeable demand exists for social housing / rental stock in the area, SHRA may not necessarily have the appetite to fund 1 000 units as part of a single phase and the project would have to be developed incrementally. • Residential is a viable proposition, a private healthcare facility would, however, strengthen the appeal of the precinct and would furthermore serve to accelerate take-up of rental stock. A private healthcare facility might also yield higher land values in comparison to affordable housing. **Layout Alternative 1 (Social housing) is an acceptable alternative but not preferred alone.** *Source: Demacon, Kaalfontein Market study (2018)*
	Layout Alternative 2: Retail • Retail is a consideration on account of the strategic location of the site. • The site is positioned at a western entrance to the Greater Tembisa Area, along a main route and public transport axis to and from the area. • The single largest shopping centres in Tembisa include the Phumalani • Mall (17 500m²) and Tembisa Plaza (18 000m²). • A number of prominent funds and development companies are actively looking for sites to accommodate large destination orientated retail malls upwards of 45 000m² in Tembisa.

	• Although market demand supports a development of 65 000m², site size (13.5ha) is not ideal to accommodate the development of this scale. It has subsequently become known that a sizeable proportion (i.e. 5 to 6 ha) of the available 13.5ha may not be developable on account of environmental considerations. The destination retail option would therefore necessitate the acquisition of additional land. • If additional land can be procured and automotive city could be added to compliment. **Due to size limitation of the site, this alternative is not viable and will not be further assessed in this BA report** *Source: Demacon, Kaalfontein Market study (2018)*

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

N/A

4. PHYSICAL SIZE OF THE ACTIVITY

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

	the activity:
Proposed activity (Mixed used development)	8Ha
Alternatives:	
Alternative 1 (Social housing)	8Ha
Alternative 2	
	Ha/ m^2

or, for linear activities:

	Length of the activity:
Proposed activity	
Alternatives:	
Alternative 1 (if any)	
Alternative 2 (if any)	
	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 (Private School and private health care facility with a Residential component)	13.5Ha
Alternatives:	
Alternative 1 (Social housing	13.5Ha
Alternative 2	
	Ha/m^2

5. SITE ACCESS

Proposal

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

Describe the type of access road planned:

The site is situated and accessible on the corner of Archerfish Drive and Dale Road. Dale Road and Archerfish Drive are important linkages connecting Kaalfontein and certain areas of Tembisa to Midrand.

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).

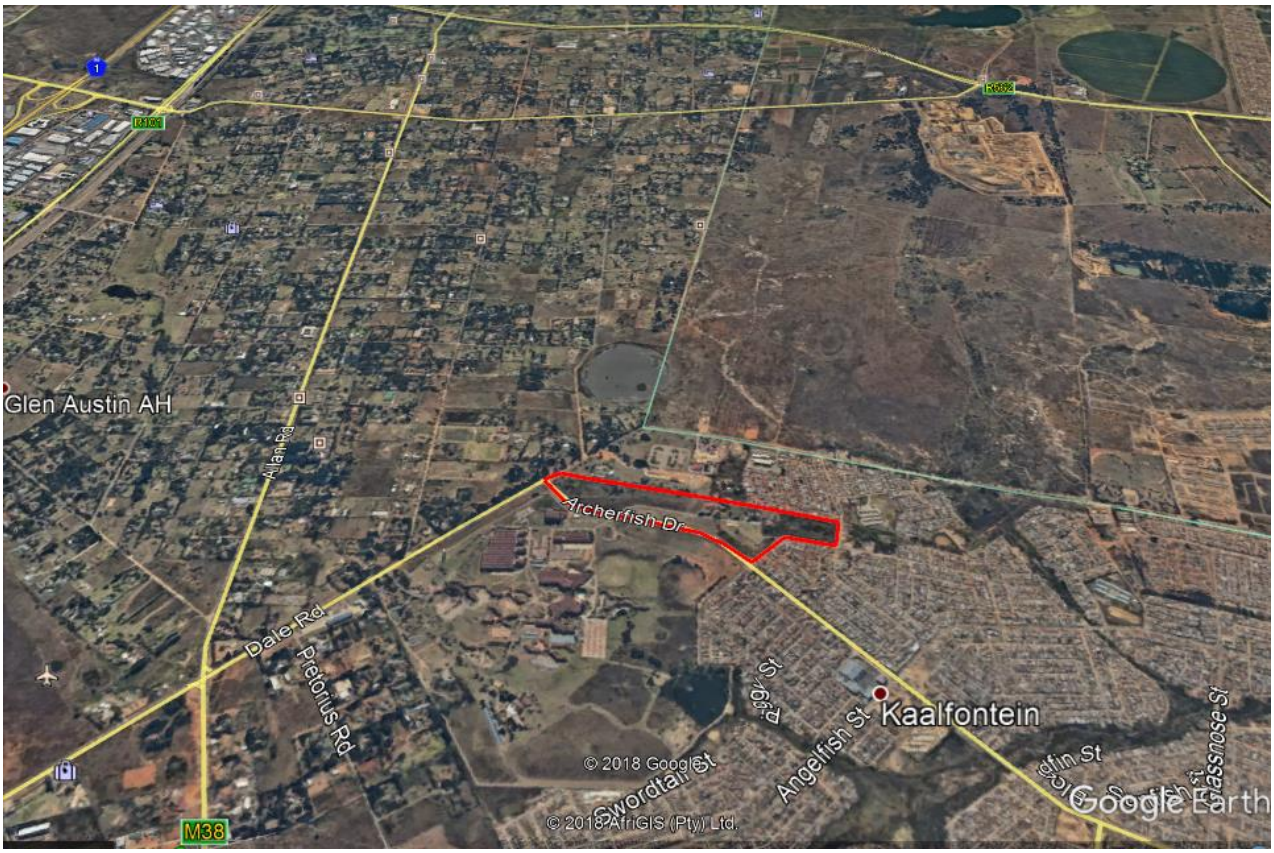


Figure 5: Overview of existing access roads to the site (red)

Alternative 1

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

Describe the type of access road planned:

Same as above (the proposed layout)

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:

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

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

Section A 6-8 has been duplicated ☐ Number of times (only complete when applicable)

6. LAYOUT OR ROUTE PLAN

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

- the layout plan is printed in colour and is overlaid with a sensitivity map (if applicable);
- layout plan is of acceptable paper size and scale, e.g.
  - A4 size for activities with development footprint of 10sqm to 5 hectares;
  - A3 size for activities with development footprint of > 5 hectares to 20 hectares;
  - A2 size for activities with development footprint of >20 hectares to 50 hectares);
  - A1 size for activities with development footprint of >50 hectares);

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

The **layout plan** for the proposed development are enclosed within **Appendix A**

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.

The **Locality Map** for the proposed development are enclosed within **Appendix A**

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.

Reference is made to **Appendix B – Site Photographs** included as part of this application

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.

Reference is made to **Appendix C – Facility Illustration** included as part of this application

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

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.

1. Indicate on a plan(s) the different environments identified
2. Complete Section B for each of the above areas identified
3. Attach to this form in a chronological order
4. Each copy of Section B must clearly indicate the corresponding sections of the route at the top of
5. 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**	tim es	(complete only when appropriate)

It is worth noting that all two Layout Alternatives are proposed in the same receiving environment and therefore will be assessed together as impacts will be similar. It is for this reason that the section will not be duplicated.

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

1. PROPERTY DESCRIPTION

Property description: (Including Physical Address and Farm name, portion etc.)	The development is proposed on Portion 57 of the Farm Kaalfontein 13- IR at the corner of Dale Road and Archerfish Drive in Kaalfontein Extension 24, City of Johannesburg Metropolitan Municipality, Gauteng Province

2. ACTIVITY POSITION

Indicate the position of the activity using the latitude and longitude of the centre point of the site for each alternative site. The co-ordinates should be in decimal degrees. The degrees should have at least six decimals to ensure adequate accuracy. The projection that must be used in all cases is the WGS84 spheroid in a national or local projection.

Proposed Activity:	**Latitude (S):**	**Longitude (E):**
Centre point of the activity	25°58'59.22"S	28°10'3.96"E

In the case of linear activities:

Proposed Activity:	Latitude (S):	Longitude (E):
Starting point of the activity		
Middle point of the activity		
End point of the activity		

Alternative 1	Latitude (S):	Longitude (E):
▪ Starting point of the activity		
▪ Middle point of the activity		
▪ End point of the activity		

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

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

The 21 digit Surveyor General code of each cadastral land parcel

T0IR00000000013000057

3. GRADIENT OF THE SITE

Indicate the general gradient of the site.

Proposed Activity

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.

Proposed Activity

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

5. GROUNDWATER, SOIL AND GEOLOGICAL STABILITY OF THE SITE

Is the site(s) located on any of the following?

	Proposed Activity:		Alternative S2 (if any):		Alternative S3 (if any):	
Shallow water table (less than 1.5m deep)	YES ✔		YES	NO	YES	NO
Dolomite, sinkhole or doline areas		NO✔	YES	NO	YES	NO
Seasonally wet soils (often close to water bodies)	YES ✔		YES	NO	YES	NO
Unstable rocky slopes or steep slopes with loose soil		NO✔	YES	NO	YES	NO
Dispersive soils (soils that dissolve in water)	YES ✔		YES	NO	YES	NO
Soils with high clay content (clay fraction more than 40%)		NO✔	YES	NO	YES	NO
Any other unstable soil or geological feature	YES ✔		YES	NO	YES	NO
An area sensitive to erosion	YES ✔		YES	NO	YES	NO

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

b) are any caves located on the site(s) 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) 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) 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):**
0	0

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

Hydrology

Based on these spatial layers no wetlands or watercourses occur within the study site although a wetland system is located south and east of the study site as well as two pan wetlands north of the study site, including Glen Austin Pan. The vacant land north of the study site is known to have several cryptic seepage wetlands (**Figure 6**).

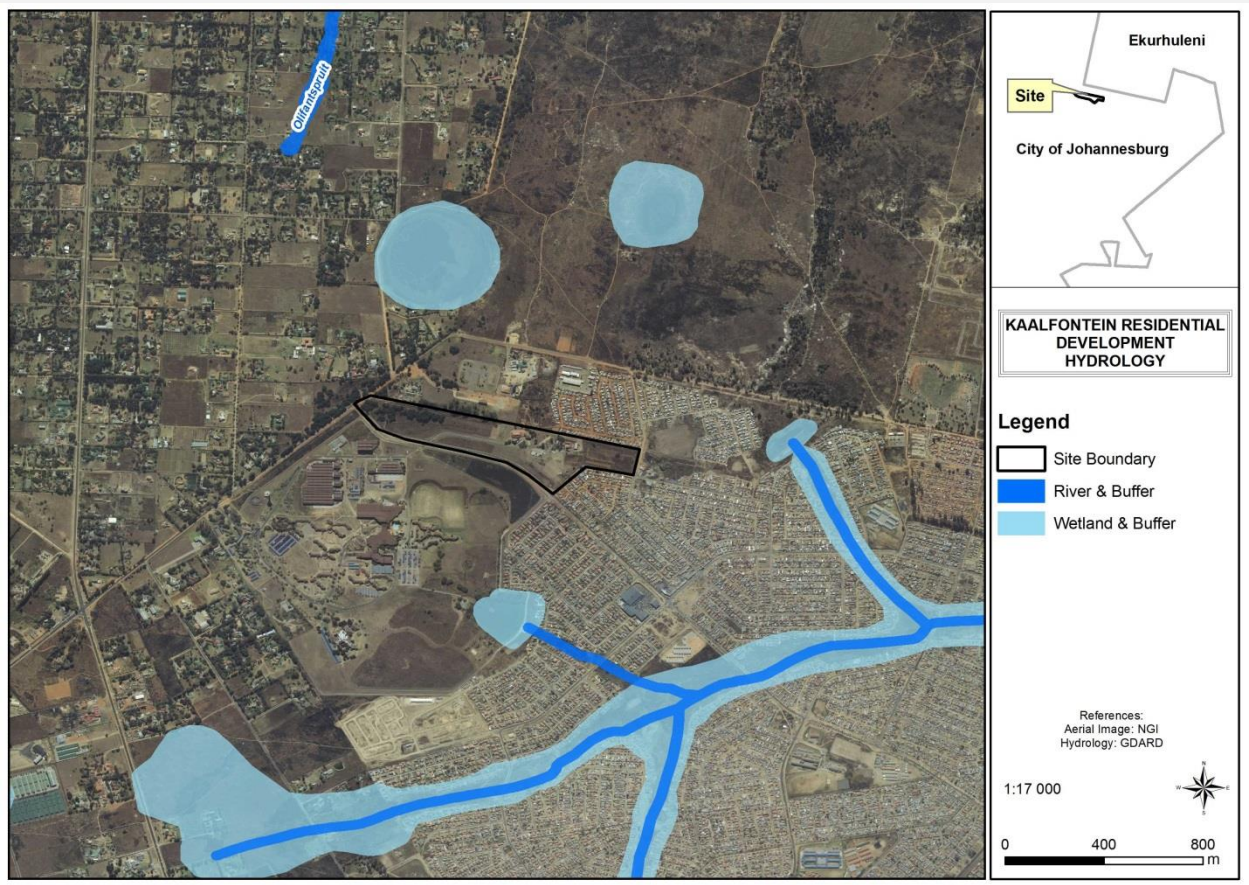


Figure 6: Regional Hydrology(refer to **Appendix A** for A3 maps)
(*Source: Kaalftontein Wetland report 2018*)

The profile hydropedology is characterized by rapid infiltration at the soil surface and subsequent recharge into the profile (the entire vertical soil to bedrock). Clay layers and hard plinthite tongues form a separation in hydrological connectivity in a vertical extent, separating the pedon (classifiable diagnostic soil form) soil from the underlying deep saprolite horizon. Hillslope hydropedology is characterised as dominating interflow at multiple depths, singularly or in combination. This is divided into recharge to deep interflow in the saprolite at the crest The entire hillslope with exception of the seep zones, continuously recharge. The interflow zones on the midslope expressing clay or plinthite

separation zones within the vertical extent of the profile recharge only the pedon, not the entire profile. The valley bottom is too wet for iron and manganese to precipitate (does not undergo an oxidative phase with sufficient substrate for plinthite formation - implies nutrient uptake by vegetation), and has a relatively high organic matter content at the surface. A thick clay layer here forms the separation layer between the pedon and the saprolite. The organic matter rich topsoil is the lowest point that connects with the event driven shallow interflow that is generated by accumulative preferential infiltration of the midslope soils overlying the clay/plinthite separation layer.

Recharge at the crest is up to post seasonal in hydrological response in the wetland in response to rainfall events. Interflow at the midslope is event and post rain-event driven. The deep saprolite interflow underneath the plinthite layer at the midslope, forms the connection of the crest recharged water that flows towards the wetland. The seep-zone is where the deep interflow water and shallow event water (biological water) interact, due to the change in the topology (topography of the bedrock). As the tology flattens out, the soil volume of the pedon and subsoil saprolite becomes less, and the subsoil saprolite water is forced under hydraulic head, up into the biological water zone. This results in seep wetlands. A similar trend is observed on the midslope, where decreases in bedrock depth induce hillslope seeps. Multiple hillslopes contribute to primarily valley bottom wetlands, whereas hillslope seep wetlands are often found on hillslopes themselves (Tinnefeld et al. 2017)."

Soils and Geology

The study site is located on Swazian geology which is characterised by Mafic and ultramafic rocks, amphibolite, undifferentiated granite and gneiss. The study site is currently primarily underlain by soils classified on a regional scale as Urban/Unconsolidated soils. These soils are transformed by anthropogenic activities or comprise of infill. The soil on the study site is thus expected to be greatly disturbed. However, the region is known for shallow soils derived from a granitic geology and the formation of hard and soft plinthic layers which trap water which is expressed as seepage wetlands. From the regional soil classification the longlands soil form is often associated with wetlands.

There is a buried (by the soil) quartz ridge which extends from the North-West. This is likened to the Boskruin ridge or Kyalami ridge, and is considered ecologically sensitive. These soils have a deep infiltration functions in the deep fractures of their extent and in this case, forms the "source" of the wetland (the cracks there provide sufficient storage capacity to slowly maintain wet conditions for long enough to form a wetland. Liken I a Jojo tank with a small tap) .The two contours which have been built up along the wetland catchment on site, indicate serious earth movement to have occurred historically on site. These contours should be considered within the building specifications with specific reference to their stability.

Areas sensitive to erosion

The soils of the Halfway House Granites are easily compacted and eroded. Red soils are more prone to compaction, requiring a controlled traffic plan during construction. Yellow and grey soils are prone to erosion. Erosion must be controlled, and construction traffic must have a clean tire tread before leaving the site. Particularly saprolite (the chemically weathered, coarse sub-soil) is highly erosive (Hydropedo, 2018)

6. AGRICULTURE

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

Gauteng Agricultural Potential Atlas the site falls within an area of very limited agricultural potential as depicted in Figure 7 below.

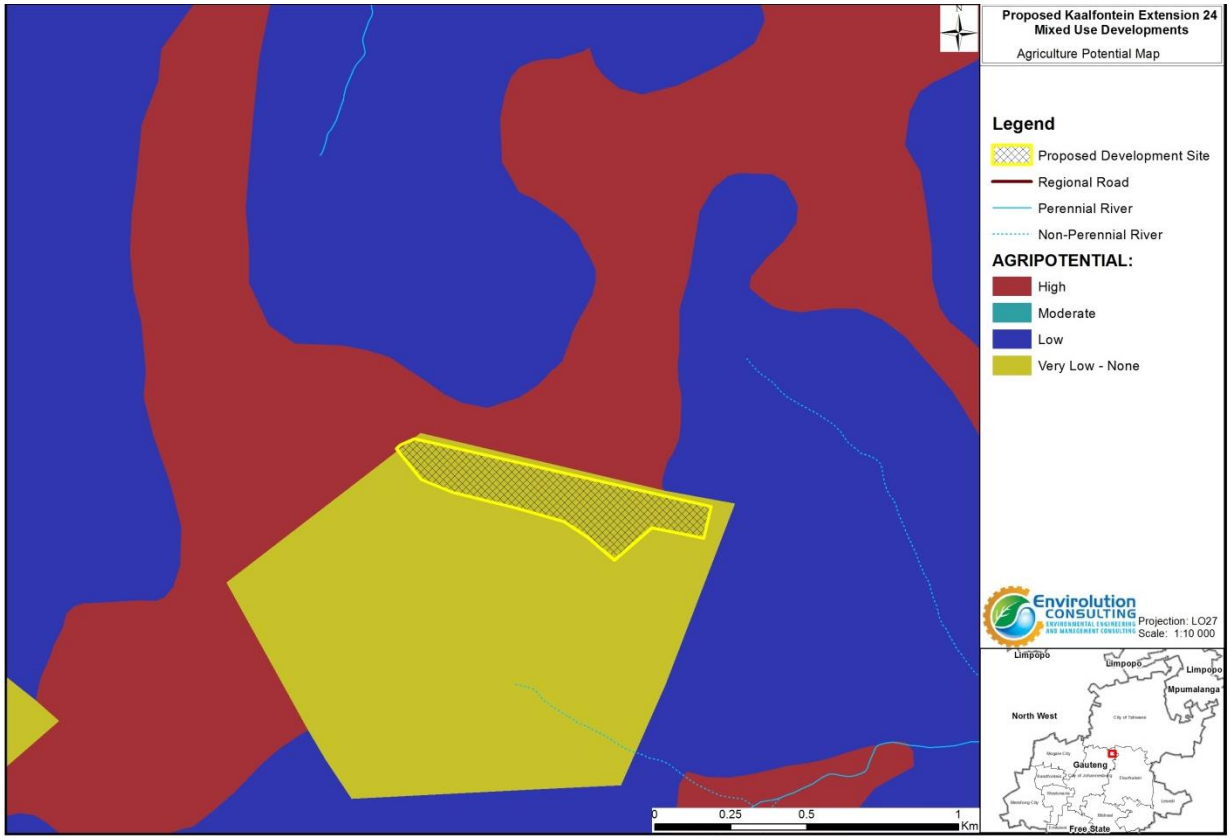


Figure 7: Agricultural Potential

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

7. GROUNDCOVER

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

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

Natural veld - good condition % = 0	**Natural veld with scattered aliens % = 30**	**Natural veld with heavy alien infestation % =15**	**Veld dominated by alien species % =20**	**Landscaped (vegetation) % =10**
Sport field % =0	Cultivated land %=0	**Paved surface (hard landscaping) % =5**	**Building or other structure % =15**	**Bare soil % =5**

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✓**	[redacted]

If YES, specify and explain:

At the time of this assessment, no TOPS listed species were recorded within the proposed development footprint or are expected to occur. However, a number of provincially protected plants are listed in the Transvaal Nature Conservation Ordinance Act No. 12 of 1983. These plants are not to be removed, damaged, or destroyed without permit authorisation from Gauteng Department of Agriculture and Rural Development (GDARD). *Gladiolus crassifolius*, present within the *Hyparrhenia hirta*-grassland, are provincially protected (**Figure 8**).

Figure 8: *Gladiolus crassifolius* occurred throughout the *Hyparrhenia hirta* grassland

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.	[redacted]	**NO✓**

If YES, specify and explain:

Are there any special or sensitive habitats or other natural features present on the site?	YES✓	

If YES, specify and explain:

Wetland/Riparian Classification and Delineation

The western section of the study site was confirmed in a hydropedological assessment as a seepage wetland (Hydropedo, 2018) (**Figure 9**). The wetland is comprised of 2.82Ha and Katspruit/hard plinthite horizon and Wasbank soils; as well Kroonstad and Longlands soils form a sensitive interflow to responsive hydropedological response zone. This responsive wetland zone fed by interflow from red Hutton soils in the higher lying areas over a short yellow (Avalon) band of soils into a grey matrix (seep). This sensitive deep interflow area covers 1.57Ha and falls largely within the protective 30m buffer zone around the wetland. The interflow that sustains long flow periods in the wetland after rainfall events originates from the hutton soil on the crest position. This flow from the hutton soils flows via the longlands and Avalon soils towards the wetland. Intercepting these flowpaths will inevitably cut off the 'tap' that sustains the wetland hydrology. Through-flow from the properties to the North also contributes to the wetland (Hydropedo, 2018).

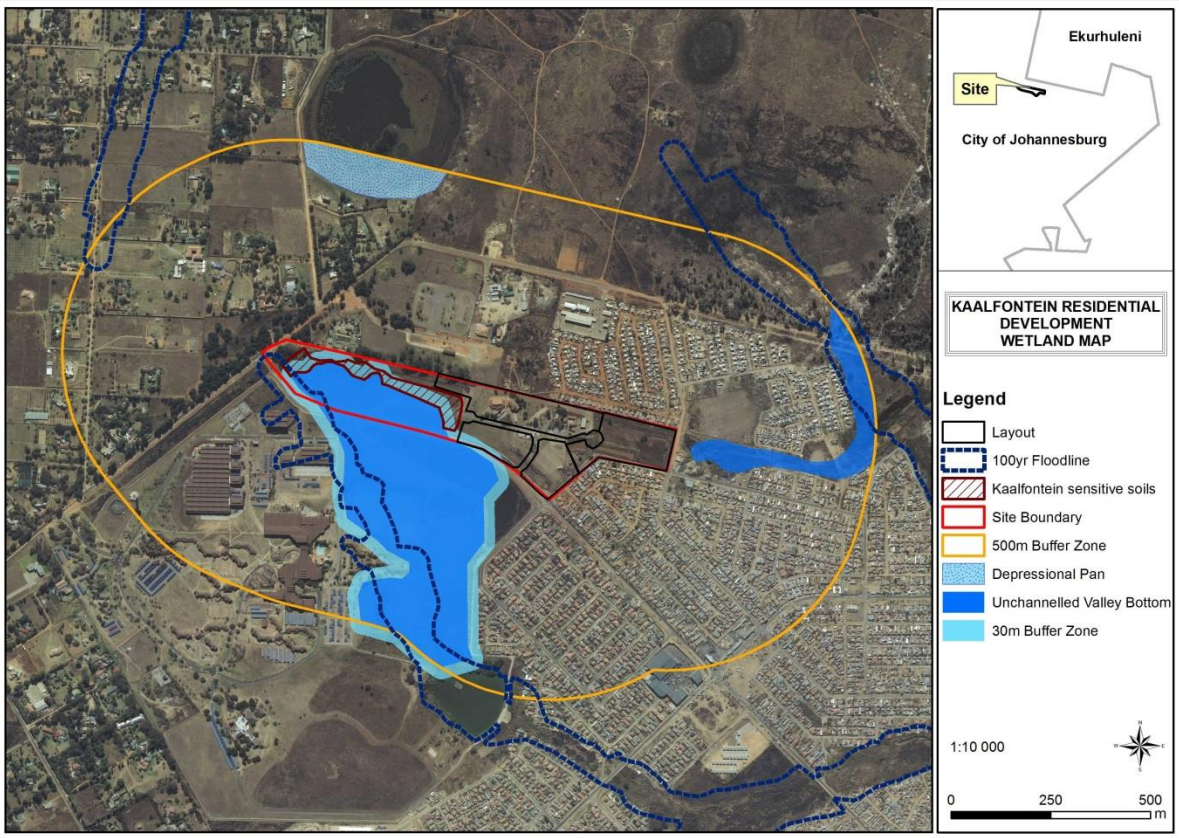


Figure 9: The delineated wetland area sensitive soils (from Hydropedo, 2018), 30 m buffer zone and 1:100 year floodline, relative to the site boundaries. **The wetland and buffer zone should be considered no-go areas for development.** The sensitive soils not covered by the buffer may be developable with appropriate mitigation measures.

No wetness gradient was seen in historic aerial imagery and the site was disturbed by past agricultural activities. The site has undergone numerous changes and impacts to both the soil profile and vegetation composition which result in the limited wetland indicator soil indicators and lack of wetland vegetation. In particular the colonisation of the invasive trees (Wattle and Eucalyptus) are known to use a lot of water thus

reducing the available water downstream and changing the species composition to species more suited to drier areas, these trees were cut down in 2014 but have recolonised the area.

Wetland Functional Assessment

The wetland recorded on site has been impacted by a long history of agriculture, roads, alien vegetation and an increasingly urban catchment. The PES scores calculated in this assessment resulted into a low E. The change in ecosystem processes and loss of natural habitat and biota is great but some remaining natural habitat features are still recognizable. Although hydrological processes remain, the high density development of Kaalfontein to the east and north of the site has likely changed natural flow processes in the wetland's catchment. Archerfisher Drive and roads in the site compact soils and affect surface water runoff. Trenches and outfalls on the site further impact on hydrological function and pollution levels. The vegetation component of this wetland's function has been completely altered.

Overview of historic vegetation type

The site is situated in the Grassland Biome which experience summer rainfall and dry winters with frost (and fire), that are unfavourable to tree growth. Therefore, grasslands comprise mainly of grasses and plants with perennial underground storage organs, for example bulbs, tubers and suffrutex species. In some grassland areas, the surface topography (e.g. rocky hills and protected valleys) creates habitats that are favourable to shrublands and trees (Mucina & Rutherford, 2006). Generally, the higher the surface rock cover, the higher the occurrence of woody vegetation such as trees and shrubs, relative to herbaceous vegetation (Mucina & Rutherford, 2006). The grassland biome is under severe threat from urbanisation, industrialisation, mining and agriculture, especially in Gauteng.

The Grassland Biome comprises several vegetation types (Mucina & Rutherford, 2006). This site is situated within the historical extent of the Egoli Granite Grassland (Mucina & Rutherford, 2006). Egoli Granite Grassland comprises climax grass species with a patchy dominance and a high diversity of forbs (an herbaceous plant other than grasses). Very little Egoli Granite Grassland is still in this pristine condition and remnants are thus of high conservation value. When Egoli Granite Grassland is disturbed, *Hyparrhenia hirta* (common thatching grass) becomes the dominant grass and the forb diversity decreases (Bredenkamp *et al*, 2006). The degradation occurs easily resulting in a change from the climax vegetation (high species diversity) to an anthropogenic *Hyparrhenia hirta* dominated vegetation type with low species diversity. It is unlikely that disturbed and transformed Egoli Granite Grassland will return to the original climax vegetation (Bredenkamp *et al*, 2006). Egoli Granite Grassland is poorly conserved and is classified as endangered, indicating that it is facing a very high risk of extinction in the near future (Golding, 2002). The pressures for land in Gauteng lead to degradation and disturbances within the Egoli Granite Grasslands.

Vegetation Survey Overview

The vegetation that could be impacted on by the proposed development on the site are grouped into three broad vegetation associations Each broad vegetation grouping is discussed below and geographically represented in **Figure 10.**

1. Modified (mowed lawns and buildings and invasive tree stands);
2. Secondary *Hyparrhenia hirta* grassland; and
3. Moist grassland.

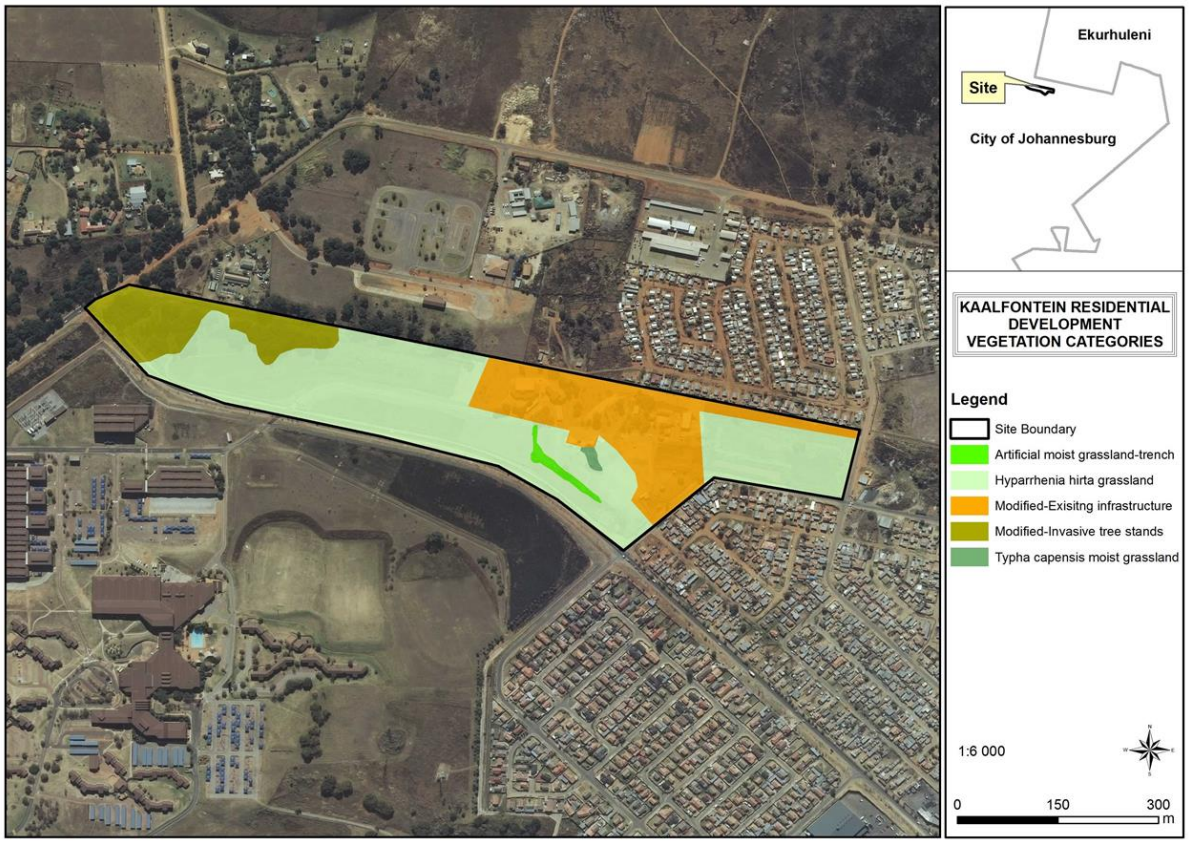


Figure 10: Vegetation associations on site

The sensitivity analysis results were classified as per **Table 4**, geographically represented in **Figure 11** and discussed below.

Table 4: Scoring of vegetation that occur within the site

Broad vegetation community	Conservation Status of regional Vegetation* unit	Predominant state	Reversibility of degradation	Protection by legislation/ policies	Plants of conservation concern	Ecological Function	Conservation Importance / unique habitat	Total Score out of max of 21	Importance and vulnerability
Modified – infrastructure and lawns	0	1	0	0	0	1	0	**2**	**low**
Alien and invasive vegetation	0	0	0	0	0	0	0	**0**	**low**
***Hyparrhenia hirta* grassland**	2	1	1	2	2	1	1	**10**	**medium**
Moist grassland-trench	2	0	0	3	0	1	1	**7**	**low**
***Typha capensis* moist grassland**	2	2	2	3	0	1	1	**11**	**medium**

*not applicable to areas devoid of natural vegetation

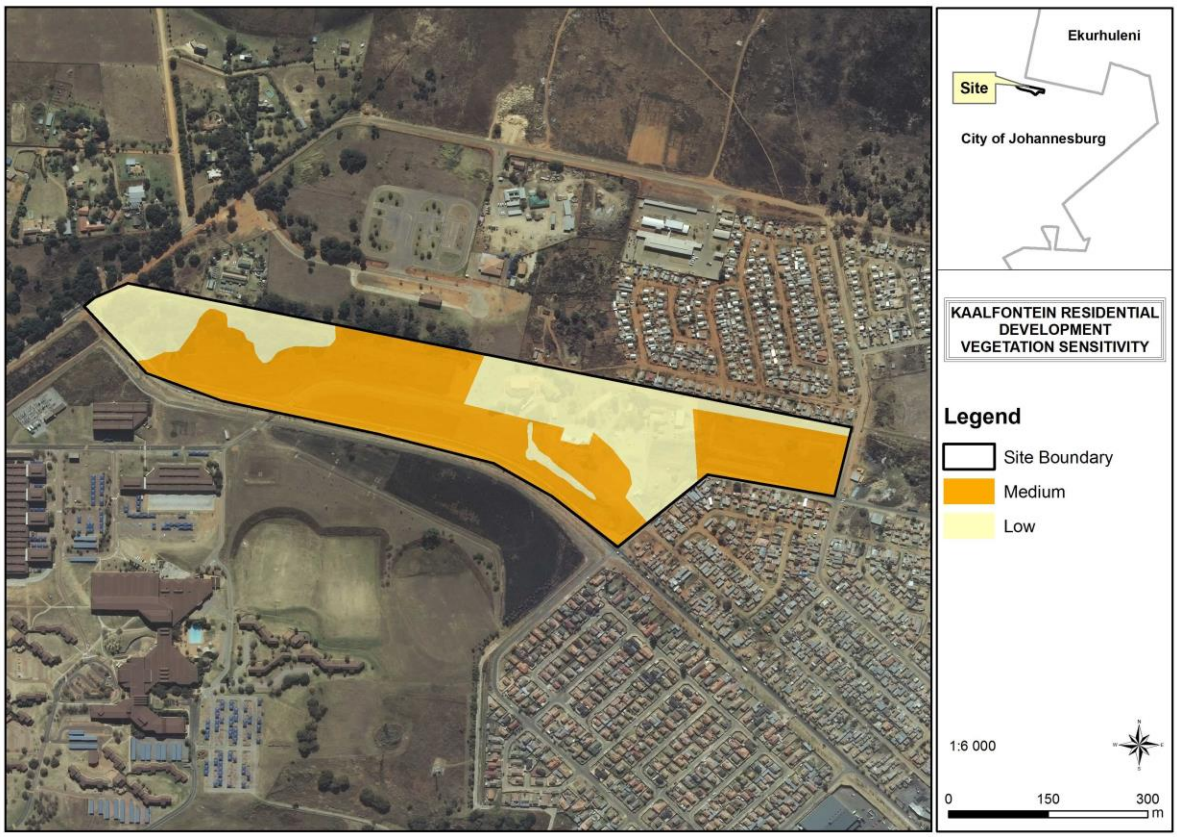


Figure 11: Vegetation Sensitivity Map(refer to **Appendix A** for A3 maps). (*Source: Kaalftontein Vegetation report 2018*)

Plant Species of Conservation Concern

A list of twenty-four (24) plants of conservation concern that were previously recorded in the quarter degree square (qds) that the project area is situated in or for which suitable habitat is present within the study area is given in Appendix C. One species listed as Declining in Gauteng (recently reclassified to Least Concern nationally) was recorded in the *Hyparrhenia hirta* grassland: *Hypoxis hmerocallidea*. The *Hyparrhenia hirta* grassland could provide habitat to more species. However, none of these were recorded in walked transects or sample plots and walked transects and are thought to be unlikely to occur (**Appendix G2**).

Listed Ecosystems

The site stretches over the historical extent of the Critically Endangered Glen Austin Pan ecosystem and the "Endangered" Egoli Granite Grassland) (**Figure 12**). The South African Biodiversity Act (Act 10 of 2004) provides for the listing of threatened or protected ecosystems. These ecosystems are grouped into Critically Endangered-, Endangered-, Vulnerable- and Protected Ecosystems (Section 52(1) (a) of the National Environmental Management: Biodiversity Act (Government Gazette 34809, Government Notice 1002, 9 December 2011)).

Figure 12: The site starches over two listed ecosystems

Gauteng Conservation Plan

The Gauteng Conservation Plan (Version 3.3) (GDARD, 2011) classified areas within the province based on its contribution to reach the conservation targets within the province. These areas are grouped as Critical Biodiversity Areas (CBAs) or Ecological Support Corridors (ESAs). The CBAs comprise 'Irreplaceable' areas that must be conserved and areas classified as 'Important' to reach the conservation targets of the Province. ESA's are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. (ESAs) to ensure sustainability in the long term.

According to the Gauteng Conservation Plan (version 3.3), the western portion of the site falls within an ESA, while the rest of the site does not fall within any conservation category (**Figure 13**). The Glen Austin Pan north of the site is protected.

ESA's are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration.

The Gauteng Conservation Plan (Version 3.3) (GDARD, 2011) classified areas within the province based on its contribution to reach the conservation targets within the province. These areas are grouped as Critical

Biodiversity Areas (CBAs) or Ecological Support Corridors (ESAs). The CBAs comprise 'Irreplaceable' areas that must be conserved and areas classified as 'Important' to reach the conservation targets of the Province. ESA's are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. (ESAs) to ensure sustainability in the long term.

According to the Gauteng Conservation Plan (version 3.3), the western portion of the site falls within an ESA, while the rest of the site does not fall within any conservation category (Figure 4). The Glen Austin Pan north of the site is protected. ESA's are areas that are not essential for meeting biodiversity representation targets/thresholds but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration.

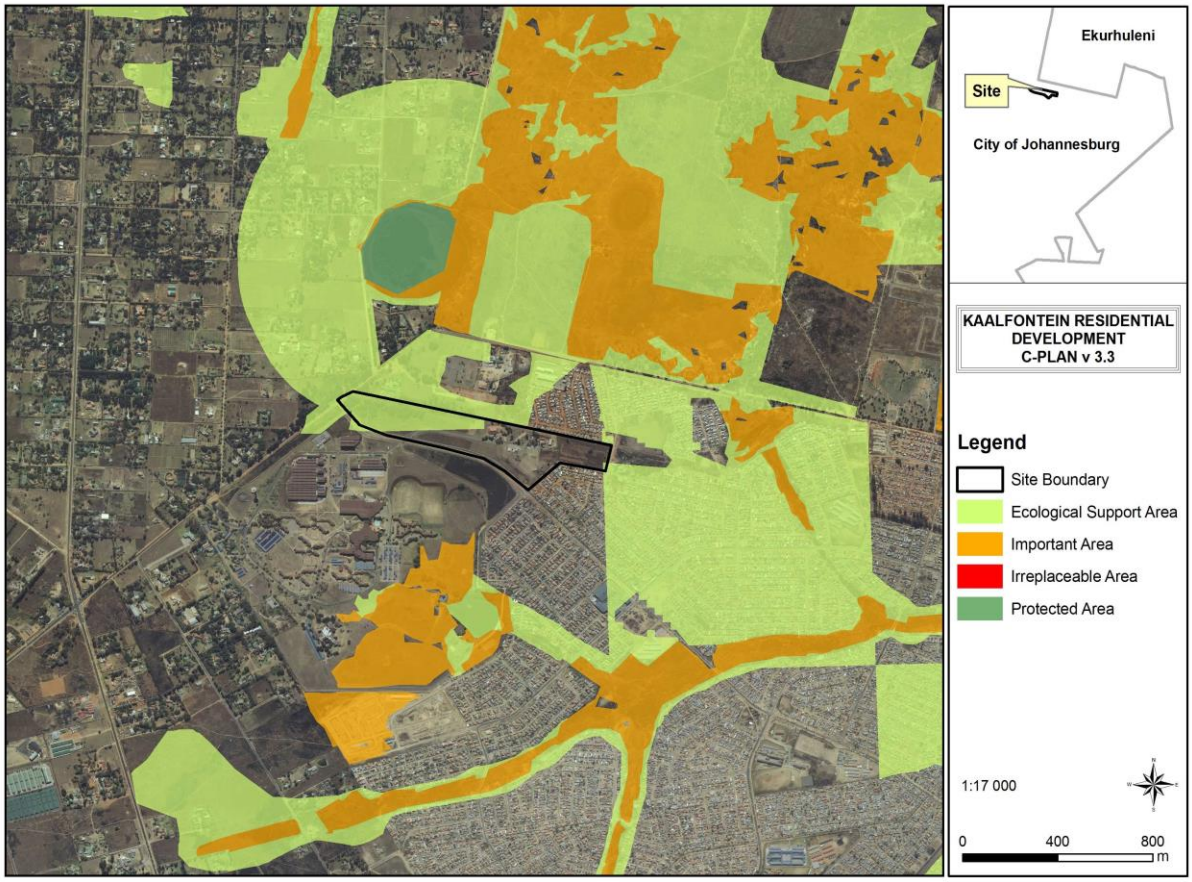


Figure 13: Gauteng Conservation Areas relevant to the study site (refer to **Appendix A** for A3 maps).

Was a specialist consulted to assist with completing this section	**YES✓**

If yes complete specialist details

1.) Wetland Specialist

Name of the specialist:	Antoinette Bootsma

Qualification(s) of the specialist:	▪ MSc Ecology, University of South Africa (2017) Awarded with distinction. Project Title: Natural mechanisms of erosion prevention and stabilization in a Marakele peatland; implications for conservation management ▪ Short course in wetland soils, Terrasoil Science (2009) ▪ Short course in wetland delineation, legislation and rehabilitation, University of Pretoria (2007) ▪ B. Sc (Hons) Botany, University of Pretoria (2003-2005). Project Title: A phytosociological Assessment of the Wetland Pans of Lake Chrissie ▪ B. Sc (Botany & Zoology), University of South Africa (1997 - 2001)
Postal address:	
Postal code:	
Telephone:	[redacted] Cell: +27 83 4545 454
E-mail:	antoinette@limosella.co.za Fax: [redacted]
Are any further specialist studies recommended by the specialist?	YES ✓
If YES, specify:	**Yes**
If YES, is such a report(s) attached?	YES ✓
If YES list the specialist reports attached below	
An Hydropedology study attached as **Appendix G4** to this report	
Signature of specialist:	Date: **11.04.2018**

2.) Heritage Specialist

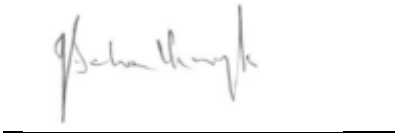
Name of the specialist:	J van Schalkwyk
Qualification(s) of the specialist:	J A van Schalkwyk, D Litt et Phil, heritage consultant, has been working in the field of heritage management for more than 30 years. Based at the National Museum of Cultural History, Pretoria, he has actively done research in the fields of anthropology, archaeology, museology, tourism and impact assessment. This work was done in Limpopo Province, Gauteng, Mpumalanga, North West Province, Eastern Cape, Northern Cape, Botswana, Zimbabwe, Malawi, Lesotho and Swaziland. Based on this work, he has curated various exhibitions at different museums and has published more than 60 papers, many in scientifically accredited journals.
Postal address:	62 Coetzer Avenue, Monument Park, 0181
Postal code:	2194
Telephone:	[redacted] Cell: 076 790 6777
E-mail:	jvschalkwyk@mweb.co.za Fax: [redacted]
Are any further specialist studies recommended by the specialist?	[redacted] NO ✓

If YES, specify:	**N/A**

If YES, is such a report(s) attached? [redacted] **NO ✓**

If YES list the specialist reports attached below

N/A

Signature of specialist: 

Date: **25.02.2018**

3.) Flora Specialist

Name of the specialist:	Antoinette Eyssell-Knox
Qualification(s) of the specialist:	• M.Sc Environmental Science, University of Pretoria (2010) Dissertation: *Land cover change and its effect on future land uses* • B. Sc (Hons) Horticulture, University of Pretoria (1999-2000) Dissertation: *Horticultural uses of the indigenous Barleria species* • B. Sc (Agriculture) Horticulture, University of Pretoria (1993-1996)
Postal address:	
Postal code:	

Telephone:	082 642 6295	Cell:	082 642 6295
E-mail:	Antoinette@dimela-eco.co.za	Fax:	[redacted]

[redacted] **NO ✓**

Are any further specialist studies recommended by the specialist?

If YES, specify:	**N/A**

If YES, is such a report(s) attached? [redacted] **NO ✓**

If YES list the specialist reports attached below

N/A

Signature of specialist: 

Date: **23.03.2018**

4.) Fauna Specialist

Name of the specialist:	I.L. Rautenbach

Qualification(s) of the specialist:	Qualifications • B.Sc. (UP) 1966, T.H.E.D (Pta TTC) 1967, M.Sc. (UP) 1971, Ph.D. (Un. Natal) 1971 • Professional Honours 1. Professional Natural Scientist (Zoology) – S.A Council for Natural Scientific Professions, Registration # 400300/05 • Fellow of the Photographic Society of South Africa • Master photographer at club level • Honorary life member of the S.A. Wildlife Management Association.
Postal address:	45 Helgaard Street, Kilner Park, Pretoria, RSA 0186
Postal code:	0186

Telephone:	012 3334112	Cell:	082 3351288
E-mail:	naasrauten@mweb.co.za	Fax:	[redacted]

Are any further specialist studies recommended by the specialist?	[redacted] **NO ✓**
If YES, specify:	**N/A**
If YES, is such a report(s) attached?	[redacted] **NO ✓**
If YES list the specialist reports attached below	**N/A**

Signature of specialist:		Date:	**30.03.2018**

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

Proposed Activity:

1. Vacant land	**2. River, stream, wetland**	3. Nature conservation area	4. Public open space	5. Koppie or ridge
6. Dam or reservoir	7. Agriculture	**8. Low density residential**	9. Medium to high density residential	**10. Informal residential**
11. Old age home	12. Retail	**13. Offices**	14. Commercial & warehousing	15. Light industrial
16. Heavy industrial[AN]	17. Hospitality facility	18. Church	19. Education facilities	20. Sport facilities
21. Golf course/polo fields	22. Airport[N]	23. Train station or shunting yard[N]	24. Railway line[N]	25. Major road (4 lanes or more)[N]
26. Sewage treatment plant[A]	27. Landfill or waste treatment site[A]	28. Historical building	29. Graveyard	30. Archeological site
31. Open cast mine	32. Underground mine	33.Spoil heap or slimes dam[A]	**34. Small Holdings**	35 Other land uses (describe):

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

Site

NORTH

8 34	**6 8 34**	**6 8 34**	**8 13 4**	**10**
8 34	**2 8 34**	**13**	**13**	**10**
8	**2 8**		**10**	**10**
13	**2**	**1**	**10**	**10**
13	**13**	**1**	**10**	**10**

WEST **EAST**

SOUTH

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

Buildings and infrastructure is present on the site and stands of alien invasive trees (wattle and blue gum trees) occur in the western corner. Historic aerial images (Google Earth) show that much of the site was historically cultivated, with soil disturbances visible throughout the site (**Figure 14**). The soil disturbances have ceased, and grassland vegetation colonised the disturbed soils.

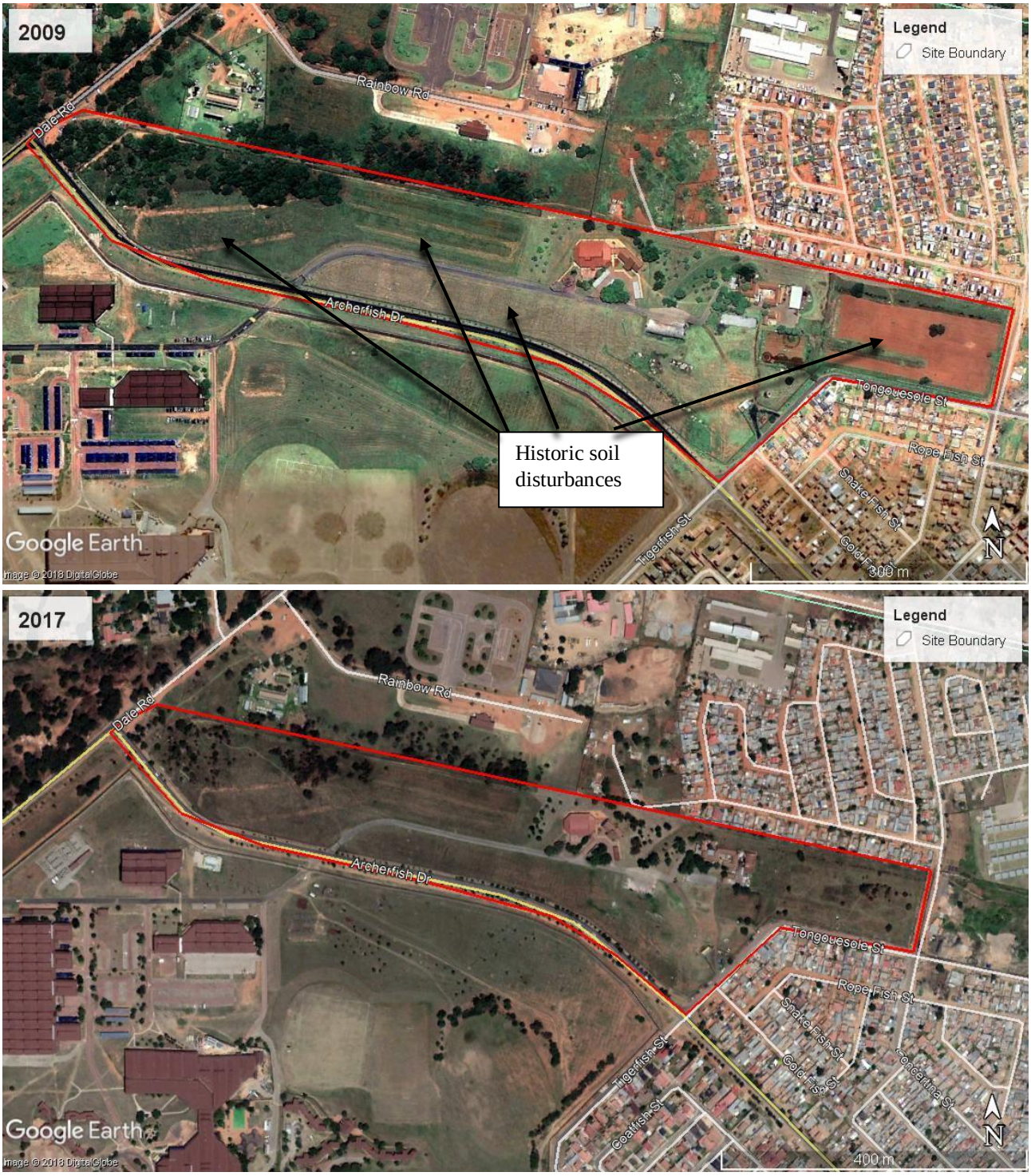


Figure 14: Land uses on and around the site in 2009 and 2017 (Google Earth imagery)

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✓**
If yes indicate the type of reports below	

▪ Wetland Assessment ▪ Wetland rehabilitation and Monitoring Plan ▪ Vegetation Assessment ▪ Fauna Impact Assessment ▪ Heritage Assessment ▪ Hydropedology study
The above specialists reports are attached within **Appendix G** of this 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.

Introduction: The City of Johannesburg is divided into seven regions, designated alphabetically from A to G. The project is located within Region A.

Population: Understanding both the age as well as anticipated population growth of the city assists in planning for the anticipated demand for services and job opportunities. The City of Johannesburg has a population of approximately 4 million made up primarily of a young population aged between 30 and 39 years. This total population translates into roughly 1.3 million households. The city's population is projected to increase to about 4.1 million in 2015 implying an annual rate of growth of the population of about 1.3% per annum by 2015. Household projections further indicate that the number of households in the City is likely to increase from about 1.3 million in 2010 to about 1.5 million in 2015 with an average household size of about 3 persons. **The region is home to more than 250 000 residents, most of whom are concentrated in Midrand. The western part of the region is scarcely populated, though some 56 000 people reside in the township of Diepsloot alone (CoJ, 2018).**

Economic Profile of local Municipality: The City' of Johannesburg` s economy is driven primarily by four economic sectors which are: (a) finance and business services, (b) community services, (c) manufacturing, and (d) trade. These four economic sectors collectively account for more than 82% of economic activity within the City. **The population in the region is relatively young, with some 24 percent being between the ages of 20 and 29. While the formal residential areas are home to prosperous and well-educated residents, most of the people living in the townships and informal settlements are poor, with low levels of school education (CoJ).**

Level Of Unemployment: The CoJ had high unemployment levels of 23.1% in 2010/2011. **Regions E, B have one of the lowest rates** of unemployment at 2.3% and 9.2% respectively. Youth unemployment remains a major challenge both nationally and for the city. Low education levels and slow formal sector growth are two of the major causes of youth unemployment. The vast majority of the youthful population in Johannesburg has only a matric certificate preventing access to the labour market (CoJ IDP 2012/2016). **Unemployment levels in this region stands at over 50 percent and more than 70 percent of the residents live below the poverty line. In the Midrand area, approximately 70 percent of residents earn less than R2 500 a month, while 34 percent earn no income at all (CoJ, 2018).**

Housing demands: In terms of the Regional Spatial Development Framework (RSDF) of the city, Kaalfontein forms part of marginalized areas together with Diepsloot Greater Ivory Park and RabieRidge). The RSDF states that in Region A, the greatest housing backlogs are in Diepsloot, and Ivory Park. Ivory Park is situated within a 4km radius of the subject property.

City of Johannesburg housing demand /backlog is 256,480; the Demand Database has over 800000 applicants. According to the Kaalfontein Market study "Between 2018 and 2023 an estimated 43 921 households will seek accommodation in the target geographic market area, resulting in an annual growth in demand of approximately 8 784 units" .

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 categorized as-

(a) the construction of a road, wall, power line, 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?	**NO ✓**
If YES, explain:	

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:

Impact analysis of cultural heritage resources under threat of the proposed development, is based on the present understanding of the development: *As no sites, features or objects of cultural significance are known to exist in the study area, there would be no impact as a result of the proposed development.*

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

SECTION C: PUBLIC PARTICIPATION (SECTION 41)

1. THE ENVIRONMENTAL ASSESSMENT PRACTITIONER MUST CONDUCT PUBLIC PARTICIPATION PROCESS IN ACCORDANCE WITH THE REQUIREMENT OF THE EIA REGULATIONS, 2014.

2. LOCAL AUTHORITY PARTICIPATION

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

Was the draft report submitted to the local authority for comment? **YES✓**

If yes, has any comments been received from the local authority? **YES✓**

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

The City of Johannesburg Metropolitan Municipality has raised the following comments and recommendations prior to the release of the DBAR, that must be addressed in the report:

- Confirmation of whether the property is affected by the Glen Austin conservancy pan 300m buffer
- Confirmation of whether the property is affected by the 1:100 year floodline
- Fauna and flora study

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

3. CONSULTATION WITH OTHER STAKEHOLDERS

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

Has any comment been received from stakeholders? **YES✓**

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

1. The Midrand SPCA has been situated in this are for more than 20 years, so it is with concern for the well-being, health and safety of our animals that we would suggest the following:
2. Prior to any work on the development, a wall is erected along the southern boundary of SPCA from Dale Road through to approximately 300m beyond the southeast corner of the pound. The wall to be at least 1,8m high, topped with razor wire.
3. This would help alleviate the visual and noise nuisance caused by the construction equipment, bearing in mind the animals have never been subjected to this.
4. In addition, the SPCA has never been connected to mains sewerage, due to the cost of covering the distance to the nearest main sewer pipe (the pound land is owned by the Joburg City Council). The proposed development would bring the nearest connection close enough to be a reasonable cost and we request that this possibility be considered when installing the sewerage infrastructure for the development.
5. We need to inform you that, even at the quietest times, the dogs in the pound do make a noise. Residents in the development close to the SPCA would need to be aware of this.
6. We would request the opportunity to meet with you prior to commencement of the development to discuss these and any other matters that may arise.

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

4. GENERAL PUBLIC PARTICIPATION REQUIREMENTS

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

5. APPENDICES FOR PUBLIC PARTICIPATION

All public participation information is to be attached in the appropriate Appendix. The information in this Appendix is to be ordered as detailed below
Appendix 1 – Proof of site notice
Appendix 2 – Written notices to I&APs
Appendix 3 – Proof of newspaper advertisements
Appendix 4 –Authority Consultation
Appendix 5 – Minutes of any public and/or stakeholder meetings – **this is anticipated during the Draft BAR review period**
Appendix 6 - Comments and Responses Report
Appendix 7 –Comments from I&APs on Basic Assessment (BA) Report - **Comments are anticipated during the Draft BAR review period**
Appendix 8 –Comments from I&APs on amendments to the BA Report N/A
Appendix 9 – Copy of the register of I&APs
Appendix E10 - Comments from I&APs on the application

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. (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✓

If yes, what estimated quantity will be produced per month? Could not be determined at this stage

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

Some construction rubble/ solid waste will arise from demolition of existing building. This solid waste will be temporarily stored on site in designated waste skips or stockpiles and then reused where possible for backfill. Surplus material will be removed by an appropriate waste contractor appointed by the main construction contractor to an approved landfill site. This will be managed through the EMPr.

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

General waste removed from site will be disposed of at a suitably licensed disposal facility. The nearest licensed landfill site is the Tembisa Landfill site located approx. 10km north of the project site. Safe disposal certificates must be obtained and kept on site for the duration of the construction phase

Will the activity produce solid waste during its operational phase? YES✓

If yes, what estimated quantity will be produced per month? `m^3

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

Some construction rubble/ solid waste will arise from demolition of existing building. This solid waste will be temporarily stored on site in designated waste skips or stockpiles and then reused where possible for backfill. Surplus material will be removed by an appropriate waste contractor appointed by the main construction contractor to an approved landfill site. This will be managed through the EMPr.

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? NO ✓

Where will the solid waste be disposed if it does not feed into a municipal waste stream (describe)?

During both construction and operation phase a registered landfill sites e.g. Tembisa Landfill site within the study area can be used as they still have capacity.

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?	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?	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:

During Construction, wastes must be separated at source into recyclable and non-recyclable materials and distributed for recycling where applicable. During the construction phase, construction waste rubble should be re-used as fill material, erosion protection and gabion construction where possible. The re-use of construction waste materials will minimize the amount of waste that will need to be disposed of at registered municipal waste facilities. In addition, there will be extensive earthworks, but import and export of material will be minimised by balancing cut and fill requirements as far as possible.

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?		**NO** ✓
If yes, what estimated quantity will be produced per month?		N/A m3
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?	**NO** ✓
If yes, what estimated quantity will be produced per month?	N/A m3

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

N/A

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

Will the activity produce effluent that will be treated and/or disposed of at another facility?	**NO** ✓

If yes, provide the particulars of the facility:

Facility name:	N/A		
Contact person:	N/A		
Postal address:	N/A		
Postal code:	N/A		
Telephone:	N/A	Cell:	
E-mail:	N/A	Fax:	

Describe the measures that will be taken to ensure the optimal reuse or recycling of waste water, if any:

N/A

Liquid effluent (domestic sewage)

Will the activity produce domestic effluent that will be disposed of in a municipal sewage system?		**NO**✓
If yes, what estimated quantity will be produced per month?		
If yes, has the municipality confirmed that sufficient capacity exist for treating /	**YES**	**NO**

disposing of the domestic effluent to be generated by this activity(ies)?

Will the activity produce any effluent that will be treated and/or disposed of onsite? **YES✓**
If yes describe how it will be treated and disposed of.

Chemical toilets are going to be used and the sewage waste will be collected by the Contractor on for treatment at a treatment facility.

Emissions into the atmosphere

Will the activity release emissions into the atmosphere? **YES✓**
If yes, is it controlled by any legislation of any sphere of government? **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:

The activity itself will not contribute directly to emissions released into the atmosphere except possible short-term dust emissions during the construction phase. Emissions generated will be in the form of dust, carbon dioxide and other vehicle emissions generated by diesel powered machinery and trucks during the construction process i.e. tip trucks, TLB's, excavators and dust from the movement of the construction vehicles. These emissions will be composed primarily of carbon monoxide (CO) and will be of a low concentration.

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 process itself 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: litters

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✓**
If yes, list the permits required

A Water Use License Application will be submitted after the Final Basic Assessment Report has been submitted to GDARD. Section 21 (c) & (i) are triggered by the activities.

If yes, have you applied for the water use permit(s)? **YES✓**
If yes, have you received approval(s)? (attached in appropriate appendix) **NO ✓**

A Water Use License Application will be submitted to Department of Water and Sanitation (DWS) concurrently with the submission of the FBAR to GDARD. The DBAR will also be made available to the Department of Water and Sanitation for comment during the DBAR review period.

3. POWER SUPPLY

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

The development will require power supply during its construction phase by means of Municipality supply. The supply authority (Eskom) has verbally confirmed that the estimated capacity of 7.3MVA is available in their substation and mentioned that due to the high demand for electricity in the area,

capacity will only be reserved once all applicable costs/fees have been paid in full. The supply required for this development is 7.3MVA and Eskom will be required to upgrade the existing network.

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

Please see above.

4. ENERGY EFFICIENCY

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

Different energy saving measures will be considered in the detail design phase of the project. For instance, great emphasis will be placed on environmental conservation brought about by prevention of flooding induced by insufficient stormwater system, orientation of the house, solar pumps.

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

- Explore uses of solar roofing and heat pump
- Orientation position of the houses to maximise the amount of heat
- The construction industry should make use of treated effluent water wherever.

Bulk services:

- **Stormwater**
  From the site inspection and the surveys done, there are visible kerb inlets (KI) for stormwater along Archerfish Drive. The sizes and capacities of these pipes will be confirmed at preliminary design stage.

- **Water Reticulation Design:**
  Based on the estimated peak water demand, the internal water reticulation system may tie into an existing water main in the Dale Road reserve area, subject to confirmation by the Local Authority. The internal water will comprise of a series of 75mm Dia. Class 12 uPVC water pipes extending into the development. Fire and domestic water demand will be calculated in accordance with the requirements of the Local Authority. The development will be provided with a water connection and an isolation valve, together with a bulk water meter by City of Johannesburg in the position to be determined at detailed design stage. This service will be handed over to the City of Johannesburg on completion and inspection of the installed services.

- **Sewer Reticulation (Internal**):
  The proposed level of service for this development is that a waterborne sewerage system will be installed. Sewer connection is to the existing network is most likely to be through the 150mm diameter clay pipe on the adjacent township, or as approved by the local authorities. The pipes will be designed to flow at 70% of the full capacity. An infiltration rate of 15% will be allowed for in the pipes. This is merely a safety factor, but the detailed design will not allow for any surface alignment that would allow for surface run-off to be routed to sewer manholes.
  Velocities will be limited to a minimum of 0.7m/s and a maximum of 2.5m/s. Velocities that exceed these will be reviewed at detailed design stage. Treatment plant capacities will be determined at preliminary design stage.
- **Stormwater Reticulation (Internal)**
  It is proposed that the following stormwater drainage infrastructure be used:

a) Road drainage

Stormwater collected on road surfaces will be drained on via surface runoff into suitable kerb inlets. Onsite detention for stormwater will be designed for. Disposal of water from the parking area will be by lowering the kerbs in a gradual fashion at the centre of the parking, where water drops into catchpits and then drains into pipes. The site will be altered by means of bulk earthworks to direct water into the predetermined catch pit positions.

b) Building Drainage

The stormwater from the structures' rooftops will fall onto the paved areas around the structures and flow away from these through platforms shaping.

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

Summaries the issues raised by interested and affected parties.

1. The Midrand SPCA has been situated in this are for more than 20 years, so it is with concern for the well-being, health and safety of our animals that we would suggest the following:
2. Prior to any work on the development, a wall is erected along the southern boundary of SPCA from Dale Road through to approximately 300m beyond the southeast corner of the pound. The wall to be at least 1,8m high, topped with razor wire.
3. This would help alleviate the visual and noise nuisance caused by the construction equipment, bearing in mind the animals have never been subjected to this.
4. In addition, the SPCA has never been connected to mains sewerage, due to the cost of covering the distance to the nearest main sewer pipe (the pound land is owned by the Joburg City Council). The proposed development would bring the nearest connection close enough to be a reasonable cost and we request that this possibility be considered when installing the sewerage infrastructure for the development.
5. We need to inform you that, even at the quietest times, the dogs in the pound do make a noise. Residents in the development close to the SPCA would need to be aware of this.
6. We would request the opportunity to meet with you prior to commencement of the development to discuss these and any other matters that may arise.
7. City of Johannesburg Metropolitan Municipality has made the following recommendations:
    - Confirmation of whether the property is affected by the Glen Austin conservancy pan 300m buffer
    - Confirmation of whether the property is affected by the 1:100 year floodline
    - Fauna and flora study

As this is the Draft Basic Assessment Report at present, it will be submitted for comment to the local authority and as well as to other stakeholders. Once comments have been received at the end of the 30-day review period, they will be recorded and reflected in the Final Basic Assessment Report.

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):

1-6 Your email has been sent to the developer for consideration in the design phase of the project in order to mitigate some of the impacts, using the review period of the DBAR , a meeting between yourselves and the will like to meet with you and discuss this further.

7 Your correspondence on the email below has been received and noted. Thank you for these recommendations and note that these have been sent to the relevant specialists for consideration in their reporting and assessment. Also a fauna and flora study has also been conducted for the

site.

Details of this correspondence has been captured in the Comments and Responses Report (refer to **Appendix 6**).

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

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

The purpose of impact assessment is to assign relative significance to predicted impacts associated with the project, and to determine the manner in which impacts are to be avoided, mitigated or managed. The potential environmental impacts were identified based on the nature of the receiving environment, a review of the proposed activities, and the issues raised in the public participation process.

The potential impacts of the proposed development were identified through a site visit, the Environmental Assessment Practitioners experience and expertise in the field and specialist study reports. In the Basic Assessment Report, the potential impacts are broadly identified and outlined. An assessment of the potential impacts is provided, identifying the impacts that are potentially significant and recommending management and mitigation measures to reduce the impacts. In general, it is recognized that every development has the potential to pose various risks to the environment as well as to the residents or businesses in the surrounding area. Therefore, it is important that these possible risks are taken into account during the pre-construction phase of the development.

In accordance with the requirements from the EIA Regulations 2014 GN 982, Regulation 19 (3) and as set out in Appendix 1, the following impacts of the issues identified through the basic assessment phase were assessed in terms of the following methodology. All impacts are assessed according to the following criteria.

- The **nature**, a description of what causes the effect, what will be affected, and how it will be affected.
  - The **extent**, wherein it is indicated whether the impact will be local (limited to the immediate area or site of development), regional, national or international. A score of between 1 and 5 is assigned as appropriate with
  - a score of 1 being site specific,
  - 2 = local (site + immediate surrounds),
  - 3 = regional (the impact could affect the area including the neighbouring farms, the transport routes and the adjoining towns) ,
  - 4 = national and
  - a score of 5 being international (where the impact has international ramifications that extend beyond the boundaries of South Africa).

- The **duration**, wherein it is indicated whether:
  - The lifetime of the impact will be of a very short duration (0–1 years) – assigned a score of 1;
  - The lifetime of the impact will be of a short duration (2-5 years) - assigned a score of 2;
  - Medium-term (5–15 years) – assigned a score of 3;
  - Long term (> 15 years) - assigned a score of 4; or;
  - Permanent - assigned a score of 5.

- The **magnitude**, quantified on a scale from 0-10, where a score is assigned:
  - 0 is small and will have no effect on the environment;
  - 2 is minor and will not result in an impact on processes;
  - 4 is low and will cause a slight impact on processes;
  - 6 is moderate and will result in processes continuing but in a modified way;
  - 8 is high (processes are altered to the extent that they temporarily cease); and
  - 10 is very high and results in complete destruction of patterns and permanent cessation of processes.

- The **probability** of occurrence, which describes the likelihood of the impact actually occurring. Probability is estimated on a scale, and a score assigned:
  - Assigned a score of 1–5, where 1 is very improbable (probably will not happen);
  - Assigned a score of 2 is improbable (some possibility, but low likelihood);
  - Assigned a score of 3 is probable (distinct possibility);
  - Assigned a score of 4 is highly probable (most likely); and
  - Assigned a score of 5 is definite (impact will occur regardless of any prevention measures).

- The **significance**, which is determined through a synthesis of the characteristics described above (refer formula below) and can be assessed as low, medium or high.
- The **status**, which is described as positive, negative or neutral.
- The degree to which the impact can be reversed.
- The degree to which the impact may cause irreplaceable loss of resources.
- The degree to which the impact can be mitigated.

The **significance** is determined by combining the criteria in the following formula:
S= (E+D+M) P; where

S = Significance weighting
E = Extent
D = Duration
M = Magnitude
P = Probability

The **significance** weightings for each potential impact are as follows:

- **< 30 points**: Low (i.e. where this impact would not have a direct influence on the decision to develop in the area),
- **30-60 points**: Medium (i.e. where the impact could influence the decision to develop in the area unless it is effectively mitigated),
- **>60 points**: High (i.e. Impact is significant, mitigation is critical to reduce impact or risk. Resulting impact could influence the decision depending on the possible mitigation. An impact which could influence the decision about whether or not to proceed with the project.).

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 and OPERATION PHASE** for the various alternatives of the proposed development. This must include an assessment of the significance of all impacts.

2.1 IMPACTS THAT MAY RESULT FROM THE CONSTRUCTION PHASE

Table 5[1]: A summary of anticipated significance of the potential direct, indirect and cumulative impacts that is likely to occur as a result of the CONSTRUCTION PHASE of both the Proposed Layout (Mixed development) and Layout Alternative 1: Social housing

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td colspan="3">IMPACT ON WATERCOURSES</td></tr>
<tr><td>
Nature of the Impact: Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow or increasing flood flows.

• The sources of this impact includes the compaction of soil, the removal of vegetation, surface water redirection during construction activities as well as changes to flowpaths and storage mechanisms in the soil during the operational phase

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly probable (4)</td><td>Highly probable (4)</td></tr>
<tr><td>Duration</td><td>Short (2)</td><td>Short (2)</td></tr>
<tr><td>Extent</td><td>Local (2)</td><td>Local (2)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>40 (moderate)</td><td>32 (moderate)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>
• Other than approved and authorized structure, no other development or maintenance infrastructure is allowed within the delineated watercourse or associated buffer zones.
• Development should include measures to ensure that the flowpaths and storage mechanisms in the soil should be disturbed as little as possible, to sustain hydrological and biogeochemical connectivity. This includes (Hydropedo, 2018):
○ Trenches perpendicular to the contour require clay curtains to deflect the preferential flow
○ Pipes installed in the soil are to be Biddum wrapped to reduce preferential flow along them.
○ Hard plinthite or clay layers (at depth) within the soil should not be broken.
○ If the biological layer in terrestrial soils or non-wetland soils is broken due to shallow pedon (soil above this layer) depth, a clay plug must be installed to prevent the mixing of hillslope water and biological water, insulating the pipe. The clay layer must be drawn flush with the original clay layer."
• A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse.
• Effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP.
• High energy stormwater input into the wetland should be prevented at all cost. Changes to natural flow of water (surface water as well as water flowing within the soil profile) should
</td><td>Impacts to the flow characteristics of this watercourse and downstream areas are likely to be permanent unless rehabilitated.</td></tr>
</table>

[1] **This table summarises the impacts for the proposed and alternative layout as they are similar**

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td></td><td>be taken into account during the design phase and mitigated effectively
• Implement the principles set out in The South African Guidelines for Sustainable Drainage Systems (SuDS) (Armitage et al, 2013)</td><td></td></tr>
<tr><td>Nature of the Impact: Changes in sediment entering and exiting the system

• Construction and operational activities will result in earthworks and soil disturbance as well as the removal of natural vegetation. This could result in the loss of topsoil, sedimentation of the downstream watercourses which could include clogging of culverts, smothering of vegetation, changed hydrology and decreased capacity of stormwater retention areas. Possible sources of impacts include:
o Earthwork activities during construction
o Clearing of surface vegetation will expose the soils, which in rainy events would wash through the watercourse, causing sedimentation. In addition, indigenous vegetation communities are unlikely to colonise eroded soils successfully and seeds from proximate alien invasive plants, particularly Campuloclinium macrocephalum (pompom weed), can spread easily into these eroded soil or sediment deposits.
• Disturbance of slopes through creation of roads and tracks adjacent to the watercourse

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly probable (4)</td><td>Possible (2)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Medium-term (3)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to the local area (2)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>52 (moderate)</td><td>18 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>• Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses.
• Water may seep into trenching and earthworks. It is likely that water will be contaminated within these earthworks and should thus be cleaned or dissipated into a structure that allows for additional sediment input and slows down the velocity of the water thus reducing the risk of erosion. Effective sediment traps should be installed.
• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).
• Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
• Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction.
• Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
• During the construction phase measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation.
• Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
• Runoff from the construction area must be managed to avoid erosion and pollution problems.
• Implementation of best management practices
• Source-directed controls
• Buffer zones should be maintained to trap sediments
• Monitoring should be done to ensure that sediment pollution is timeously addressed</td><td>Expected to be limited provided that the mitigation measures are implemented correctly and effective rehabilitation of the site is undertaken where necessary.</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>Nature of the Impact: Introduction and spread of alien vegetation.

• The moving of soil and vegetation resulting in opportunistic invasions after disturbance and the introduction of seed in building materials and on vehicles. Invasions of alien plants can impact on hydrology, by reducing the quantity of water entering a watercourse, and outcompete natural vegetation, decreasing the natural biodiversity.
• Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plans can easily colonise and impact on downstream users.
<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr><tr><td>Duration</td><td>Medium-term (3)</td><td>Short duration (2)</td></tr><tr><td>Extent</td><td>Regional (4)</td><td>Local (2)</td></tr><tr><td>Magnitude</td><td>Moderate (6)</td><td>Low (4)</td></tr><tr><td>Significance</td><td>39 (moderate)</td><td>24 (low)</td></tr><tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr></table></td><td>• Implement an Alien Plant Control Plan
• Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards.
• Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.
• Rehabilitate or revegetate disturbed areas and monitor for effective rehabilitation as specified in the rehabilitation plan</td><td>Expected to be limited provided that the mitigation measures are implemented correctly and effective rehabilitation of the site is undertaken where necessary.</td></tr>
<tr><td>Nature of the Impact: Loss and disturbance of wetland habitat and fringe vegetation

• Direct development within watercourse areas. Loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation.

<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Possible (2)</td><td>Improbable (1)</td></tr><tr><td>Duration</td><td>Medium-term (3)</td><td>Short term (2)</td></tr><tr><td>Extent</td><td>Local Area (2)</td><td>Local Area (2)</td></tr></table></td><td>• Other than approved and authorized structure, no other development or maintenance infrastructure is allowed within the delineated watercourse or associated buffer zones.
• Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas
• Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed.
• Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish
• Operational activities should not impact on rehabilitated or naturally vegetated areas</td><td>Expected to be limited provided that the mitigation measures are implemented correctly and effective rehabilitation of the site is undertaken where necessary.</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>
<table>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>26 (low)</td><td>8 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>Nature of the Impact: Changes in water quality due to pollution

• Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands/rivers and a reduction in watercourse function as well as human and animal waste.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Possible (2)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Medium-term (3)</td></tr>
<tr><td>Extent</td><td>Regional (3)</td><td>Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>42 (moderate)</td><td>18 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>• Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone.
• Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse.
• Provision of adequate sanitation facilities located outside of the watercourse area or its associated buffer zone
• The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc.
• After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use.
• Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer.
• Maintenance of buffer zones to trap sediments with associated toxins
• Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse
• Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects.
• Treatment of pollution identified should be prioritized accordingly.</td><td>Expected to be limited provided that the mitigation measures are implemented correctly and effective rehabilitation of the site is undertaken where necessary.</td></tr>
<tr><td colspan="3">IMPACT ON VEGETATION</td></tr>
<tr><td>Nature of the Impact: Destruction of Hyparrhenia hirta grassland

The development will require the removal of the Hyparrhenia hirta grassland which contributes to open space and catchment to the Kaalspruit east of the site. However, these functions can be mitigated. It is assumed that the whole site will be developed with limited if any natural open space remaining.</td><td>• Incorporate open space planning into the development – these areas should serve as groundwater recharge zones and should be linked to wetland areas if found to be present by the wetland specialists (Limosella, 2018)
• Permeable paving should be utilized to allow for ground water recharge
• A temporary fence or demarcation must be erected around the construction area to prevent access to sensitive environs e.g. moist grassland if verified to be wetlands (Limosella, 2019)
• Prohibit vehicular or pedestrian access into natural areas beyond the demarcated boundary</td><td>Localised alteration of soil surface characteristics and loss of flora and increased fragmentation of remaining grasslands in the area.</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>The sources of this impact include:
Clearing of and damage to vegetation in construction footprint, access roads, construction camps, vehicle / machinery traffic and trampling by workers;
Illegal disposal and dumping of construction material such as cement or oil, as well as maintenance materials during construction.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (5)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Permanent (5)</td><td>Permanent (5)</td></tr>
<tr><td>Extent</td><td>Limited to Site (1)</td><td>Limited to Site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Minor (2)</td></tr>
<tr><td>Significance</td><td>50 (medium)</td><td>24 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>of the construction area.
Remove vegetation as and when necessary to protect soils from erosion and a stormwater management plan must be implemented for the duration of construction
Construction workers may not remove flora and neither may anyone collect seed from the plants without permission from the local authority.
Where topsoils need to be removed, store such in a separate area where such soils can be protected until they can be re-used for post-construction rehabilitation where applicable. Never mix topsoils with subsoils or other spoil materials
Maintain site demarcations in position until the cessation of construction work.
After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land must be left in a condition as close as possible to that prior to construction.</td><td></td></tr>
<tr><td>Nature of the Impact: <u>Destruction of protected plants and plants of conservation concern</u>
Development within the Hyparrhenia hirta-grassland would require the removal of the declining Hypoxis hemerocallidea and the provincially protected Gladiolus crassifolius species.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (5)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to site (1)</td><td>Limited to site (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Low (4) Only if</td></tr>
</table></td><td>It I assumed that the development will include only limited open space and that all the vegetation will be removed. Protected plants must be removed by a suitably qualified specialist and replanted in suitable habitat such as the buffer areas of the wetlands if found to be present by the wetland specialist. (Note, these plants may only be removed with the permission of the provincial authority and as provided for in the Record of Decision). Their survival must be monitored for at least two growing seasons after relocation.
These species can also be used in rehabilitation of landscaping. If these species cannot be relocated within the site their destruction must be communicated to the GDARD and can only take place once a permit to do so was issued by the GDARD
Construction workers may not tamper or remove these plants, and neither may anyone collect seed from the plants without permission from the local authority.</td><td>Species removed and relocated as part of rehabilitation could die due to transplantation shock or damage during replanting.</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>
<table>
<tr><td></td><td></td><td>plants are avoided or relocated, else rating stays at 6</td></tr>
<tr><td>Significance</td><td>45 (medium)</td><td>12 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>Nature of the Impact: Removal of alien invasive vegetation (positive)

• Removing of existing invasive alien vegetation (e.g. the tree stands in the western corner of the site) could have a positive effect and reduce infestations within the area

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Highly probable (4)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Long-term (4)</td></tr>
<tr><td>Extent</td><td>Local Area (2)</td><td>Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>High (8)</td></tr>
<tr><td>Significance</td><td>30 (low)</td><td>56 (medium)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Positive</td><td>Positive</td></tr>
</table>
</td><td>Construction:
• Compile and implement an alien invasive monitoring plan to remove alien invasive plant species from the site, prior to construction.
• Rehabilitate all areas cleared of invasive plants as soon as practically possible, utilising specified methods and species.
• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after construction is complete.
• Follow manufacturer's instruction when using chemical methods, especially in terms of quantities, time of application etc.
• Ensure that only properly trained people handle and make use of chemicals.
• Dispose of the eradicated plant material at an approved solid waste disposal site.
• Only indigenous plant species naturally occurring in the area should be used during the rehabilitation of the areas affected by the construction activities.

Maintenance:
• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after construction is complete.</td><td>If alien invasive species monitoring is not maintained, the cleared areas could become infested again.</td></tr>
<tr><td>Nature of the Impact: Clearing of land for construction camps and potential pollution of the soil and water

These may be at one or several locations, area will be cleared and</td><td>• Prevent spillage of construction material and other pollutants, contain and treat any spillages immediately, strictly prohibit any pollution/littering according to the relevant EMPr
• No open fires may be lit for cooking or any other purposes, unless in specifically designated and secured areas</td><td>Compaction on construction camps could result in altered topsoil characteristics and vegetation composition. These areas are also</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>levelled where necessary, site offices may be temporary structures, machinery, building supplies and temporary staff facilities (excluding accommodation) will be housed here. The impacts could include:
• Removal of vegetation
• Levelling and compaction of soils
• Storage of machinery, supplies and staff facilities

This could lead to the loss of vegetation and/or species of conservation concern, alteration and loss of microhabitats, altered vegetation cover, increased erosion and contamination of soil and groundwater.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Local Area (2)</td><td>Site bound (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>33 (moderate)</td><td>14 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>• Facilities may not be used as staff accommodation
• No vehicles may be washed on the property, except in suitably designed and protected areas
• No vehicles may be serviced or repaired on the property, unless it is an emergency situation in which case adequate spillage containment must be implemented</td><td>prone to invasion by alien invasive plant species.</td></tr>
<tr><td colspan="3">IMPACTS ON FAUNA</td></tr>
<tr><td>Nature of the Impact: <u>Direct impact on species richness and loss of habitat.</u>

Loss of ecological resources will result, but this will have a minimal impact given the small site size as well as the poor conservation character of its transformed grassland.

Mitigation would not be possible given the nature of the proposed development.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
</table>
</td><td>• Storm water is to be cleaned and preferable recycled.</td><td>None</td></tr>
</table>

Potential impacts:			Proposed mitigation:	Risk of the impact and mitigation not being implemented
Probability	Very Probable (4)	Very Probable (4)		
Duration	Short-term (1)	Short-term (1)		
Extent	Limited to Local Area (1)	Limited to Local Area (1)		
Magnitude	Medium (0)	Medium (0)		
Significance	**Low (8)**	**Low (8)**		
Status (positive, negative or neutral)	Negative	Negative		
VISUAL IMPACTS				
Nature of the Impact: Visual Impacts			▪ Ensure that no litter, refuse, waste, rubbish, rubble, debris and builders wastes generated on the premises be placed, dumped or deposited on adjacent or surrounding properties including road verges, roads or public places and open spaces during or after the construction period. All waste/litter/rubbish etc. must be disposed of at an approved dumping site as approved by the Council. ▪ Bare surfaces must be rehabilitated as soon as possible with indigenous vegetation that will be able to grow in the area; ▪ The landscape must be rehabilitated in such a way that it corresponds to the surrounding topography; ▪ Should overtime/night work be authorized, the Contractor shall be responsible to ensure that lighting does not cause undue disturbance to neighboring residents. In this situation low flux and frequency lighting shall be utilized.	The risk is low provided the mitigation measures are implemented
Description	**Without Mitigation**	**With Mitigation**		
Probability	Probable (3)	Improbable (2)		
Duration	Short-term (2)	Short-term (2)		
Extent	Limited to Local Area (2)	Limited to Local Area (2)		
Magnitude	Medium (6)	Low (4)		
Significance	**30 (Medium)**	**20 (Low)**		
Status (positive, negative or neutral)	Negative	Negative		
NOISE IMPACTS				
Noise Impacts anticipated			• Construction activities must be limited to normal working hours and according to municipal bylaws, i.e. working hours must be limited to weekdays only. • If construction is required on the weekend; permission from adjacent landowners will be required prior to construction. • No sound amplification 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. • 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.	Noise pollution caused during construction could potentially be a nuisance to neighbouring residential areas. Health risk on the noise recipient if mitigation measures are not implemented.
Description	**Without Mitigation**	**With Mitigat**		
Probability	Probable (3)	Improbable (2)		
Duration	Short-term (2)	Short-term (2)		
Extent	Local (2)	Local (2)		
Magnitude	Moderate (6)	Moderate (5)		
Significance	**30 (Moderate)**	**18 (Low)**		

<table>
<tr><th colspan="4">Potential impacts:</th><th colspan="2">Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td colspan="2">Status (positive or negative)</td><td>Negative</td><td>Negative</td><td colspan="2"></td><td></td></tr>
<tr><td colspan="7">HERITAGE IMPACT</td></tr>
<tr><td colspan="4">Nature of the Impact: Loss and disturbance of heritage sites due to the development.

There are no heritages or archaeological resources identified at the project site. Therefore this impact will not be assessed further in this basic assessment report
<table><tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr><tr><td>Probability</td><td>Low (1)</td><td>Low (1)</td></tr><tr><td>Duration</td><td>Permanent (5)</td><td>Permanent (5)</td></tr><tr><td>Extent</td><td>Limited to Local Area (1)</td><td>Limited to Local Area (1)</td></tr><tr><td>Magnitude</td><td>Minor (8)</td><td>Minor (8)</td></tr><tr><td>Significance</td><td>Low (8)</td><td>Low (8)</td></tr><tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr></table></td><td colspan="2">• Nonetheless, should graves, fossils or any archaeological artefacts be identified during construction, work on the area where the artefacts were found, must cease immediately and it should immediately be reported to a heritage practitioner or local museum so that an investigation and evaluation of the finds can be made.</td><td>N/A</td></tr>
<tr><td colspan="7">TRAFFIC IMPACTS</td></tr>
<tr><td colspan="4">Nature of the Impact: Anticipated impacts on traffic during construction

• Traffic generated or attracted by the facility is high and has significant impact on the level of service of the immediate intersections.
• •Upgrades are required on the existing intersections without any development traffic and further upgrades requirements are apportioned to the development.
• The route affected by the development is mostly used by taxis; therefore people accessing the development have been allocated</td><td colspan="2">• The proposed main gate should be wide enough to to accommodate exit and entry manoeuvring by vehicle. Two lanes should be provided for the vehicles entering the resident, with one allocated to the residents and another to visitors.
• Pedestrian gates should be provided at all the access facilities in the proposed development.</td><td>Very High traffic congestion in the area</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>bus and taxi-stops.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly Probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Local (2)</td><td>Local (2)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Moderate (6)</td></tr>
<tr><td>Significance</td><td>48 (moderate)</td><td>Low (24)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td></td><td></td></tr>
<tr><td colspan="3">SOCIAL IMPACTS</td></tr>
<tr><td>Positive Social impacts anticipated during construction

• Livelihoods improved during construction
• Labour will be required for construction activities of the proposed development. It is therefore expected that jobs will be created during the construction period.
• The construction labour requirements have not been estimated as yet. It is expected that much of the work will require mechanised construction methods because of the bulk of the works. However, there will also be a need for manual labour for construction.

<table>
<tr><th>Description</th><th>Without Enhancement</th><th>With Enhancement</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Highly Probable (4)</td></tr>
<tr><td>Duration</td><td>Very short-term (1)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Limited to site(1)</td><td>Limited to site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>Low (18)</td><td>Low (24)</td></tr>
<tr><td>Status (positive,</td><td>Positive</td><td>Positive</td></tr>
</table></td><td>Enhancements:
• The project must increase the possibility that locals are employed and involved in the rehabilitation.
• This provides the opportunity for affected communities to benefit, but also provides an opportunity to raise awareness amongst affected communities about the benefits of the project.</td><td>Construction can provide a limited number of jobs. There will therefore not be enough jobs on offer compared with the number of people that apply.

It is very likely that there will be some disturbance to subsistence agriculture in the floodplain during construction of phase 1</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>
<table>
<tr><td>negative or neutral)</td><td></td><td></td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>
Negative Social impacts anticipated during the construction period

• The increased dust resulting from construction activities (vegetation clearing, site preparation, earthworks, uncovered topsoil stockpiles and sand piles and loads on vehicles), vehicles, plant and machinery poses a health hazard to construction staff and people living and working in the vicinity of the site.
• Safety And Security issues for the residents

The overall impact on the community is likely to be of low significance as these can be easily mitigated

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly Probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Local (2)</td><td>Local (2)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Moderate (6)</td></tr>
<tr><td>Significance</td><td>48 (moderate)</td><td>Low (24)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>
• All adjacent landowners must be informed of the construction processes prior to commencement of construction activities. Adjacent land owners must be informed timeously of any service stoppages in their areas.
• Notification must include possible timeframes for stoppages. Consequences of such stoppages must be clearly indicated to all surrounding/affected land owners.
• Affected land owners must be timeously informed of any/all maintenance of the bulk water services supply which may result in service stoppages to their properties. Again this must include possible timeframes so alternatives can be provided.
• All flammable substances must be stored in dry area which do not pose an ignition risk to the said substances
• Ensure all construction vehicles and machinery is under the control of competent personnel.
• No open fires will be allowed on site unless in a demarcated area identified by the ECO
• Limit access to the construction site to the workforce only. Comply with the requirements of the Occupational Health and Safety Act, 1993 (Act No. 85 of 1993).
• Construction footprints, including site offices, excavations, storage areas, materials lay-down areas, stockpile area, and workers rest areas should be clearly demarcated or fenced off before construction commences.
• All construction activities should be limited to the demarcated areas.
• Access to these demarcated areas strictly controlled.
• Entry points and access routes to the sites must be clearly marked and traffic limited to those areas as far as possible.
• Suitable warning and information signage should be erected before construction commences.
• Adequate sanitary and ablutions facilities must be provided for construction workers
• The facilities must be regularly serviced to reduce the risk of surface or groundwater pollution.
•
</td><td>Low risk with mitigations</td></tr>
</table>

2.2 IMPACTS THAT MAY RESULT FROM THE OPERATION PHASE

Table 6[2]: A summary of anticipated significance of the potential direct, indirect and cumulative impacts that are likely to occur as a result of the OPERATION PHASE for both the Proposed Layout (Mixed development) or Layout Alternative 1: Social housing

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td colspan="3">IMPACT ON WATERCOURSES</td></tr>
<tr><td>Nature of the Impact: Changing the quantity and fluctuation properties of the watercourse by for example restricting water flow or increasing flood flows.

• The sources of this impact includes changes to flowpaths and storage mechanisms in the soil during the operational phase

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (5)</td><td>Highly probable (4)</td></tr>
<tr><td>Duration</td><td>Long-term (4)</td><td>Long-term (4)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>Limited to Local Area (4)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>low (4)</td></tr>
<tr><td>Significance</td><td>70 (high)</td><td>48 (moderate)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>▪ Other than approved and authorized structure, no other development or maintenance infrastructure is allowed within the delineated watercourse or associated buffer zones.
▪ Development should include measures to ensure that the flowpaths and storage mechanisms in the soil should be disturbed as little as possible, to sustain hydrological and biogeochemical connectivity. This includes (Hydropedo, 2018):
○ Trenches perpendicular to the contour require clay curtains to deflect the preferential flow
○ Pipes installed in the soil are to be Biddum wrapped to reduce preferential flow along them.
○ Hard plinthite or clay layers (at depth) within the soil should not be broken.
○ If the biological layer in terrestrial soils or non-wetland soils is broken due to shallow pedon (soil above this layer) depth, a clay plug must be installed to prevent the mixing of hillslope water and biological water, insulating the pipe. The clay layer must be drawn flush with the original clay layer."
▪ A temporary fence or demarcation must be erected around No-Go Areas outside the proposed works area prior to any construction taking place as part of the contractor planning phase when compiling work method statements to prevent access to the adjacent portions of the watercourse.
▪ Effective stormwater management should be a priority during both construction and operational phase. This should be monitored as part of the EMP.
▪ High energy stormwater input into the wetland should be prevented at all cost. Changes to natural flow of water (surface water as well as water flowing within the soil profile) should be taken into account during the design phase and mitigated effectively
▪ Implement the principles set out in The South African Guidelines for Sustainable Drainage Systems (SuDS) (Armitage et al, 2013)</td><td>Impacts to the flow characteristics of this watercourse and downstream areas are likely to be permanent unless rehabilitated.</td></tr>
</table>

[2] [2] **This table summarises the impacts for the proposed and alternative layout as they are similar**

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Nature of the Impact: Changes in sediment entering and exiting the system

• Construction and operational activities will result in earthworks and soil disturbance as well as the removal of natural vegetation. This could result in the loss of topsoil, sedimentation of the downstream watercourses which could include clogging of culverts, smothering of vegetation, changed hydrology and decreased capacity of stormwater retention areas.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Possible (2)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Medium-term (3)</td></tr>
<tr><td>Extent</td><td>Regional (3)</td><td>Limited to the local area (2)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>30 (moderate)</td><td>18 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>▪ Consider the various methods and equipment available and select whichever method(s) that will have the least impact on watercourses.
▪ Water may seep into trenching and earthworks. It is likely that water will be contaminated within these earthworks and should thus be cleaned or dissipated into a structure that allows for additional sediment input and slows down the velocity of the water thus reducing the risk of erosion. Effective sediment traps should be installed.
▪ Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area (DWAF, 2005).
▪ Remove only the vegetation where essential for construction and do not allow any disturbance to the adjoining natural vegetation cover.
▪ Rehabilitation plans must be submitted and approved for rehabilitation of damage during construction and that plan must be implemented immediately upon completion of construction.
▪ Cordon off areas that are under rehabilitation as no-go areas using danger tape and steel droppers. If necessary, these areas should be fenced off to prevent vehicular, pedestrian and livestock access.
▪ During the construction phase measures must be put in place to control the flow of excess water so that it does not impact on the surface vegetation.
▪ Protect all areas susceptible to erosion and ensure that there is no undue soil erosion resultant from activities within and adjacent to the construction camp and work areas.
▪ Runoff from the construction area must be managed to avoid erosion and pollution problems.
▪ Implementation of best management practices
▪ Source-directed controls
▪ Buffer zones should be maintained to trap sediments
▪ Monitoring should be done to ensure that sediment pollution is timeously addressed</td><td>Expected to be limited provided that the mitigation measures are implemented correctly and effective rehabilitation of the site is undertaken where necessary.</td></tr>
<tr><td>Nature of the Impact: Introduction and spread of alien vegetation.

• Once in a system alien invasive plants can spread through the catchment. If allowed to seed before control measures are implemented alien plans can easily colonise and impact on downstream users.</td><td>▪ Implement an Alien Plant Control Plan
▪ Retain vegetation and soil in position for as long as possible, removing it immediately ahead of construction / earthworks in that area and returning it where possible afterwards.
▪ Monitor the establishment of alien invasive species within the areas affected by the construction and maintenance and take immediate corrective action where invasive species are observed to establish.
▪ Rehabilitate or revegetate disturbed areas and monitor for effective rehabilitation as</td><td>Expected to be limited provided that the mitigation measures are implemented correctly and effective rehabilitation of the site is undertaken where necessary.</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Possible (2)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Medium-term (3)</td></tr>
<tr><td>Extent</td><td>Regional (4)</td><td>Limited to Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>33 (moderate)</td><td>18 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>specified in the rehabilitation plan</td><td></td></tr>
<tr><td>Nature of the Impact: Loss and disturbance of wetland habitat and fringe vegetation

• Direct development within watercourse areas. Loss and disturbance of watercourse habitat and fringe vegetation due to direct development on the watercourse as well as changes in management, fire regime and habitat fragmentation.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Possible (2)</td><td>Improbable (1)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Short term (2)</td></tr>
<tr><td>Extent</td><td>Local Area (2)</td><td>Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>26 (low)</td><td>8 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>▪ Other than approved and authorized structure, no other development or maintenance infrastructure is allowed within the delineated watercourse or associated buffer zones.
▪ Demarcate the watercourse areas and buffer zones to limit disturbance, clearly mark these areas as no-go areas
▪ Monitor rehabilitation and the occurrence of erosion twice during the rainy season for at least two years and take immediate corrective action where needed.
▪ Monitor the establishment of alien invasive species within the areas affected by the construction and take immediate corrective action where invasive species are observed to establish
▪ Operational activities should not impact on rehabilitated or naturally vegetated areas</td><td>Expected to be limited provided that the mitigation measures are implemented correctly and effective rehabilitation of the site is undertaken where necessary.</td></tr>
<tr><td>Nature of the Impact: Changes in water quality due to pollution

• Construction and operational activities may result in the discharge of solvents and other industrial chemicals, leakage of fuel/oil from vehicles and the disposal of sewage resulting in the loss of sensitive biota in the wetlands/rivers and a reduction in</td><td>▪ Provision of adequate sanitation facilities located outside of the watercourse or its associated buffer zone.
▪ Implementation of appropriate stormwater management around the excavation to prevent the ingress of run-off into the excavation and to prevent contaminated runoff into the watercourse.
▪ Provision of adequate sanitation facilities located outside of the watercourse area or its</td><td>Expected to be limited provided that the mitigation measures are implemented correctly and effective rehabilitation of the site is undertaken where necessary.</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>watercourse function as well as human and animal waste.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Short Term (2)</td></tr>
<tr><td>Extent</td><td>Local Area (2)</td><td>Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>52 (moderate)</td><td>24 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>associated buffer zone
▪ The development footprint must be fenced off from the watercourses and no related impacts may be allowed into the watercourse e.g. water runoff from cleaning of equipment, vehicle access etc.
▪ After construction, the land must be cleared of rubbish, surplus materials, and equipment, and all parts of the land shall be left in a condition as close as possible to that prior to use.
▪ Maintenance of construction vehicles / equipment should not take place within the watercourse or watercourse buffer.
▪ Maintenance of buffer zones to trap sediments with associated toxins
▪ Control of waste discharges and do not allow dirty water from operational activities to enter the watercourse
▪ Ensure that no operational activities impact on the watercourse or buffer area. This includes edge effects.
▪ Treatment of pollution identified should be prioritized accordingly.</td><td></td></tr>
<tr><td colspan="3">IMPACT ON VEGETATION</td></tr>
<tr><td>Nature of the Impact: Destruction of Hyparrhenia hirta grassland

The development will require the removal of the Hyparrhenia hirta grassland which contributes to open space and catchment to the Kaalspruit east of the site. However, these functions can be mitigated. It is assumed that the whole site will be developed with limited if any natural open space remaining.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Definite (5)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Permanent (5)</td><td>Short term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Site (1)</td><td>Limited to Site (1)</td></tr>
<tr><td>Magnitude</td><td>Low (4)</td><td>Low (4)</td></tr>
</table></td><td>▪ Use indigenous plants local to the area in the landscaping of the development
▪ Open spaces should be managed in accordance to an open space management plan, incorporating the management of grasslands as catchment areas and movement corridors.</td><td>Localised alteration of soil surface characteristics and loss of flora and increased fragmentation of remaining grasslands in the area.</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>
<table>
<tr><td>Significance</td><td>50 (medium)</td><td>14 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td>
Nature of the Impact: Destruction of protected plants and plants of conservation concern

• Development within the Hyparrhenia hirta-grassland would require the removal of the declining Hypoxis hemerocallidea and the provincially protected Gladiolus crassifolius species.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short term (2)</td><td>Very short term (1)</td></tr>
<tr><td>Extent</td><td>Limited to Site (2)</td><td>Limited to the Site (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>30 (medium)</td><td>12(low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>
• The relocated species should be monitored for at least two years post relocation. If die back is noted, a specialist should be consulted and corrective action taken as soon as possible.
• No operational activities are allowed to impact on the relocated species
</td><td>Species removed and relocated as part of rehabilitation could die due to transplantation shock or damage during replanting.</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>Nature of the Impact: Removal of alien invasive vegetation (positive)

• Removing of existing invasive alien vegetation (e.g. the tree stands in the western corner of the site) could have a positive effect and reduce infestations within the area

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Highly probable (4)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Long-term (4)</td></tr>
<tr><td>Extent</td><td>Local Area (2)</td><td>Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>High (8)</td></tr>
<tr><td>Significance</td><td>30 (low)</td><td>56 (medium)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Positive</td><td>Positive</td></tr>
</table>
</td><td>Maintenance:

• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after construction is complete.</td><td>If alien invasive species monitoring is not maintained, the cleared areas could become infested again.</td></tr>
<tr><td>Nature of the Impact: Clearing of land for construction camps and potential pollution of the soil and water

These may be at one or several locations, area will be cleared and levelled where necessary, site offices may be temporary structures, machinery, building supplies and temporary staff facilities (excluding accommodation) will be housed here. The impacts could include:</td><td>• Monitor all sites disturbed by construction activities for colonisation by exotics or invasive plants and control these as they emerge. Monitoring should continue for at least two years after construction is complete.</td><td>Compaction on construction camps could result in altered topsoil characteristics and vegetation composition. These areas are also prone to invasion by alien invasive plant species.</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>

Removal of vegetation
Levelling and compaction of soils
Storage of machinery, supplies and staff facilities

This could lead to the loss of vegetation and/or species of conservation concern, alteration and loss of microhabitats, altered vegetation cover, increased erosion and contamination of soil and groundwater.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Medium-term (3)</td><td>Very short-term (1)</td></tr>
<tr><td>Extent</td><td>Local Area (2)</td><td>Site bound (1)</td></tr>
<tr><td>Magnitude</td><td>Moderate (6)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>33 (moderate)</td><td>12 (low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><th colspan="3">IMPACTS ON FAUNA</th></tr>
<tr><td>Nature of the Impact: Direct impact on species richness and loss of habitat.

Loss of ecological resources will result, but this will have a minimal impact given the small site size as well as the poor conservation character of its transformed grassland.</td><td>• Storm water is to be cleaned and preferable recycled.</td><td>None</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>Mitigation would not be possible given the nature of the proposed development.

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Most likely 4</td><td>Most likely 4</td></tr>
<tr><td>Duration</td><td>Permanent 5</td><td>Permanent 5</td></tr>
<tr><td>Extent</td><td>Local 1</td><td>Local 1</td></tr>
<tr><td>Magnitude</td><td>Small 0</td><td>Small 0</td></tr>
<tr><td>Significance</td><td>Low 24</td><td>Low 24</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td colspan="3">VISUAL IMPACTS</td></tr>
<tr><td>Nature of the Impact: Visual Impacts

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Improbable (2)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (2)</td><td>Limited to Local Area (2)</td></tr>
<tr><td>Magnitude</td><td>Medium (6)</td><td>Low (4)</td></tr>
<tr><td>Significance</td><td>30 (Medium)</td><td>20 (Low)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>▪ Ensure that no litter, refuse, waste, rubbish, rubble, debris and builders wastes generated on the premises be placed, dumped or deposited on adjacent or surrounding properties including road verges, roads or public places and open spaces during or after the construction period. All waste/litter/rubbish etc. must be disposed of at an approved dumping site as approved by the Council.
▪ Bare surfaces must be rehabilitated as soon as possible with indigenous vegetation that will be able to grow in the area;
▪ The landscape must be rehabilitated in such a way that it corresponds to the surrounding topography;
▪ Should overtime/night work be authorized, the Contractor shall be responsible to ensure that lighting does not cause undue disturbance to neighboring residents. In this situation low flux and frequency lighting shall be utilized.</td><td>The risk is low provided the mitigation measures are implemented</td></tr>
<tr><td colspan="3">HERITAGE IMPACT</td></tr>
<tr><td>Nature of the Impact: Loss and disturbance of heritage sites due to the development.</td><td>▪ Nonetheless, should graves, fossils or any archaeological artefacts be identified during construction, work on the area where the artefacts were found, must cease immediately and it should immediately be reported to a heritage practitioner or local museum so that an</td><td>N/A</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>There are no heritages or archeological resources identified at the project site. Therefore this impact will not be assessed further in this basic assessment report

<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Low (1)</td><td>Low (1)</td></tr>
<tr><td>Duration</td><td>Permanent (5)</td><td>Permanent (5)</td></tr>
<tr><td>Extent</td><td>Limited to Local Area (1)</td><td>Limited to Local Area (1)</td></tr>
<tr><td>Magnitude</td><td>Minor (8)</td><td>Minor (8)</td></tr>
<tr><td>Significance</td><td>Low (8)</td><td>Low (8)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Negative</td><td>Negative</td></tr>
</table></td><td>investigation and evaluation of the finds can be made.</td><td></td></tr>
<tr><td colspan="3">SOCIAL IMPACTS</td></tr>
<tr><td>Nature of the Impact: Livelihoods improved (Positive)

• Project is meant to address the current housing backlog in the region, this project will contribute to this shortfall and therefore deemed as a positive impact

<table>
<tr><th>Description</th><th>Without Enhancement</th><th>With Enhancement</th></tr>
<tr><td>Probability</td><td>Probable (3)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Limited to Local</td><td>Limited to Local</td></tr>
</table></td><td>None required</td><td>none</td></tr>
</table>

<table>
<tr><th>Potential impacts:</th><th>Proposed mitigation:</th><th>Risk of the impact and mitigation not being implemented</th></tr>
<tr><td>
<table>
<tr><td></td><td>Area (2)</td><td>Area (2)</td></tr>
<tr><td>Magnitude</td><td>Medium (6)</td><td>Medium (6)</td></tr>
<tr><td>Significance</td><td>30 (Medium)</td><td>30 (Medium)</td></tr>
<tr><td>Status (positive, negative or neutral)</td><td>Positive</td><td>Positive</td></tr>
</table>
</td><td></td><td></td></tr>
<tr><td colspan="3">TRAFFIC IMPACTS</td></tr>
<tr><td>
Nature of the Impact: Anticipated impacts on traffic in the area

• Traffic generated or attracted by the facility is high and has significant impact on the level of service of the immediate intersections.
• •Upgrades are required on the existing intersections without any development traffic and further upgrades requirements are apportioned to the development.
• The route affected by the development is mostly used by taxis; therefore people accessing the development have been allocated bus and taxi-stops.
<table>
<tr><th>Description</th><th>Without Mitigation</th><th>With Mitigation</th></tr>
<tr><td>Probability</td><td>Highly Probable (4)</td><td>Probable (3)</td></tr>
<tr><td>Duration</td><td>Short-term (2)</td><td>Short-term (2)</td></tr>
<tr><td>Extent</td><td>Local (2)</td><td>Local (2)</td></tr>
<tr><td>Magnitude</td><td>High (8)</td><td>Moderate (6)</td></tr>
<tr><td>Significance</td><td>48 (moderate)</td><td>Low (24)</td></tr>
<tr><td>Status (positive or negative)</td><td>Negative</td><td>Negative</td></tr>
</table>
</td><td>
• The proposed main gate should be wide enough to to accommodate exit and entry manoeuvring by vehicle. Two lanes should be provided for the vehicles entering the resident, with one allocated to the residents and another to visitors.
Pedestrian gates should be provided at all the access facilities in the proposed development.
</td><td>Very High traffic congestion in the area</td></tr>
</table>

2.3 NO GO OPTION

This is the option of not undertaking the proposed Kaalfontein mixed used development at this site. This option will result in no impacts occurring on the biophysical environment (i.e. biodiversity, soils), and will result in no visual or social impact hence the project site status quo remains. Kaalfontein forms part of marginalized areas together with Diepsloot Greater Ivory Park and Rabie Ridge). The RSDF states that in Region A, the greatest housing backlogs are in Diepsloot, and Ivory Park. Ivory Park is situated within a 4km radius of the subject property. The No-Go option will result in the situation where the need for housing as identified by the RSDF not to be realised for this area. **From the Table 7 below it can be noted that negative impacts of the no go option alternative are considered to outweigh the positive impacts of this alternative. The no go option is therefore not preferred**

Table 7: Potential impacts should the development not be Approved **"No-Go" Alternative**

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**
Housing Backlog in the region	**N – Very High**	**There are no mitigation measures**	**N – Low**	**Very Low risk**
Changes to flow dynamics	Negligible	There are no mitigation measures	Negligible	No risk
Sedimentation	Negligible	There are no mitigation measures	Negligible	No risk
Establishment of alien plants	Negligible	There are no mitigation measures	Negligible	No risk
Loss of wetland habitat	Negligible	There are no mitigation measures	Negligible	No risk
Pollution of watercourses	Negligible	There are no mitigation measures	Negligible	No risk
Destruction of *Hyparrhenia hirta* grassland	Negligible	There are no mitigation measures	Negligible	No risk
Destruction of protected plants and plants of conservation concern	Negligible	There are no mitigation measures	Negligible	No risk
Alien invasive vegetation	N – Very High	There are no mitigation measures	N – Low	Very Low risk
Clearing of land for construction camps and potential	Negligible	There are no mitigation measures	Negligible	No risk

pollution of the soil and water				
Direct impact on species richness and loss of habitat.	Negligible	There are no mitigation measures	Negligible	No risk
Visual Impacts	Negligible	There are no mitigation measures	Negligible	No risk
Noise Impacts anticipated	Negligible	There are no mitigation measure	Negligible	
Loss and disturbance of heritage sites due to the development.	Negligible	There are no mitigation measures	Negligible	No risk
Social impacts anticipated during the construction period (Positive)	Negligible	There are no mitigation measures	Negligible	No risk
Social impacts anticipated during the construction period (Negative)	Negligible	There are no mitigation measures	Negligible	No risk

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

- Wetland Assessment
- Vegetation Assessment
- Fauna Impact Assessment
- Heritage Assessment
- Hydropedology study

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

- The information provided by the client forms the basis of the planning and layouts discussed.
- All wetlands within 500 m of any developmental activities should be identified as per the DWS Water Use Licence application regulations. In order to meet the timeframes and budget constraints for the project, wetlands within the study sites were delineated on a fine scale based on detailed soil and vegetation sampling. Wetlands that fall outside of the site, but that fall within 500 m of the proposed activities were delineated based on desktop analysis of vegetation gradients visible from aerial imagery.
- No layout plans were yet available at the time of this assessment. In the absence of layout plans for the site, the mitigation measures are general and focussed on guiding the final layout plans.

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.

Proposed and Alternative Designs

Potential impacts:	**Significance rating of impacts(positive, negative or neutral):**	**Proposed mitigation:**	**Significance rating of impacts after mitigation:**	**Risk of the impact** and **mitigation not being implemented**
It is not foreseen that the proposed development would reach a decommissioning and closure phase due to the nature of the development (housing development). Impacts associated with the decommissioning phase were therefore not assessed.				

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

Not Applicable

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

- Post decommissioning management cost will not be determined at this stage as this phase of the development is not contemplated.
- Rehabilitation management costs is also unknown at this planning stage of the project.

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 can result from an effect which in itself may not be significant but may become significant if added to other existing or potential impacts that may result from activities associated with the proposed development. The anticipated cumulative impacts of this development includes the following:

Impacts on the Wetland

- high energy runoff and sediment input may significantly alter the wetland and downstream areas, these impacts are assessed to be low with the implementation of mitigation measures

Destruction of protected plants and plants of conservation concern

- If mitigation measures are adequately implemented, no cumulative impacts are expected

Direct impact on species richness and loss of habitat (fauna)

- Urbanisation, displacement of remaining vertebrate species by suburban life forms such as house mice, turtle doves, house sparrows, and skinks may occur.

Increased socio-economic upliftment as a result of the proposed development (Positive Impact)

- Constructing the proposed development will result in additional jobs being created in the area and skills development during the construction phase. Due to the high unemployment rate in the study area. The positive impact will be very low positive but with enhancement it can be low positive.

Removal of alien invasive vegetation

- The removal and sustained low or no infestation with alien invasive species will have a positive cumulative impact as the seed source of these species within the area will be reduced.

Increase traffic congestion in the area

- This is expected to be **low** so long as the recommendations stipulated in the traffic report are adopted and adhered to.

Generally, the cumulative impact for the development is rated as **Low** and with mitigations

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.

The following conclusions were drawn from the specialist studies undertaken within this Basic Assessment:

Wetland Assessment:

Hydropedo (April, 2018) confirmed the seep wetland, based on conceptualized hydropedological interpretation (Tinnefeld et al. 2017). The wetland is comprised of 2.82Ha and Katspruit, Wasbank, Kroonstad, and Longlands soils. This responsive wetland zone is fed by interflow from red Hutton soils in the higher lying areas over a short yellow (Avalon) band of soils into a grey matrix (seep). This sensitive multiple interflow area covers 1.57Ha and falls largely within the protective 30m buffer zone around the wetland. The interflow that sustains long flow periods in the wetland after rainfall events originates from the hutton soil on the crest position. This flow from the hutton soils flows via the longlands and Avalon soils towards the wetland. Intercepting these flowpaths will inevitably cut off the 'tap' that sustains the wetland hydrology. Through-flow from the properties to the North also contributes to the wetland (Hydropedo, 2018). Wetlands outside the site that fall within 500m of the site include the Glen Austin Pan which lies to the north of the site and a watercourse that forms a tributary of the Rietspruit which lies to the east of the site.

Vegetation Assessment

Most of the vegetation on the site is not regarded as sensitive and are developable. The *Hyparrhenia hirta* grassland is not sensitive per se, however, these grasslands form part of the remaining open spaces in the fast-developing area and function as catchment for groundwater recharge and prevention of flooding of proximate watercourses and its function increased its sensitivity rating to low-medium. However, as long as open spaces and permeable surfaces are incorporated into the development, the function of the *Hyparrhenia hirta* grassland can be substituted and the impacts mitigated. In addition, the Declining and provincially Protected Plant species could be relocated or used within the landscaping of the development. Moist grasslands on the site are thought to be artificial. Vegetation within the trench is completely dominated by alien and invasive plant species and other than stabilising the soils, has no ecological function and are of low sensitivity. The *Typha capensis* moist grassland includes sedges and is as precaution classified as medium sensitivity. The wetland assessment report should be consulted with regards to the functionality of this wetland as well as potential presence of wetland conditions within the *Hyparrhenia hirta*-grassland.

Fauna assessment:

The proposed development will displace natural biotic components, as depauperate as they are. The site is ideal for urbanization. It is amidst a fast-developing suburban region, is flat terrain with substrates that will adequately support foundations for suburban facilities and accompanying paving, roads and security fencing. The biota typical of Highveld Grasslands has formerly ecologically been (to some extent) jeopardized. In its present state, as well as in its former natural state, it does / did not excite as a conservation source of high or exceptional biotic diversity. The conservation status of the site is assessed as “Low”.

The proposed development will be on previously transformed grassland and from a conservation perspective the development is thus considered to be acceptable. From the standpoint of vertebrates and the single natural habitat-type (terrestrial) as well as the unnatural arboreal habitat (wattles) involved we cannot offer any reasonable and scientifically-based objectives to the construction and operation of a suburb, which will (from a conservation perspective) be benign. The conservation impact of the development on natural biota (as it now is)

is rated to be Low, whereas the ultimate direct impact of the development on species richness and loss of habitat is calculated to be 80%.

Heritage assessment:

From a heritage point of view, it is recommended that the proposed development be allowed to continue on acceptance of the proposed conditions. Should archaeological sites or graves be exposed in other areas during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.

Traffic Impact Assessment:

According to the Traffic impact report (Appendix I4), the proposed development will comprise construction of Multi-level houses, offices, shopping centre and a small Private Hospital and parking areas. Based on the worst-case scenario it is expected that the development will generate a total of 822 peak hour trips in the AM and PM peak hours. However, morning peak hours area confirmed to be the most critical in assessing the impact of this development. Analysis is conducted on both the morning peak and noon peak hour.

- The route affected by the development is mostly used by taxis; therefore people accessing the development have been allocated bus and taxi-stops.
- Traffic generated or attracted by the facility is high and has significant impact on the level of service of the immediate intersections.
- •Upgrades are required on the existing intersections without any development traffic and further upgrades requirements are apportioned to the development.
- The proposed main gate should be wide enough to to accommodate exit and entry manoeuvring by vehicle. Two lanes should be provided for the vehicles entering the resident, with one allocated to the residents and another to visitors.

The proposed development on portion 57 of the Kaalfontein Farm 13-IR is supported from a traffic engineering perspective so long as the recommendations stipulated in this report are adopted and adhered to.

It is clear from the specialist studies (**Appendix G**) undertaken for the project that there are some level of negative impacts associated with the project. Cognisant of the conclusions established through the basic assessment investigation, there were areas of high environmental sensitivity identified, these areas were mostly wetlands and wetland buffers shown in the environmental sensitivity map (refer to appendix A); these areas must be avoided for construction. For the majority of the site, the proposed development will be on previously transformed grassland and from a conservation perspective the development is considered to be acceptable as most of the vegetation on the site is not regarded as sensitive and are developable. There is also the element of positive socio-economic impacts such as job creation and business opportunities associated to the project. However, the main aim of the project is to address housing backlog in the region and more specifically in the Kaalfontein area which will in turn result in achieving one of the objectives of the RSDF for the region as whole.

Overall, the significance levels of the majority of identified negative impacts can generally be reduced to acceptable levels by implementing the recommended mitigation measures. With reference to the information

available at this planning approval stage in the project cycle, the confidence in the environmental assessment undertaken is regarded as acceptable with the implementation of the of practical and appropriate mitigation measures as detailed in this report and contained in the Environmental Management Programme in **Appendix H.**

Alternative 2 Design

See above, the impacts are similar with no difference and therefore compared collectively**.**

No-go (compulsory)

This is the option of not undertaking the proposed Kaalfontein mixed used development at this site. This option will result in no impacts occurring on the biophysical environment (i.e. biodiversity, soils), and will result in no visual or social impact hence the project site status quo remains. Kaalfontein forms part of marginalized areas together with Diepsloot Greater Ivory Park and Rabie Ridge). The RSDF states that in Region A, the greatest housing backlogs are in Diepsloot, and Ivory Park. Ivory Park is situated within a 4km radius of the subject property. The No-Go option will result in the situation where the need for housing as identified by the RSDF not to be realised for this area. **The no go option is therefore not preferred**

6. IMPACT SUMMARY OF THE PROPOSAL AND ALTERNATIVE

A summary of the impact assessments is presented in **Table 8 and 9;** the tables cover the construction and operational impacts. An overall weighted score is provided in each case. Thus far each of the environmental issues are assigned equal weighting (I.e. the weighted score is the average of each of the individual scores. The impact scores are also colour coded according to the following:

< 30	**Low significance**
30 to -60	**Moderate significance**
>60	**High significance**

Table 8: Impact Summary table **:** Construction Phase

Environmental Aspect	Construction	
	Without Mitigation	With Mitigation
Changes to flow dynamics	Moderate	Moderate
Sedimentation	Moderate	Low
Establishment of alien plants	Moderate	Low
Loss of wetland habitat	Low	Low
Pollution of watercourses	Moderate	Low
Destruction of *Hyparrhenia hirta* grassland	Moderate	Low
Destruction of protected plants and plants of conservation	Moderate	Low

concern		
Removal of alien invasive vegetation (positive)	Low	Moderate
Clearing of land for construction camps and potential pollution of the soil and water	Moderate	Low
Direct impact on species richness and loss of habitat.	Low	Low
Visual Impacts	Moderate	Low
Noise Impacts anticipated	Moderate	Low
Loss and disturbance of heritage sites due to the development.	Low	Low
Anticipated impacts on traffic during construction	Moderate	Low
Social impacts anticipated during the construction period (negative)	Moderate	Low
Social impacts anticipated during the construction period (Positive)	Moderate	Moderate

Table 9 : Impact Summary table: Operation Phase

Environmental Aspect	**Operation**	
	Without Mitigation	**With Mitigation**
Changes to flow dynamics	High	Moderate
Sedimentation	Moderate	Low
Establishment of alien plants	Moderate	Low
Loss of wetland habitat	Low	Low
Pollution of watercourses	Moderate	Low
Destruction of *Hyparrhenia hirta* grassland	Moderate	Low
Destruction of protected plants and plants of conservation concern	Moderate	Low
Removal of alien invasive vegetation (positive)	Low	Moderate
Clearing of land for construction camps and potential pollution of the soil and water	Moderate	Low
Direct impact on species richness and loss of habitat.	Low	Low
Loss and disturbance of heritage sites due to the development.	Low	Low
Anticipated impacts on traffic in the area	Low	Low

Impact scores are not intended to be definitive measures of environmental impact, but they are a useful guide to evaluating the overall environmental performance of a new development and they assist in interpreting key influences of a development

For alternative:

During construction and operation phases of the development, it is noted that the impacts of Alternative 1 rehabilitation design are similar as that of the proposed.

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.

Two Design alternatives have been proposed with respect to the construction of the Kaalfontein mixed used development. The development can be either the **Proposed Layout design (Mixed development) and Layout design Alternative 1 (Social housing)**

Having assessed the impacts of both the Proposed Design and Alternative Design, Firstly it would appear that the overall **significance impacts of the construction phase** are of more or less **in the** mid-range of **Medium-LOW**. The "without mitigation" scores are of medium low category, and these are potentially modified to scores of low significance if proposed mitigation measures are implemented, approaching a negligible level of impact in some cases. While it is generally presumed that construction activities are damaging to the environment, the state of disturbance of the site with the extensive cover of alien species, loss of historic wetlands, and the severe degradation of the watercourse there has been some debate whether much of the construction activities will be detectable in the baseline conditions of the site. Secondly, once established the operational conditions are overall positive. The e overall development remain **Moderate Positive** and Low Negative. The environmental cost are expected to occur at local and site level and are considered acceptable provided the mitigation measures as outlined in this Basic Assessment Report and EMPr are implemented.

From an **environmental perspective**, both design alternatives assessed within this report are feasible. However, from a **technical perspective**, albeit that sizeable demand exists for social housing / rental stock in the area, SHRA may not necessarily have the appetite to fund 1 000 units as part of a single phase and the project would have to be developed incrementally hence the alternative design (social housing only) not preferred from a technical perspective and a more Mixed Used development **(Proposed Design)** is more the preferred option for implementation in view of site dynamics, market realities and environmental considerations.

7. SPATIAL DEVELOPMENT TOOLS

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

Provincial Spatial Development Framework (PSDF)
The Gauteng PSDF is a provincial and strategic planning policy that responds to and complies with in particular the National Development Plan vision 2030 and the National Spatial Development Perspective (NSDP). This framework promotes a developmental state in accordance to the principals of global sustainability as is stated by among others, the South African constitution and enabling legislation. The Gauteng PSDF is based on six growth and development pillars, each of which has its onset of drivers with long term-programmes. Pillar 1 highlights the job creation. The proposed development will create jobs opportunities during the construction phase, these employment opportunities will target local community members that are usually excluded from mainstream economic and formal employment. Therefore, the development is in line with the Gauteng PSDF.

Integrated Development Plan (IDP) and Spatial Development Framework (SDF) of the Local Municipality (e.g. would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF?).
In terms of the Regional Spatial Development Framework (RSDF) of the city, Kaalfontein forms part of marginalized areas together with Diepsloot Greater Ivory Park and RabieRidge). The RSDF states that in Region A, the greatest housing backlogs are in Diepsloot, and Ivory Park. Ivory Park is situated within a 4km radius of the subject property. The marginalized areas of Diepsloot and Greater Ivory Park require integration into the broader urban network. The most prominent needs arising from these marginalized areas encompass employment opportunities, business sites and local retail, which has resulted in large scale, unregulated informal trade. Increased densities and pressure for development in many parts of the region are causing infrastructure capacity constraints and a threat to the biodiversity of the environment. The Gauteng Provincial strategic plan of November 2016, indicates that the 20 Year Review confirms that the demand for housing in Gauteng remains{high It must also be noted that the figures on the Housing Demand Database excludes those who do not qualify for housing subsidies but are still in need of housing. The available figures on current demand for housing per municipality in Gauteng shows a total housing backlog of 687015.City of Johannesburg housing demand /backlog is 256,480, the Demand Database has over 800000 applicants. According to the Kaalfontein Market study "Between 2018 and 2023 an estimated 43 921 households will seek accommodation in the target geographic market area, resulting in an annual growth in demand of approximately 8 784 units".

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	

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

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

The assessment process has shown that the proposed Kaalfontein Extension 24 Mixed Use Developments will have limited detrimental impacts on the environment but will contribute to socioeconomic development in the area as per the RSDF objective. The EIA has also assisted in the identification of essential mitigation measures that will mitigate the impacts associated with the activity to within acceptable levels. In conclusion, Envirolution Consulting PTY (Ltd) is of the opinion that, based on socioeconomic and biophysical implications, **the application as it is currently expressed in the proposal should be approved** provided the essential mitigation and monitoring measures are implemented as follows:

- A final detailed layout must be submitted to the relevant authority for approval prior to commencement with the project;
- Other than approved and authorized structure, no other development or maintenance infrastructure is allowed within the delineated watercourse or associated buffer zones.

- The EMPr should be a legal binding document and an extension of the Environmental authorisation once issued by GDARD
- The appointed contractor should be contractually bound to comply with the conditions of the EMPr
- An independent ECO should be present during construction to monitor the implementation of the EMPr and the environmental authorization once issued and compile monthly audit report for submission to the relevant authorities
- Compliance with the mitigation measures outlined in this BA report and EMPr;
- Avoid, as far as reasonably possible, disturbing wetlands within the study area. Where this is unavoidable, appropriate remediation steps must be taken
- Only authorized structures should be constructed within the watercourse
- Adequate measures must be put in place to prevent polluted runoff water from entering the, watercourses, thus preventing surface and groundwater pollution.
- All relevant legislation and requirement of other government departments (National, Provincial), in particular of Section 28 (duty of care) of NEMA, must be complied with.
- In the event of a major incident (e.g. fire causing damage to property and environment, major spill or leak of contaminants), the relevant authorities should be notified as per the notification of emergencies/ incidents, as per the requirements of section 30 of NEMA.
- A Water Use License must be obtained from Department of Water and Sanitation prior to the commencement of construction activities.
- A plant permit for the removal of identified protected plant species on site must be obtained from the relevant authority.
- Compliance with all legal requirements in relation to environmental management and conditions of the authorization issued by GDARD.
- Construction noise on site must not exceed 85DB as required by the Health and Safety Act
- The site after construction must be rehabilitated back to its original state, if not possible to a state that conforms to the principles of sustainable development.

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

In terms of the Regional Spatial Development Framework (RSDF) of the city, Kaalfontein forms part of marginalized areas together with Diepsloot Greater Ivory Park and RabieRidge). The RSDF states that in Region A, the greatest housing backlogs are in Diepsloot, and Ivory Park. Ivory Park is situated within a 4km radius of the subject property.

The marginalized areas of Diepsloot and Greater Ivory Park require integration into the broader urban network. The most prominent needs arising from these marginalized areas encompass employment opportunities, business sites and local retail, which has resulted in large scale, unregulated informal trade. Increased densities and pressure for development in many parts of the region are causing infrastructure capacity constraints and a threat to the biodiversity of the environment.

The Gauteng Provincial strategic plan of November 2016 indicates that the 20 Year Review confirms that the demand for housing in Gauteng remains high. It must also be noted that the figures on the Housing Demand Database excludes those who do not qualify for housing subsidies but are still in need of housing. The available figures on current demand for housing per municipality in Gauteng shows a total housing backlog of 687015.City

of Johannesburg housing demand /backlog is 256,480, the Demand Database has over 800000 applicants. According to the Kaalfontein Market study "Between 2018 and 2023 an estimated 43 921 households will seek accommodation in the target geographic market area, resulting in an annual growth in demand of approximately 8 784 units" this demand for housing provides the impetus for the project.

Furthermore, the project shall assist in achieving the performance areas as identified by the Local Municipality, namely growth in the region and creation of more employment opportunities as well as through the improvement of public services and broadening access to communities and thereby improving quality of living which is further aligned with achieving the goal of opportunity in terms of economic growth and employment which also entails access to basic services, social infrastructure and quality environment..

10. THE PERIOD FOR WHICH THE ENVIRONMENTAL AUTHORISATION IS REQUIRED (Consider when the activity is expected to be concluded)

Duration and Validity: The environmental authorization is required for a period of 10 years from the date of issue. Should a longer period be required, the applicant/EAP will be required to provide a detailed motivation on what the period of validity should be

11. THE PERIOD ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPR)

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

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

EMPr attached	YES

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 A: Site plan(s)
Appendix B: Photographs
Appendix C: Facility illustration(s)
Appendix D: Route position information (N/A)
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.