Draft Basic Assessment Report

Eldorette Extension 42

Gaut 002/17-18/E0169

November 2017

Executive Summary











TEXTURE
ENVIRONMENTAL CONSULTANTS

Executive Summary

1 INTRODUCTION

Mr. Abey Malatse (the applicant) appointed Texture Environmental Consultants as the independent Environmental Assessment Practitioner (EAP) to undertake the Environmental Impact Assessment (EIA) for the proposed development of Eldorette Extension 42.

An application for environmental authorisation is submitted to the Gauteng Department of Agriculture and Rural Development (GDARD). The GDARD requires a Basic Assessment for this project. The Basic Assessment will conform to the National Environmental Management Act 107 of 1998 (as amended). The Basic Assessment will provide information about the proposed Eldorette Extension 42, and its scope is restricted to this component of the project.

In addition to the Environmental application, an application for a General Authorisation is being submitted to the Department of Water and Sanitation (DWS), for a water use authorisation in terms of the General Notice 509, Government Gazette 40229, dated 26 August 2016, "General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA)".

The application is being completed in terms of the requirement for an authorisation to use water in terms of Section 22 of the NWA, for the water uses, "to impede or divert the flow of water in, or to change the beds, banks or characteristics of, a watercourse" (as defined in terms of Section 21(c) & (i) of the NWA).

In addition to the above, A Phase I Heritage Impact Assessment (HIA) study is generally required in terms of Section 38 of the National Heritage Resources Act (No 25 of 1999) to establish whether any of the types and ranges of heritage resources ('national estate') as outlined in Section 3 of the National Heritage Resources Act (No 25 of 1999) do occur on the property and, if so to determine the significance of these heritage resources, and to make recommendations regarding the mitigation and management of significant heritage resources that may be affected.

The proposed project is located on Portion 646 (a Portion of Portion 405) of the farm Witfontein 301 J.R, Tshwane Metropolitan Municipality, Gauteng Province. The said property is located in Heatherdale, south of First Avenue, between Iris - and Lily Street and to the west of Willem Cruywagen Road. The property is furthermore situated in close proximity and to the east of John Vorster Drive (PWV9).

2 APPROACH TO THE BASIC ASSESSMENT PROCESS

The approach followed by the consultants is based on the specifications for the Basic Assessment Report in terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998), as amended.

Gauteng Provincial Department of Agriculture and Rural Development, is the lead authority for this EIA process and the development needs to be authorised by this Department in accordance with the NEMA.

To ensure that all requirements and processes in terms of the Acts are followed the following tasks need to be conducted:

The following has to be submitted to the GDARD:
- ✓ Application form for Authorisation
- ✓ Draft Basic Assessment Report
- ✓ Environmental Management Plan (EMP)
- ✓ Final Basic Assessment Report

The environmental authority will review the Application and final Basic Assessment Report and the following decisions may be made:
- ✓ Grant authorisation of the activity
- ✓ Refuse the activity
- ✓ Request further information or investigations
- ✓ Refer the application to a scoping process where substantial additional investigations or assessments are required in order to make a decision.

3 PROJECT

An application for the establishment of a township on Portion 646 (a portion of Portion 405) of the Farm Witfontein 301 JR was submitted in terms of Section 96 (1) of the Town Planning and Township Ordinance, 1986 (Ord. 15 of 1986) to The City of Tshwane Metropolitan Municipality – to be known as Eldorette Extension 42. The said application was approved in terms of the Section 98(1) of the Town Planning and Townships Ordinance, 1986 (Ord.15 of 1986) on 14 June 2013.

The land use rights ascribed to the approved township is summarised in the table below for ease of reference.

ERF	**1**	**2**
EXTENT	1.9614 ha	0.1936 ha
USE ZONE	Residential 3	Public Open Space
USES PERMITTED	Dwelling Units	Public Open Space
DENSITY	N/A	N/A
COVERAGE	50%	SDP
HEIGHT	3 Storeys	N/A
FAR	0.6	N/A

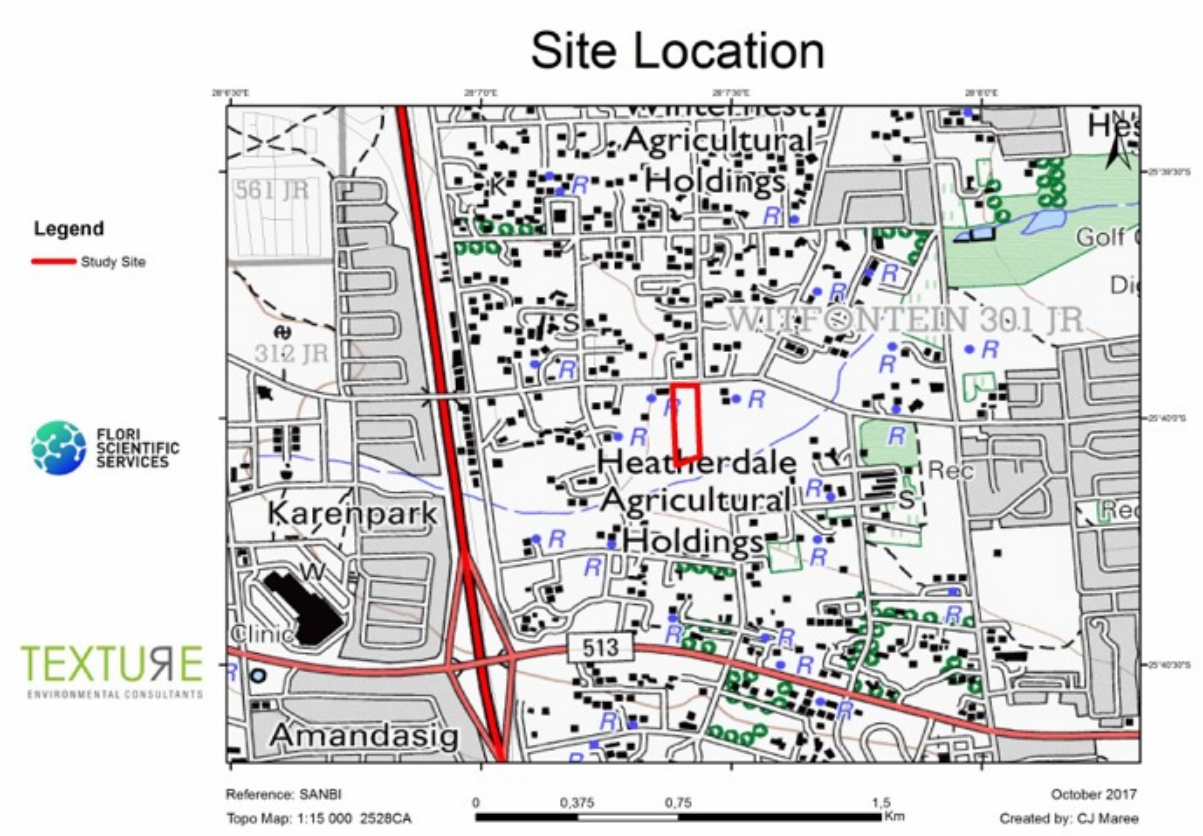
Subsequently, in 2015 the property was purchased by the Abram Ratlou Malatse who intends to finalize the township application as approved by the City of Tshwane Metropolitan Municipality. Based on the mentioned approved land use rights, once the township is proclaimed the property owner intends to develop one-hundred and four (104) dwelling units on the proposed Erf 1 of Eldorette Ext. 42, aimed to be student accommodation.

4 PROJECT LOCALITY

The area under discussion is positioned in the northern portion of Tshwane, to the north of Brits Road (K14), to the east of the R80 Mabopane Highway (PWV 9) and to the south of the Platinum Highway (PWV 2). The R80 Mabopane Highway (PWV 9) runs north-south through the Akasia area dissecting the larger area into an eastern and western portion. First Avenue, which provides access to the property, together with Brits Road (K14), provides linkages over the R80 Mabopane Highway (PWV 9) and can be viewed as important connector roads, linking the

eastern and western portions of the larger Akasia area. The location of the both the R80 Mabopane Highway (PWV 9) and the Platinum Highway (PWV 2) also ensure that the subject property is well connected and easily accessible on a regional and local level.

The proposed project is set out in the Location Map below.



Map 1: Site Location

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

- Heatherview: 25°40'23.95"S; 28° 7'35.69"E.
- Heatherdale Agricultural Holdings (AH): 25°39'53.55"S; 28° 7'15.79"E.
- Study site (Approximate centre point): 25°40'1.08"S; 28° 7'24.70"E
- 1:50 000 map grid references: 2528CA.

Map 2: Study area location (Google Earth)

The site is bound by First Avenue to the north, the proposed Eldorette X34 to the east, the proposed Eldorette X26 to the west, Portion 394 and Portion 298 of the farm Witfontein 301-JR to the south. A small, semi-perennial stream (the Boepensspruit) flows south and east of the study area. The Boepensspruit is outside of the boundaries of the study area, and approximately 80m south of the southern boundary of the site.

5 PROPERTY DESCRIPTIONS

The proposed township to be known as Eldorette Extension 42 will be established on Portion 646 (a Portion of Portion 405) of the farm Witfontein 301 J.R, Tshwane Metropolitan Municipality, Gauteng Province.
The Surveyor-general 21-digit site (erf/farm/portion) reference number is T0JR00000000030100646.

6 TOPOGRAPHY

The study site is a flat plain that is situated on top of a plateau. The average elevation for the site is 1 277m asl, with an average gradient of less than 2%. There are no rocky outcrops (koppies), ravines or ridges on the study site.

7 GEOLOGY AND SOILS

The property is located on norite of the Lower Zone, Rustenburg Layered Suite of the Bushveld Igneous Complex. The property is not subject to dolomite related instabilities.
The entire property is covered by a surface horizon of colluvial sandy clay overlying residual coarse sand.

8 SITE AND SURROUNDING LAND USES

The present landcover of the region is predominantly medium-to high-density urbanisation in the form of housing and related infrastructure, such as roads, powerlines, etc.

The surrounding established neighbourhoods include Eldorette, Theresapark, Heatherview, Amandasig and Karenpark. Most of the agricultural holdings however still serves a single residential function although several of the holdings is in the process of being developed as residential townships. Examples of nearby township where construction has commenced, includes Eldorette Extension 51 situated on the opposite side of First Avenue along Rose Street, Heatherview Extension 36 situated along Main Street south-east of the subject property and Eldorette Extension 21 situated along Iris Street south-west of the subject property.

The recognised 'Akasia nodal area' consisting of the Wonderpark Shopping, the Akasia Netcare Hospital and the surrounding business is situated approximately 2 km west of the subject property. Other prominent land uses identified in a 2 km radius from the subject property includes amongst others (in a clock-wise direction):

1. Akasia Golf Club;
2. Thornbrook Golf Estate;
3. Akasia High School;
4. Theresapark Primary School;
5. Hatfield Christian Church North,
6. Heatherdale Cemetery;
7. Akasia Town Hall;
8. Akasia Municipal Office; and
9. Wonderpark Estate.

The site itself is within the mentioned Heatherdale agricultural holding (A.H.) area that is becoming more and more urbanised, but was previously cultivated on a regular basis. It would appear that historically the property was not actively ploughed, cultivated or even grazed. It seems as if the site was mostly left in a semi-natural state. The state of the veld is a combination of some older, established trees and some younger, regenerating trees and Marikana Thornveld, with open patches. There is no pristine Marikana thornveld vegetation present on the study site and a fair amount of scattered alien invasive plant species.
There is a moderate amount of illegal dumping taking place on the study site, with regular, but low levels of movement of people through the site.

9 NEED AND DESIRABILITY

Residential developments, at an increase density, have become a growing trend in South African cities. This is attributed to the notion that a compact urban form will provide more efficient and environmentally sustainable living and working environments in the long-run. In contrast, sprawling cities threatens the sustainability of the city through loss of valuable agricultural land while segregating living and working environments further. Densification in the South African perspective is also aimed at addressing problems experienced with already fragmented cities whilst catering for the growth of our population. The demand and need for higher density developments, instead of conventional single dwelling houses on large erven, can further be substantiated by the benefits that comes with densification such as the optimal use of resources (i.e. land and existing infrastructure) and lower maintenance cost and increased security for the end-user.

Current densification policies, at national, provincial and local levels, also encourage the densification of existing urban areas through the development of under-utilised vacant land within urban areas (infill development) and optimization of existing infrastructure (engineering

services, roads, etc.). Densification in or close to established areas where economic and social amenities are readily available also contributes to the reduction of the ecological footprint due to shortened travel distances. The desirability of the development at this location can further be validated by the content of the local policies and guidelines which earmarked the area under discussion for densification.

The number of approved township near the subject property such as Eldorette Extension 51 situated on the opposite side of First Avenue, Extension 42 and Extension 26 situated successively to the west of the subject property is also testimonial to the development trend in this area. Based on the identified changing nature of the surrounding area viz. conversion of agriculture holdings to higher density residential developments, the proposed residential development is expected to complement and enhance the emerging character of the area. The proposed housing typology mixture consisting of one- and two-bedroom units, will also aid in affording the wider population an opportunity to secure tenure close to existing economic opportunities and social amenities.

Having taken all the relevant factors into account, it is the applicant's submission that the proposed development is desirable in terms of the following:

1. The location of both the R80 Mabopane Highway (PWV 9) and the Platinum Highway (PWV 2) in proximity to the subject property ensure that the development will be well connected and easily accessible on a regional and local level.
2. The proposed development is situated in an established urban area where municipal engineering services and infrastructure are readily available as reflected in the specialist studies. Any upgrades required to the services infrastructure will be for the account of the developer. Bulk contributions will also be payable to the Municipality for purposes of the improvement and maintenance of the infrastructure network.
3. The proposed development is situated in an established urban area where economic and social amenities are readily available such as; the Akasia Golf Club, the Akasia High School, Theresapark Primary School, the Hatfield Christian Church North, Heatherdale Cemetery, the Wonderpark Shopping Centre, the Akasia Netcare Hospital, the Akasia Town Hall and the Akasia Municipal Office.
4. The densification and compaction of the area by means of the proposed development will have the following advantages:
    - A more compact urban form that discourages dispersed urban sprawl; and
    - The provision of a range of housing typologies in the Eldorette area.
5. The proposed development is compatible with the surrounding land uses due to the following factors:
    - The proposed land use will be residential and should blend in well with the predominant residential charter of the surrounding developments;
    - The proposed development is not in isolation from the surrounding land uses due to both Eldorette Ext. 26 and Eldorette Ext. 34 (properties adjacent to Eldorette Ext. 42) have also been approved.
    - According to the Regional Spatial Development Framework, 2013, Region 1, the proposed development falls within an area earmarked for Mixed Use Developments.
    - Residential uses fall within the category of mixed-use developments and are therefore in-line with the RSDF, 2013; and
    - The development controls ascribed to property will be restricted to a height of 3 storeys, a Coverage of 50% and a Floor Area Ratio of 0.6. Thus, allowing for a Total Floor Area of 11 768m².
6. City of Tshwane Regional Spatial Development Framework, 2013 – Region 1:
    - As mentioned previously, the proposed township is situated in an area earmarked for Mixed-Use Developments and within close proximity to the Akasia Metropolitan Node.

- The nodal area accommodates higher order land uses such as retail and offices and the inclusion of higher density residential that will further strengthen the first order character of the area.
- Due to the close proximity to the node, higher density residential uses are encouraged as it allows for easy access to employment opportunities.
- The proposed development is situated on First Avenue, according to the RSDF, 2013 – Region 1, First Avenue is classed as a Mobility Road.
    - Mobility Roads primarily serves the intra-metropolitan traffic and serves as the most important linkages between the Metropolitan Activity Areas.
    - Medium to high density residential developments are encouraged along Mobility Roads.

In view of the above it is the applicant's opinion that the proposed development can be deemed desirable and should not have a detrimental impact on the surrounding properties or the environment.

10 LEGAL REQUIREMENTS

10.1 National Environmental Management Act

In terms of the National Environmental Management Act, 1998 (Act No. 107 of 1998) (NEMA) as amended and the EIA Regulations 2014, an application for environmental authorisation for certain listed activities must be submitted to the relevant authority, the Gauteng Department of Agriculture and Rural Development (GDARD).

A Basic Assessment (BA) process for this proposed project is being undertaken by Texture Environmental. The listed activities for the proposed Eldorette X42 are the following:

Table 2: Listed Activities

Listed Activity	Activity/ Project Description
Listing Notice 1 Activity 19 The infilling or depositing of any **material of more than 10 cubic metres** into, or the dredging, excavation, removal or moving of soil, sand, shells, shell grit, pebbles or rock of more than 10 cubic metres **from a watercourse**.	To make provision for the excavation or infilling of more than 10 cubic metres of soil from a watercourse if required. Infilling and / or **excavation within the 1:100 year flood lines** will have to be done to construct civil services in the 1:100 year flood line areas.
Listing Notice 1 Activity 27 The **clearance of an area of 1 hectare or more, but less than 20 hectares of indigenous vegetation**, except where such clearance of indigenous vegetation is required for – (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The construction of the proposed development will entail the clearance of more that 1 hectares of indigenous vegetation, but less than 20 hectares. The impacted study area is 2,1550 ha of which 0,1936 ha will be zoned as public open space and maintained as park area. As a result, **approximately 1,9614 hectares of indigenous vegetation** will thus be cleared.
Listing Notice 3 Activity 4 The **development of a road wider than 4 metres** with a reserve less than 13,5 metres. **c. Gauteng** (i) A protected area identified in terms of NEMPAA, excluding conservancies; (ii) National Protected Area Expansion Strategy Focus Areas; (iii) Gauteng Protected Area Expansion Priority Areas;	According to the Gauteng Conservation Plan (C-Plan) version 3.3, the study area is outside of Critical Biodiversity Areas (CBAs), but borders on an **Ecological Support Area (ESA).** The study area is outside of any Critical Biodiversity Areas (CBAs),

(iv) Sites identified as Critical Biodiversity Areas (CBAs) or Ecological Support Areas (ESAs) in the Gauteng Conservation Plan or in bioregional plans; (v) Sites identified within threatened ecosystems listed in terms of the National Environmental Management Act: Biodiversity Act (Act No. 10 of 2004); (vi) Sensitive areas identified in an environmental management framework adopted by the relevant environmental authority; (vii) Sites identified as high potential agricultural land in terms of Gauteng Agricultural Potential Atlas; (viii) Important Bird and Biodiversity Area (IBA); (ix) Sites or areas identified in terms of an international convention; (x) Sites managed as protected areas by provincial authorities, or declared as nature reserves in terms of the Nature Conservation Ordinance (Ordinance 12 of 1983) or the NEMPAA; (xi) Sites designated as nature reserves in terms of municipal Spatial Development Frameworks; or (xii) Sites zoned for conservation use or public open space or equivalent zoning.	with an Ecological Support Area (ESA) approximately 45m to 70m south of the southern boundary. The demarcated ESA is the small stream that flows south and east of the study area. Access to the Proposed Development is currently gained directly from First Avenue, north of the Proposed Development. A new cul-de-sac will be constructed from First Avenue along the western boundary of the Proposed Development. The cul-de-sac will provide access to Eldorette X26 and the Proposed Development.
Listing Notice 3 Activity 12 The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan **c. Gauteng** (i) Within any critically endangered or endangered ecosystem listed in terms of section 52 of the NEMBA or prior to the publication of such a list, within an area that has been identified as critically endangered in the National Spatial Biodiversity Assessment 2004; (ii) Within Critical Biodiversity Areas or **Ecological Support Areas** identified in the Gauteng Conservation Plan or bioregional plans; or (iii) On land, where, at the time of the coming into effect of this Notice or thereafter such land was zoned open space, conservation or had an equivalent zoning.	According to the Gauteng Conservation Plan (C-Plan) version 3.3, the study borders on an **Ecological Support Area (ESA).**
Listing Notice 3 Activity 14 The development of— (i) dams or weirs, where the dam or weir, including infrastructure and water surface area exceeds 10 square metres; or (ii) **infrastructure** or structures with **a physical footprint of 10 square metres or more**; where such development occurs— (a) within a watercourse; (b) in front of a development setback; or (c) if no development setback has been adopted, **within 32 metres of a watercourse**, measured from the edge of a watercourse; excluding the development of infrastructure or structures within existing ports or harbours that will not increase the development footprint of the port or harbour.	**Infrastructure** or structures with a **physical footprint of 10 square metres or more** will be **constructed within 32 metres of the 1:100 year flood line area**.

10.2 National Water Act

An application for a General Authorisation is being submitted to the Department of Water and Sanitation (DWS), for a water use authorisation in terms of the General Notice 509, Government Gazette 40229, dated 26 August 2016, “General Authorisation in terms of Section 39 of the National Water Act, 1998 (Act No. 36 of 1998) (NWA)”.

The application is completed in terms of the requirement for an authorisation to use water in terms of Section 22 of the NWA, for the water uses, “to impede or divert the flow of water in, or to change the beds, banks or characteristics of, a watercourse” (as defined in terms of Section 21(c) & (i) of the NWA).

The residential development itself is on the section of property that is outside of the 1:100 year floodline. The lower part of the property, which falls within the floodline, is being maintained as an "undisturbed" open space. Only natural stormwater run-off from the residential development will "flow" into the watercourse (floodline). No concentrated stormwater collected, on the property, will be released from the property directly into any watercourse. Stormwater and sewage service systems will be linked directly onto the Municipality's systems as described below.

Services for the residential development, sewage and concentrated stormwater, will tie into the Municipality's main sewage and stormwater pipelines on 1st Ave, as designed in terms of the Municipality's Sewage network requirements, and the Stormwater Management Plan, for the township.

A short new section of the Sewage pipeline (shared by all the developments along 1st Ave and other parts of the township) crosses the watercourse (Boepenspruit) along an existing road and the corner of 1st Ave and Main. The stormwater from the developments along 1st Ave, will be collected by the main stormwater pipe on 1st Ave, and will be released in a controlled manner, in terms of the Municipality's Stormwater Management Plan, into the watercourse (Boepenspruit) at the corner of 1st Ave and Main, in such a way that it does not cause flooding and or erosion.

A GA is required because the services, as described above, are to be used by the development and the developer is therefore having an indirect impact on the watercourse. However, a full Water Use Licence Application (WULA) has been submitted to the DWS, by another developer, for the construction and operation of a sewage and stormwater pipeline crossing, and for the release of stormwater into, the watercourse (Boepenspruit). Further, the GA authorises the specific activities as are required and to be allowed within the 1:100 floodline (open space) for the protection, rehabilitation, and maintenance of the watercourse on the developer's property.

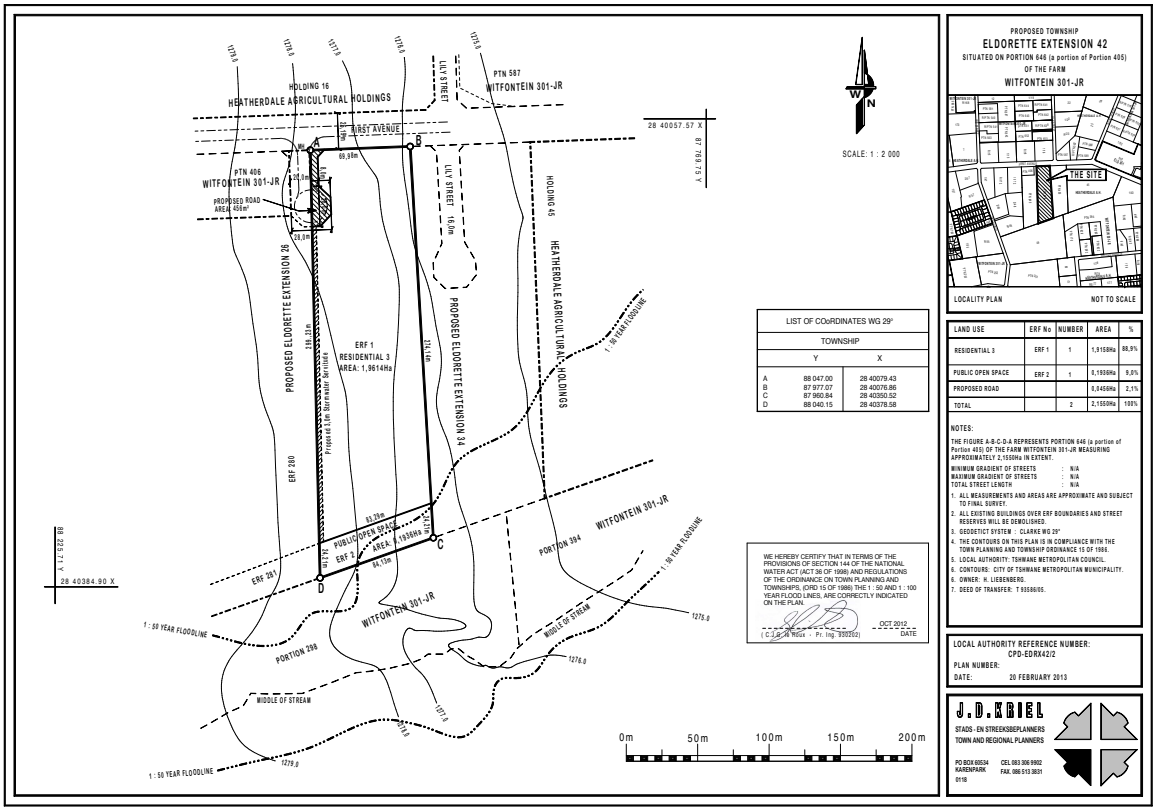
11 FEASIBLE AND REASONABLE ALTERNATIVES

During investigations various alternatives were investigated. The best options will be determined through the environmental and specialist studies, as well as public opinion.
The following alternatives have been identified and are described as follows:

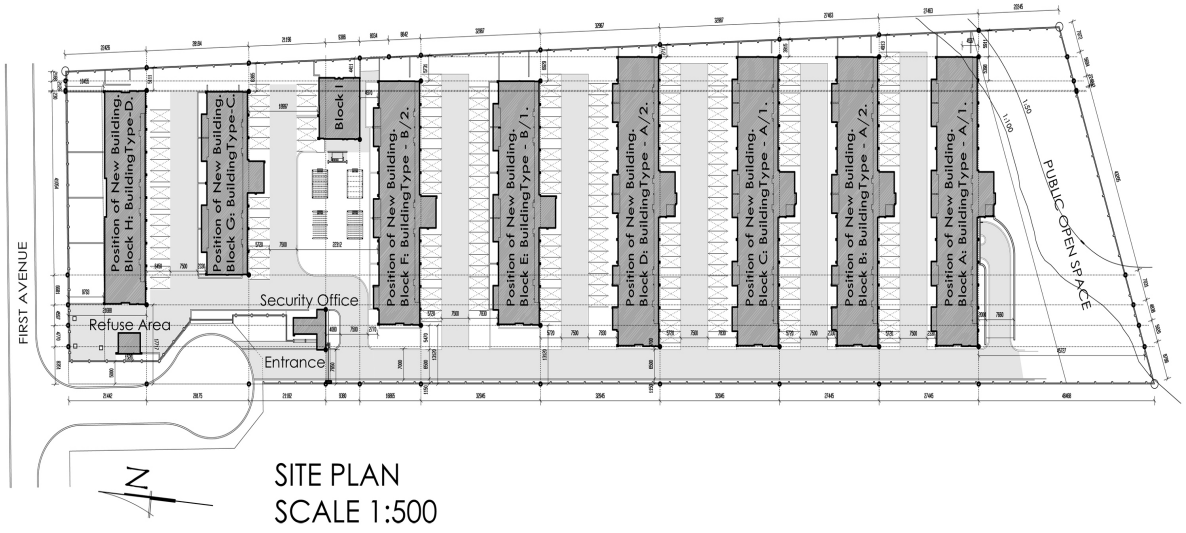
11.1 Layout Alternatives

The layout options were investigated in terms of the layout for the proposed establishment so as to accommodate the watercourse area, and so that the impact of the residential development on the watercourse is significantly minimised. The property is impacted by flood lines as indicated and endorsed by the relevant engineer on the Layout Plan, below.

Preferred Layout
The preferred and final layout was in consideration of the flood lines and sensitive watercourse area to the south. As indicated on the layout plan, a portion of the subject property falls below the 1:100-year flood line area and is therefore not deemed suitable for development. The remaining portion of the property is, however, suitable for development and will be utilised as such. The area affected by the floodline will be accommodated as a 'Public Open Space' and will therefore not form part of the housing development.



Map 3: Preferred Layout



Map 4: Site Development Plan - Preferred Layout

11.2 Activity alternative

The agricultural potential of the study area in terms of crop production has been indicated as medium. The agricultural potential in terms of cattle farming is 'low potential grazing land'. In summary, the study area as a single unit has medium/low agricultural potential.

Most the surrounding properties are also zoned 'Agricultural' terms of the Tshwane Town Planning Scheme, 2008 (Revised 2014). But as mentioned, several of the surrounding agricultural holdings is in the process of being developed as townships. Examples of nearby

township where construction has commenced, includes Eldorette Extension 51 situated on the opposite side of First Avenue along Rose Street, Heatherview Extension 36 situated along Main Street south-east of the subject property and Eldorette Extension 21 situated along Iris Street south-west of the subject property. In addition Eldorette Extension 34 and Extension 26 which is situated to the east and to the west of the subject property.
Agriculture could therefore not be considered as an alternative for this property.

11.3 No-Go Alternative

It is suggested that to maintain the status quo is not the best option for the macro environment. The do-nothing ("no go") option would entail not using the site and maintaining the site as is. From certain perspectives this is not a viable option as the site is situated within an urban area surrounded by either upcoming or already existing residential communities. By not developing the site, the site will be anomalous in the context of the surrounding urban residential land-uses, and some of the direct and indirect socio-economic benefits (i.e. job creation, etc.) will not materialise.
From an environmental perspective, most of the study site is assessed to be of medium sensitivity. This is because although there are no areas of pristine Marikana Thornveld on site and seemingly no presence of red data species either, the veldtype is endangered (EN). If, for example, the entire site was pristine the sensitivity rating might well have been high. A small section of the study area near the northwest corner has a sensitivity rating of Low. This is because this area is highly disturbed and transformed and there is an old, derelict dwelling.
Further to the above, according to the Gauteng Conservation Plan (C-Plan) version 3.3, the study area is outside of any Critical Biodiversity Areas (CBAs), with an Ecological Support Area (ESA) approximately 45m to 70m south of the southern boundary. The demarcated ESA is basically that of the small Boepenspruit that flows south and east of the study area, and its riparian area. The site is however impacted by flood lines as indicated and endorsed by the relevant engineer.
However much of the ecological linkages between the site and surrounding natural areas have been lost due to the increase in development around the site. Not developing the site will assist in protecting the natural features on the site, however the development as proposed will maintain the floodline/ watercourse area as an undeveloped but importantly as a controlled area. The floodline areas are proposed to be zoned as public open space (erf 2). This will entail approximately 9% of the township.
The No-Go development alternative could therefore not be considered the responsible way to manage the site.

12 SPECIALIST INPUT

Specialist input was obtained to investigate the impact of the various alternatives that could accomplish the purpose of the project. The specialist input is summarised as follows:

12.1 Biodiversity Assessment

A Biodiversity Assessment has been conducted by Texture Environmental. Refer to Appendix G.
The report identified the following:

Terrestrial Ecology
Vegetation
The vegetation of the study area is characteristic of Marikana Thornveld, with Acacia thorntrees being dominant in the landscape. The site is a small holding (plot), within an agricultural holdings (A.H.) area that is becoming more and more urbanised. It would appear that historically the property was not actively ploughed, cultivated or even grazed. It seems as

if the site was mostly left in a semi-natural state. The state of the veld is a combination of some older, established trees and some younger, regenerating trees and Marikana Thornveld, with open patches. There is no pristine Marikana thornveld vegetation present on the study site and a fair amount of scattered alien invasive plant species. Presently the property is not fenced off and there is a lot of free movement of people in and through the site, which is having a visible, negative impact on the flora as well as the fauna.

Priority species
Aloe greatheadii, *Gladiolus eliotii.*

Protected trees in the study area
There are no protected trees in the study area.

Fauna
No priority faunal species (which includes red data species) were encountered during field investigations.

Aquatic Ecology
Watercourses in the study area
There are no watercourses in the study area, including wetlands. A small, semi-perennial stream (Boepensspruit) flows south of the study area. The stream, riparian zone and annual floodplain are approximately 80m south of the southern boundary of the study area.

PES & EIS
The PES of the small stream is Category D (Largely modified).
The EIS of the small stream is Category C (Moderate).

Drainage regions
Below is a summary of the drainage regions and water management regions in which the study area is situated.

Level	Category
Primary Drainage Area (PDA)	A
Quaternary Drainage Area (QDA)	A23E
Wetland Vegetation Ecoregion	Central Bushveld Group 2
Water Management Area (WMA) – Previous / Old	Crocodile (West) & Marico
Water Management Area (WMA) – New (as of Sept. 2016)	Limpopo (WMA 1)
Sub-Water Management Area	Crocodile West
Catchment Management Agency (CMA)	Limpopo (CMA 1)

Sensitivity analyses
The ecological sensitivity of the study area is determined by combining the sensitivity analyses of both the floral and faunal components. The highest calculated sensitivity unit of the two categories is taken to represent the sensitivity of that ecological unit.

Ecological community	Floristic sensitivity	Faunal sensitivity	Ecological sensitivity	Development Go-ahead
Thornveld	Medium/Low	Medium/Low	**Medium/Low**	Go-Slow
Stream	Medium	Medium	**Medium**	Go-But

Fatal flaws
There are no fatal flaws.

Priority areas
The study area does not fall within any national priority areas. These priority areas include formal and informal protected areas (nature reserves); important bird areas (IBAs); RAMSAR sites; National fresh water ecosystem priority areas (NFEPA) and National protected areas expansion strategy (NPAES) focus areas.

Critical Biodiversity Areas
Critical biodiversity areas (CBAs) are terrestrial and aquatic features in the landscape that are critical for retaining biodiversity and supporting continued ecosystem functioning and services (SANBI, 2007).
The study area is outside of any Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs);

According to the Management Zones of the Gauteng Environmental Management Framework (2014), the study site is situated within Zone 1: Urban Development Zone. The intention of Zone 1 is to streamline urban development activities in order to establish a more effective and efficient city region. Part of the land use zoning that also needs to be considered during proposed development is the compatibilities between the various EMF Management Zones.

The sensitivity assessment takes a number of issues into consideration. These include the terrestrial and the aquatic ecology of the site and immediate surrounding area; the conservation status of the vegetation type in which the study site is situated, which in this case is endangered (EN); the presence of pristine veldtypes; the presence of red data fauna and flora species; the EMF Landuse Zone in which the study site is situated in terms of the Gauteng EMF (2014) and the presence of ideal habitats for priority species (which include, but are not limited to red data species).
The study site is assessed to be of medium sensitivity.

Sensitivity map of the study area

12.2 Heritage Impact Assessment

Archaetnos Culture & Cultural Resource Consultants conducted a Heritage Impact Assessment for this project. Refer to Appendix G.
The findings are summarised as follows:
The area that was surveyed is located in an almost entirely urbanized location. Although it consists of agricultural holdings, most of these have been developed into residential areas, a school and industrial developments. The surrounding landscape therefore consists of industrial buildings, roads and infrastructure, with natural areas in between.
No buildings or other structures are to be found on the surveyed site. The site was previously used for agricultural and grazing purposes. Therefore, the site is almost entirely disturbed with the natural vegetation mostly consisting of pioneer plant species such as grass, weeds and thorn bushes. The vegetation cover varies between low and medium high, with a few large trees. The under footing is reasonably dense. Therefore, the horizontal archaeological visibility is good and the vertical archaeological visibility fair. Other signs of disturbance include remains of fences, old roads and illegal dumping.
The topography of the surveyed area is fairly flat, with a slight fall towards the south. A non-perennial stream is located towards the south, but outside of the surveyed area.
No sites of cultural heritage significance were located during the survey. This is due to the entire area being disturbed by former and recent human interventions.
It is therefore recommended that the proposed development may continue. This report is seen as ample mitigation.

Recommendations/Mitigation
Should construction work begin for this project:

- The developer should note that due to the nature of archaeological material, such sites, objects or features, as well as graves and burials may be uncovered during construction activities on site.
- Operating controls and monitoring should therefore be aimed at the possible unearthing of such features. Care should therefore be taken when development commences that if any of these are discovered, a qualified archaeologist be called in to investigate the occurrence.
- If any evidence of archaeological sites or remains (eg, remnants of stone-made structures, indigenous ceramics, bones, stone artefacts, ostrich eggshell fragments, marine shell and charcoal/ash concentrations), unmarked human burials, or other categories of heritage resources are found during the proposed activities, SAHRA APM Unit (021 462 4502) must be alerted immediately, and a professional archaeologist or palaeontologist, depending on the nature of the finds, must be contacted as soon as possible to inspect the findings. If the newly discovered heritage resources prove to be of archaeological significance, a Phase 2 rescue operation might be necessary.

This report concludes that the impacts of the proposed development on the cultural and environmental values are not significant.

12.3 Town Planning

The City of Tshwane Metropolitan Municipality approved a township establishment application for the Proposed Township: Eldorette Ext. 42, situated on Portion 646 (a portion of portion 50) of the Farm Witfontein 301 JR. Subsequently, in 2015, the property was sold to Abram Ratlou Malatse, who intends to finalise the township.

Herewith the rights approved:

Use Zone	Erf No.	No. Erven	Area (ha)	FSR / Coverage	Floor Area (m^2)	No of Units
Residential 3	1	1	1.9614	0.6 / 50%	11 768.4	104
Public Open Space	2	1	0.1936	-	-	-

Amended Conditions of Establishment were obtained on 30 June 2017 to indicate the Change of Ownership for the proposed township.

The following steps are still to be followed for the finalization of the township:

- Surveying and approval of the General Plan;
- Complying with pre-proclamation Conditions;
- Obtain the Section 101 Clearance Certificate;
    - Environmental authorization to be obtained.
- Opening of the Township Register;
- Proclamation of the township.

As mentioned within Paragraph 9 – Need and Desirability, the township is in-line with Council's policies and vision for the area and fits in well with the surrounding character of the area.

The natural environment was also taken into consideration during the planning phase, as "Public Open Space" was incorporated within the layout of the township to create an aesthetic development for the potential residents.

12.4 Geotechnical investigation

A Geotechnical Site Investigation was conducted by J Louis van Rooy during November 2007 for the Proposed Development. Appendix G refers.
The findings are summarised as follows:

- The site will be suitable for development if the appropriate foundation design and building procedures are implemented as listed in this report and the NHBRC Home Builders Manual.
- The major geological factors that may influence residential development are the following:
    - High to very high soil heave
    - Moderate to high soil compressibility
    - Seasonal perched water tables, saturated soil profiles, surface ponding
- The upper clay horizon will exhibit additional heave and differential movements when the soil profile experiences moisture changes. Special foundation and drainage measures will be necessary to limit damage to structures to be erected.
- The upper soil horizon will not be suitable for construction of platforms, lower road pavement layers and backfill. Fill will need to be imported or excavated below the clay horizon covering the site. The clay may in some instances also be poor sub-grade. Excavation of road and parking area foundations and replacement with inert material may be necessary.
- The site soils will be corrosive to steel pipes.
- Localized areas of excavation difficulty are expected on potential shallow norite possible large sized corestones.

12.5 Electrical Services

CivilConsult Consulting Engineers compiled a report titled *"Services Provision Details*". Refer to Appendix G.

The Proposed Development will be supplied with electricity from the City of Tshwane (CoT) Power Supply Network. The external network design will adhere to CoT's standards and requirements. The internal network is earmarked for private ownership and operation. Other standards to which the electrical design will adhere include the relevant SABS safety and equipment standards, as well as the NRS 048 Quality of Supply Standard.

Estimated Maximum Demand
The total estimated maximum demand of the Proposed Development is shown in Table below.

Table: Estimated Maximum Demand

Zoning	Proposed Development		
	Number of Units	Unit Load Assumption (kVA / Unit)	ADMD (after diversity Maximum Demand) Load (kVA)
Residential 3	104	3.1	322
Access control	1	5	5
Medical bay and managers house	1	5	5
Total			**332**

External Supply Network
There are existing CoT networks in the vicinity of the Proposed Development. CivilConsult proposes a new supply from an existing miniature substation with enough spare capacity or by installing a new 500kVA miniature substation near the Proposed Development. The Proposed Development could be energized directly from a new maximum demand board to be installed on the border of the Proposed Development.
An enquiry for the required electrical capacity has been logged with Tshwane on 07 December 2016. CoT will determine whether the necessary spare capacity is available and inform on the outcome of their investigation. The viability of this proposal depends on the availability of enough spare capacity on the existing CoT network.

Bulk Metering
Bulk metering will be done by CoT by means of a new maximum demand board to be installed on the boundary of the Proposed Development.

Internal Reticulation
The following is proposed:
- install wall-mounted distribution boards or planted 3CR12 meter kiosks pre-wired with 60A single phase circuit breakers and space for smart meters
- install 25mm^2, 4-core, low voltage, copper cables from the CoT connection to the distribution boards or kiosks

Area Lighting
Area lighting equipment should be determined taking into account the following :
- the degree of street luminance required versus the sensitivity of the area to excess lighting
- architectural and landscaping preferences
- whether solar panels must be used for electrical supply

12.6 Civil Engineering Services

CivilConsult Consulting Engineers compiled a report titled *"Services Provision Details*". Refer to Appendix G.

Water Reticulation
An existing 200mm Ø AC water pipeline is located parallel and on the southern side of First Avenue, north of the Proposed Development.
The Proposed Development will connect directly to the existing 200mm Ø AC water pipeline in the north western corner with a new 160mm Ø uPVC bulk water connection.
The internal water reticulation will connect directly to the new 160mm Ø uPVC bulk water connection. A bulk water meter will be installed for the Proposed Development.

A GLS Investigation was conducted during October 2016 for Eldorette X34. Eldorette X34 forms the eastern boundary of the Proposed Development.
GLS confirmed that the findings and upgrades proposed for Eldorette X34 could be implemented for Eldorette X42.

The Proposed Development currently falls in the Akasia East Reservoir Zone. The Proposed Development forms part of the Eldorette 2 future development area in accordance with the Tshwane Master Plan.

The following upgrades are required as proposed by GLS to accommodate the Proposed Development within the Akasia East Reservoir Zone :
- 60m x 1100mm Ø parallel reinforced pipe (Item AK.2)
- Reset Flow Control Valve (FCV) at Akasia East Reservoir to 265ℓ/s

CivilConsult proposes that the bulk services contributions for the Proposed Development be utilized for the upgrades required by the GLS Investigation (Item AK.2 and Item 1).

No Water Use License Application (WULA) will be required for the "abstraction" of water by the Proposed Development as potable water will be provided by the City of Tshwane.

The City of Tshwane wayleave process will have to be followed for work done within road reserves.

Table: Estimated Water Demand

Zoning	Proposed Development		
	Floor Area (m^2)	Average Annual Daily Demand (AADD)	Water Demand (kℓ/d)
Residential 3	11 768.40	1.20kℓ/100m^2	141.22
Total			**141.22**

The total new daily water demand is 141.22 kl/day.

Sewer Network
The nearest existing sewer is located on the western side of Main Street, approximately 530m east of the Proposed Development.

A GLS Investigation was conducted during October 2016 for the development of Eldorette X34. Eldorette X34 form the eastern boundary of the Proposed Development. GLS confirmed

that the findings and upgrades proposed for Eldorette X34 could be implemented for Eldorette X42.
The Proposed Development currently falls in the Rooiwal Waste Water Treatment Plant (Rooiwal WWTP) drainage area. The Proposed Development forms part of the Eldorette 2 future development area on the Tshwane Master Plan.

The following upgrades are required by GLS to accommodate the Proposed Development within the existing Rooiwal WWTP :
- 135m x 200mm Ø new pipe to upgrade existing outfall sewer (Item R1_017.04)
- 325m x 160mm Ø new pipe (Item 1)
- 345m x 160mm Ø new pipe (Item 2)
- 40m x 160mm Ø new pipe (Item R1_F040.00)
- 135m x 200mm Ø new pipe (Item R1_F039.03)

Item 2 as proposed by the GLS Investigation can not be implemented because of the 1:50 year flood line of the existing river, south of the Proposed Development.
A new sewer varying in size will be installed from the north western corner of the Proposed Development parallel to and along the northern side of First Avenue connecting to the existing sewer on the western side on Main Road. The new sewer will include Item 1, R1_F040.00 and R1_F039.03 of the GLS Investigation.

The internal sewer reticulation will connect directly to the new 160mm Ø uPVC sewer on the northern boundary of the Proposed Development.
CivilConsult proposes that the bulk services contributions of the Proposed Development be utilized for the following upgrades required by the GLS Investigation :
- Item 1
- Item 2
- R1_F040.00
- R1_F039.03

CivilConsult proposed that Item R1_017.04 will not be implemented by the developer of the Proposed Development because the bulk service contribution will be used for the abovementioned upgrades.
The City of Tshwane wayleave process will have to be followed for work done within road reserves.

Table: Estimated Sewerage Flow

Zoning	Proposed Development		
	Floor Area (m^2)	Average Annual Flow (AADF)	Sewer Flow (kℓ/d)
Residential 3	11 768.40	1.20kℓ/100m²	141.22
Total			**141.22**

The total new sewage outflow will be 141.22 kl/day.

Access
Access to the Proposed Development is currently gained directly from First Avenue, north of the Proposed Development.
A new cul-de-sac will be constructed from First Avenue along the western boundary of the Proposed Development. The cul-de-sac will provide access to Eldorette X26 and the Proposed Development.

Roads
First Avenue is not constructed to the standards and specifications of CoT. First Avenue will be upgraded from the north western corner of the Proposed Development up to Main Street, east of the Proposed Development.
The access road and new road upgrades will be designed and constructed according to the Standards and Specifications of CoT.

Stormwater
Existing Stormwater
The general drainage pattern of the Proposed Development is from west to the east.
The existing storm water service plan received from CoT shows that an existing storm water pipe is located in First Avenue draining storm water to the east and discharging into a culvert at the intersection of Main Street and First Avenue. CoT indicated that they are not aware of the storm water pipe and it does not exist.
A natural watercourse is located south and east of the Proposed Development.

Proposed Storm Water Infrastructure
A concrete channel will be constructed parallel to and along the eastern boundary within the Proposed Development. The storm water run-off generated by the Proposed Development will drain into the concrete channel and discharge into the natural watercourse, south of the Proposed Development. A field outlet with energy dissipation blocks will be provided at the concrete channel's discharge point in the south eastern corner of the Proposed Development. The field outlet will discharge above the 1:100-year flood line in Erf 2 of the Proposed Development which means that a WULA will not be required, but will be addressed as part of the GA application to be submitted to the DWS.

First Avenue will be upgraded by the developer of the Proposed Development up to Main Street. A new storm water pipe will be installed parallel to and along the southern side of First Avenue in accordance with CoT Storm Water Master Plan. The access cul-de-sac's storm water will connect to the new storm water pipe on the southern side of First Avenue, north of the Proposed Development.

The City of Tshwane wayleave process will have to be followed for work done within road reserves.

Traffic
Due to the nature of the Proposed Development, all the trips to and from the site are considered as primary and external trips.
The peak hour trip generation and the trip generation adjustment factors for the Proposed Development are derived using Tables 3.1 and 3.2 respectively from the COTO *TMH 17 Volume 1 – South African Trip Data Manual.*

The trip generation rate for the Proposed Development is the highest on weekdays. Therefore, the weekday trip generation rate is required in order to establish the capacity requirements. As a result, the trip generation rates are calculated for the following peak hour periods and are summarised in the tables below:
- Weekday- AM Peak Hour and PM Peak Hour

Table : Existing Peak Hour Trip Generation on the road network

Code	Land Use	Erf No.	Units	Trip Generation Rate (Week)		Directional Split (in : out)		Trips Generated			
								AM		PM	
				AM	PM	AM	PM	In	Out	In	Out
225	Residential 3	1	104	0.20	0.30	25:75	65:35	6	24	14	11
Total								**30**		**25**	

Table : Proposed Peak Hour Trip Generation of the Development

Code	Land Use	Erf No.	Units	Trip Generation Rate (Week)		Directional Split (in : out)		Trips Generated			
								AM		PM	
				AM	PM	AM	PM	In	Out	In	Out
200	Residential	-	32	1.00	1.00	25:75	70:30	8	24	23	9
Total								**32**		**32**	

First Avenue is classified as a class 4a Commercial Major Collector which can accommodate up to 1000 vehicles per day. The traffic generated during the week will ultimately have an insignificant impact on the surrounding road network and the existing traffic. The Proposed Development will generate approximately 5-25 peak hour single direction trips during the week. According to Table 6.2.3 below if less than 50 peak hour single direction trips are generated neither a Traffic Impact Study nor a Traffic Impact Statement will be required.

12.7 Waste Management

The collection of solid waste should be carried out by the CoT. A refuse area will be accommodated on site and waste will be disposed of at the municipal dumping site as per the requirements of the Municipal Health Bylaws. The estimated volume of solid waste is 25 m^3/week.

12.8 Flood lines

The subject property is located north of the Boepenspruit, a tributary of the Apies River, and is therefore impacted by flood lines as indicated and endorsed by the relevant engineer, on the Layout Plan.

13 IMPACT ASSESSMENT

The impacts that may result from the planning and design, construction, operational, decommissioning and closure phases as well as proposed management of identified impacts and proposed mitigation measures have been addressed in the Basic Assessment Report.

14 ENVIRONMENTAL MANAGEMENT PROGRAMME (EMPr)

An Environmental Management Programme was prepared to detail a plan of action to ensure that recommendations for preventing the negative environmental impacts (and where possible improving the environment) are implemented during the life-cycle of the project.

15 CONCLUSION

In summary the following is recommended for authorisation:

The maps attached in Appendix A indicates/highlights the whole area (inclusive of floodline area) that was investigated to inform GDARD on the area that is part of the authorisation. The wider area that was investigated will allow future potential amendments to the EA should it be necessary (at a later stage).
Should small changes be done to the layout of the site after authorisation it will not be considered crucial and will not warrant a new application.

Development will not be allowed in the 1:100 year flood line area, except for the specific activities as are required and to be allowed within the 1:100 floodline (open space) for the protection, rehabilitation, and maintenance of the watercourse on the developer's property as authorised by the General Authorisation, by the Department of Water and Sanitation. This includes the construction and operation of a sewage and stormwater pipeline crossing, and for the release of stormwater into, the watercourse (Boepenspruit).

The Proposed Layout Alternative is recommended for authorisation of the proposed development.

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