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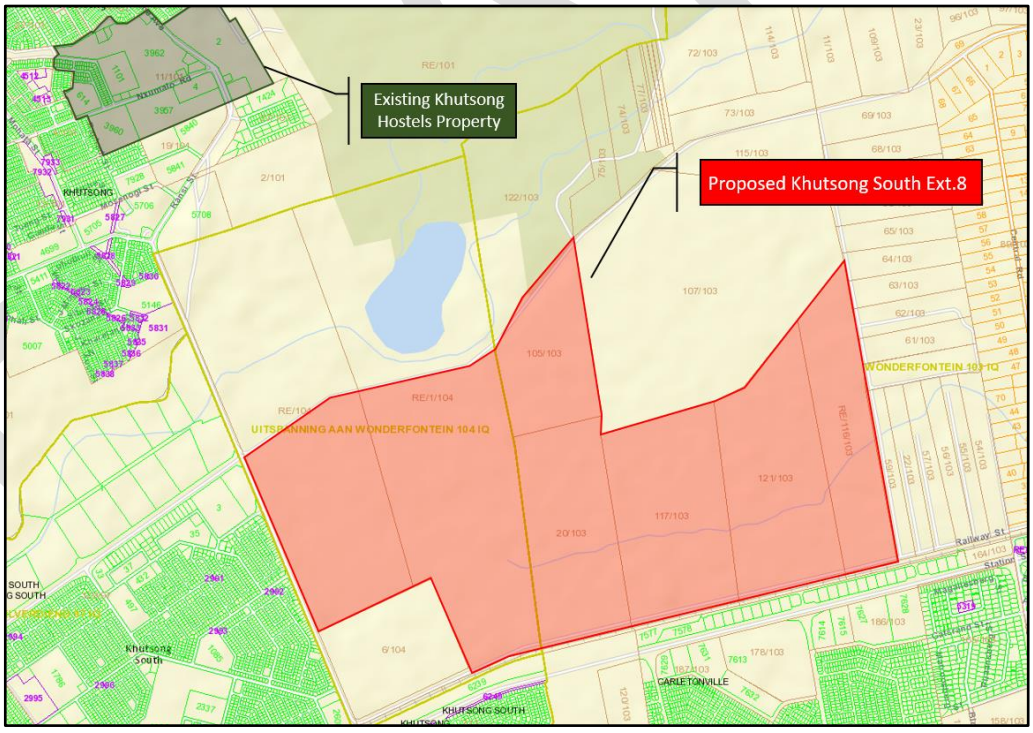
# DRAFT ENVIRONMENTAL SCREENING ASSESSMENT

## PROPOSED KHUTSONG SOUTH EXTENSION 8 HOUSING DEVELOPMENT SITUATED NEAR CARLETONVILLE WITHIN THE MERAFONG CITY MUNICIPALITY, WEST RAND DISTRICT MUNICIPALITY, GAUTENG

31 January 2020

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**Declaration (Author)**

I, **Brian Mafela,** declare that -

- I act as the independent specialist in this application;
- I will perform the work relating to the application in an objective manner, even if this results in views and findings that are not favourable to the applicant;
- I declare that there are no circumstances that may compromise my objectivity in performing such work;
- I have expertise in conducting the specialist report relevant to this application, including knowledge of the Act, Regulations and any guidelines that have relevance to the proposed activity;
- I will comply with the Act, Regulations and all other applicable legislation;
- I have no, and will not engage in, conflicting interests in the undertaking of the activity;
- I undertake to disclose to the applicant and the competent authority all material information in my possession that reasonably has or may have the potential of influencing - any decision to be taken with respect to the application by the competent authority; and the objectivity of any report, plan or document to be prepared by myself for submission to the competent authority;
- all the particulars furnished by me in this form are true and correct; and
- I realise that a false declaration is an offence in terms of regulation 48 and is punishable in terms of section 24F of the Act.

**Brian Mafela**


| | | | |
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# 1 INTRODUCTION

## 1.1 Project Locality

Afzelia Environmental Consultants (PTY) Ltd was appointed by ETL Consulting (PTY) Ltd to undertake an Environmental Screening Assessment for the proposed Khutsong South Extension 8 housing development situated near Carletonville within the Merafong City Local Municipality which is nestled in the West Rand District of the Gauteng Province (Figure 1.1). The proposed development site is located approx. 75Km south-west of the Johannesburg CBD and 48Km north-east of the Potchefstroom CBD. At a local scale, the proposed development site is situated in between the Khutsong township, Khutsong South township and the Oberholzer township (Figure 1.2). The site can be found at the following GPS co-ordinates 26° 20' 44.70" S; 27° 20' 58.72" E.

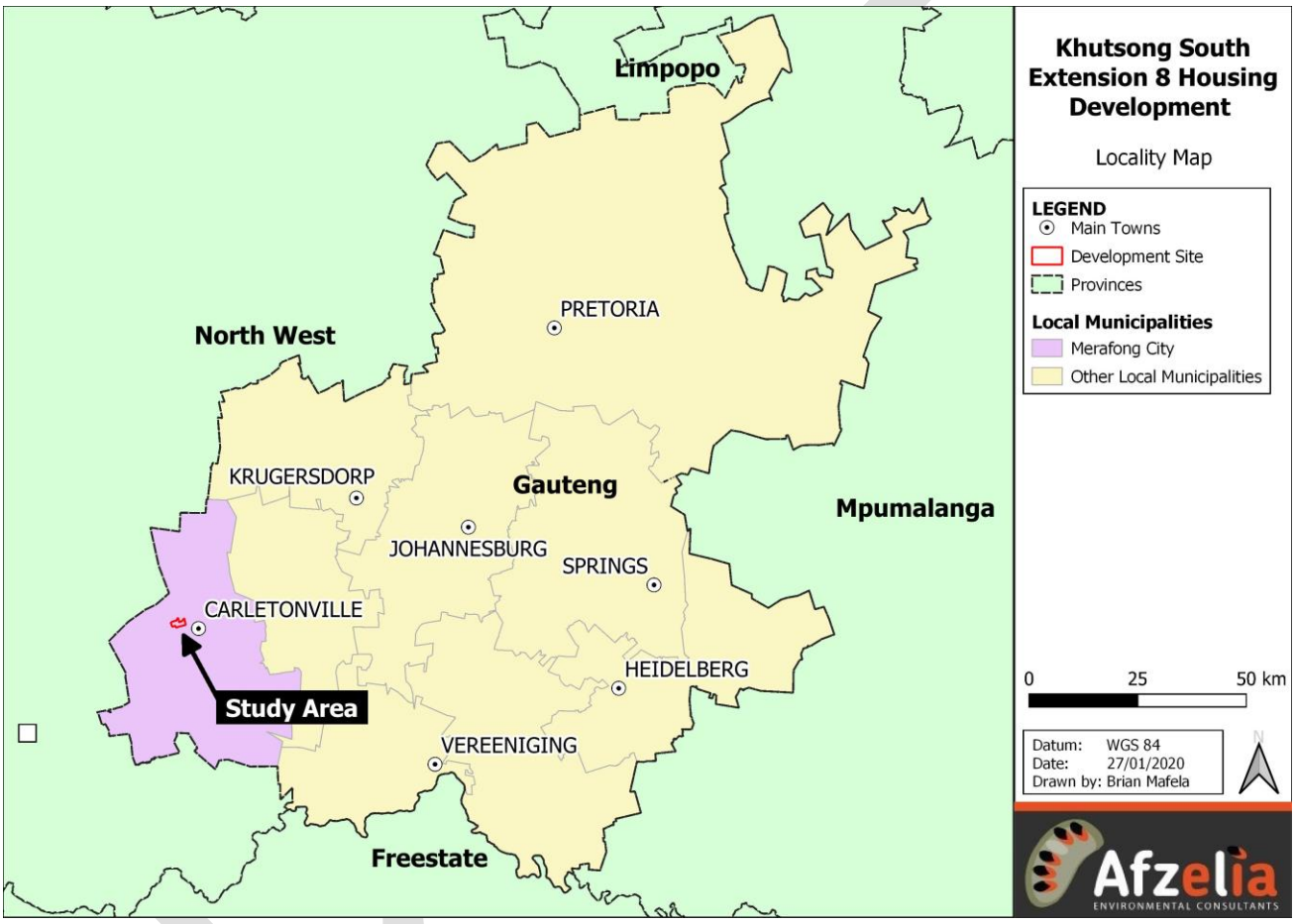


**Figure 1.1:** Location of the proposed development site within the Gauteng Province.

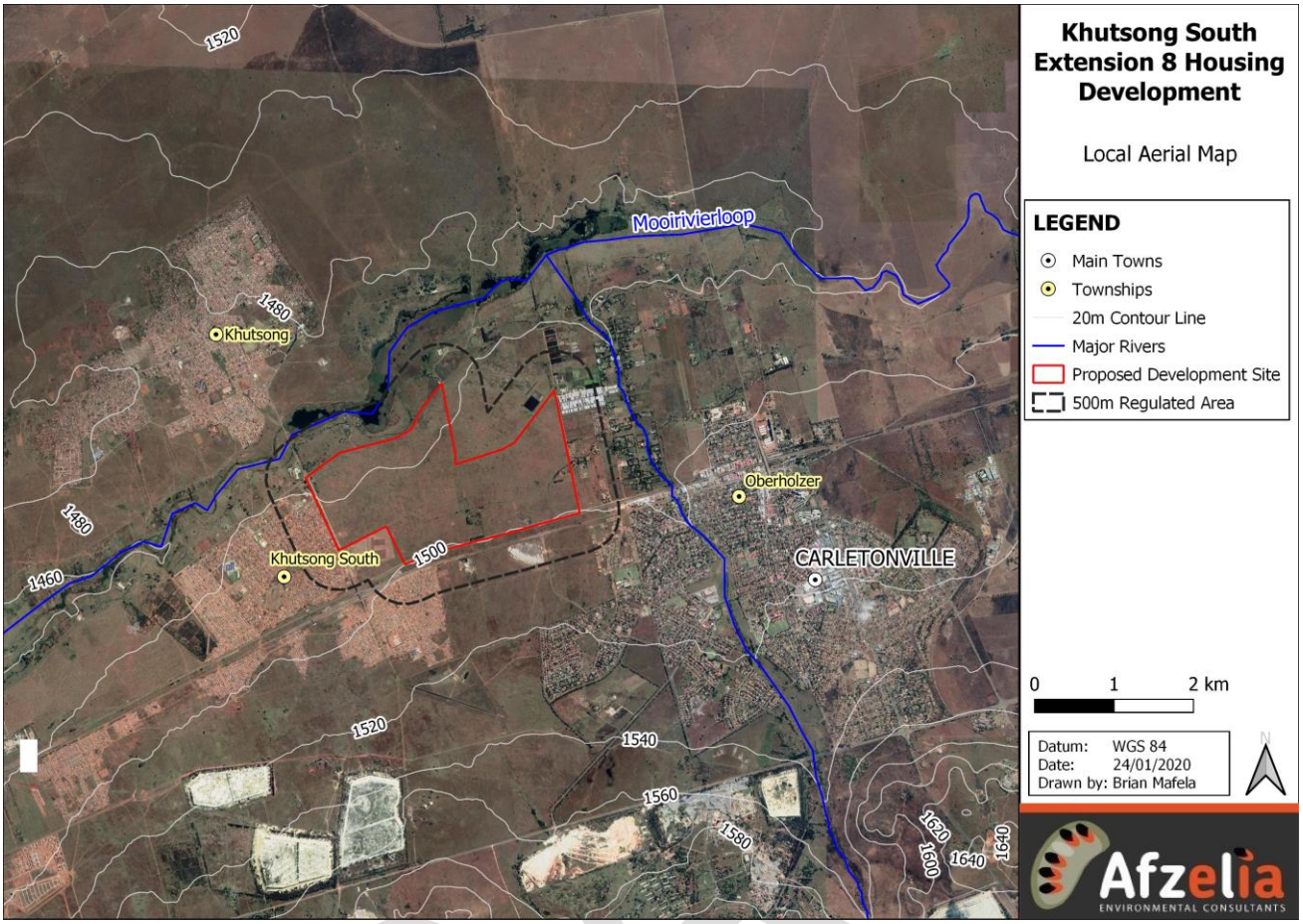


**Figure 1.2:** Aerial map of the study area.

## 1.2 Project Description

The Gauteng Department of Human Settlements in conjunction with the Merafong City Municipality and West Rand District Municipality are proposing to expand the existing Khutsong township by constructing new houses. The new settlement will be known as Khutsong South Extension 8 and involves the construction of a total of 27 000 units to accommodate the residents to be relocated from the Khutsong Hostel, Khutsong Extensions 1and 6 including Khutsong informal Area. The proposed development entails development of arterial roads, a sewer and water reticulation infrastructure. Both the sewer and water reticulation infrastructure will be linked to existing infrastructure. The proposed development is to be situated at the following properties Portion 116, 117, 120 and 121 of the Wonderfontein 103 I.Q. and a portion of the RE and Portion 1 of the Twyfelvlakte 104 I.Q. A property map has been provided as Figure 1.3.

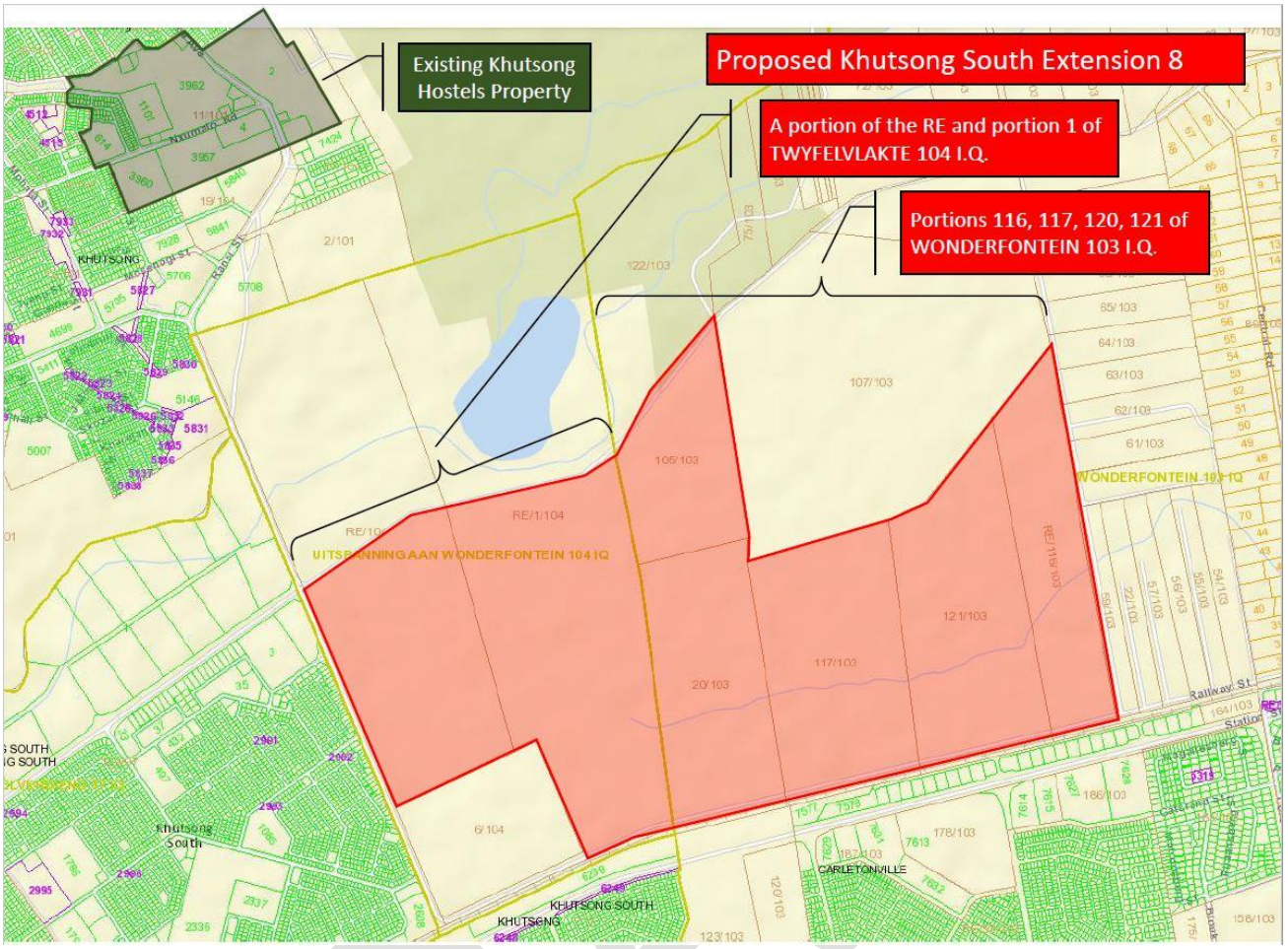


**Figure 1.3:** Property map.

## 1.3 Need and Desirability

The need for the establishment of a new residential area (Khutsong South Ext. 8) is because 90% of the existing Khutsong residential area falls within high risk dolomite zones 3 and 4. According to the South African National Standards (SANS) No. 1936, no informal structures may be permitted on dolomitic land as it is susceptible to developing sink holes that can lead to infrastructure damage and human fatalities. The Municipality along with the Gauteng Department of Human Settlement decided to relocate residents currently situated in high risk zones namely the informal housing from Khutsong Proper township, Khutsong Extension 1 and 6 townships to a new low-risk location. The relocation programme will greatly reduce the risk of human fatalities.

Furthermore, Khutsong is a poor township with a high percentage of residents (47%) living in informal houses. Constructing the Khutsong South Ext. 8 housing development will contribute significantly towards alleviating poverty and improving the quality of life of the Khutsong residents.

## 1.4 Data Sources Used

Prior to undertaking fieldwork, the specialist undertook a desktop study of the site and associated watercourses (wetlands, streams and rivers). This entailed reviewing available literature and GIS data on water resource conservation, reviewing site details and desktop mapping all watercourses within and around the study area. All desktop-mapped watercourses were revised following an infield wetland delineation process. The following information was used in completing the desktop assessment:

i. The latest Google Earth™ imagery was used to identify likely wetland vegetation and delineate the wetland boundary at a desktop level.

ii. NFEPA GIS dataset was used to identify prioritised catchments, rivers and wetlands.
iii. Gauteng Conservation Plan GIS dataset was used to identify biodiversity conservation areas.
iv. Threatened Ecosystem GIS dataset was used to identify conservation important vegetation types.
v. Gauteng Geological GIS dataset was used to identify the underlying geology at the site.
vi. Merafong City Municipal Spatial Development Framework 2016 – 2021 written by the Merafong City Municipal.
vii. Merafong City Municipal Integrated Development Plan 2018 – 2019 written by the Merafong City Municipal.

### 1.5 Assumptions and limitations

The following assumptions and limitation are applicable to this study:

i. Desktop wetland delineation was undertaken using 5m contours, the latest aerial imagery and the latest Google Earth imagery. No infield wetland delineation was undertaken.
ii. The gradient of slope was calculated using 20m contour lines which may not be accurate.
iii. All literature and datasets used were assumed to be accurate at the time of compiling this report.
iv. This report was compiled based on limited project details provided by the client.

# 2 ENVIRONMENTAL LEGISLATION

## 2.1 Applicable Environmental Legislation

This report and its scope or work and recommendation made thereof are guided by a plethora of environmental legislations. The most relevant pieces of legislations are briefly discussed in Table 2.1 below. The below mentioned pieces of legislation are an extension of the Section 24 of The Constitution of 1996 (Act 108 of 1996) which states that:

> *"everyone has the right to an environment that is not harmful to their health or wellbeing and to have the environment protected through reasonable legislative measures."*

**Table 2.1:** Applicable environmental legislations.

| Legislation | Objective / Purpose of the Legislation | Administering Authority |
|---|---|---|
| National Environmental Management Act, 1998 (Act No. 107 of 1998) | This Act serves to provide for co-operative, environmental governance by establishing principles for decision-making on matters affecting the environment, institutions that will promote co-operative governance and procedures for co-ordinating environmental functions exercised by organs of state; and to provide for matters connected therewith. | National or Provincial Department of Economic Development, Tourism and Environmental Affairs (EDTEA) |
| Mineral and Petroleum Resources and Development Act, 2008 (Act No. 49 of 2008) | The objects of this Act are to:<br>a) recognise the internationally accepted right of the State to exercise sovereignty over all the mineral and petroleum resources within the Republic;<br>b) give effect to the principle of the State's custodianship of the nation's mineral and petroleum resources;<br>c) promote equitable access to the nation's mineral and petroleum resources to all the people of South Africa;<br>d) substantially and meaningfully expand opportunities for historically disadvantaged persons, including women and communities, to enter into and actively participate in the mineral and petroleum industries and to benefit from the exploitation of the nation's mineral and petroleum resources;<br>e) promote economic growth and mineral and petroleum resources development in the Republic, particularly development of downstream industries through provision of feedstock, and development of mining and petroleum inputs industries;<br>f) promote employment and advance the social and economic welfare of all South Africans;<br>g) provide for security of tenure in respect of prospecting, exploration, mining and production operations;<br>h) give effect to section 24 of the Constitution by ensuring that the nation's mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development; and<br>i) ensure that holders of mining and production rights contribute towards the socio-economic development of the areas in which they are operating. | Department of Mineral and Resources (DMR) |
| National Environmental Management: Waste | The objects of this Act are— | National or Provincial EDTEA |

| | | |
|---|---|---|
| Act, 2008 (Act No. 59 of 2008) | a) to protect health, well-being and the environment by providing reasonable measures for—<br>(i) minimising the consumption of natural resources;<br>(ii) avoiding and minimising the generation of waste;<br>(iii) reducing, re-using, recycling and recovering waste;<br>(iv) treating and safely disposing of waste as a last resort;<br>(v) preventing pollution and ecological degradation;<br>(vi) securing ecologically sustainable development while promoting justifiable economic and social development;<br>(vii) promoting and ensuring the effective delivery of waste services;<br>(viii) remediating land where contamination presents, or may present, a significant risk of harm to health or the environment: and<br>(ix) achieving integrated waste management reporting and planning;<br>b) to ensure that people are aware of the impact of waste on their health, well-being and the environment;<br>c) to provide for compliance with the measures set out in paragraph (a)\ and<br>d) generally, to give effect to section 24 of the Constitution in order to secure an environment that is not harmful to health and well-being. | |
| National Water Act, 1998 (Act No. 36 of 1998) | The purpose of this Act is to ensure that the nation's water resources are protected, used, developed, conserved, managed and controlled in ways which take into account amongst other factors -<br>a) meeting the basic human needs of present and future generations;<br>b) promoting equitable access to water;<br>c) redressing the results of past racial and gender discrimination;<br>d) promoting the efficient, sustainable and beneficial use of water in the public interest;<br>e) facilitating social and economic development;<br>f) providing for growing demand for water use;<br>g) protecting aquatic and associated ecosystems and their biological diversity;<br>h) reducing and preventing pollution and degradation of water resources;<br>i) meeting international obligations;<br>j) promoting dam safety;<br>k) managing floods and droughts,<br>and for achieving this purpose, to establish suitable institutions and to ensure that they have appropriate community, racial and gender representation. | Department of Water and Sanitation (DWS) |

| | | |
|---|---|---|
| National Environmental Management: Biodiversity Act, 2004 (Act No. 10 of 2004) | The objectives of this Act are:<br>a) within the framework of the National Environmental Management Act, to provide for-<br>(i) the management and conservation of biological diversity within the Republic and of the components of such biological diversity;<br>(ii) the use of indigenous biological resources in a sustainable manner; and<br>(iii) the fair and equitable sharing among stakeholders of benefits arising from bioprospecting involving indigenous biological resources;<br>b) to give effect to ratified international agreements relating to biodiversity which are binding on the Republic;<br>c) to provide for co-operative governance in biodiversity management and conservation; and<br>d) to provide for a South African National Biodiversity Institute to assist in achieving the objectives of this Act. | National or Provincial EDTEA |
| National Forests Act, 1998 (Act No. 84 of 1998) (as amended) | The purposes of this Act are to:<br>a) promote the sustainable management and development of forests for the benefit of all;<br>b) create the conditions necessary to restructure forestry in State forests;<br>c) provide special measures for the protection of certain forests and trees;<br>d) promote the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes;<br>e) promote community forestry;<br>f) promote greater participation in all aspects of forestry and the forest products industry by persons disadvantaged by unfair discrimination. | Department of Agriculture, Forestry and Fisheries (DAFF) |

## 2.2 Applicable National, Provincial and Local Policies, Plans, Guidelines, Spatial Tools

### 2.2.1 Merafong City Municipal Spatial Development Framework 2016 - 2021

According to the Municipality's Spatial Development Framework (SDF) for 2016 – 2021, Khutsong township is plagued with service delivery challenges with the most notable being:

i. 36% of households have no access to municipal tap water on their evern and 61% do not have tap water inside their dwellings,
ii. 37% of households have no access to full waterborne sanitation,
iii. 36% of the households have do no access to electricity, and
iv. 47% of the households live in informal housing.

Despite 5 000+ houses having been recently built; preliminary investigation undertaken by the Municipality indicate that formal housing is still inadequate to cater for the population of Khutsong township which is estimated to be over 62 000. Furthermore, a study undertaken by the Intraconsult firm in 1997 revealed that 90% of the Khutsong residential area falls within high risk dolomite zones 3 and 4. Dolomic land is known for developing sinkholes. According to the South African National Standards (SANS) No. 1936, no informal structures may be permitted on dolomitic land. The Municipality therefore realised a need to relocate residents of informal housing from Khutsong Proper township, Khutsong Extension 1 and 6

townships to a new location. In the SDF, the Municipality has identified Khutsong South Extension 8 as the new location, however, it is characterised by a low to medium dolomite risk.

### 2.2.2 Merafong City Municipal Integrated Development Plan 2018 - 2019

The Municipality's Integrated Development Plan (IDP) identified that Khutsong South Extension 8 as part of the integrated human settlement mega project which is aimed at providing approx. 50 000 stands along with creating jobs for the locals.

# 3 DESKTOP FINDINGS

## 3.1 Environmental Attributes

### 3.1.1 Biophysical Attributes

The biophysical attributes of the study area are summarised in Table 3.1 below.

**Table 3.1:** Summary of the biophysical attributes of the study area.

| Attribute | Value | Reference |
|---|---|---|
| **Altitude of the site** | 1475 – 1505m a.m.s.l. | GoogleEarth, 2019 |
| **Ecoregion** | 16.03 (South-eastern Uplands)<br>Characterised by undulating hills and low mountains. | DWAF, 2007 |
| **MAT** | 16 – 18 °C (Zone 3) | DWAF, 2007 |
| **MAP** | 838.8 mm | Schulze, 1997 |
| **Rainfall intensity** | 74.1 mm (Zone 4) | Schulze, 2007 |
| **Geology** | Dolomite | Council of Geoscience, 2008 |
| **Soil** | Unknown | Site observation |
| **Soil Erodibility Score (K-factor)** | 0.21 (moderately low erodibility) | Schulze, 2007 |

### 3.1.2 Quaternary Catchment and Drainage Setting

The development site is situated within quaternary catchments C23E drained primarily by a perennial river, the Mooirivierloop River. The Mooirivierloop River is fed by 2 unnamed left-bank tributaries. The Mooirivierloop River discharges into the Mooi River located at least 30km downstream. The drainage network within the quaternary catchments is shown in Figure 3.1. At a local scale, the proposed development site is located south of the confluence between Mooirivierloop and one of the unnamed tributaries. The Mooirivierloop River runs along the boundary of the 500m regulated area (Figure 3.2). The proposed development site has a very gentle slope of 1.4 – 2.0% and drains in a north-westerly direction towards the Mooirivierloop River.

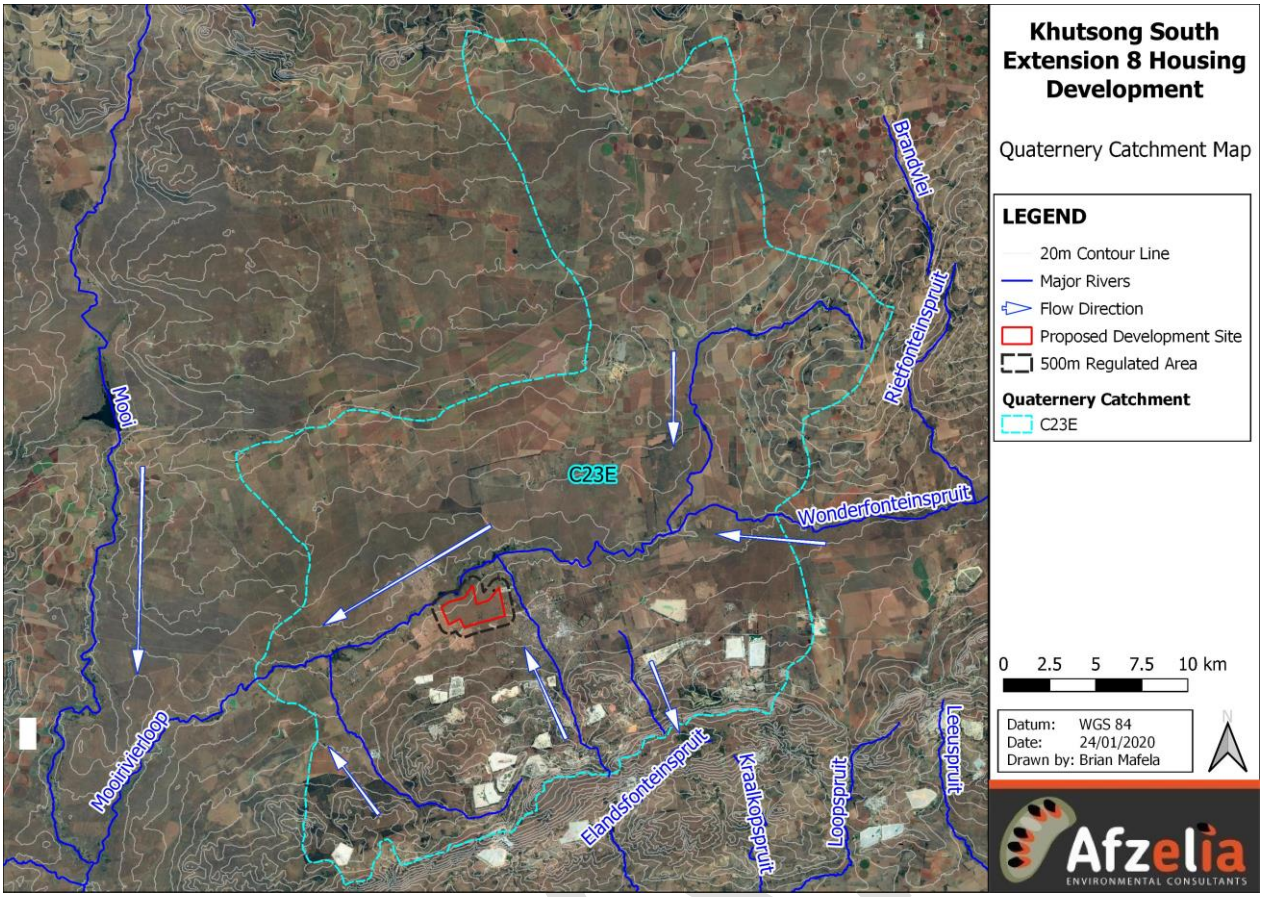


**Figure 3.1:** Quaternary catchment and drainage setting of the study area.

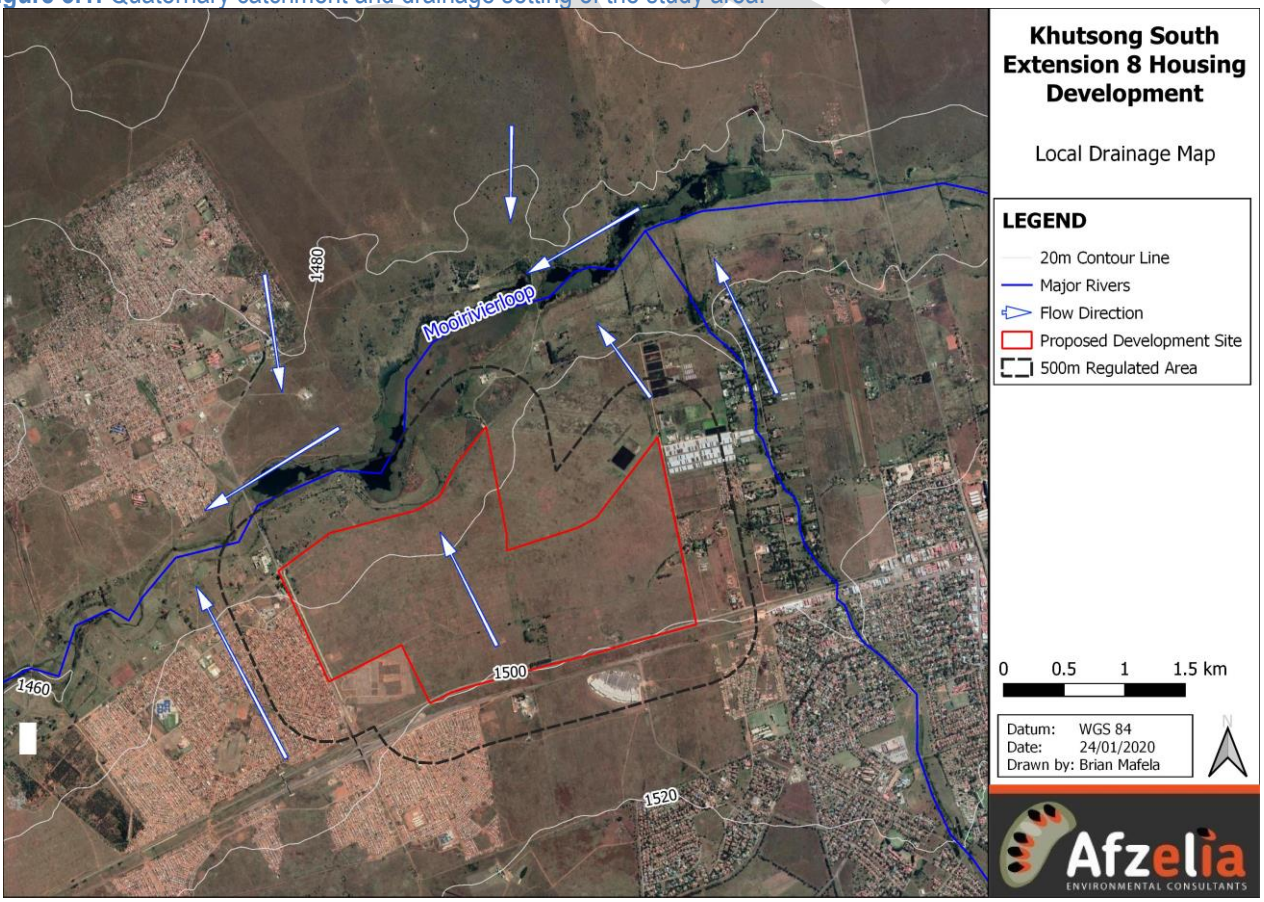


**Figure 3.2:** Site level drainage setting of the study area.

### 3.1.3 Desktop Wetland Habitation Delineation

Through a desktop delineation exercise the specialist identified a single wetland unit (Unit CVB1) which was classified as a channelled valley bottom wetland and 2 river units (Units R1 and R2). The river flowing through the wetland habitat was identified as Mooirivierloop River, which is a left-bank tributary of the Mooi River. Wetland Unit CVB1 occurs at least 120m away from the northern boundary of the proposed development property but well within the DWS regulated area (i.e. 500m radius of the development property). Also delineated within the DWS regulated area were 3 artificial ponds (Units AP1, AP2 and AP3) associated with the Oberholzer Wastewater Treatment Plant (WWTP). The closest pond is situated 50m away from the northern boundary of the development area and the furthest 390m away. The spatial distribution of delineated watercourse units is shown in Figure 3.3.

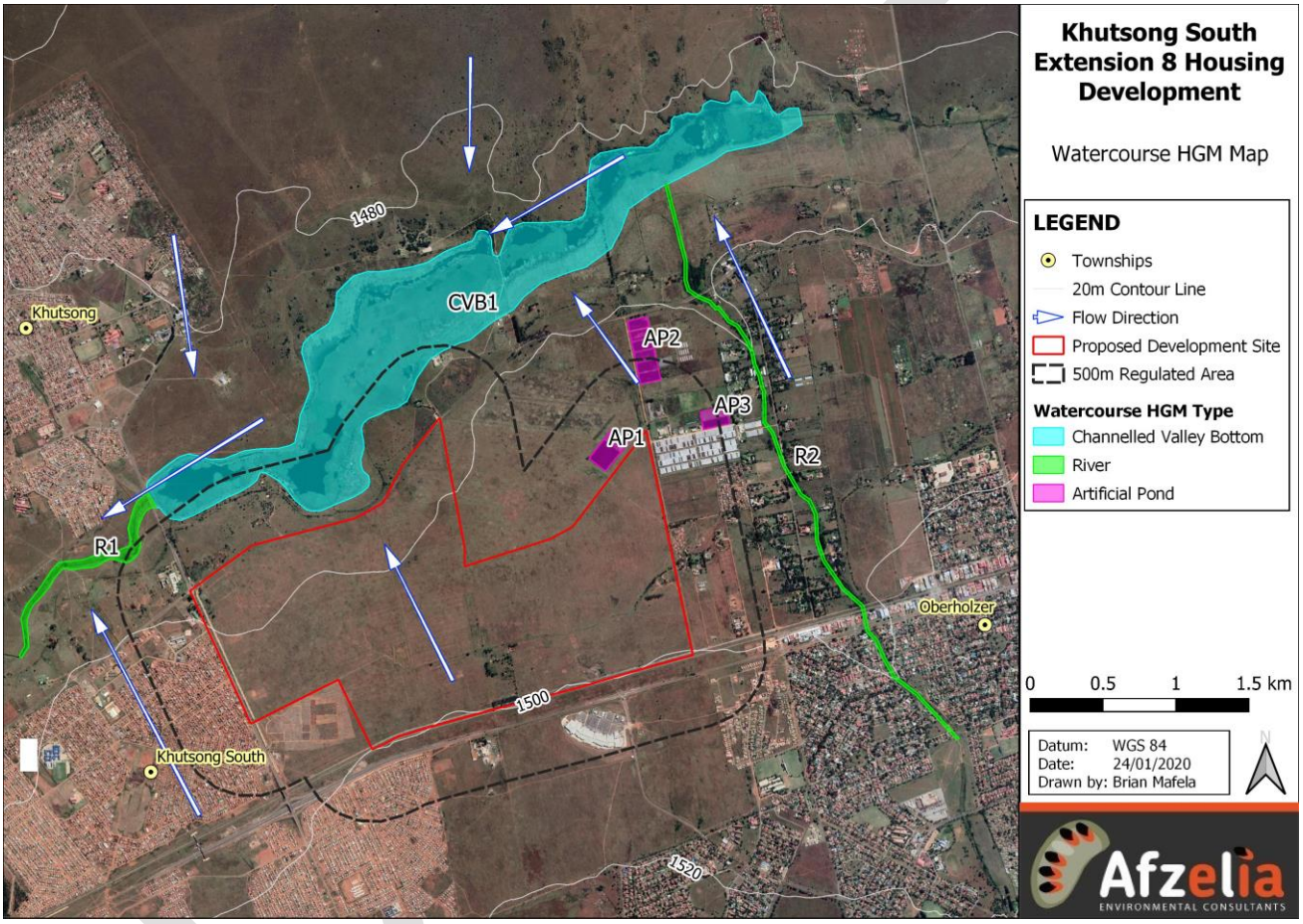


**Figure 3.3:** Map showing the spatial distribution of desktop delineated watercourses.

### 3.1.4 National Freshwater Ecosystem Priority Area

According to the National Freshwater Ecosystem Priority Areas (NFEPA) GIS dataset (CSIR, 2011) the development area falls within a sub-quaternary catchment (No. 1378) identified as an "Upstream Management Area." An Upstream Management Areas is a sub-quaternary catchment in which human activities need to be managed to prevent degradation of downstream river FEPAs and Fish Support Areas (CSIR, 2011). The means the proposed development will need to be implemented in a manner that prevents any degradation of the aquatic habitat associated with it. In terms of prioritised wetland habitats, the NFEPA GIS dataset did not flag the presence of any wetland FEPA or wetland cluster within a 500m radius of the development area (CSIR, 2011). A FEPA map is provided as Figure 3.4.

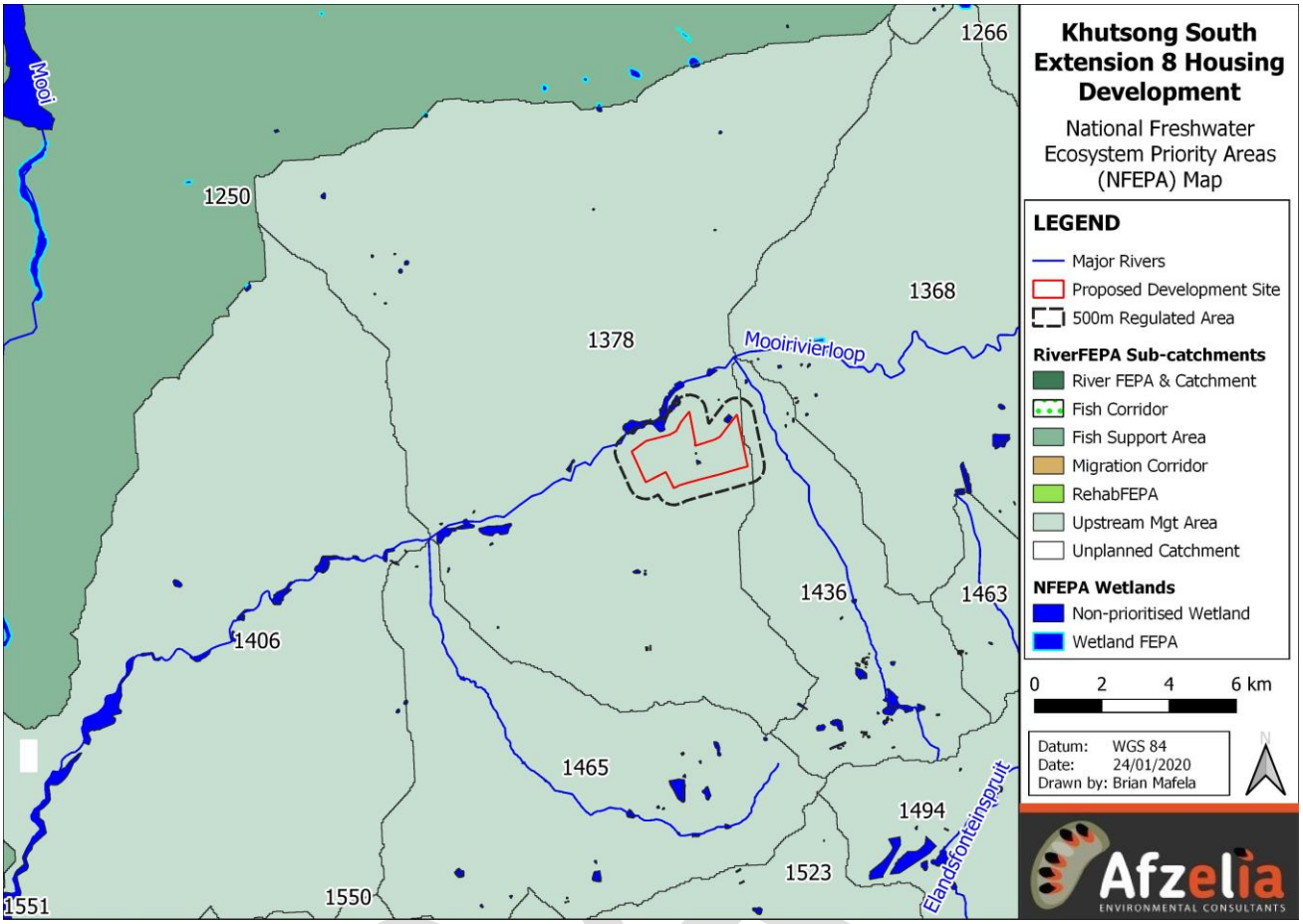


**Figure 3.4:** Freshwater Ecosystem Priority Area map.

### 3.1.5 Threatened Ecosystems: Vegetation Types

The development area is characterised by a terrestrial vegetation type known as the Carletonville Dolomite Grassland (Gh15) which belongs to the Dry Highveld Grassland Bioregion (SANBI, 2018) (Figure 3.5). The Carletonville Dolomite Grassland has a national threat status of **Least Threatened** (SANBI, 2014). No freshwater vegetation type was flagged as present within and the study area.

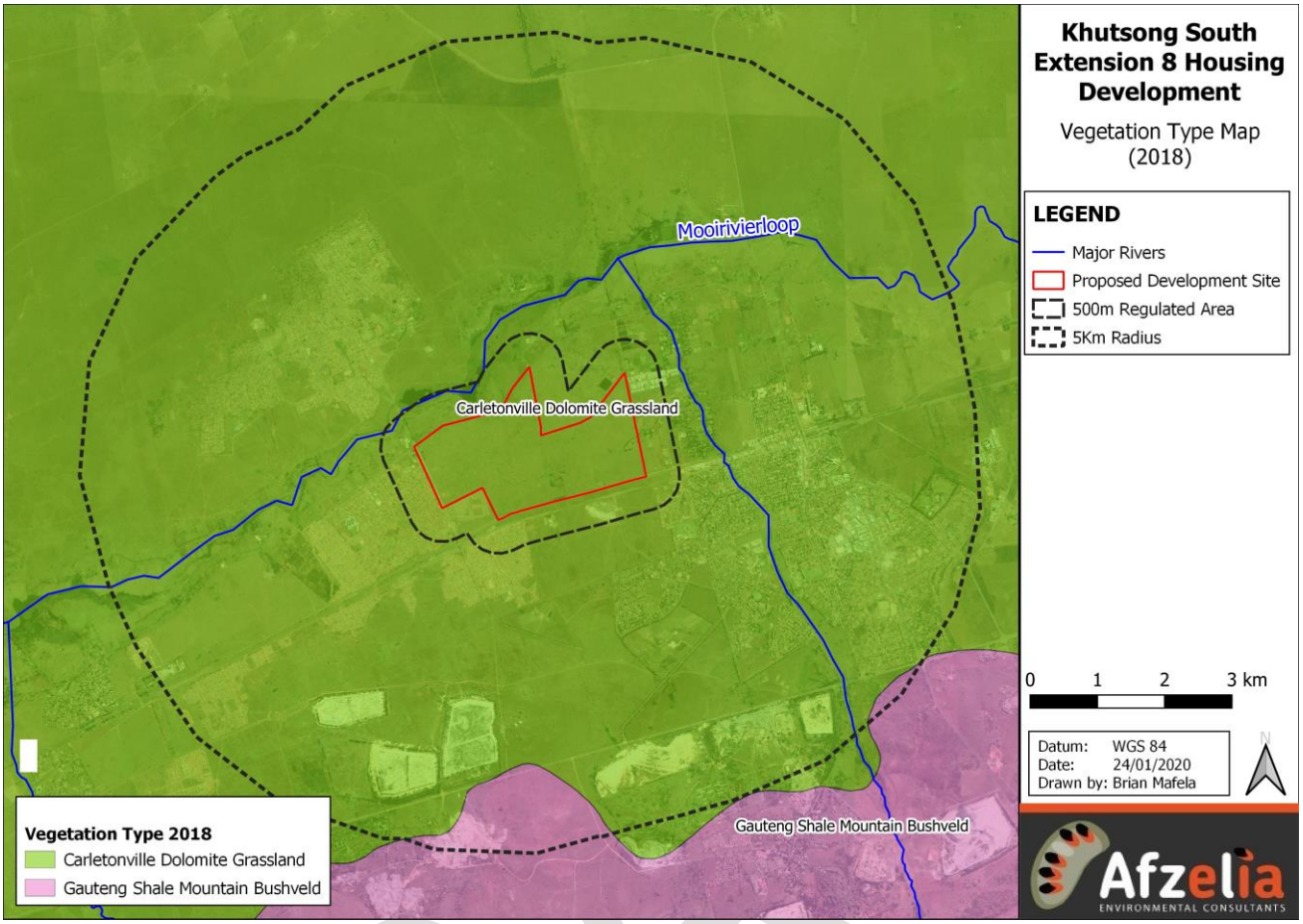


**Figure 3.5:** Terrestrial vegetation types within a 5Km radius of the development area.

### 3.1.6 Land Capability Assessment

According to the Department of forestry and fisheries, the study area falls within an area classified as land capability class II (Figure 3.6). Land in class II is considered arable land. Land uses suited for this land include wildlife, forestry, light to intensive grazing and poorly adapted to intensive, well adapted cultivation. In Gauteng, land in class II constitutes 20.4% of the province.

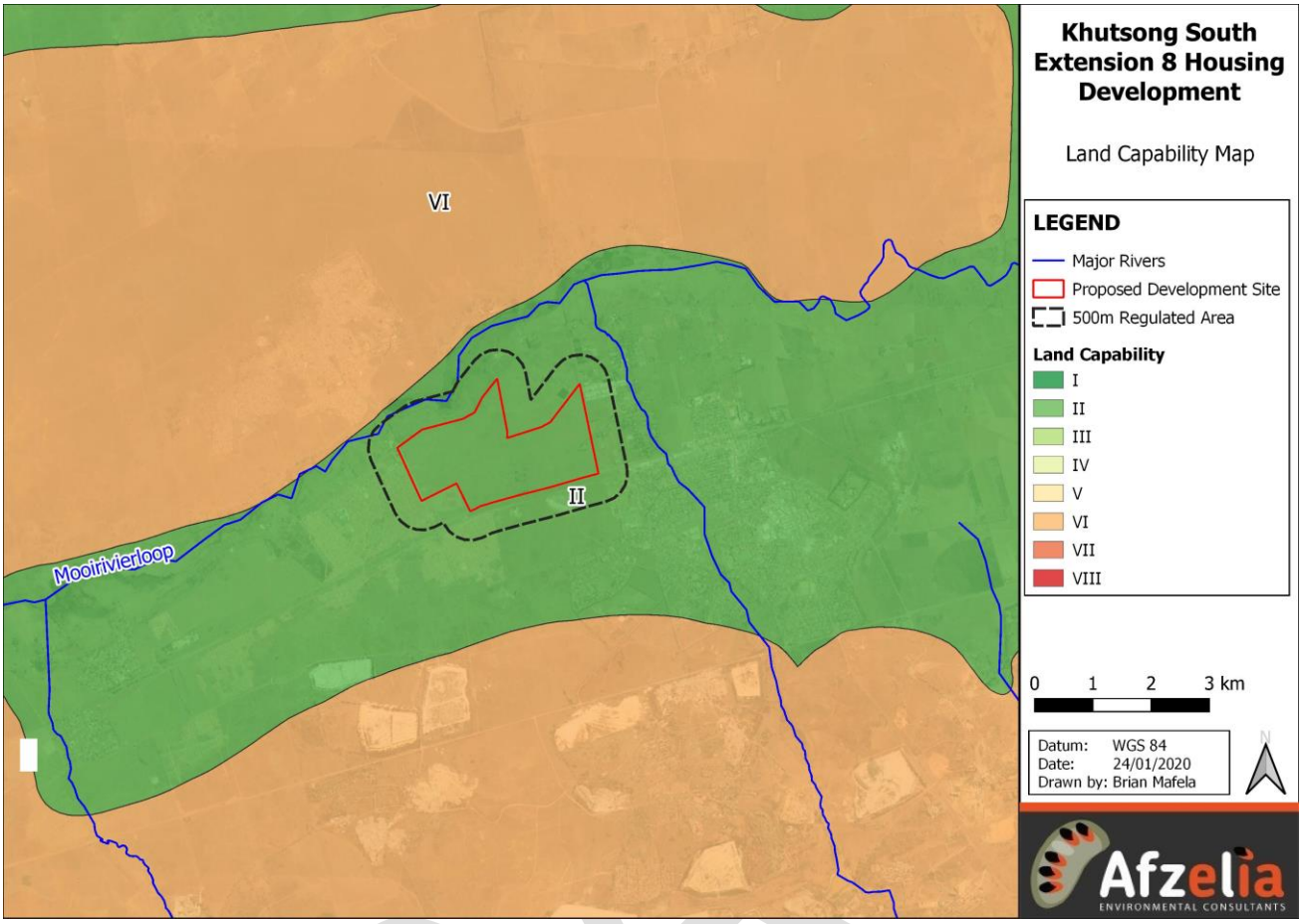


**Figure 3.6:** Land capability map.

### 3.1.7 Conservation & Protected Areas

The proposed development area shares the northern boundary with the Abe Bailey Nature Reserve (Abe Bailey NR) which extends beyond the 5km radius of the proposed development area. The Mooirivierloop River meanders through the southern portion of the Abe Bailey NR (Figure 3.7).

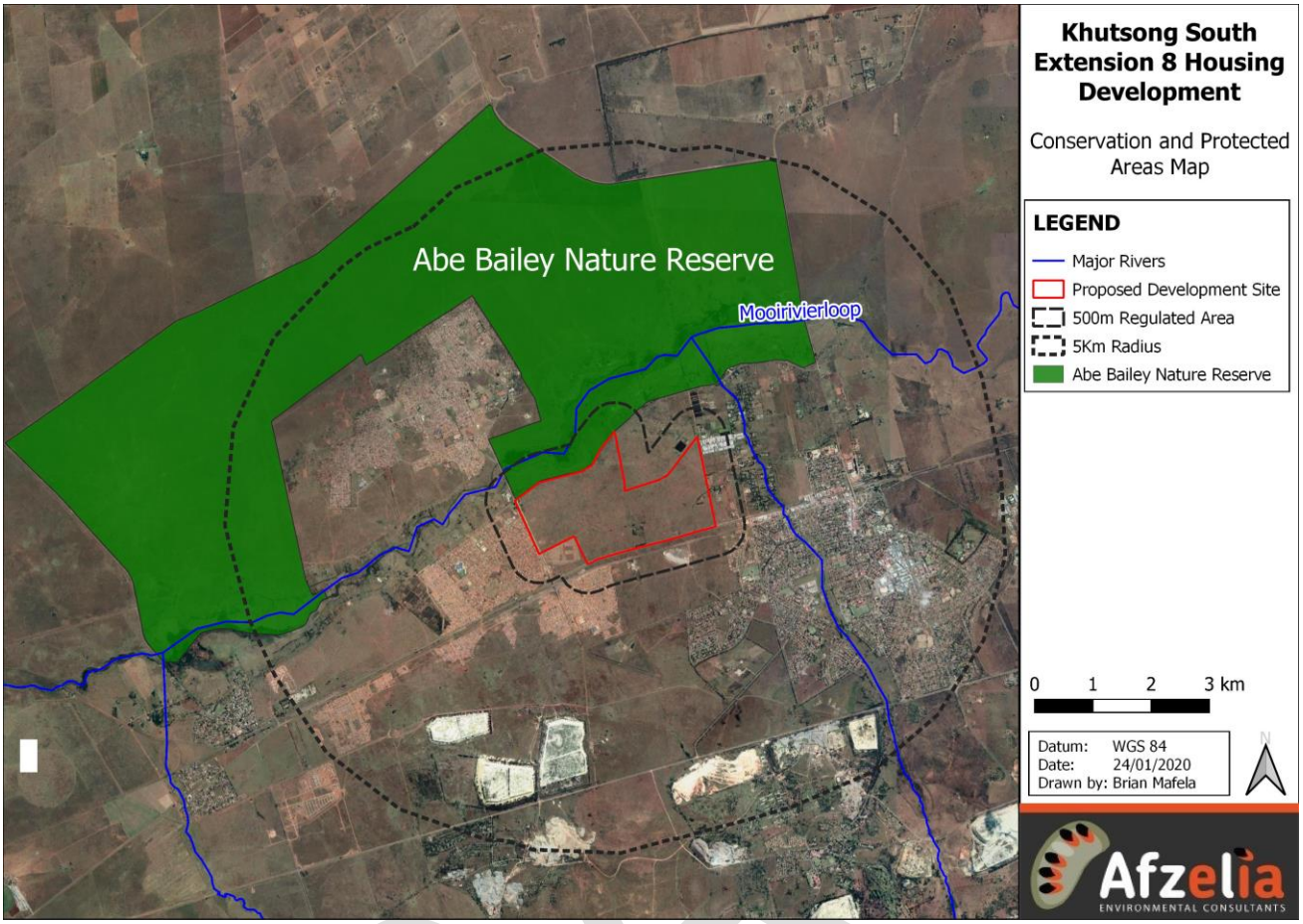


**Figure 3.7:** Conservation and protected areas map.

## 3.2 Provincial Conservation Guidelines

### 3.2.1 Gauteng Conservation Plan

The Gauteng Conservation Plan (C-Plan) is a provincial conservation planning tool that aims to (i) serve as the basis for biodiversity inputs into land use planning processes in the province, (ii) serve as the basis for biodiversity inputs into bioregional plans for municipalities within the province, (iii) serve as the primary informant for the biodiversity component of the Basic Assessment and Environmental Impact Assessment (EIA) processes, and (iv) guide protected area expansion and biodiversity stewardship programmes in the province (GDARD, 2014). It identifies biodiversity priority areas in a number of major categories namely:

i. Protected Areas
ii. Critical Biodiversity Areas ("Irreplaceable Areas" and "Important Areas")
iii. Ecological Support Areas

The Critical Biodiversity Areas (CBA) are comprised of key areas that are required to meet national biodiversity pattern and process targets. Ecological Support Areas (ESA) are areas required to prevent the degradation of Critical Biodiversity Areas and Protected Areas.

Interrogation of the Gauteng C-Plan revealed the north-western section of the development area as an ESA and the presence of the Abe Bailey Nature Reserve and CBA:Important Area within the 500m regulated area (Figure 3.8).

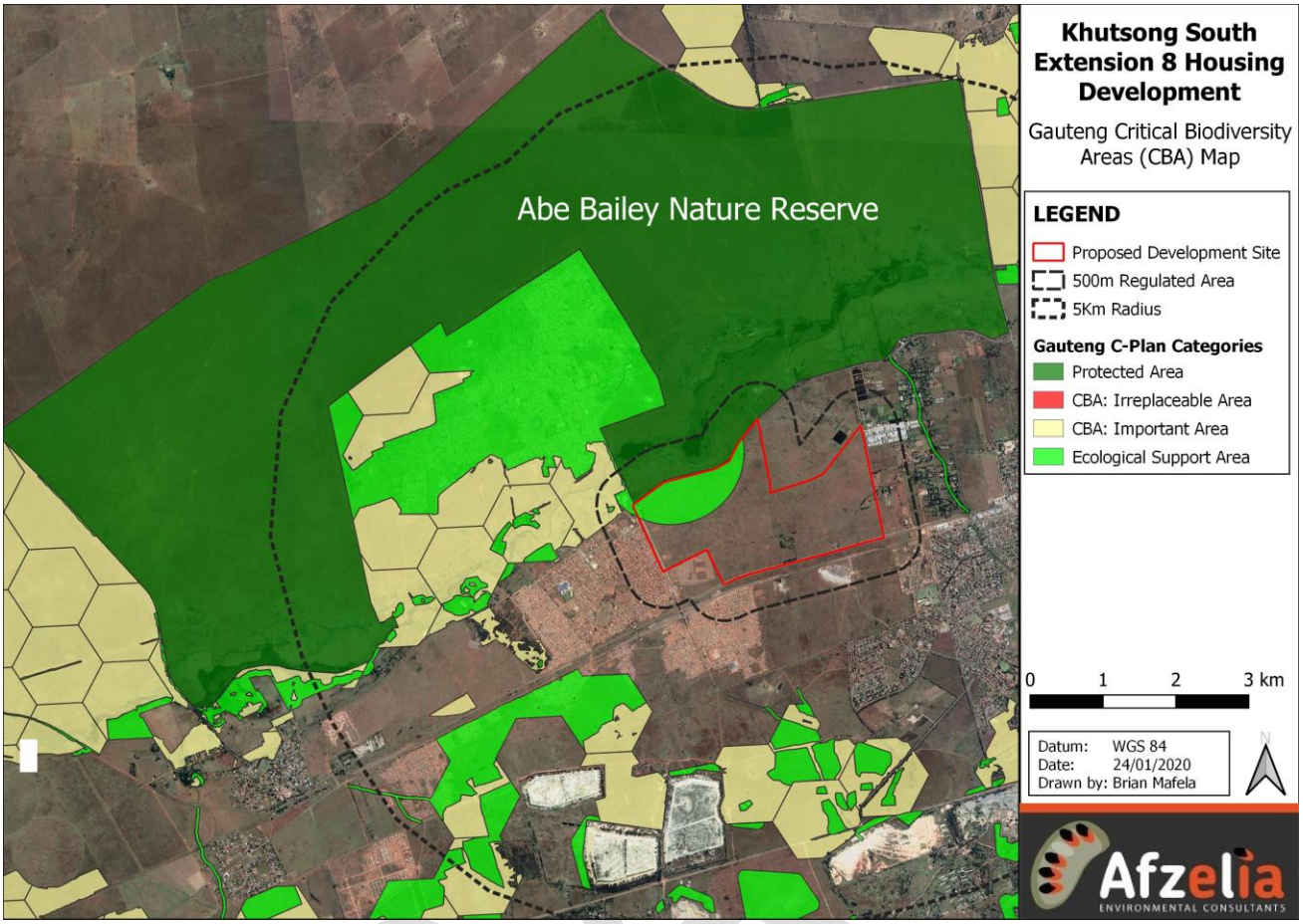


**Figure 3.8:** Gauteng critical biodiversity areas map.

# 4 BRIEF IMPACT ASSESSMENT & MITIGATION

## 4.1 Brief Impact Identification

Urbanisation is known to result in negative impact on the environment and its associated biota.

i. Water resource pollution resulting from (i) poor / incorrect disposal of waste (e.g. solid waste, pesticides, etc.), (ii) poor management of waste management infrastructure such as sewer pipelines, and (iii) poor management of the open spaces resulting in erosion and sedimentation of water resources.
ii. Temporal degradation of the watercourse habitat resulting from undertaking construction activities within the watercourse. Such activities may include construction of bulk water and bulk sewer pipelines across delineated watercourses. Expected impacts include removal of vegetation, excavation and trampling of the watercourse habitat.
iii. Increased flood peaks within the wetland and Mooirivierloop River resulting from catchment hardening. High flood peaks will lead to increased channel incision and sedimentation of downstream resources.
iv. The reduction of the wetland buffer and increased water pollution within the wetland and river will likely result in the decline of aquatic biota such as amphibians, fish and invertebrates.

## 4.2 Planning Phase Recommendations

The following planning recommendations are aimed at guiding the development of the layout and selection of construction and wastewater treatment technologies.

### 4.2.1 Wastewater Disposal Recommendations

The following wastewater disposal methods are recommended:

i. Only full waterborne sanitation must be provided to each unit.
ii. Linking to an existing sewer infrastructure must be given priority over setting up an onsite treatment plant.

Stormwater is generally a major problem with urban developments due to increased hardened surfaces which restrict infiltration but promote increased runoff. It is therefore of paramount importance that sustainable stormwater management methods are implemented for developments with hardened surfaces. The general principle for stormwater management is to reduce the rate of runoff to a predevelopment state and ensure that runoff is not concentrated onto adjacent neighbouring sites or other infrastructure. This principle is in line with the eThekwini Municipality's stance on management of stormwater with the municipality. In this regard we recommend the following mitigation measures:

### 4.2.2 Stormwater Management Recommendations

**Point-Source Mitigation Measures**

i. Hardened surfaces such as driveways, paved walkways, paved yards etc. must be kept to a minimum. If required, porous paving such as block paving must be used in favour
ii. All units must have rainwater harvesting infrastructure. A common and acceptable technology is diverting stormwater from the gutter into Jo-jo tanks for storage. Harvested water can then be used for gardening purposes as an example. The acceptable storage ratio for rainwater tanks is 60% of the volume of the tank. In other words, when calculating the volume of storage required (on the 1 $m^3$ to 40 $m^2$ area) then 60% of the rainwater tank volume may be claimed on the assumption that the tank is 40% full at any given time.
iii. Runoff generated by arterial roads must be handled through use of grassed swales. Where required grassed swales can be reinforced with gabion mattresses to prevent erosion. Short runner grasses are preferred for this technology.
iv. Grassed swales must be designed to divert runoff away from the road and into the veld at regular intervals. This reduces discharge quantities at each discharge point and thus minimising the risk of erosion.
v. Stormwater must never be discharged into the sewer infrastructure. The two must always be kept separate.

**End-point Mitigation Measures**

In the event that point-source mitigation measures are not adequate to handle stormwater end-point mitigation measures will need to be implemented. These include:

vi. Stormwater over flows from rainwater harvesting infrastructure and any other infrastructure must be discharged into a water retaining structure such as a soakpit if the soil and geological profiles allow.
vii. Soakpits must be constructed at least 3m away from buildings to avoid any water damage to infrastructure.
viii. All soakpits must be designed to allow for removal of accumulated silt, organic material and any other wind-blown material from the soakpit in order to ensure continued effective functioning.
ix. A series of smaller stormwater outlets should be considered over a few large outlets.
x. All stormwater generated by the development must be attenuated onsite and within the property boundary.

# 5 APPLICABLE ENVIRONMENTAL PROCESSES & APPLICATIONS

## 5.1 Activities Triggered According to the National Environmental Management Act

Review of the EIA Regulations (2014) promulgated in terms of the National Environmental Management Act, 1998 (Act 107 of 1998) as amended under Government Notice No. 982, 983 , 964 and 985 of 04 December 2014 read in conjunction with Regulations (GNR) 324, 326 and 327 of 07 April 2017 indicate that the proposed Khutsong South Extension 8 housing development constitutes Listed Activities namely Listed Activity No. 9, 10, 12, 19, 27, 28 of Listing Notice 1 and Listed Activity 15 of Listing Notice 2. A brief description on the Listed Activity is provided in Table 5.1 below. Since the proposed development constitutes Listed Activities, an application for Environmental Authorisation will need to be made to the Gauteng Department of Agriculture and Rural Development (GDARD) prior to commencing with construction. The application will need to follow a Scoping and Full Environmental Impact Assessment (Scoping and Full EIA) process.

**Table 5.1:** Brief description of applicable Listed Activities.

| Listing Notice | Activity number | Description of the listed activity | Rationale |
|---|---|---|---|
| Listing Notice 1 | 9 | The development of infrastructure exceeding 1 000 metres in length for the bulk transportation of water or stormwater –<br>(i) With an internal diameter of 0.36 metres or more; or<br>(ii) With a peak throughput of 120 litres per second or more. | This activity will only be confirmed once project details become available. |
| | 10 | The development and related operation of infrastructure exceeding 1 000 metres in length for bulk transportation of sewage, effluent, process water, waste water, return water, industrial discharge or slimes –<br>(i) With an internal diameter of 0.36 metres or more; or<br>(ii) With a peak throughput of 120 litres per second or more | This activity will only be confirmed once project details become available. |
| | 12 | The development of –<br>(iii) Infrastructure or structures with a physical footprint of 100 square metres or more<br>Where such development occurs –<br>(a) Within a watercourse; or<br>(b) Within 32 metres of a watercourse, measured from the edge of the watercourse | This activity will only be confirmed once an infield watercourse delineation has been undertaken. |
| | 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. | This activity will only be confirmed once an infield watercourse delineation has been undertaken. |
| Listing Notice 2 | 15 | Clearance of an area of 20 hectares or more of indigenous vegetation. | The proposed development will result in the clearance of approx. 412Ha of indigenous vegetation. |

### 5.2 Activities Triggered According to the Waste Management Act

The need for a Waste Management Licence could not be established due to lack of project details.

### 5.3 Activities Triggered According to the Mineral and Petroleum Resources and Development Act

The proposed Khutsong South Extension 8 housing development does not constitute a Listed Activity that requires an application for a Mining Right or Mining Permit as contemplated in the Mineral and Petroleum Resources and Development Act, 2002 (as amended), the NEMA (No 107 of 1998), and the EIA Regulations (2014) (as amended).

### 5.4 Applicable Water Uses According to the National Water Act

The proposed development likely constitutes 3 water uses as defined in the National Water Act. These include Section 21 (a), (c) and (i). A description of these uses is provided in Table 5.3 below.

**Table 5.2:** Brief description of applicable Listed Activities.

| Activity No. | Water Use | Rationale |
|---|---|---|
| Section 21 (a) | Taking water from a water resource | i. Abstraction of water from the Mooirivierloop River for use during the construction phase of the project constitutes a Section 21 (a) water use. |
| Section 21 (c) | Impeding or diverting the flow of water in a watercourse. | i. The proposed development constitutes a Section 21 (c) and (i) water use due to the presence of watercourses (wetlands and rivers) within the impact zone of the housing development. This is a standard requirement for all developments occurring within 500m of a wetland. |
| Section 21 (i) | Altering the bed and banks of a watercourse or characteristics of a watercourse. | |

### 5.5 General Authorisation Exemption

The General Authorisation (GA) for the impeding or diverting the flow of water in a watercourse (Section 21 c) or altering the bed, banks, course or characteristics of a watercourse (Section 21 i) as contemplated in the National Water Act (Act No. 36 of 1998) was implemented to replace the need for a water user to apply for a licence provided that the water use is within the limits and conditions of this GA. However, according to the Government Notice 509 of 2016, *"the GA does not apply:*

*a) to the use of water in terms of section 21(c) or (i) of the Act for the rehabilitation of a wetland as contemplated in General Authorisation 1198 published in Government Gazette 32805 dated 18 December 2009;*
*b) to the use of water in terms of section 21(c) or (i) of the Act within the regulated area of a watercourse where the Risk Class is Medium or High as determined by the Risk Matrix;*
*c) in instances where an application must be made for a water use license for the authorisation of any other water use as defined in section 21 of the Act that may be associated with a new activity;*
*d) where storage of water results from the impeding or diverting of flow or altering the bed, banks, course or characteristics of a watercourse; and*
*e) to any water use in terms of section 21(c) or (i) of the Act associated with construction, installation or maintenance of any sewerage pipelines, pipelines carrying hazardous materials and to raw water and wastewater treatment works."*

As per exclusion (e) from above-mentioned exclusions from the GA, the installation of sewer pipelines does not qualify for a GA. Therefore, the entire project will need to be authorised through an application for a Water Use Licence.

# 6 WAY FORWARD

## 6.1 Authorisations, Licences & Permits Required

Prior to commencing construction, the following authorisations, licences and permits should be applied for:

i. An **Environmental Authorisation** must be applied for from the Gauteng Department of Agriculture and Rural Development (GDARD) through a Scoping and Full EIA process;
ii. A **Waste Management Licence** may need be applied for from the GDARD; and
iii. A **Water Use Licence** must be applied for from the Gauteng Department of Water and Sanitation.

## 6.2 Specialist Studies Required

In order to submit a successful application for abovementioned authorisations and licences, specialist studies listed in Table 6.1 must be undertaken to inform the decision-making process. Please note that the list is not exhaustive but an indication of confirmed environmental studies required. During the EIA process additional may be requested.

**Table 6.1:** Brief description of applicable Listed Activities.

| Specialist Study | Rationale | Terms of Reference |
|---|---|---|
| Wetland and River Habitat Impact Assessment | The proposed development occurs within 105m of a desktop delineated wetland habitat. | i. Infield wetland delineation.<br>ii. Assessment of the present ecological state (PES), ecosystem services provided by and the ecological importance and sensitivity (EIS) of each delineated wetland.<br>iii. Assessment of the significance of potential adverse impacts.<br>iv. Determination of the wetland buffer width.<br>v. Provision of mitigation measures. |
| Aquatic Ecological and Surface Water Quality Impact Assessment | The proposed development occurs within 120m of a perennial river (Mooirivierloop River). | i. Infield riparian habitat delineation.<br>ii. Assessment of the present ecological state (PES) and the ecological importance and sensitivity (EIS) of each delineated riparian habitat.<br>iii. Assessment of the quality of water, fish and macroinvertebrates in the Mooirivierloop River.<br>iv. Assessment of the significance of potential adverse impacts.<br>v. Determination of the river buffer width.<br>vi. Provision of mitigation measures. |
| Terrestrial Ecological Impact Assessment | The proposed development footprint is virgin land characterised by a medium tall grassland. | i. Infield vegetation assessment.<br>ii. Identification of conservation important vegetation communities.<br>iii. Assessment of the present ecological state (PES) and the ecological importance and sensitivity (EIS) of delineated vegetation communities.<br>iv. Identification and geotagging of conservation important species.<br>v. Assessment of the significance of potential adverse impacts.<br>vi. Provision of mitigation measures. |
| Agricultural Potential Impact Assessment | The proposed development footprint is virgin land which may be of agricultural significance. | i. The terms of reference are to be determined by an agricultural specialist. |

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|---|---|---|
| Level 1 Heritage Impact Assessment | The proposed development footprint may contain historic features worth preserving or salvaging. | i. The terms of reference are to be determined by a heritage specialist. |
| Palaeontological Impact Assessment | The proposed development footprint may contain historic features worth preserving or salvaging. | i. The terms of reference are to be determined by a Palaeontologist. |

# 7 CONCLUSION

The need and desirability of the Khutsong South Extension 8 housing development is compelling and undeniable. However, it is important to ensure that the proposed development is implemented in an environmentally sustainable manner. Review of desktop data highlighted the presence conservation areas such as the Abe Bailey Nature Reserve and ecological support areas (ESAs), along with sensitive habitats such as a channelled valley bottom wetland (CVB1) and 2 river units (R1 and R2). These conservation areas and habitats will need to be protected from degradation resulting from the implementation of the project.

Prior to commencement of construction, there are authorisations and licence that would need to be obtained. These include (i) an **Environmental Authorisation** which will need to be applied through a Scoping and Full EIA process from the Gauteng Department of Agriculture and Rural Development (GDARD) through a Scoping and Full EIA process; and (ii) a **Water Use Licence** from the Gauteng Department of Water and Sanitation. The need for a **Waste Management Licence** from the GDARD will be established once details of the proposed development area provided to Afzelia Environmental Consultants.

In order to submit a successful application for abovementioned authorisations and licences, the following environmental studies amongst other will need to be undertaken; (i) a Wetland and River Habitat Impact Assessment, (ii) an Aquatic Ecological and Surface Water Quality Impact Assessment, (iii) a Terrestrial Ecological Impact Assessment, (iv) an Agricultural Potential Impact Assessment, (v) a Level 1 Heritage Impact Assessment, and (vi) a Paleontological Impact Assessment.

# 8 REFERENCES

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