Kuhle
Environmental Consult (Pty) Ltd

BASIC ASSESSMENT REPORT FOR

The proposed Parys Residential Development on Portions 95 and 96 of the farm Rietpoort 518 IQ situated north of Parys, North West Province.

NAME OF APPLICANT	**Plaasrivier Projects (Pty) Ltd**
TEL NO	079 522 9602
REF NUMBER	

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List of abbreviations

AADD	Average Annual Daily Water Demand:
°C	Degrees Celsius
°F	Degrees Fahrenheit
BAR	Basic Assessment Report
BGIS	Biodiversity Geographical Information Systems
CBA	Critical Biodiversity Area
CV	Curriculum Vitae
EAP	Environmental Assessment Practitioner
E	East
EIA	Environmental Impact Assessment
EMPr or EMPR	Environmental Management Programme
ESA	Ecological Support Area
GNR	Government Notice Regulation
ha	Hectares
I&AP	Interested and Affected Party
kg	Kilogram
km	Kilometer
km²	Square Kilometer
l or L	Litres
ℓ /s	Litres per second
m	Meters
ML	Megalitre
mm	Millimetres
PPP	Public Participation Process
RE/Re	Remaining Extent
SANBI	South African National Biodiversity Institute
S	South
SWSA	Strategic Water Source Areas
WULA	Water Use License Application

DISCLAIMER

APPLICANT DETAILS

Project applicant:	Plaasrivier Projects (Pty) Ltd		
Property	Portions 95 and 96 of the farm Rietpoort 518 IQ		
Responsible position, e.g. Director, CEO, etc.:	Owner/Director		
Contact person:	Mr. Hugo Johannes Hayes		
Postal address:	13 A Wes Street Parys Free State		
Postal code:	9585	Cell:	079 522 9602
Telephone:		Fax:	
E-mail:	hugo@profectionqs.co.za		

ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

(1) The environmental impact assessment process must be undertaken in line with the approved plan of study for environmental impact assessment.
(2) The environmental impacts, mitigation and closure outcomes as well as the residual risks of the proposed activity must be set out in the environmental impact assessment report.

OBJECTIVE OF THE ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

2. The objective of the environmental impact assessment process is to, through a consultative process-
(a) determine the policy and legislative context within which the activity is located and document how the proposed activity complies with and responds to the policy and legislative context;
(b) describe the need and desirability of the proposed activity, including the need and desirability of the activity in the context of the preferred location;
(c) identify the location of the development footprint within the preferred site based on an impact and risk assessment process inclusive of cumulative impacts and a ranking process of all the identified development footprint alternatives focusing on the geographical, physical, biological, social, economic, heritage and cultural aspects of the environment;
(d) determine the--
(i) nature, significance, consequence, extent, duration and probability of the impacts occurring to inform identified preferred alternatives; and
(ii) degree to which these impacts-
(aa) can be reversed;
(bb) may cause irreplaceable loss of resources, and
(cc) can be avoided, managed or mitigated;
(e) identify the most ideal location for the activity within the preferred site based on the lowest level of environmental sensitivity identified during the assessment;
(f) identify, assess, and rank the impacts the activity will impose on the preferred location through the life of the activity;
(g) identify suitable measures to avoid, manage or mitigate identified impacts; and
(h) identify residual risks that need to be managed and monitored.

SCOPE OF ASSESSMENT AND CONTENT OF ENVIRONMENTAL IMPACT ASSESSMENT REPORTS

3. Contact Person and correspondence address

A. DETAILS OF:

i) The EAP who prepared the report

ii) Expertise of the EAP

Name of Practitioner	Danie Labuschagne
Qualifications	Master's Degree in Geography and Environmental Management. EAPASA: 2019/1122 Pr.Sci.Nat: 117285 (refer to **Appendix A**)
Contact details	Cell No.: (061) 970 2449 e-mail address: danie.kuhle@outlook.com

Summary of the EAP's past experience. (Attach the EAP's curriculum vitae as **Appendix B**)

Kuhle Environmental Consult (Pty) Ltd was contracted by **Plaasrivier Projects (Pty) Ltd** as an independent environmental consultant to undertake the Basic Assessment Process for the proposed Parys Residential Development on Portions 95 and 96 of the farm Rietpoort 518 IQ situated north of Parys, North West Province.

Kuhle Environmental Consult (Pty) Ltd is a professional environmental consultancy with extensive experience in the mining and non-mining industry which provide a holistic environmental management service, including environmental assessment and planning to ensure compliance with relevant environmental and mining legislation. Kuhle Environmental Consult (Pty) Ltd benefits from the pooled resources, diverse skills and experience in the environmental and mining field held by its team and outsourced specialists; which has been actively involved in undertaking environmental / specialist studies for a wide variety of projects throughout South Africa. Kuhle Environmental Consult (Pty) Ltd does not have any interest in secondary developments that may arise out of the authorisation of the proposed project.

Danie Labuschagne has experience consulting in the environmental field. His key focus is on environmental assessment, advice and management and ensuring compliance to legislation and guidelines. He is currently involved in undertaking EIAs for several mining and non-mining projects across the country (refer to **Appendix B** for CV).

B. THE LOCATION OF THE ACTIVITY

Farm Name:	Portions 95 and 96 of the farm Rietpoort 518 IQ
Application area footprint (Ha)	2.4679ha
Magisterial district:	Dr Kenneth Kaunda District Municipality
Distance and direction from nearest town	The property is adjacent (north) to the town of Parys, and falls within the North West Province.
21 digit Surveyor General Code for each farm portion	1. T0IQ00000000051800095 2. T0IQ00000000051800096
Application to include	• 57 residential units ranging from high-medium density, • with associated infrastructure. • A package plant will be constructed to treat the sewage generated by a proposed residential development.

C. PLAN WHICH LOCATES THE PROPOSED ACTIVITY/ACTIVITIES APPLIED FOR AS WELL AS ASSOCIATED STRUCTURES & INFRASTRUCTURE AT AN APPROPRIATE SCALE

Application area

Below is the middle point coordinate of the proposed development which is illustrated by **figure 1**.

Site	Latitude	Longitude
Proposed Parys Residential Development.	26°53'43.17"S	27°26'41.62"E

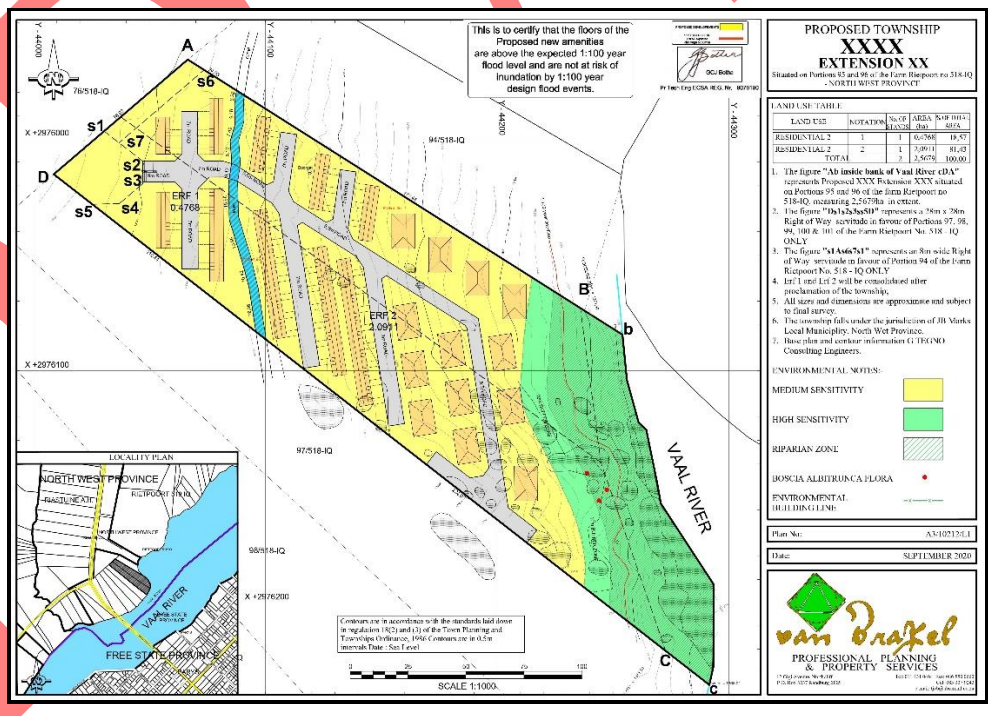

Figure 1: Proposed development illustration (**Appendix D**)

Locality Map

(show nearest town, scale not smaller than 1:250000 attached as **Appendix C).**

A Locality map is attached in **Appendix C** and on **figure 2** below.

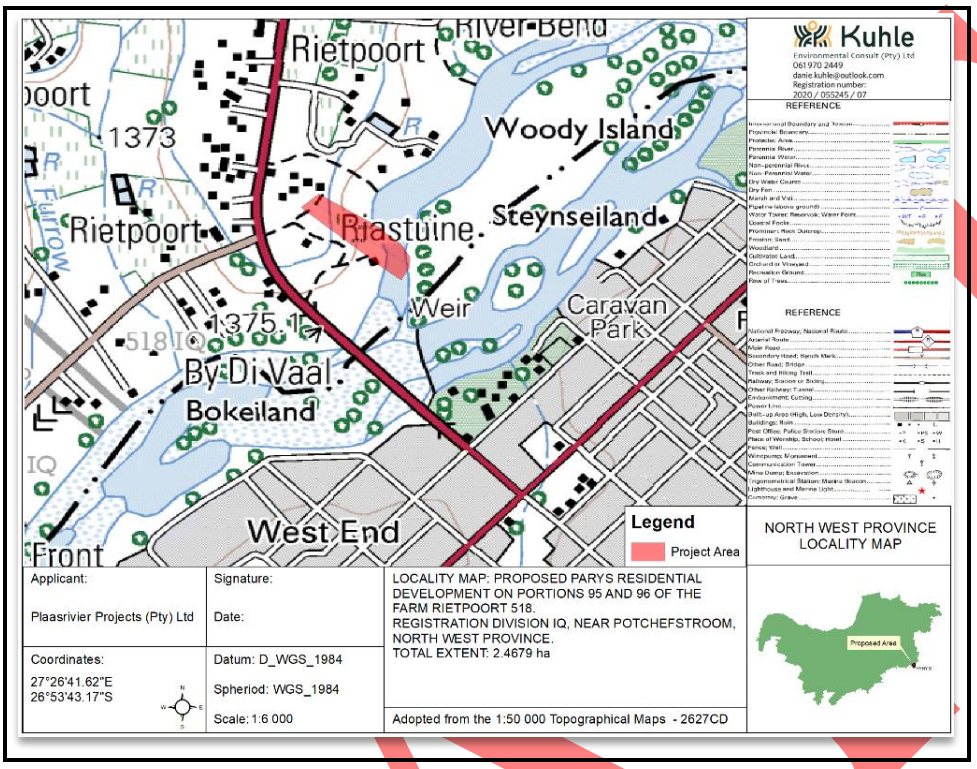

Figure 2: Locality map of the proposed site

Site layout Map

A Site layout map is attached in **Appendix D** and on **figure 3** below.

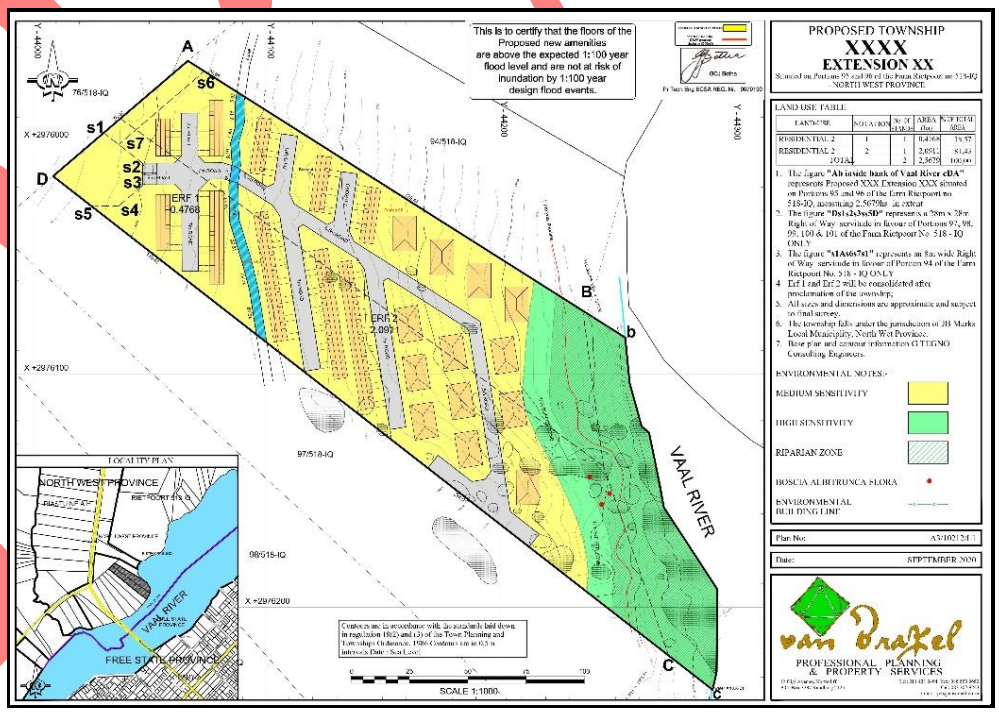

Figure 3: Site layout map of the proposed site

D. DESCRIPTION OF THE SCOPE OF THE PROPOSED OVERALL ACTIVITY.

i. Listed & Specified Activities

Indicate the number and date of the relevant notice:	**Activity No (s) and Activity Description (in terms of the relevant notice)**	**Describe each listed activity as per project description**
e.g. GN.R. 327, 4 December 2014	*5(i) the development and related operation of facilities or infrastructure for the concentration of more than 1000 poultry per facility within an urban area excluding chicks younger than 20 days*	*Construction of broiler houses that will accommodate 2000 chickens per facility within urban area*
Listing Notice GNR 327, Activity 19: 07 April 2017	"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; but excluding where such infilling, depositing, dredging, excavation, removal or moving—(a)will occur behind a development setback;(b)is for maintenance purposes undertaken in accordance with a maintenance management plan;(c)falls within the ambit of activity 21 in this Notice, in which case that activity applies;(d)occurs within existing ports or harbours that will not increase the development footprint of the port or harbour; or(e)where such development is related to the development of a port or harbour, in which case activity 26 in Listing Notice 2 of 2014 applies."	Small infrastructure like fences, small bridges, etc. are expected to be erected within the 1:100 year flood line.
Listing Notice GNR 327, Activity 24: 07 April 2017	"The development of a road—(i) for which an environmental authorisation was obtained for the route determination in terms of activity 5 in Government Notice 387 of 2006 or activity18	The existing gravel road will be upgraded and widened in order to accommodate the access of the residential area.

	in Government Notice 545 of 2010; or(ii) with a reserve wider than 13,5 meters, or where no reserve exists where the road is wider than 8 metres; but excluding a road—(a) which is identified and included in activity 27 in Listing Notice 2 of2014;(b) where the entire road falls within an urban area; or(c) which is 1 kilometre or shorter."	
Listing Notice GNR 327, Activity 27: 07 April 2017	"The clearance of an area of 1 hectares or more, but less than 20 hectares of indigenous vegetation."	The Applicant intends to clear 2.4679ha of land for the construction of residential units and associated infrastructure.
Listing Notice GNR 327, Activity 28: 07 April 2017	"Residential, mixed, retail, commercial, industrial or institutional developments where such land was used for agriculture, game farming, equestrian purposes or afforestation on or after 01 April 1998 and where such development:(i) will occur inside an urban area, where the total land to be developed is bigger than 5 hectares; or(ii) will occur outside an urban area, where the total land to be developed is bigger than 1 hectare; excluding where such land has already been developed for residential, mixed, retail, commercial, industrial or institutional purposes."	Planned rezoning of the land from agricultural to residential land use. The site is currently zoned "Agricultural". An application is made in terms of Section 56 of the Tlokwe City Council Spatial Planning and Land Use Management By-Law, 2015; read together with the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) to establish a township consisting of two (2) erven, each erf will be zoned "Residential 2" with a density of 57 residential units
Listing Notice GNR 324, Activity 4: (h) (v) 07 April 2017	"Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the competent authority; or."	The application area falls within the CBA1 and ESA1 areas.

ii. Description of the associated structures & infrastructure related to the development

(Describe Methodology or technology to be employed, and for a linear activity, a description of the route of the activity

Plaasrivier Projects (Pty) Ltd (the Applicant) intends to develop a Residential Development east of the R53 side travelling from Fochville to Parys. The proposed development will consist of two (2) erven, each erf will be zoned "Residential 2" with a density of 57 residential units. The 57 units will consist of 13 Units of 250m² footprints (Townhouse Units), and 44 Units of 96m² footprints (Duplex Units). The proposed development is situated adjacent (north) to the town of Parys and falls within the North West Province.

The units are to be sectionalised and sold off.

It is the intention of the applicant to consolidate the two (2) erven once the township has been promulgated, therefore both erven must be granted the same zoning and development controls.

The following information were obtained from the Engineering Services Planning Report, which were conducted by GTEGNO Consulting Engineers CC (2020) **(Appendix H (i))**:

Design Standards

The design criteria are based on the planning principles in the Guidelines for the Provision of Engineering Services and Amenities in Residential Township Development and Guidelines for Human Settlement Planning and Design (Red Book) as issued by the CSIR and the requirements of local authority, namely, JB Marks Local Municipality.

Description	**Requirements**
Max Height (Storeys)	2
Parking Bays (min 2 / Unit	57 Covered and 57 Uncovered
*The indications above are designed within accordance to the JB Marks Town Planning Scheme: Schedules 1 and 3	

Access & Roads

Access to the proposed residential development will be obtained from an existing service road that joins the R53 at the Kopjeskraal Road (Road D636). The service road extends into the proposed development in a south-western direction, to serve the private road. (***Point A- service road, Point B- Internal Access on Appendix H (i)***).

The construction costs relating to the internal road will be the responsibility of the developer. The local authority will be responsible for the external service road up to the entrance of the development.

The street widths of the internal and external roads will be:

- Road widths ranging 5.5m – 7 m

The geometrical design of the internal parking areas and access road will be according to the Guidelines for Engineering Services and Amenities specifications.

The access and parking areas within the newly proposed residential development will become the responsibility of the owner once the construction phase is completed.

Find the proposed Intersection Layout Plan attached as **Appendix H (ii)**.

The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) further states the following **(Appendix H (iii))**:

No formal access exists via a registered Right of Way Servitude within the Title Deeds or Surveyor General Diagrams. The surface owners of Portions 94, 95, 96, 97, 98, 99, 100 & 101 of the Farm Rietpoort No. 518 – IQ share a common access (motorised gate) to the R53. Therefore, access to the site will be gained via this existing access point located on Portion 101 of the Farm Rietpoort No. 518 – IQ. This means that residents are currently and will in future be travelling across the various portions of Portions 97, 98, 99, 100 & 101 of the Farm Rietpoort No. 518 – IQ.

The proposed township layout suggests that a formal Right of Way Servitude should be registered to allow formal access to all the relevant farm portions in the form of:

- Erf 1/ 2 is subject to a 28m x 28m Right of Way Servitude in favour of Portions 97, 98, 99, 100 & 101 of the Farm Rietpoort No. 518 – IQ only.
- Erf 1/ 2 is subject to an 8m wide Right of Way Servitude in favour of Portion 94 of the Farm Rietpoort No. 518 – IQ only.

Stormwater

Two options can be considered for the stormwater management:

The stormwater drainage to be considered will be by means of surface runoff within the proposed development area towards the south eastern portion and then distributed back into the Vaal River.

Stormwater drainage will be spread in order to make sure that concentration of storm water will not occur. (***Point C in Appendix H (i)***).

A stormwater pipe system will only be provided where the stormwater capacity, which by calculations, whereby the road surface runoff exceeds the total runoff flow.

The construction cost for the type of stormwater system within the newly proposed development will be the developer's responsibility and of which must adhere to the specification and design standards of the Local Authority. The final design can be supplied once a Professional Engineer has been appointed.

After construction of the above-mentioned stormwater network system, the developer will be responsible to maintain these services.

The 1:100 flood line had an affect to the above-mentioned development. Also, an Ecological Fauna and Flora Habitat Survey has been complied by Anthene Ecological CC – R.F. Terblanche **(Appendix H(iv))**, whereby the report determined the extent of the Riparian Zone (with a 10m buffer) and found that the Riparian Zone is ecologically disturbed, contains no threatened plant or animal species but does contain three (3) examples of a protected tree species named *Boscia albitrunca* of which had an affect on the design of the proposed development. Refer to the flood line position and proposed "Buffer Area" as indicated on **Appendix D**.

Water uses and supply:

There will be no municipal supply of water to the development, the developer will therefore be responsible for sufficient bulk water supply and water pressure inside the development. Water will be supplied to the development by means of abstraction from an on-site borehole (BH1) (-26.894464° S, 27.444080° E). The borehole will then be connected to the bulk storage tank(s) of 78 800L. A 75mm uPVC class 9 gravity pipe will have to be installed from the tank(s) to supply the development. The developer will be responsible for the design and construction of the internal water supply network to the requirements of the Local Authority.

BH1 was installed on-site up to a depth of 145m. Based on the test results, the borehole can be pumped at 1L/s for 12-hours, or alternatively a float switch should be installed within the water storage tank. Based on the aquifer tests and groundwater reserve determination, a total volume of 15 768m^3/a (15768000L/a) is available from the borehole.

It is advised that a bulk meter must be installed at the above-mentioned position from where the internal water network is connected.

The portable water tanks will operate with a pressure pump and will have one duty and on standby pump, with a backup generator.

The maximum projected volume of water consumption is as follows:

Type of Development	No.	Consumption ℓ/c/d	Consumption ℓ/day/Unit	AADD (ℓ/ day)	Peak Factor	Peak Flow (ℓ/s)
96m³ Units	44	150 x 4	600	26 400	22	10.032
250 m³Units	13	200 x 5	1000	13 000		
Total:	**57**	-	**1600**	**39 400**	**22.00**	**10.032**

The average annual daily water demand (AADD):

Total = 39 400 ℓ/day, which = 0.456 ℓ /s

The peak demand: Total = 4.013 ℓ/s

Fire requirement (Low – Risk – Group 1): 1 x 8.33 ℓ/s = 8.33 ℓ/s

The peak demand total plus peak including Fire requirement demand: Total = **8.789 ℓ/s** (*Fire Water storage is calculated for a 2-hour duration fire using the 8.33 ℓ/s flow rate for a borehole instead of municipal water, as there is no bulk water connection available from the municipality.)*

This means that the total water storage that should be supplied by the developer for portable water and fire storage is 2 x 39 400 ℓ/day (48-hour storage) + 2 x 60 x 60 x 8.33 ℓ/s. Therefore, the total storage: **Total Storage = 138 776 ℓ**

Ablution / Sanitation

Due to the absence of bulk sewer services, the Local Authority will not be able to provide services to the proposed development. Therefore, the developer will be responsible for the design, construction of the internal sewer network and the bulk services (processing) of the sewage.

No services are installed on the proposed development area, therefore a newly proposed internal gravitational system will have to connect to a proposed package plant.

The newly proposed internal 160mm diameter uPVC Solid wall Class 34 gravitational sewer reticulation system will connect to the proposed package plant at **Point F in Appendix H(i)**. The sewage will be treated and then be re-used for irrigation purposes. *It should be noted that the package plant effluent outflow should match or surpass the Special Condition as set out by DWS guidelines for private / single package plants discharging into water courses (here it is the Vaal River).*

All the buildings will be provided with individual connection points, cleaning and rodding eyes, connected to the main internal main sewer pipeline. The developer will be responsible for the cost of the construction of the internal sewerage gravitational system to adhere to the specification and design standards of the Local Authority.

After construction, the internal sewer network will become the responsibility of the developer to maintain.

The maximum projected total average daily sewer effluent flow is as follows:
Peak factor = 1.00
Percentage allowed for extraneous flow = 15% (included)
Flow per unit: 900 ℓ/day/250 m² unit & 720 ℓ/day/96 m²

(13 Units x 900 ℓ/day/unit + 44 Units x 720 ℓ/day/unit) x 1.15 / 86400 x 2.50 = 1.45 ℓ/s

Total Average Annual Daily Demand (AADD) = 49 887 ℓ /day = 0.58 ℓ/s

Total Peak Design Flow = 1.45 ℓ/s

Waste Management / Solid Waste

All solid waste generated, by the residential development, will be collected by the Local Authority at the relevant entrances of the development and disposed of at the municipal waste disposal site.

The maximum projected volume of normal domestic waste is as follow:

Residential 1: 57 Units x 120 ℓ/week/unit = 6.84 m^3/week

Total: = 6.84 m^3/week

The following information were obtained from the Electrical Services Report, which were conducted by Denobili Consulting (2020) **(Appendix H(v))**:

Power supply

The following table summarizes the maximum power demand estimation:

Maximum demand estimation

Item	Qty	Description	ADMD	Max Demand (kVA)
1	44	Duplex 2 Bed units	3.3kVA	146
2	13	Townhouses	4.8	63
3	-	Streetlights / External	4	4
			Total	**213**

* Energy efficiency not taken into consideration.

The estimated load required for the proposed development is 213kVA or 307A three phase.

The developer will be making use of alternatives such as solar / gas for hot water generation as per SANS 10400:X of the National building Act guidelines. This Act states that 50% of the hot water to be generated must be by means of alternative energy. Gas will also be used for cooking purposes.

The use of alternative energy sources will reduce the demand and load on the electrical grid.

The area adjacent to the proposed residential development is supplied by ESKOM through single phase. The closest supply line to the proposed development is found on Portion 97/518. The ESKOM pole number for that plot is no. EKK 92/4.

The load flow analysis was performed by Eskom Free State Operation Unit planning division in Bloemfontein.

ESKOM will calculate the cost to be able to provide an electrical connection for the development.

ESKOM has indicated that sufficient electrical capacity is available on the overhead rural network to accommodate the indicted 212kVA.

E. POLICY AND LEGISLATIVE CONTEXT

Title of legislation, policy or guideline:	Administering authority:	Promulgation Date:
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended).	National & Provincial	27 November 1998

National Environmental Management Act No. 107 of 1998 as amended.	Department of Environmental Affairs	27 November 1998
Constitution of South Africa Act 108 of 1996	National	18 December 1996
National Environmental Management: Biodiversity Act No. 10 of 2004	Department of Environmental Affairs	7 June 2004
National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)	National & Provincial	1 July 2009
EIA regulations under NEMA	Department of Environmental Affairs	14 December 2014
Conservation of Agricultural Resources Act,1983 (Act No. 43 of 1983)	Department of Agriculture Forestry and Fisheries	1 June 1984
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).	National and Provincial	11 September 2004
National Water Act, 1998 (Act No. 36 of 1998).	National	20 August 1998
Tlokwe City Council Spatial Planning and Land Use Management By-Law, 2015	Municipal	
Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)	National	

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

Legislation, policy of guideline	Description of compliance
National Environmental Management Act No. 107 of 1998 as amended.	The project triggers activities listed in the 2014 EIA NEMA regulations (As Amended) and the activities should be approved prior to construction.
Constitution of South Africa Act 108 of 1996	The project will ensure that the environment is not harmful to anyone during construction and operational as everyone has the right to a healthy environment.
National Environmental Management Waste Act, 2008 (Act No. 59 of 2008)	The project will generate waste during all stages (construction, operation and decommission) and the waste should be managed as per the waste act. However, during the construction and operation of the proposed development, the basis of the National Environmental Management Waste Act, 2008 (Act No. 59 of 2008) hierarchy focusing on waste reduction and reuse will be implemented.

2014 EIA regulations (As Amended) under NEMA	The project is being applied for.
Conservation of Agricultural Resources Act,1983 (Act No. 43 of 1983)	For the management of alien species that will and might grow on site and ways to manage them.
National Water Act, 1998 (Act No. 36 of 1998).	The objectives of the National Water Act, 1998 (Act No. 36 of 1998) have been addressed and management measures have been compiled in this Basic Assessment Report for the protection of natural water resources. Furthermore, the application process of an Water Use License is underway.
National Environmental Management Biodiversity Act, 2004 (Act No. 10 of 2004).	The site contains one Protected tree species *Boscia albitrunca* (Shepherd's Tree). Few individuals of *Boscia albitrunca* are present at the riparian zone at the site (Figure 2). In terms of a part of section 15(1) of the National Forests Act No. 84 of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister. No development will take place within the Riparian Zone and the 10m buffer.
National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004).	No listed activities are triggered in terms of GNR. 893 printed in terms of the National Environmental Management Air Quality Act, 2004 (Act No. 39 of 2004). The Environmental Management Plan, however still focuses on the minimisation of any emissions resulting in deterioration of the air quality.
Tlokwe City Council Spatial Planning and Land Use Management By-Law, 2015	Application is made in terms of Section 56 of the Tlokwe City Council Spatial Planning and Land Use Management By-Law, 2015; read together with the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) to establish a township consisting of two (2) erven, each erf will be zoned "Residential 2" with a density of 57 residential units.
Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013)	Application is made in terms of Section 56 of the Tlokwe City Council Spatial Planning and Land Use Management By-Law, 2015; read together with the Spatial Planning and Land Use Management Act, 2013 (Act 16 of 2013) to establish a township consisting of two (2) erven, each erf will be zoned "Residential 2" with a density of 57 residential units.

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F. NEED AND DESIRABILITY OF THE PROPOSED ACTIVITIES

(Motivate the need and desirability of the proposed development including the need and desirability of the activity in the context of the preferred location).

No	Question as per guideline	Response	Question as per guideline	Response
NEEDS			**DESIREBILITY**	
1	Is the land use associated with the activity being applied for considered within the timeframe intended by the existing approved SDF agreed to be the relevant environmental authority?	The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) **(Appendix H(iii))** states: As per the *Map C.24: Critical Biodiversity Areas – Tlokwe SDF 2014*, the site is located within a Biodiversity Node, but is identified as a medium critical biodiversity site, therefore there is no need for conservation of the entire extent of the site. Refer to the attached Ecological Fauna and Flora Habitat Survey complied by Anthene Ecological CC **(Appendix H(iv))** for more details. The site falls outside the Vredefort Dome Buffer as per *Map C.28: Heritage Sites & Figure C.15 Vredefort Dome WHS Factor Plan – Tlokwe SDF 2014*. Thus, the Vredefort Dome WHS will not be a limiting	Is the development the Best Practicable Environmental Option for this land/site?	Although the best option is agriculture, the proposed development can also be seen as a Best Practicable Environmental Option for this land/site. The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) **(Appendix H(iii))** states: The primary drive generating the need and desirability to develop the proposed site comes from the existing development found within / around Parys. Parys contains variuos interesting shops and attractions that have been established over the years due to its proximity to larger nodes, such as

		factor for the proposed residential development. The site gains access via the R53 Road, which is identified as a Main Road via the *Map C.29: Adjacent Municipalities – Tlokwe SDF 2014* which can be seen as a form of corridor. Therefore, the proposed development boasts good accessibly. In addition to the district context of the site described above the site is located within a Development Node 3 on a micro level as per the *Figure D.3: Cumulative effect assessment: co Corridor / Study area – Tlokwe SDF 2014.* One of only four (4) development nodes along the Vaal River located on the edge of the JB Marks municipal area. Development along corridors is an important development concept within spatial planning. This is due to the fact that the flow of goods, services & information as well as communication establishes a corridor between nodes, which in turn creates conditions that are potentially favourable for urban development despite		those found within the Gauteng Province. Many of the wealthier residents of Gauteng own a river side holiday home or make use of the many venues/ guest houses/ lodges/ conference centres found within the region to get away from the hustle and bustle of Gauteng. Parys owes a percentage of its growth to the surrounding country estates and available lodging (as well niche shops) that attracts outside populations and leads to economic spending and growth in the town. Therefore, the proposed development will allow for further growth of Parys and its surroundings. It is important for the JB Marks Municipality to understand that a potential development on the edge of their municipal boundary can support the development within a neighbouring local authority; just

		being outside an urban fabric. As per the *Map D12: Municipal Wide SDF – Tlokwe SDF 2014,* the R53 is identified as Secondary Corridor as well as a Tourism Corridor. Therefore, granting further support for the proposed land use and township establishment as the "Main Road" corridor mention above is reconfirmed and an additional type of corridor is identified - Tourism.		as the existing developments of the neighbouring local authority can support a potential development on the edge of the JB Marks municipal boundary. One can suggest that the proposed development must be considered on a regional scale as much as it is considered on a local scale.
2	Should the development, or if applicable, expansion of the town/area concerned in terms of this land use occurs here at this point in time?	The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) **(Appendix H(iii))** states: The primary drive generating the need and desirability to develop the proposed site comes from the existing development found within / around Parys. Parys contains variuos interesting shops and attractions that have been established over the years due to its proximity to larger nodes, such as those found within the Gauteng Province. Many of the wealthier residents of Gauteng own a river side holiday home or make use	Would the approval of this application compromise the integrity of the existing approved and credible municipal IDP and SDF as agreed to by the relevant authorities?	No, the proposed land use is in line with Municipality's objectives.

		of the many venues/ guest houses/ lodges/ conference centres found within the region to get away from the hustle and bustle of Gauteng. Parys owes a percentage of its growth to the surrounding country estates and available lodging (as well niche shops) that attracts outside populations and leads to economic spending and growth in the town. Therefore, the proposed development will allow for further growth of Parys and its surroundings. It is important for the JB Marks Municipality to understand that a potential development on the edge of their municipal boundary can support the development within a neighbouring local authority; just as the existing developments of the neighbouring local authority can support a potential development on the edge of the JB Marks municipal boundary. One can suggest that the proposed development must be considered on a regional scale as much as it is considered on a local scale.		

3	Does the community/area need the activity and the associated land use concerned? This refers to the strategic as well as local level.	The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) **(Appendix H(iii))** states: The primary drive generating the need and desirability to develop the proposed site comes from the existing development found within / around Parys. Parys contains variuos interesting shops and attractions that have been established over the years due to its proximity to larger nodes, such as those found within the Gauteng Province. Many of the wealthier residents of Gauteng own a river side holiday home or make use of the many venues/ guest houses/ lodges/ conference centres found within the region to get away from the hustle and bustle of Gauteng. Parys owes a percentage of its growth to the surrounding country estates and available lodging (as well niche shops) that attracts outside populations and leads to economic spending and growth in the town. Therefore, the proposed development will allow for further growth of Parys and its	Would the approval of this application compromise the integrity of the existing environmental management priorities for the area (e.g. as defined in EMFs), and if so, can it be justified in terms of sustainability considerations?	No, the agricultural sector is one of the identified targeted areas for sectors. The integrity of the existing environmental management priorities for the area will not be compromised by this development.

		surroundings. It is important for the JB Marks Municipality to understand that a potential development on the edge of their municipal boundary can support the development within a neighbouring local authority; just as the existing developments of the neighbouring local authority can support a potential development on the edge of the JB Marks municipal boundary. One can suggest that the proposed development must be considered on a regional scale as much as it is considered on a local scale. Precedents was found of the above mentioned "cross municipal boundary support". A short drive from the bridge crossing the Vaal River (R53) from Parys to the intersection of the R500 & R53 revealed that the near area is well developed with some legal and possible illegal land uses that are not only agricultural in nature but a mix of various land uses. The existing land uses comprise of shops, professional consultant offices, venues/ guest houses/ lodges/ conference centres, pubs & auction		

		ground to name a few. These land uses are supporting and receiving support from Parys and its surrounding population.		
4	Are the necessary services with adequate capacity currently available (at the time of application) or must additional capacity be created to cater for the development?	No. The proposed development will not make use of municipal services and will install its own bulk supply services.	Do location factors favour this land use (associated with the activity applied for) at this place?	Yes. The location provides a peaceful and aesthetic environment. Also, the proposed area is adjacent to the town of Parys. The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) **(Appendix H(iii))** states: The primary drive generating the need and desirability to develop the proposed site comes from the existing development found within / around Parys. Parys contains variuos interesting shops and attractions that have been established over the years due to its proximity to larger nodes, such as those found within the Gauteng Province.

				Many of the wealthier residents of Gauteng own a river side holiday home or make use of the many venues/ guest houses/ lodges/ conference centres found within the region to get away from the hustle and bustle of Gauteng. Parys owes a percentage of its growth to the surrounding country estates and available lodging (as well niche shops) that attracts outside populations and leads to economic spending and growth in the town. Therefore, the proposed development will allow for further growth of Parys and its surroundings. It is important for the JB Marks Municipality to understand that a potential development on the edge of their municipal boundary can support the development within a neighbouring local authority; just as the existing developments of the neighbouring local authority can

				support a potential development on the edge of the JB Marks municipal boundary. One can suggest that the proposed development must be considered on a regional scale as much as it is considered on a local scale. Precedents was found of the above mentioned "cross municipal boundary support". A short drive from the bridge crossing the Vaal River (R53) from Parys to the intersection of the R500 & R53 revealed that the near area is well developed with some legal and possible illegal land uses that are not only agricultural in nature but a mix of various land uses. The existing land uses comprise of shops, professional consultant offices, venues/ guest houses/ lodges/ conference centres, pubs & auction ground to name a few. These land uses are supporting and

				receiving support from Parys and its surrounding population.
5	Is this development provided for in the infrastructure planning of the municipality, and if not what will the implication is on the infrastructure planning of the municipality (priority and placement of services and opportunity costs)?	The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) **(Appendix H(iii))** states: As per the *Map C.24: Critical Biodiversity Areas – Tlokwe SDF 2014,* the site is located within a Biodiversity Node, but is identified as a medium critical biodiversity site, therefore there is no need for conservation of the entire extent of the site. Refer to the attached Ecological Fauna and Flora Habitat Survey complied by Anthene Ecological CC **(Appendix H(iv))** for more details. The site falls outside the Vredefort Dome Buffer as per *Map C.28: Heritage Sites & Figure C.15 Vredefort Dome WHS Factor Plan – Tlokwe SDF 2014.* Thus, the Vredefort Dome WHS will not be a limiting factor for the proposed residential development. The site gains access via the R53 Road, which is identified as a Main Road via the *Map C.29: Adjacent*	How will the activity or the land use associated with the activity applied for, impact on sensitive natural and cultural areas (built and rural/natural environment)?	The establishment of the proposed development will definitely have an impact on the environment; but this impact is only expected to be site related. The impacts can be mitigated and in implementing those measures effectively can have a significantly low impact. An Ecological Fauna and Flora Habitat Survey has been complied by Anthene Ecological CC – R.F. Terblanche. The report determined the extent of the Riparian Zone (with a 10m buffer) and found that the Riparian Zone is ecologically disturbed, contains no threatened plant or animal species but does contain three (3) examples of a protected tree species named Boscia albitrunca. No development will take place within the Riparian Zone and the 10m buffer.

		Municipalities – Tlokwe SDF 2014 which can be seen as a form of corridor. Therefore, the proposed development boasts good accessibly. In addition to the district context of the site described above the site is located within a Development Node 3 on a micro level as per the *Figure D.3: Cumulative effect assessment: co Corridor / Study area – Tlokwe SDF 2014*. One of only four (4) development nodes along the Vaal River located on the edge of the JB Marks municipal area. Development along corridors is an important development concept within spatial planning. This is due to the fact that the flow of goods, services & information as well as communication establishes a corridor between nodes, which in turn creates conditions that are potentially favourable for urban development despite being outside an urban fabric. As per the *Map D12: Municipal Wide SDF – Tlokwe SDF 2014*, the R53 is identified as Secondary Corridor as well as a Tourism Corridor.		

		Therefore, granting further support for the proposed land use and township establishment as the "Main Road" corridor mention above is reconfirmed and an additional type of corridor is identified - Tourism.		
6	Is this project part of a national programme to address an issue of national concern or importance?	No.	How will the development impact on people's health and wellbeing (e.g. in terms of noise, odours, visual character and sense of place, etc)?	The site and surrounding area are known to be agricultural holdings with land uses including farming activities, therefore the visual character and sense of place aesthetics in the area is associated to agricultural activities and the proposed establishment will have a impact in this regard. However, precedents was found of the above mentioned "cross municipal boundary support". A short drive from the bridge crossing the Vaal River (R53) to the intersection of the R500 & R53 revealed that the near area is well developed with some legal and possible illegal land uses that are not only agricultural in nature but a

				mix of various land uses. The existing land uses comprise of shops, professional consultant offices, venues/ guest houses/ lodges/ conference centres, pubs & auction ground to name a few. These land uses are supporting and receiving support from Parys and its surrounding population.
7			Will the proposed land use result in unacceptable cumulative impacts?	The potential cumulative impacts that have been identified for the proposed development are as follows; • Waste Management; • Noise Management; • Air Quality; • Storm water management; • Security and Safety; and • Water Quality and Quantity. A management plan will have to be enforced through the EMPr **(Appendix I)** to ensure the proper mitigation of impacts.

G. MOTIVATION FOR THE PREFERRED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE

NB!! – This section is about the determination of the specific site layout and the location of infrastructure and activities on site, having taken into consideration the issues raised by interested and affected parties, and the consideration of alternatives to the initially proposed site layout.

Location of the site

The site is located within the JB Marks Local Municipality, in the Dr Kenneth Kaunda District Municipality on Portions 95 and 96 of the farm Rietpoort 518 IQ situated adjacent (north) to the town of Parys, and falls within the North West Province.

Access to the above-mentioned development will be from the existing service road that joins the R53 at the Kopjeskraal Road (Road D636). The service road extends into the development in a south-western direction, to serve the private road.

Preferred activity

The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) **(Appendix H(iii))** states:

The primary drive generating the need and desirability to develop the proposed site comes from the existing development(s) found within / around Parys. Parys contains variuos interesting shops and attractions that have been established over the years due to its proximity to larger nodes, such as those found within the Gauteng Province.

Many of the wealthier residents, of the Gauteng Province, own a river side holiday home or make use of the various venues/ guest houses/ lodges/ conference centres found within the region to get away from the hustle and bustle of Gauteng. Parys owes a percentage of its growth to the surrounding country estates and available lodging (as well niche shops) that attracts outside populations and leads to economic spending and growth in the town. Therefore, the proposed development will allow for further growth of Parys and its surroundings. The proposed development can support the development within a neighbouring local authority; just as the existing developments of the neighbouring local authority can support a potential development on the edge of the JB Marks municipal boundary. One can suggest that the proposed development must be considered on a regional scale as much as it is considered on a local scale.

Precedents was found of the above mentioned “cross municipal boundary support”. A short drive from the bridge crossing the Vaal River (R53) from Parys to the intersection of the R500 & R53 revealed that the near area is well developed with some legal and possible illegal land uses that are not only agricultural in nature but a mix of various land uses. The existing land uses comprise of shops, professional consultant offices, venues/ guest houses/ lodges/ conference centres, pubs & auction ground to name a few. These land uses are supporting and receiving support from Parys and its surrounding population.

Preferred Technology

Preferred	Description
Septic tanks	The newly proposed internal 160mm diameter uPVC Solid wall Class 34 gravitational sewer reticulation system will connect to the proposed package plant. The sewage will be treated and then re-used for irrigation purposes.

Single borehole	BH1 was installed on-site up to a depth of 145m. Based on the test results, the borehole can be pumped at 1L/s for 12-hours, or alternatively a float switch should be installed within the water storage tank. Based on the aquifer tests and groundwater reserve determination, a total volume of 15 768m³/a (15768000L/a) is available from the borehole

The residential units will have the following specifications:

Residential Unit Dimensions

Townhouse Units:	13 Units of 250m², with 5 people per Unit
Duplex Units:	44 Units of 96m² footprints, with 4 people per Unit

Technical information

Parking Bays:	min 2 / Unit - 57 Covered and 57 Uncovered
Roads:	Street widths of internal and external roads will be as follows: • Road widths ranging 5.5m – 7 m
Water:	The water supply to the development will be by means of single borehole, connected to the Bulk storage tank(s) of 78 800ℓ, a 75mm uPVC class 9 gravity pipe that will need to be installed from the tank(s) to supply the development.
Sanitation:	The newly proposed internal 160mm diameter uPVC Solid wall Class 34 gravitational sewer reticulation system will connect to the proposed package plant. The sewage will be treated and then re-used for irrigation purposes.
Solid waste:	All solid waste will be collected by the Local Authority at the relevant entrances of the development and disposed of at the municipal waste disposal site.
Electrical services:	The estimated load required for the development is 213kVA or 307A three phase. The developer will be making use of solar / gas for hot water generation as per SANS 10400:X of the National building Act guidelines. This Act states that 50% of hot water generation must be by

	means of alternative energy. Gas will also by use for cooking. The following electrical services are proposed: a) Bulk Supply: Existing and new ESKOM MV infrastructure b) Point of Connection (POC): New bulk metering point from ESKOM c) MV Reticulation: ESKOM to design d) LV Reticulation: Internal design e) LV Connections: ESKOM

H. A FULL DESCRIPTION OF THE PROCESS FOLLOWED TO REACH THE PROPOSED DEVELOPMENT FOOTPRINT WITHIN THE APPROVED SITE, INCLUDING:

i. Details of the development footprint alternatives considered;

- **Location alternatives**

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity.

No alternatives exist, the proposed area is preferred due the need for the township being motivated through reference to general guidelines to ensure a sustainable urban environment. The proposed development complies with the NWSDF, Tlokwe SDF, Tlokwe Town Planning Scheme and SPLUMA.

Also, the various reports (Geotechnical, OSR and TIA) are in support of the proposed township, and the site is confirmed as suitable for development.

- **Activity alternatives**

No alternatives exist, the proposed area is preferred due the need for the township being motivated through reference to general guidelines to ensure a sustainable urban environment. The proposed development complies with the NWSDF, Tlokwe SDF, Tlokwe Town Planning Scheme and SPLUMA.

Also, the various reports (Geotechnical, OSR and TIA) are in support of the proposed township, and the site is confirmed as suitable for development.

- **Design and layout alternatives**

There are no design alternatives for this application as the proposed designs are designed according to the various general guidelines to ensure a sustainable urban environment. The proposed development complies with the NWSDF, Tlokwe SDF, Tlokwe Town Planning Scheme and SPLUMA. Also, the proposed layout is the best option, since a large portion was excluded through implementing an Environmental Building line to ensure that the sensitive zones and *Boscia Albitrunca* is protected. Therefore, no alternative design exists.

Furthermore, the various reports (Geotechnical, OSR and TIA) are in support of the proposed township, and the site is confirmed as suitable for development.

- **No-go alternative**

Should the "no-go" alternative be identified as the preferred alternative, then the following situations will occur:

- The property will remain at its current status and investment options will be more limited;
- In addition, not using the site for any economic activities does not provide opportunity for job creation within the local community. Business activities provide entrepreneurial opportunities as well as job opportunities, while the environmental impact will be fairly low;

The "No-Go" alternative is not recommended, due to the proposed development complying with the NWSDF, Tlokwe SDF, Tlokwe Town Planning Scheme and SPLUMA. Furthermore, the various reports (Geotechnical, OSR and TIA) are in support of the proposed development, and the site is confirmed as suitable for development.

Technology alternatives

Technology alternatives were considered, the property contains no municipal bulk services. The technology alternatives that will be implemented:

Water:	The water supply to the development will be by means of single borehole, connected to the Bulk storage tank(s) of 78 800ℓ, a 75mm uPVC class 9 gravity pipe that will need to be installed from the tank(s) to supply the development.
Sanitation:	The newly proposed internal 160mm diameter uPVC Solid wall Class 34 gravitational sewer reticulation system will connect to the proposed package plant. The sewage will be treated and then re-used for irrigation purposes.
Solid waste:	All solid waste will be collected by the Local Authority at the relevant entrances of the development and disposed of at the municipal waste disposal site.
Electrical services:	The estimated load required for the development is 213kVA or 307A three phase. The developer will be making use of solar / gas for hot water generation as per SANS 10400:X of the National building Act guidelines. This Act states that 50% of hot water generation must be by means of alternative energy. Gas will also by use for cooking. The following electrical services are proposed: a) Bulk Supply: Existing and new ESKOM MV infrastructure b) Point of Connection (POC): New bulk metering point from ESKOM c) MV Reticulation: ESKOM to design d) LV Reticulation: Internal design e) LV Connections: ESKOM

ii. Details of the Public Participation Process Followed

Describe the process undertaken to consult interested and affected parties including public meetings and one on one consultation. NB the affected parties must be specifically consulted regardless of whether or not they attended public meetings. (Information to be provided to affected parties must include sufficient detail of the intended operation to enable them to assess what impact the activities will have on them or on the use of their land.

Newspaper advertisement

An advertisement was placed in English in two of the local newspapers **(Potchefstroom Herald and Parys Gazette)** on **20 August 2020** (see **Appendix E(ii)**) notifying the public of

the EIA process and requesting Interested and Affected Parties (I&APs) to register with, and submit their comments to Kuhle Environmental Consult (Pty) Ltd. I&APs were given the opportunity to raise comments within 30 days of the advertisement.

Site notices

Site notices were placed (as anticipated on the coordinates below) on site in English, on **20 August 2020**, to inform surrounding communities and immediately adjacent landowners of the proposed development. I&APs was given the opportunity to raise comments. Photographic evidence of the site notices is included in **Appendix E(iii).** Below are the approximate coordinates where the site notices was placed.

Figure 4: Site notice co-ordinates

Direct notification of proposed project to identified I&APs, surrounding landowners & occupiers

Identified key stakeholders representing various sectors, were directly informed of the proposed development and provided with an opportunity to register as an interested and/or affected party (I&AP) via email on **20 August 2020** and were requested to submit comments by **21 September 2020.**

Direct notification of Draft BAR to identified I&APs, surrounding landowners & occupiers

Identified and registered key stakeholders representing various sectors, were directly informed of the proposed development and the availability of the Basic Assessment Report via email on **13 November 2020** and were requested to submit comments by **13 December 2020.**

The consultees included:

Table 1: List of Stakeholders, Landowners, & surrounding landowners

Stakeholders	Landowners	Surrounding Landowner
Department of Agriculture and Rural Development (DARD)	Plaasrivier Projects (Pty) Ltd Mr. Herman Fouche	Wikus Viljoen Trust
Department of Economic Development, Environment,		Jan Du Toit Familietrust

Stakeholders	Landowners	Surrounding Landowner
Conservation and Tourism (DEDECT)		
The Department of Human Settlements, Water & Sanitation (DHSWS)		Stephanus Petrus Janse van Rensburg
Provincial Heritage Resources Agency (PHRA) North West		Amabaw Trust
Department of Community Safety and Transport Management		Overcomers Organisation (Pty) Ltd
Department of Public Works and Roads		Johannes Jacobus Pretorius
Department of Agriculture Forestry, and Fisheries (DAFF)		HLA Finansiele & Arbeidskonsultante
Department of Environment, Forestry, and Fisheries (DEFF)		Kingfisher Prop (Pty) Ltd
Department of Agriculture, Land Reform and Rural development		Philippus Petrus van der Merwe
Dr Kenneth Kaunda District Municipality		
Municipal councilor of the ward & Municipal Manager for JB Marks Local Municipality		
Fezile Dabi District Municipality		
Municipal councilor of the ward & Municipal Manager for Ngwathe Local Municipality		
WESSA (National Office)		

Public Meeting Consultation

- N/A

Issues Raised by Interested and Affected Parties

All comments received during the review period of the draft reports, as well as response provided will be captured and recorded within the comment and response report.

iii. Summary of issues raised by I&APs

Interested and Affected Parties (I&APs) List the names of persons consulted in this column, and Mark with an X where those who must be consulted were in fact consulted.		Comments Received	EAPs response to issues as mandated by the applicant	Section and paragraph reference in this report where the issue and or response where incorporated
Erf / farm / holdings / township /Stakeholder / I&AP	**Owner & Contact person**			
Landowner				
Rietpoort 95/518 **Rietpoort 96/518**	Plaasrivier Projects (Pty) Ltd – Mr. Hugo Hayes	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
Direct Surrounding Landowners				
Rietpoort 94/518	Wikus Viljoen Trust	On 19/08/2020, Mr. Viljoen provided his email address to the EAP over WhatsApp. On 21/08/2020, Mr. Viljoen provided the EAP with his Comments and Response Form via email. The Comments and Response Form stated: - More project information .	On 19/08/2020, the EAP called Mr. Viljoen regarding the project. On 19/08/2020, the EAP confirmed the telephonic conversation and requested and the email address over WhatsApp. On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter). On 4/09/2020, the EAP replied with the following via email:	

			"Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ. I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon. However, I herewith attach the Hydrogeological Investigation since the impact on the water resources are of great concern to other I&APs"	
Rietpoort 97/518	Jan Du Toit Familietrust	On 21/10/2020, Mr. Du Toit's representative, from Du Toit Mandelstam, provided the following comments via email: *Please note the below was translated from Afrikaans to English:* 1. I confirm that we are acting on behalf of Jan du Toit & the Trustees of the Jan du Toit Family Trust, the owners of the property adjacent to proposed project area. 2. Our Clients have an interest in your studies & reports and I request that we be kept fully informed of the process and that you provide us with copies thereof. 3. We would like to receive the Civil Services Report to which you refer. 4. We would also like to receive the contact details of the Attorneys, Town Planners,	On 20/08/2020, the EAP had an informal discussion with Mr. Du Toit at offices of Du Toit Mandelstam in Parys. During this discussion it was concluded that the EAP will provide Mr. Du Toit with the Services Report once received and that sufficient time will provided to comment thereon. On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter) and confirmed the informal discussion earlier that day. On 04/09/2020, the EAP provided Mr. Du Toit with the following update:	

		Surveyors & Engineers involved in the planned development. 5. Our Clients reserve the right to comment on - and object to the planned development of the property, including the planned impact on the environment & use of water.	"Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ. I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon. However, I herewith attach the Hydrogeological Investigation since the impact on the water resources are of great concern to other I&APs." In an email dated 06/11/2020, the EAP responded with the following: *Note that this email was translated from Afrikaans to English* „I hereby acknowledge receipt of your email. Please find. the Civil Services Report attached. The contact information you request will be provided in the relevant specialist studies. These specialist studies will be attached to the Draft Basic Environmental Impact Assessment Report. The report will be circulated for 30 days next week."	

Rietpoort 98/518	Stephanus Petrus Janse van Rensburg	On 21/09/2020, the following email was received from Scheepers & Aucamp Prokureurs / Attorneys: "Kindly find attached hereto the objection against the application of environmental impact assessment (EIA) and the integrated water use licence application (IWULA) for your attention." Please see **Appendix E(v)** for the list of objections.	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter). On 04/09/2020, the EAP provided Mr. Stephanus Petrus Janse van Rensburg with the following update: "Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ. I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon. However, I herewith attach the Hydrogeological Investigation since the impact on the water resources are of great concern to other I&APs." On 23/09/2020, the EAP confirmed the receipt of their email and comments.	Strain on Fauna and Flora: See Stormwater p10; Ecological habitat p.86; Recommendations of Specialist Reports p.119; Fauna and Flora Impacts p. 95, p.102, p.109, and EMPr-Appendix I. Strain on Water Resources: See Water uses and supply p10-11; Hydrogeology & Groundwater Investigationp.80-81; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; and EMPr-Appendix I. Canal Pollution: Canal water will only be used for irrigation. Water samples will be take on a quarterly basis in order to monitor the water quality and the impact of the development. See Waste and erosion mitigation

				measures in the EMPr-Appendix I. The canal is seemingly not lined, and some leakages from the canal may result in more severe or pronounced seepage water conditions. Traffic: See Recommendations of Specialist Reports p.119; Traffic Impacts p.94,p.101, p.108; IX. Traffic generation p.113; Traffic volumes p.116 and 118; and EMPr-Appendix I. Noise Impact: See Noise Impacts p.96, p.102, p.108; III. Noise pollution p.112; Noise levels p.117 and p.118; and EMPr-Appendix I. Air Quality Impact: See Air quality p.97 and p.100; Air Quality Impacts p.108; XII. Air Pollution p.113; Air quality p.116 and p.117; and EMPr-Appendix I.

				Impact from package plant: See Ablution / Sanitation p.11; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; Waste Management, Sewerage/Effluent p.101; V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air p.112; and EMPr-Appendix I. Development not suitable for the proposed property: The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) (Appendix H(iii)) states: As per the Map C.24: Critical Biodiversity Areas – Tlokwe SDF 2014, the site is located within a Biodiversity Node, but is

				identified as a medium critical biodiversity site, therefore there is no need for conservation of the entire extent of the site. Refer to the attached Ecological Fauna and Flora Habitat Survey complied by Anthene Ecological CC (Appendix H(iv)) for more details. The site falls outside the Vredefort Dome Buffer as per Map C.28: Heritage Sites & Figure C.15 Vredefort Dome WHS Factor Plan – Tlokwe SDF 2014. Thus, the Vredefort Dome WHS will not be a limiting factor for the proposed residential development. The site gains access via the R53 Road, which is identified as a Main Road via the Map C.29: Adjacent Municipalities – Tlokwe SDF 2014 which can be seen as a form of corridor. Therefore, the proposed

				development boasts good accessibly. In addition to the district context of the site described above the site is located within a Development Node 3 on a micro level as per the Figure D.3: Cumulative effect assessment: co Corridor / Study area – Tlokwe SDF 2014. One of only four (4) development nodes along the Vaal River located on the edge of the JB Marks municipal area. Development along corridors is an important development concept within spatial planning. This is due to the fact that the flow of goods, services & information as well as communication establishes a corridor between nodes, which in turn creates conditions that are potentially favourable for urban development despite being outside an urban fabric. As per

				the Map D12: Municipal Wide SDF – Tlokwe SDF 2014, the R53 is identified as Secondary Corridor as well as a Tourism Corridor. Therefore, granting further support for the proposed land use and township establishment as the "Main Road" corridor mention above is reconfirmed and an additional type of corridor is identified - Tourism. Considering the various reports, if the mitigation measures are implemented, it is supported that the proposed township, and the site is confirmed as suitable for development.
Rietpoort 99/518	Amabaw Trust	On 19/08/2020, Mr. Wesseloo provided his email address to the EAP over WhatsApp. On 21/09/2020, the following email was received from Scheepers & Aucamp Prokureurs / Attorneys: "Kindly find attached hereto the objection against the application of environmental impact assessment (EIA) and the integrated	On 19/08/2020, the EAP called Mr. Wesseloo regarding the project. On 19/08/2020, the EAP confirmed the telephonic conversation and requested and the email address over WhatsApp.	Strain on Fauna and Flora: See Stormwater p10; Ecological habitat p.86; Recommendations of Specialist Reports p.119; Fauna and Flora Impacts p. 95, p.102, p.109, and EMPr-Appendix I.

		water use licence application (IWULA) for your attention." Please see **Appendix E(v)** for the list of objections.	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter). On 04/09/2020, the EAP provided Mr. Wesseloo with the following update: "Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ. I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon. However, I herewith attach the Hydrogeological Investigation since the impact on the water resources are of great concern to other I&APs." On 23/09/2020, the EAP confirmed the receipt of their email and comments.	Strain on Water Resources: See Water uses and supply p10-11; Hydrogeology & Groundwater Investigationp.80-81; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; and EMPr-Appendix I. Canal Pollution: Canal water will only be used for irrigation. Water samples will be take on a quarterly basis in order to monitor the water quality and the impact of the development. See Waste and erosion mitigation measures in the EMPr-Appendix I. The canal is seemingly not lined, and some leakages from the canal may result in more severe or pronounced seepage water conditions.

				Traffic: See Recommendations of Specialist Reports p.119; Traffic Impacts p.94,p.101, p.108; IX. Traffic generation p.113; Traffic volumes p.116 and 118; and EMPr-Appendix I. Noise Impact: See Noise Impacts p.96, p.102, p.108; III. Noise pollution p.112; Noise levels p.117 and p.118; and EMPr-Appendix I. Air Quality Impact: See Air quality p.97 and p.100; Air Quality Impacts p.108; XII. Air Pollution p.113; Air quality p.116 and p.117; and EMPr-Appendix I. Impact from package plant: See Ablution / Sanitation p.11; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; Waste

				Management, Sewerage/Effluent p.101; V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air p.112; and EMPr-Appendix I. Development not suitable for the proposed property: The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) (Appendix H(iii)) states: As per the Map C.24: Critical Biodiversity Areas – Tlokwe SDF 2014, the site is located within a Biodiversity Node, but is identified as a medium critical biodiversity site, therefore there is no need for conservation of the entire extent of the site. Refer to the attached Ecological Fauna and Flora Habitat Survey

				complied by Anthene Ecological CC (Appendix H(iv)) for more details. The site falls outside the Vredefort Dome Buffer as per Map C.28: Heritage Sites & Figure C.15 Vredefort Dome WHS Factor Plan – Tlokwe SDF 2014. Thus, the Vredefort Dome WHS will not be a limiting factor for the proposed residential development. The site gains access via the R53 Road, which is identified as a Main Road via the Map C.29: Adjacent Municipalities – Tlokwe SDF 2014 which can be seen as a form of corridor. Therefore, the proposed development boasts good accessibly. In addition to the district context of the site described above the site is located within a Development Node 3 on a micro level as per the Figure D.3: Cumulative effect

				assessment: co Corridor / Study area – Tlokwe SDF 2014. One of only four (4) development nodes along the Vaal River located on the edge of the JB Marks municipal area. Development along corridors is an important development concept within spatial planning. This is due to the fact that the flow of goods, services & information as well as communication establishes a corridor between nodes, which in turn creates conditions that are potentially favourable for urban development despite being outside an urban fabric. As per the Map D12: Municipal Wide SDF – Tlokwe SDF 2014, the R53 is identified as Secondary Corridor as well as a Tourism Corridor. Therefore, granting further support for the proposed land use and township

				establishment as the "Main Road" corridor mention above is reconfirmed and an additional type of corridor is identified - Tourism. Considering the various reports, if the mitigation measures are implemented, it is supported that the proposed township, and the site is confirmed as suitable for development.
Rietpoort 100/518	Overcomers Organisation (Pty) Ltd	No comments received yet	On 19/08/2020, the EAP requested a callback from Overcomers via WhatsApp. On 20/08/2020, the EAP had an informal discussion with Mr. Cilliers and Mr. & Mrs. Wilmot at Overcomers Parys. During this discussion it was concluded that the EAP will provide the Services Report once received and that sufficient time will provided to comment thereon. On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter) and confirmed the informal discussion earlier that day.	

			On 04/09/2020, the EAP provided Overcomers with the following update: "Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ. I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon. However, I herewith attach the Hydrogeological Investigation since the impact on the water resources are of great concern to other I&APs."	
Rietpoort 76/518	Johannes Jacobus Pretorius	On 20/08/2020, Mr. Johannes Jacobus Pretorius confirmed that he had no objections.	Per hand On 20/08/2020, the EAP had an informal discussion with Mr. Johannes Jacobus Pretorius and provided him with a Request for Comments Letter (Notification Letter) per hand.	
Rietpoort 149/518	HLA Finansiele & Arbeidskonsultante	No comments received yet		
Rietpoort 150/518	Kingfisher Prop (Pty) Ltd	No comments received yet		
Riastuine 19	Philippus Petrus van der Merwe	No comments received yet		

Riastuine 20		No comments received yet		
The Local Municipality of jurisdiction				
JB Marks Local Municipality	Municipal Manager: Mr. Lebo Ralekgetho Sec: Me. Cynthia Chacha	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter). The email was delivered on 21/08/2020 and read on 21/08/2020.	
Local Municipality of jurisdiction - councilor of the applicable ward				
JB Marks Local Municipality	Ward 2 Councillor	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter). The email was delivered on 21/08/2020 and read on 21/08/2020.	
Organs of state in the North West Province having jurisdiction				
Department of Economic, Development, Environment, Conservation and Tourism (DEDECT)	Ouma Skosana	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
The Human Settlements, Water and Sanitation (DWS)	Mr K. Mudau (WULA Manager)	(See various emails attached as **Appendix E(v)**)	IWULA Integrated Water Use License Application Management (Pty) Ltd is currently handling the Water Use License Applications. (See various emails attached as **Appendix E(v)**)	
NW Agriculture and Rural Development (Dept. of Agric.)	Ms. Bonolo Mohlakoana	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
Provincial Heritage Resources Agency (PHRA) North West	Mr. Motlhabane Mosiane	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	

Department of Public Works, Roads and Transport in NW (DPWRT)	HOD: Mr P Mothupi	In a letter dated 15/09/2019, the Department stated the following: "Your notice letter dated 21 August 2020 has reference. This application is issued in terms of the Advertising on Roads and Ribbon Development Act, Act No 21 of 1940 and Roads Ordinance No 22 of 1957 as amended. This Department has no objection to the above-mentioned application, since none of the existing proclaimed and or planned provincial roads are affected. It should be noted that Route R53 forms part of National Road Network, you are therefore been advised to consult with SANRAL."	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
Department of Agriculture, Forestry, and Fisheries (DAF)	Mr. Maurice Vukeya & Mrs Mpho Gumula	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
North West Department: Economy and Enterprise Development	HOD Mr L Tshikovhi	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
Department of Agriculture, Land Reform and Rural Development	Land Claims Commissioner: Regional Offices, Chief Director: Mr Lengane Bogatsu	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
Other important stakeholders identified –				
Dr Kenneth Kaunda District Municipality	Municipal Manager Ms Shirley Lesupi	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
Ngwathe Local Municipality	Municipal Manager: Sec:	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
Ngwathe Local Municipality	Ward 13 Councillor	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	

Fezile Dabi District Municipality	Municipal Manager	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
WESSA (National Office)	To whom it may concern	No comments received yet	On 20/08/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
Registered I&APs				
	Andre van Niekerk	In an email dated 10/09/2020 Mr. Van Niekerk stated the following: *Please note the below was translated from Afrikaans to English*: "The objection we have to the proposed development is sewage waste and water pollution. If there are so many plots you can not use "sigriool". Is it going to be connected to the town's sewer system?"	In an email dated 17/09/2020, the EAP replied with the following: "Please note that you are now registered as an Interested and Affected Party (I&AP). Will you please be so kind to provide me with your Portion number? Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ. I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon."	Strain on Fauna and Flora: See Stormwater p10; Ecological habitat p.86; Recommendations of Specialist Reports p.119; Fauna and Flora Impacts p. 95, p.102, p.109, and EMPr-Appendix I. Strain on Water Resources: See Water uses and supply p10-11; Hydrogeology & Groundwater Investigationp.80-81; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; and EMPr-Appendix I. Canal Pollution: Canal water will only be used for irrigation. Water

				samples will be take on a quarterly basis in order to monitor the water quality and the impact of the development. See Waste and erosion mitigation measures in the EMPr-Appendix I. The canal is seemingly not lined, and some leakages from the canal may result in more severe or pronounced seepage water conditions. Traffic: See Recommendations of Specialist Reports p.119; Traffic Impacts p.94,p.101, p.108; IX. Traffic generation p.113; Traffic volumes p.116 and 118; and EMPr-Appendix I. Noise Impact: See Noise Impacts p.96, p.102, p.108; III. Noise pollution p.112; Noise levels p.117 and p.118; and EMPr-Appendix I. Air Quality Impact: See Air quality p.97

				and p.100; Air Quality Impacts p.108; XII. Air Pollution p.113; Air quality p.116 and p.117; and EMPr-Appendix I. Impact from package plant: See Ablution / Sanitation p.11; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; Waste Management, Sewerage/Effluent p.101; V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air p.112; and EMPr-Appendix I. Development not suitable for the proposed property: The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services

				(2020) (Appendix H(iii)) states: As per the Map C.24: Critical Biodiversity Areas – Tlokwe SDF 2014, the site is located within a Biodiversity Node, but is identified as a medium critical biodiversity site, therefore there is no need for conservation of the entire extent of the site. Refer to the attached Ecological Fauna and Flora Habitat Survey complied by Anthene Ecological CC (Appendix H(iv)) for more details. The site falls outside the Vredefort Dome Buffer as per Map C.28: Heritage Sites & Figure C.15 Vredefort Dome WHS Factor Plan – Tlokwe SDF 2014. Thus, the Vredefort Dome WHS will not be a limiting factor for the proposed residential development. The site gains access via the R53 Road, which is identified as a

				Main Road via the Map C.29: Adjacent Municipalities – Tlokwe SDF 2014 which can be seen as a form of corridor. Therefore, the proposed development boasts good accessibly. In addition to the district context of the site described above the site is located within a Development Node 3 on a micro level as per the Figure D.3: Cumulative effect assessment: co Corridor / Study area – Tlokwe SDF 2014. One of only four (4) development nodes along the Vaal River located on the edge of the JB Marks municipal area. Development along corridors is an important development concept within spatial planning. This is due to the fact that the flow of goods, services & information as well as communication

				establishes a corridor between nodes, which in turn creates conditions that are potentially favourable for urban development despite being outside an urban fabric. As per the Map D12: Municipal Wide SDF – Tlokwe SDF 2014, the R53 is identified as Secondary Corridor as well as a Tourism Corridor. Therefore, granting further support for the proposed land use and township establishment as the "Main Road" corridor mention above is reconfirmed and an additional type of corridor is identified - Tourism. Considering the various reports, if the mitigation measures are implemented, it is supported that the proposed township, and the site is confirmed as suitable for development.

Rietpoort 102/518 Rietpoort 103/518	1. Fatima Ismail 2. Fawzia Essop 3. Suliman Yacoob	In a letter received via email on 17/09/2020, the following were stated: "We hereby want to make a formal objection to the planning application cited above for 50 housing units to be built on these two properties. We would like to object on several aspects which are detailed below: • The main dispersal route will clearly be through a residential area which will disrupt the amenity of nearby residents and result in a significant increase in Noise Levels generated by 50 housing units. In such cases conflicts occur which are not easily resolved, which can blight peoples' quality of life. Care is thus needed in the siting of such a major development. • Access to the proposed site will result in heavy traffic in an area which is a known traffic risk area, there having been several fatal accidents recently. • We have serious concerns that water and sanitation provision for such a major development of 50 housing units would have an adverse effect on neighboring portions of 518. • Guarantees will be required that water from the already strained local canal will not be polluted as this is also used for domestic purposes and sustenance • Sanitation, water, drainage and disposal for 50 housing units will put a heavy strain on the area and run greater risk of pollution in the river and the canal	In an email dated 17/09/2020, the EAP replied with the following: "I herewith acknowledge the receipt of your objection. Please note that you are now registered as an Interested and Affected Party (I&AP). Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ. I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon." On 23/09/2020, the EAP confirmed the receipt of their email and comments.	Strain on Fauna and Flora: See Stormwater p10; Ecological habitat p.86; Recommendations of Specialist Reports p.119; Fauna and Flora Impacts p. 95, p.102, p.109, and EMPr-Appendix I. Strain on Water Resources: See Water uses and supply p10-11; Hydrogeology & Groundwater Investigationp.80-81; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; and EMPr-Appendix I. Canal Pollution: Canal water will only be used for irrigation. Water samples will be take on a quarterly basis in order to monitor the water quality and the impact of the development. See Waste and erosion mitigation

		• We would need adequate assurance that seepage from septic tanks will not pollute wells and boreholes which currently forms the lifeblood of all the local residents on the farm and in the local area. • The Government has indicated that developments should not be permitted if the local community is opposed to a scheme and this is enshrined in the localism and natural heritage law in South Africa. There is in this instance a strong feeling from the local community since it will adversely affect neighboring portions which are part of a World Heritage Conservation Site. " On 21/09/2020, the following email was received from Scheepers & Aucamp Prokureurs / Attorneys: "Kindly find attached hereto the objection against the application of environmental impact assessment (EIA) and the integrated water use licence application (IWULA) for your attention." Please see **Appendix E(v)** for the list of objections.		measures in the EMPr-Appendix I. The canal is seemingly not lined, and some leakages from the canal may result in more severe or pronounced seepage water conditions. Traffic: See Recommendations of Specialist Reports p.119; Traffic Impacts p.94,p.101, p.108; IX. Traffic generation p.113; Traffic volumes p.116 and 118; and EMPr-Appendix I. Noise Impact: See Noise Impacts p.96, p.102, p.108; III. Noise pollution p.112; Noise levels p.117 and p.118; and EMPr-Appendix I. Air Quality Impact: See Air quality p.97 and p.100; Air Quality Impacts p.108; XII. Air Pollution p.113; Air quality p.116 and p.117; and EMPr-Appendix I.

				Impact from package plant: See Ablution / Sanitation p.11; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; Waste Management, Sewerage/Effluent p.101; V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air p.112; and EMPr-Appendix I. Development not suitable for the proposed property: The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) (Appendix H(iii)) states: As per the Map C.24: Critical Biodiversity Areas – Tlokwe SDF 2014, the site is located within a Biodiversity Node, but is

				identified as a medium critical biodiversity site, therefore there is no need for conservation of the entire extent of the site. Refer to the attached Ecological Fauna and Flora Habitat Survey complied by Anthene Ecological CC (Appendix H(iv)) for more details. The site falls outside the Vredefort Dome Buffer as per Map C.28: Heritage Sites & Figure C.15 Vredefort Dome WHS Factor Plan – Tlokwe SDF 2014. Thus, the Vredefort Dome WHS will not be a limiting factor for the proposed residential development. The site gains access via the R53 Road, which is identified as a Main Road via the Map C.29: Adjacent Municipalities – Tlokwe SDF 2014 which can be seen as a form of corridor. Therefore, the proposed

				development boasts good accessibly. In addition to the district context of the site described above the site is located within a Development Node 3 on a micro level as per the Figure D.3: Cumulative effect assessment: co Corridor / Study area – Tlokwe SDF 2014. One of only four (4) development nodes along the Vaal River located on the edge of the JB Marks municipal area. Development along corridors is an important development concept within spatial planning. This is due to the fact that the flow of goods, services & information as well as communication establishes a corridor between nodes, which in turn creates conditions that are potentially favourable for urban development despite being outside an urban fabric. As per

				the Map D12: Municipal Wide SDF – Tlokwe SDF 2014, the R53 is identified as Secondary Corridor as well as a Tourism Corridor. Therefore, granting further support for the proposed land use and township establishment as the "Main Road" corridor mention above is reconfirmed and an additional type of corridor is identified - Tourism. Considering the various reports, if the mitigation measures are implemented, it is supported that the proposed township, and the site is confirmed as suitable for development.
	Gideon Visagie	In an email dated 06/09/2020, Mr. Visagie requested to be registered as an I&AP.	In an email dated 08/09/2020, the EAP replied with the following: "Please note that you are now registered as an Interested and Affected Party (I&AP). Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ.	

			I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon."	
	Mimosa Resort		On 2/09/2020, the EAP emailed the Request for Comments Letter (Notification Letter).	
	Rietpoort Irrigation Board	In an email dated 22/08/2020, the following were stated and requested: The Chairman of the Rietpoort Irrigation Board is Rowland York. He is not available at present as he is still in hospital after heart surgery. For any info please feel free to contact me. As Secretary of the Rietpoort Irrigation Board, I should be able to answer most of your questions. Rietpoort 149 is owned by Arina Anthonissen. Mobile 0828522290, email catantho@absamail.co.za Rietpoort 150 is owned by Johan Bosch. Mobile 0837003073, email admin@redantsecurity.co.za Riastuine 20 is owned by the SADF. I have no particulars on this property, but the last info I had was that it is owned by the South African Defence Force. The owner of Riastuine 19 has fenced it and included it in with his property and is utilising it for grazing for his game. Attached please find the map you requested.	In an email dated 11/08/2020, the following were stated and requested: "With reference to our telephonic conversation. Firstly, thank you for the assistance. Will you please be so kind to provide me with the following information regarding the Rietpoort Irrigation Board: - Chairman's details - Contact details - A map indicating the canal Also, will you be able to assist me with the contact details of the following properties: - Riastuine 20 - Rietpoort 149 - Rietpoort 150"	Strain on Fauna and Flora: See Stormwater p10; Ecological habitat p.86; Recommendations of Specialist Reports p.119; Fauna and Flora Impacts p. 95, p.102, p.109, and EMPr-Appendix I. Strain on Water Resources: See Water uses and supply p10-11; Hydrogeology & Groundwater Investigationp.80-81; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; and EMPr-Appendix I.

		Please register the Rietpoort Irrigation Board as an interested and affected party in any development proposed for Rietpoort 95 and 96. As the supplier of irrigation water, and also having access to a 10 metre servitude, which is 5m on either side of the canal which passes over these properties, any development proposed for Rietpoort 95 and 96 is of great concern.	In an email dated 24/08/2020, the EAP acknowledged the receipt of their email and that the Board is registered as an I&AP. On 04/09/2020, the EAP provided Rietpoort Irrigation Board with the following update: "Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ. I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon. However, I herewith attach the Hydrogeological Investigation since the impact on the water resources are of great concern to other I&APs."	Canal Pollution: Canal water will only be used for irrigation. Water samples will be take on a quarterly basis in order to monitor the water quality and the impact of the development. See Waste and erosion mitigation measures in the EMPr-Appendix I. The canal is seemingly not lined, and some leakages from the canal may result in more severe or pronounced seepage water conditions. Traffic: See Recommendations of Specialist Reports p.119; Traffic Impacts p.94,p.101, p.108; IX. Traffic generation p.113; Traffic volumes p.116 and 118; and EMPr-Appendix I. Noise Impact: See Noise Impacts p.96, p.102, p.108; III. Noise pollution p.112; Noise levels p.117 and p.118;

				and EMPr-Appendix I. Air Quality Impact: See Air quality p.97 and p.100; Air Quality Impacts p.108; XII. Air Pollution p.113; Air quality p.116 and p.117; and EMPr-Appendix I. Impact from package plant: See Ablution / Sanitation p.11; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; Waste Management, Sewerage/Effluent p.101; V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air p.112; and EMPr-Appendix I. Development not suitable for the proposed property: The Motivational Memorandum

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				development. The site gains access via the R53 Road, which is identified as a Main Road via the Map C.29: Adjacent Municipalities – Tlokwe SDF 2014 which can be seen as a form of corridor. Therefore, the proposed development boasts good accessibly. In addition to the district context of the site described above the site is located within a Development Node 3 on a micro level as per the Figure D.3: Cumulative effect assessment: co Corridor / Study area – Tlokwe SDF 2014. One of only four (4) development nodes along the Vaal River located on the edge of the JB Marks municipal area. Development along corridors is an important development concept within spatial planning. This is due to the

				fact that the flow of goods, services & information as well as communication establishes a corridor between nodes, which in turn creates conditions that are potentially favourable for urban development despite being outside an urban fabric. As per the Map D12: Municipal Wide SDF – Tlokwe SDF 2014, the R53 is identified as Secondary Corridor as well as a Tourism Corridor. Therefore, granting further support for the proposed land use and township establishment as the "Main Road" corridor mention above is reconfirmed and an additional type of corridor is identified - Tourism. Considering the various reports, if the mitigation measures are implemented, it is supported that the proposed township, and the site is confirmed as

				suitable for development.
	Prof. R.C.W. Webber-Youngman			
	Sally J'Arlette-Joy	In an email dated 08/09/2020, the following were stated and requested: "I am writing to voice my concern about this proposed development. My property is at 152 Rietpoort. I really do not think that the area is suitable for this kind of development as currently it is farming and low grade tourism. Concerns are pollution, noise levels, additional traffic, additional sewerage and draining of underground water supply from neighbouring properties.. I would like you to give your urgent consideration to this matter."	In an email dated 08/09/2020, the following were stated and requested: "Please note that you are now registered as an Interested and Affected Party (I&AP) and your comments will be included in the Draft Basic Assessment Report. Herewith an update regarding the proposed development on Portion 95&96 Rietpoort 518 IQ. I am still waiting for the Final Layout Plan and the Civil Services Report. Once I receive these documents I will forward them to you with the Draft Basic Assessment Report. You will then be provided with sufficient time to comment thereon."	Strain on Fauna and Flora: See Stormwater p10; Ecological habitat p.86; Recommendations of Specialist Reports p.119; Fauna and Flora Impacts p. 95, p.102, p.109, and EMPr-Appendix I. Strain on Water Resources: See Water uses and supply p10-11; Hydrogeology & Groundwater Investigationp.80-81; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; and EMPr-Appendix I. Canal Pollution: Canal water will only be used for irrigation. Water samples will be take on a quarterly basis in order to monitor the water quality

				and the impact of the development. See Waste and erosion mitigation measures in the EMPr-Appendix I. The canal is seemingly not lined, and some leakages from the canal may result in more severe or pronounced seepage water conditions. Traffic: See Recommendations of Specialist Reports p.119; Traffic Impacts p.94,p.101, p.108; IX. Traffic generation p.113; Traffic volumes p.116 and 118; and EMPr-Appendix I. Noise Impact: See Noise Impacts p.96, p.102, p.108; III. Noise pollution p.112; Noise levels p.117 and p.118; and EMPr-Appendix I. Air Quality Impact: See Air quality p.97 and p.100; Air Quality Impacts p.108; XII. Air Pollution p.113; Air

				quality p.116 and p.117; and EMPr-Appendix I. Impact from package plant: See Ablution / Sanitation p.11; Groundwater Impacts p.98, p.102,p.108; Surface Water Impacts p.98,103; Recommendations of Specialist Reports p.119; Waste Management, Sewerage/Effluent p.101; V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air p.112; and EMPr-Appendix I. Development not suitable for the proposed property: The Motivational Memorandum compiled by Van Brakel Professional Planning and Property Services (2020) (Appendix H(iii)) states: As per the Map C.24: Critical Biodiversity Areas –

				Tlokwe SDF 2014, the site is located within a Biodiversity Node, but is identified as a medium critical biodiversity site, therefore there is no need for conservation of the entire extent of the site. Refer to the attached Ecological Fauna and Flora Habitat Survey complied by Anthene Ecological CC (Appendix H(iv)) for more details. The site falls outside the Vredefort Dome Buffer as per Map C.28: Heritage Sites & Figure C.15 Vredefort Dome WHS Factor Plan – Tlokwe SDF 2014. Thus, the Vredefort Dome WHS will not be a limiting factor for the proposed residential development. The site gains access via the R53 Road, which is identified as a Main Road via the Map C.29: Adjacent Municipalities – Tlokwe SDF 2014 which can be seen

				as a form of corridor. Therefore, the proposed development boasts good accessibly. In addition to the district context of the site described above the site is located within a Development Node 3 on a micro level as per the Figure D.3: Cumulative effect assessment: co Corridor / Study area – Tlokwe SDF 2014. One of only four (4) development nodes along the Vaal River located on the edge of the JB Marks municipal area. Development along corridors is an important development concept within spatial planning. This is due to the fact that the flow of goods, services & information as well as communication establishes a corridor between nodes, which in turn creates conditions that are potentially

				favourable for urban development despite being outside an urban fabric. As per the Map D12: Municipal Wide SDF – Tlokwe SDF 2014, the R53 is identified as Secondary Corridor as well as a Tourism Corridor. Therefore, granting further support for the proposed land use and township establishment as the "Main Road" corridor mention above is reconfirmed and an additional type of corridor is identified - Tourism. Considering the various reports, if the mitigation measures are implemented, it is supported that the proposed township, and the site is confirmed as suitable for development.

iv. The environmental attributes associated with the sites

The descriptions below are purely based on desktop studies, observations made on site and various specialist inputs.

Some of the features are seen on the site photography (**Appendix F**)

Geology and Soils

The following information were obtained from the Preliminary Engineering Geological Investigation, which were conducted by RockSoil Consult (Pty) Ltd (2020) **(Appendix H(vi))**:

Regional

Based on the 1:250 000-scale 2626 Wes Rand Geological Sheet (Figure 7), the site is underlain by **Zg**: Undifferentiated granite and gneiss.

A number of geological faults do occur in the region, however no faults or major geological structures were identified on site. The zone boundary however between Zone I and Zone II assigned during the preliminary assessment may be a structural feature of interest to be assessed during the intrusive shallow soil assessment.

No economical mineral deposits are found on or in close proximity of the site and therefore the development is not expected to sterilise any known mineral deposits.

Also, no soluble rock formations such as dolomite and limestone underlie the proposed site.

The area is non-dolomitic. Therefore, dolomite related instability is not of any concern.

Site Specific

The presence of granite was confirmed through the various granite rock outcrops and large-size boulders that are present on site, especially towards the centre to eastern portions.

The basic borehole log that was obtained during the drilling of the on-site borehole (BH1) indicated that an upper red, loose unconsolidated sandy soil transgressing into potassium feldspar rich granite rock from fairly shallow depth is present. This description confirmed the expected geology, as presented by the regional geological sheet.

A silty sandy soil cover is present towards the western portion of the site with expected shallow undulating granite-gneiss rock with the presence of large-size granite rock boulders towards especially the centre, eastern and south-eastern site portions. The depth of bedrock in the western site portion was not established.

Collapsible Soil

The upper soils that are present on site are expected to have an open/voided collapsible soil fabric, as typical for this geological setting.

Seepage

Shallow perched seepage water conditions can be expected during and after heavy and/or continuous rainfall (downpours). Seepage water can mainly be expected on, but not limited to the soil/rock interface.

Potential perched water tables can be expected around and especially on the down-slope of the existing water canal. The canal is seemingly not lined, and some leakages from the canal may result in more severe or pronounced seepage water conditions.

Active Soils

Highly active soils are not typically associated with this type of geological setting, considering the parental granite-gneiss rock type, expected secondary minerals (alteration products) and the climatic setting. The specialist did not identify any highly active soils with excessive surficial desiccation cracking during the walkover survey.

Generally, a low soil-heave potential is anticipated for the proposed site.

Highly Compressible Soil

The transported and potential residual-soils (if present) overlying the granite-gneiss rock are expected to be unconsolidated, considering the weathering environment and depositional environment. An organic rich upper horizon is expected; however, it should be of very limited depth. Nevertheless, a low to moderate soil compressibility is anticipated, probably secondary to the collapse potential.

Erodibility of Soil

An intermediate to high erodibility is assigned to the site; considering the slope angle, parental rock, depositional environment and grading of the upper soils inspected on site.

Excavation Difficulty

No intrusive assessment (test pitting) was conducted during this preliminary assessment phase. Based on the visual observations made, excavation difficulty can especially be expected towards the centre and eastern to south-eastern portions of the proposed site. Numerous large-size surficial boulders are present on the centre and eastern to south-eastern portions. Prominent granite-gneiss rock outcrop (in excess of 20 m by 8- 10 m) were noted in localised areas on the centre to eastern portions of the site. Rock boulders in excess of 2 m diameter were noted. The more prominent outcrop areas are mainly towards the eastern half to eastern third of the site.

Considering the typical weathering profile of the granite-gneiss formations, medium to large-size corestones and shallow undulating bedrock conditions will most probably result in excavation difficulty throughout most of the proposed site. Excavation difficulty is expected to be significantly less towards the western third of the site.

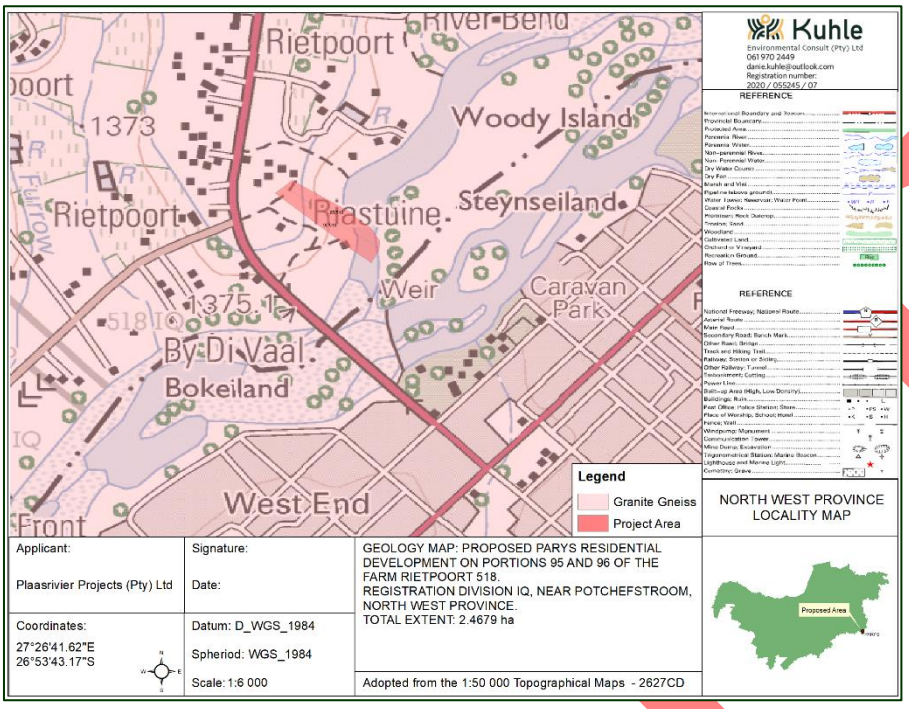


Figure 6: Geology map of the proposed site (Council for Geoscience, 2020) **(Appendix G(i))**

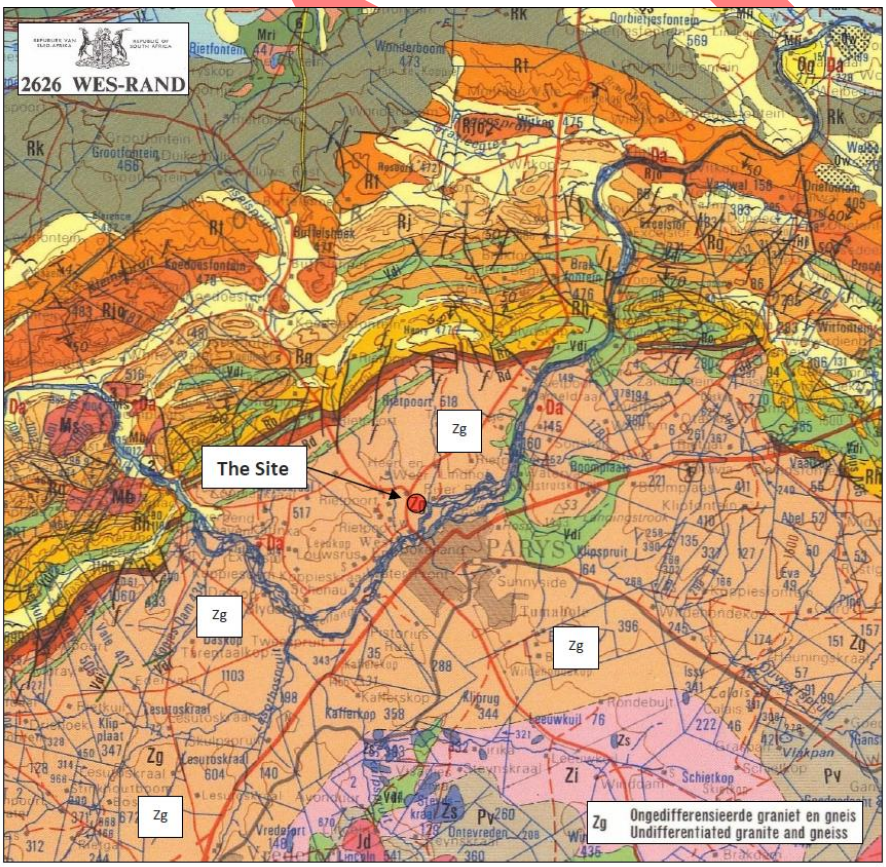


Figure 7: Geology map of the proposed site (Council for Geoscience, 2020) **(Appendix H(vi))**

Seismic Sensitivity

According to the Preliminary Engineering Geological Investigation, which were conducted by RockSoil Consult (Pty) Ltd (2020) **(Appendix H(vi))**, Seismic hazard zones applicable to South

Africa are depicted in **Figure 8** and **Figure 9**. The zones were determined by using the seismic hazard map which presents the peak ground acceleration with a 10% probability of being exceeded in a 50-year period. It includes both natural and mining-induced seismicity activity (SANS10160-4, 2017).

The following zones of importance are considered:

- **Zone I**: Natural seismic activity
- **Zone II**: Regions of mining-induced and natural seismic activity

It is determined that the site is situated in the seismic hazard zone, **Zone II** (SANS10160-4, 2017). The structural engineering will have to comply with the requirements as set out in the national standards, basis of structural design and actions for buildings and industrial structures, *Part 4: Seismic actions and general requirements for buildings (SANS10160-4, 2017).* An importance factor of 1 will probably apply to the category of structures (importance class II "Ordinary buildings, not belonging to the other categories".).

The ground-type can be considered "**Ground Type 1**" with "Rock or other rock-like geological formation, including at most 5 m of weaker material at the surface" with a **vs,30 of >800 m/s** (SANS10160-4, 2017). The ground type is confirmed by the shallow rock, rock outcrop and on-site borehole log obtained.

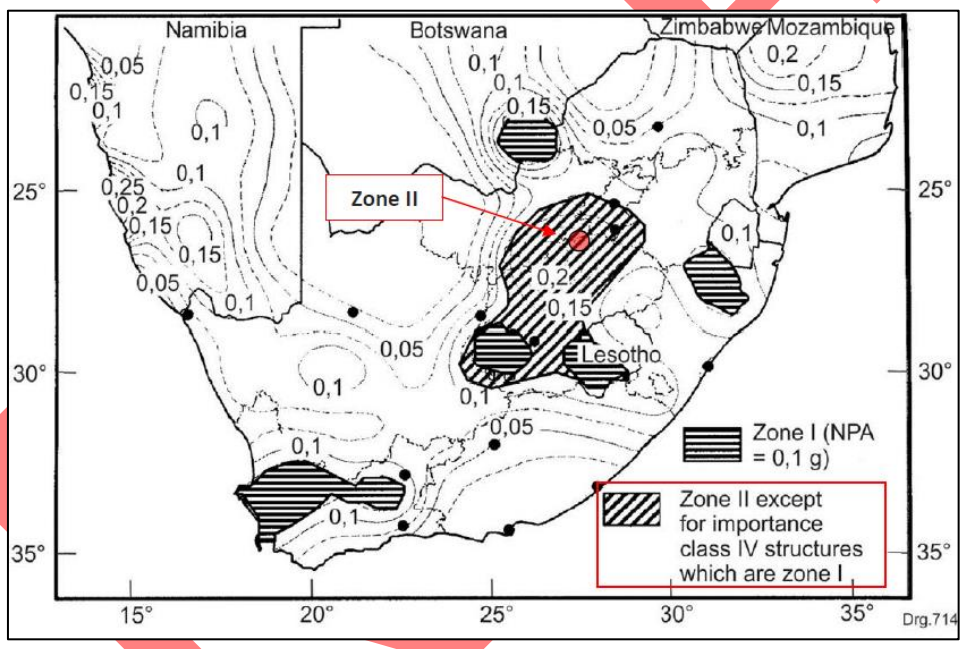


Figure 8: Seismic Hazard Zones of South Africa (SANS10160-4, 2017) **(Appendix H(vi))**

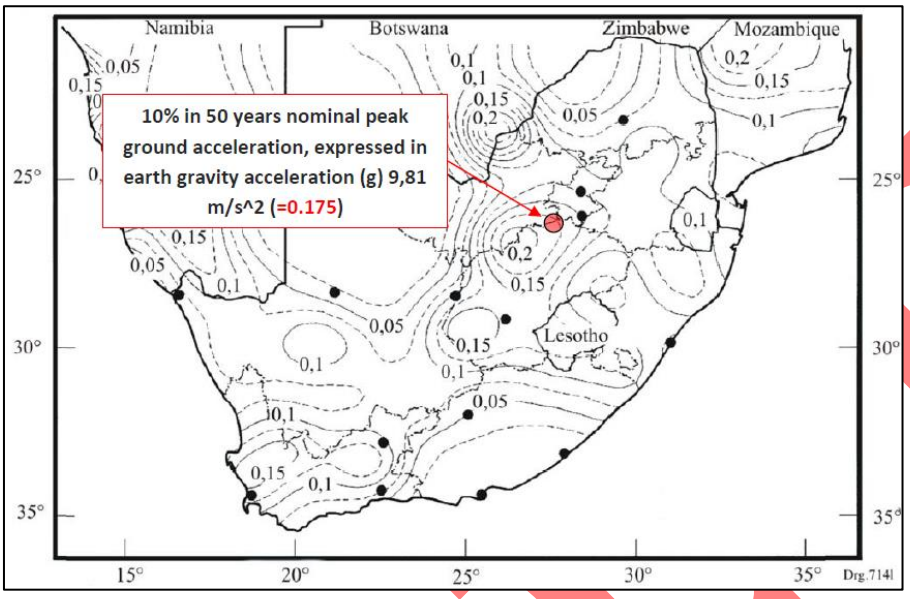


Figure 9: Seismic Hazard Map of South Africa (SANS10160-4, 2017) **(Appendix H(vi))**

Hydrogeology

The following information were obtained from the Hydrogeological Investigation, which were conducted by Milnex CC (2020) **(Appendix H(vii))**:

According to the 1:500 000 Hydrogeological map series 2526 Johannesburg (Barnard and Baran, 1999), the proposed site is underlain by an intergranular and fractured type of aquifer. The average borehole yield ranges between 0.5 and 2L/s. A shallower aquifer occurs within the weathered zone, where the original rock structure has been changed to a mass of loose rock fragments, in a matrix of fine products of weathering, mostly sand, silt and clay. The deeper fractured aquifer was targeted for the water supply through a borehole.

The abovementioned underlying aquifer is classified, by the aquifer vulnerability and classification maps of South Africa, as a minor aquifer which is the least vulnerable aquifer system. According to Parsons and Conrad (1998), a minor aquifer seldom produces large quantities of water and can be fractured or potentially fractured rocks which do not have a high permeability.

Groundwater Investigation

The following information were obtained from the Hydrogeological Investigation, which were conducted by Milnex CC (2020) **(Appendix H(vii))**:

During a neighbouring borehole investigation groundwater levels of accessible boreholes were measured of which ranged between 10.6 and 17.1 meters below ground level (m.b.g.l). All the identified boreholes are used for domestic and garden irrigation purposes.

One borehole (BH1), for the development, was drilled up to a depth of 145m. During drilling, two water strikes were intersected at depths of 14 and 137mbgl. The major water strike (145m) had a blow yield of 4000L/hr.

The static groundwater level was 9.35m.b.g.l. A groundwater sample was collected from BH1 and submitted to an accredited laboratory for inorganic and bacteriological analysis. However, a field analysis included the following parameters: pH, Electrical Conductivity (EC) and Total Dissolved Solids (TDS). The pH recorded was neutral and the EC and TDS were compliant with the SANS 241-1:2015 drinking water quality standards.

Based on the Flow Characteristic (FC) Programme the sustainable yield for BH1 is 0.54L/s for a 24-hour pump schedule. It is recommended that a 1L/s pump must be installed, and a pumping

schedule of 12-hours should be implemented, or a float switch must be installed within the storage tank. A total volume of 15 768m^3/a (43.2m3/day) is available from the borehole.

Furthermore, a groundwater flow direction map was constructed in order to determine the flow of subsurface water. The surrounding water levels measured, during the field investigation, were used to generate this map. From the map it can be concluded that the groundwater flow direction is in a northerly direction towards HBH5 and HBH6. A cone of depression is formed around these boreholes due to abstraction.

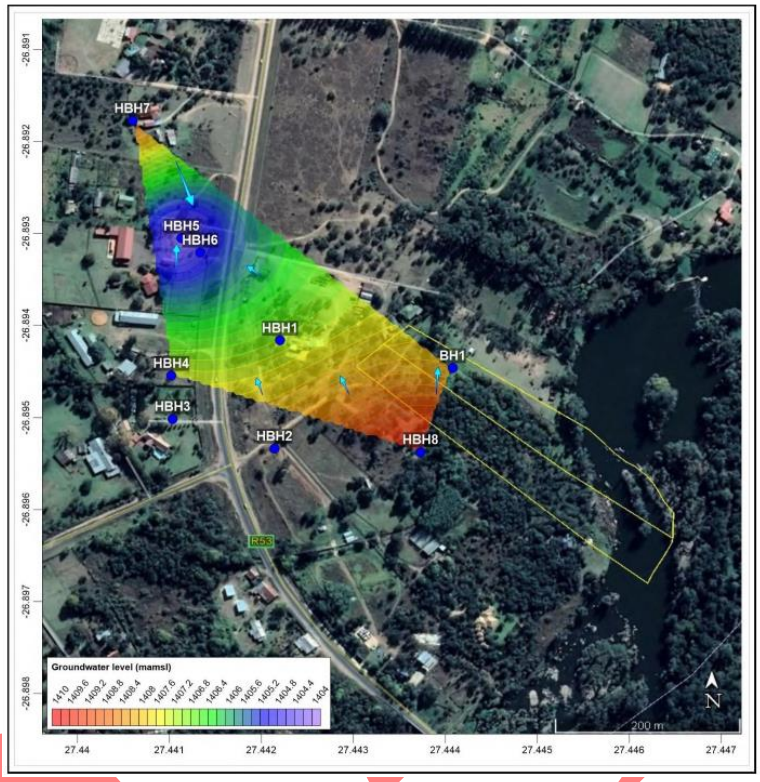


Figure 10: Groundwater Flow Direction Map (Milnex CC, 2020) **(Appendix H(vii))**

Climate

The adjacent town, Parys, lies approximately 1392m above sea level. The summers have much more rainfall, when compared with winter. According to Köppen and Geiger, the climate of the Parys region is classified as "Cwb". The temperature here averages 16.8 °C | 62.2 °F. Precipitation here is about 637 mm | 25.1 inch per year.

The least amount of rainfall of the region occurs in July. The average in this month is 6 mm | 0.2 inch. With an average of 109 mm | 4.3 inch, the most precipitation falls in January.

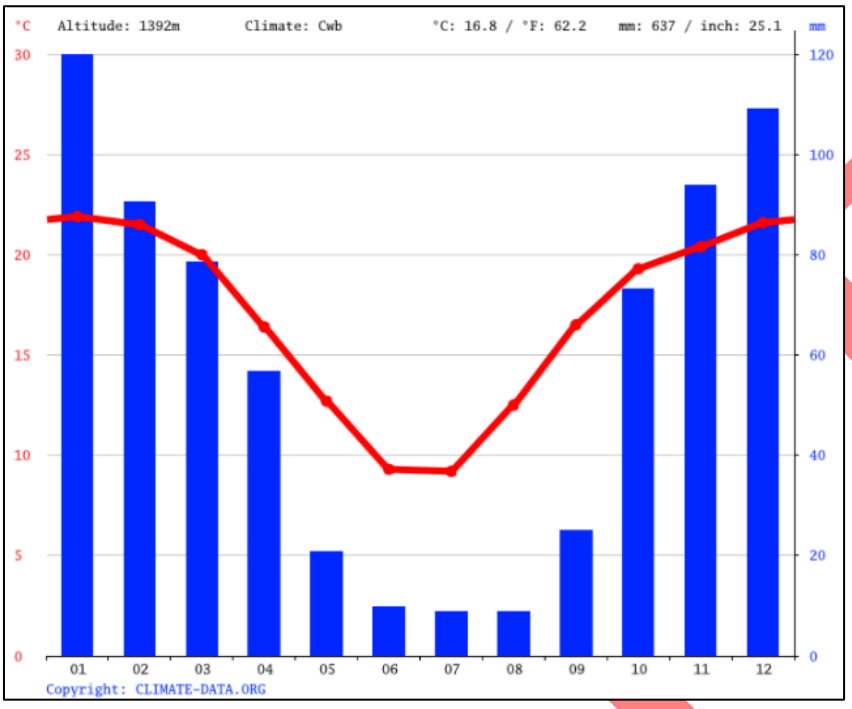


Figure 11: Parys Climate Graph // Weather by Month

The highest temperatures occur in January, with an average at around 21.9 °C | 71.4 °F. At 9.2 °C | 48.6 °F on average, July is the coldest month of the year.

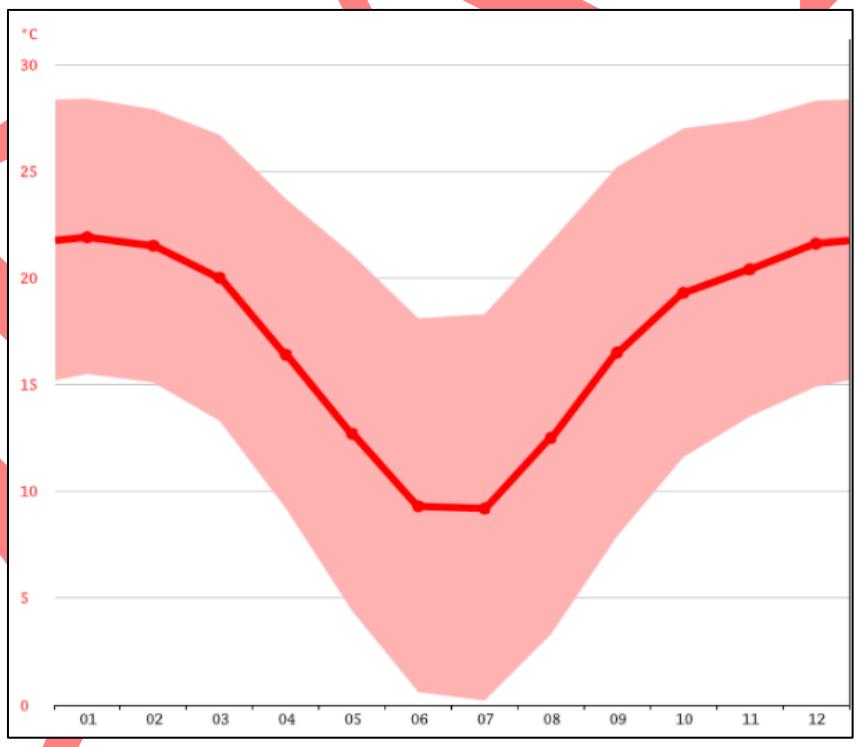


Figure 12: Parys average temperature

The precipitation varies in the driest and wettest months approximately 103 mm | 4 inch. During the year, the average temperatures vary by 12.6 °C | 54.7 °F.

	January	February	March	April	May	June	July	August	September	October	November	December
Avg. Temperature (°C)	21.9	21.5	20	16.4	12.7	9.3	9.2	12.5	16.5	19.3	20.4	21.6
Min. Temperature (°C)	15.5	15.1	13.3	9.2	4.4	0.6	0.2	3.3	7.9	11.6	13.5	14.9
Max. Temperature (°C)	28.4	27.9	26.7	23.7	21.1	18.1	18.3	21.7	25.2	27	27.4	28.3
Avg. Temperature (°F)	71.4	70.7	68.0	61.5	54.9	48.7	48.6	54.5	61.7	66.7	68.7	70.9
Min. Temperature (°F)	59.9	59.2	55.9	48.6	39.9	33.1	32.4	37.9	46.2	52.9	56.3	58.8
Max. Temperature (°F)	83.1	82.2	80.1	74.7	70.0	64.6	64.9	71.1	77.4	80.6	81.3	82.9
Precipitation / Rainfall (mm)	110	83	72	52	19	9	8	8	23	67	86	100

Figure 13: Parys average monthly temperatures and rainfall

Source for climate data: https:// https://en.climate-data.org/africa/south-africa/free-state/parys-12809/

Terrain and Slopes

Slopes

Gradient (decimal) = Rise (Relief Line) / Run (Topo Line) = (1386m-1369m above sea level) / 317m = 0.0528

Here for every 1 meter of horizontal travel, there is 0.0536 meters of altitude gain.

Gradient (percentage) = 0.0536 * 100 = 5.36%, which equals to a plain.

However, steeper slopes occur towards the edge of the Vaal River. This is supported by the the Preliminary Engineering Geological Investigation, which were conducted by RockSoil Consult (Pty) Ltd (2020) **(Appendix H(vi))**. According to this report, Steep slopes are present towards the eastern site boundary. The majority of the steep slopes are situated below the 1:100-year floodline. Localised areas with slopes of between 15° and 25° are present above the 1:100-year floodline. These areas are mainly situated along the indicated 1:100-year floodline, especially from the centre site portion to the southern site boundary. It occupies a narrow band of approximately 10 meters in width. The areas with slopes in excess of 12 to 25° are expected to be less than approximately 800 to 1 000 m² in surface area.

Also, the down-slope canal berm is an artificial steep slope. It is however expected that the canal and surroundings will be engineered and/or incorporated into the development layout.

Unstable Natural Slopes

The natural slopes are expected to be stable, given the shallow nature of the profile. However, Geotechnical input should be provided for significant cuts/fills or earthworks in the more detailed assessments.

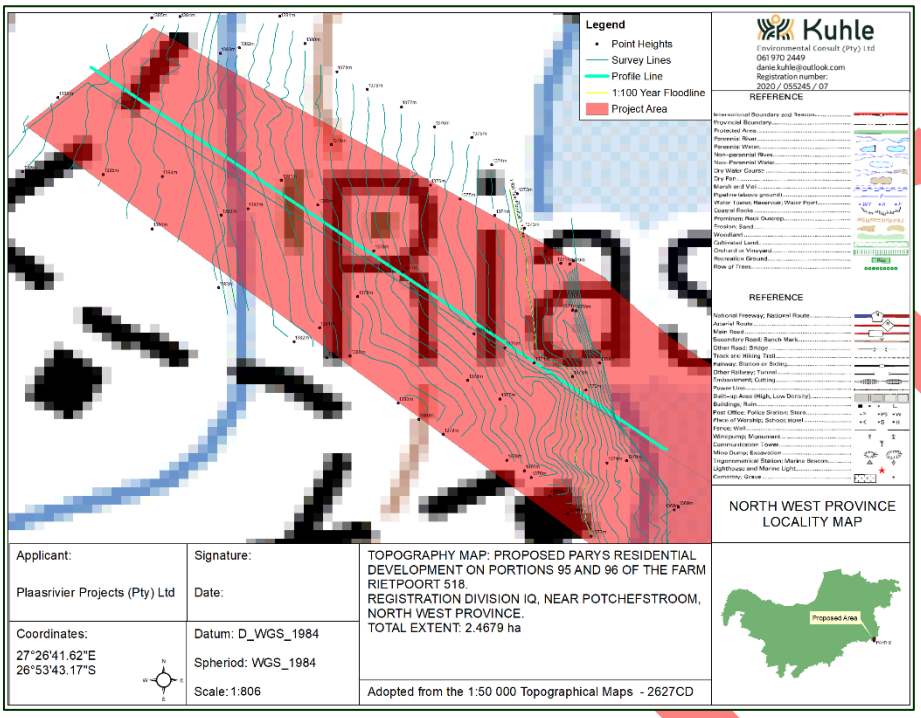


Figure 13: Topography map of the proposed site **(Appendix G(ii))**

1st level	2nd level	gradient (%)	relief intensity ($m.km^{-2}$)
L level land	**LP** plain	<10	<50
	LL plateau	<10	<50
	LD depression	<10	<50
	LF low gradient footslope	<10	<50
	LV valley floor	<10	<50
S sloping land	**SE** medium-gradient escarpment zone	10-30	100-150
	SH medium-gradient hill	10-30	100-250
	SM medium-gradient mountain	15-30	150-300
	SP dissected plain	10-30	50-100
	SV medium-gradient valley	10-30	100-150
T steep land	**TE** high-gradient escarpment zone	>30	150-300
	TH high-gradient hill	>30	150-300
	TM high-gradient mountain	>30	>300
	TV high-gradient valley	>30	>150

Adapted from SOTER manual (van Engelen and Wen 1995); revised, not published

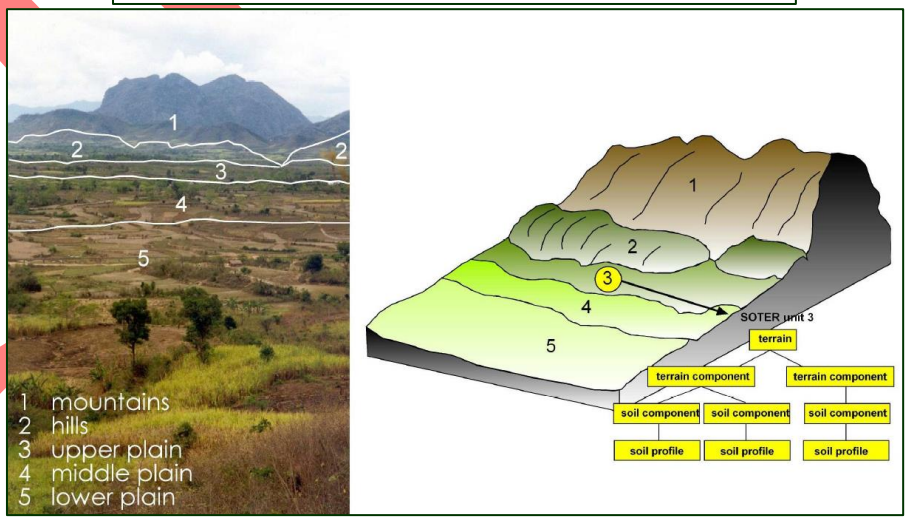


Figure 14: Hierarchy of major landforms

Land Capability

Land capability is the combination of soil suitability and climate factors. The National Department of Agriculture (2006) classified land capability into two broad categories, namely land suited to cultivation (Classes I – IV) and land with limited use, generally not suited to cultivation (Classes V – VIII). The site and surrounds have a land capability of Class 5 which falls under non-arable land. Land class V defined:

The proposed development falls within Land in Class V:

- Land in Class V has little or no erosion hazard but have other limitations impractical to remove that limit its use largely to pasture, range, woodland or wildlife food and cover. These limitations restrict the kind of plants that can be grown and prevent normal tillage of cultivated crops. Pastures can be improved and benefits from proper management can be expected.
- It is nearly level. Some occurrences are wet or frequently flooded. Other are stony, have climatic limitations, or have some combination of these limitations.
- Examples of Class V are:
    - Bottomlands subject to frequent flooding that prevents the normal production of cultivated crops.
    - Nearly level land with a growing season that prevents the normal production of cultivated crops.
    - Level or nearly level stony or rocky land.
    - Ponded areas where drainage for cultivated crops is not feasible but which are suitable for grasses or trees.

(AGIS, 2016)

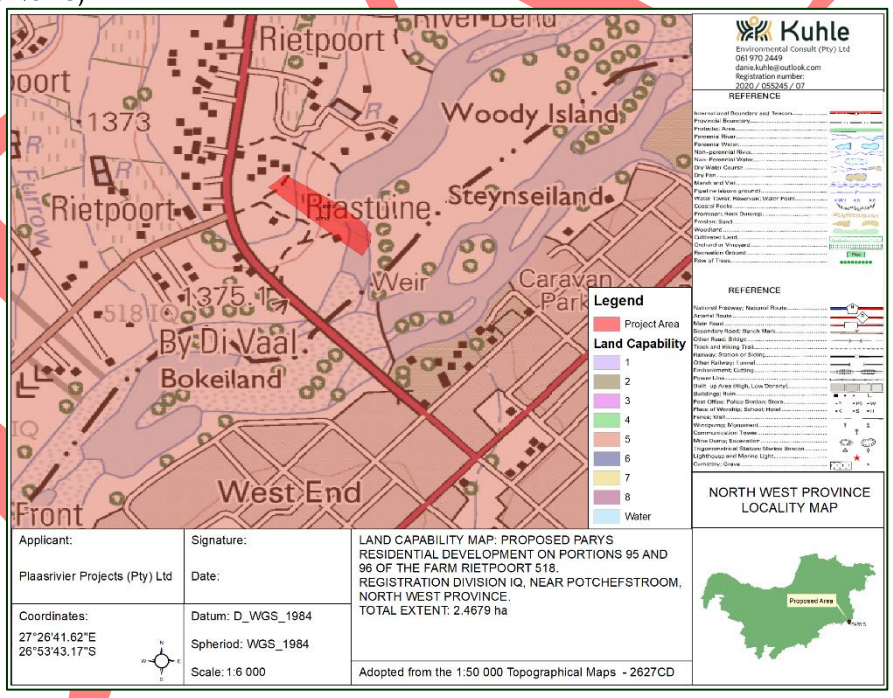


Figure 15: Land capability map of the proposed site **(Appendix G(iii))** (AGIS, 2016)

Ecological habitat

Plant Species

According to the Ecological Fauna and Flora Habitat Survey Report conducted by Anthene Ecological CC (2020) **(Appendix H(iv))**, the Terrestrial vegetation at most of the site is known as a woodland with a mixture of alien invasive and indigenous tree species. A conspicuous high cover of the alien invasive shrub *Cestrum laevigatum* is found at many parts of the understory vegetation of the woodland. Indigenous tree species found on site include *Vachellia karroo, Ziziphus mucronata, Celtis africana, Searsia lancea, Diospyros lycioides* and *Grewia occidentalis*. Alien invasive tree species present on site include *Melia azedarach, Gleditsia triacanthos* and *Ligustrum lucidum*. Bush encroachment of the tree *Vachellia karroo* and the shrub *Asparagus laricinus* is visible on various parts of the site. Exotic tree species such as *Quercus robur* have been planted in some areas. Indigenous grass species such as *Cynodon dactylon, Digitaria eriantha* and *Eragrostis curvula* are present at the terrestrial zone at the site. The alien invasive *Pennisetum clandestinum* (Kikuyu grass) forms dense mats in some areas. Various alien invasive herbaceous weeds are noticeable at the site such as *Tagetes minuta, Bidens pilosa, Bidens bipinnata, Conyza bonariensis, Datura ferox, Verbena aristigera, Schkuhria pinnata, Verbena aristigera* and *Verbena bonariensis*.

Riparian vegetation at the site is can classed as ecologically disturbed and contains conspicuously high covers of *Eucalyptus camaldulensis*. The indigenous reed species *Phragmites australis*, occurs at some areas in the riparian zone. The indigenous tree species *Ziziphus mucronata* is conspicuous at the remaining more natural parts of the riparian zone on site. Other indigenous tree species at the riparian zone include *Vachellia karroo, Diospyros lyciodes* and *Gymnosporia buxifolia*. A few *Boscia albitrunca* individuals are present at the riparian zone. Indigenous grass species at the riparian zone include *Panicum maximum* and *Ehrharta erecta*. Alien invasive *Melia azedarach* is also present at the riparian zone as well as exotic herbaceous species that prefer wet areas such as *Rumex crispus* and *Plantago major*. It should be noted that the Vaal River and its riparian zone is a corridor of particular conservation importance.

The *Boscia albitrunca* (Sheppard's tree) is a tree species of the North West Province which are listed as Protected Species under the National Forests Act No. 84 of 1998, Section 15(1). In terms of a part of section 15(1) of the National Forests Act No. 84 of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister.

Vertebrates

According to the Ecological Fauna and Flora Habitat Survey Report conducted by Anthene Ecological CC (2020) **(Appendix H(iv))**, smaller mammals of a particular high conservation significance are likely to be found on the site. One mammal species which is expected to visit or be a resident in the area is the Near Threatened *Aonyx capensis* (African Clawless Otter). A a corridor or habitat for the *Aonyx capensis,* at the riparian zone, should be conserved.

The report further confirms that with bird species, which often have a large distributional range, their presence does not imply that they are particularly dependent on a site as breeding location. No threat to any threatened bird species or any bird species of particular conservation importance are expected.

Also, according to the report, there appears to be no threat to any reptile species of particular high conservation importance if the development is approved.

Furthermore, the report states that no frog species that occur in the North West are listed as Threatened species (Vulnerable, Endangered or Critically Endangered) or Near Threatened species according to IUCN Amphibian Specialist Group (2013). According to the Biodiversity Management Directorate of GDARD (Gauteng Department of Agriculture and Rural Development) (2014) there are no amphibians in Gauteng that qualify for red listed status. A suitable habitat for the Giant Bullfrog appears to be absent on site.

Invertebrates

According to the Ecological Fauna and Flora Habitat Survey Report conducted by Anthene Ecological CC (2020) **(Appendix H(iv))**, four species of butterfly in the Gauteng Province and North West Province combined are listed as threatened in the recent butterfly conservation assessment of South Africa (Mecenero *et al.,* 2013). The expected presence or not of these threatened butterfly species as well as species of high conservation priority that are not threatened, at the site is assessed in the relevant report. However, there appears to be no threat to any threatened butterfly species if the site is developed.

The report further confirms that the fruit chafer beetle species (*Coleoptera: Scarabaeidae: Cetoninae*) (*Ichnestoma stobbiai* or *Trichocephala brincki*) that are of high conservation priority in the North West Province, were not found during the surveys. There appears to be no suitable habitat for *Ichnestoma stobbiai* or *Trichocephala brincki* at the site. There appears to be no threat to any of the fruit chafer beetles of particular high conservation priority if the site were developed.

Also, according to the report, there appears to be no threat the rock scorpion species (*Scorpiones: Ischnuridae*) that are known to be of high conservation priority in the North West Province. None of these rock scorpions have been found at the site and the habitat does not appear to be optimal.

To summarise:

Terrestrial vegetation over most of the site is a woodland with a mixture of alien invasive and indigenous tree species. Bush encroachment of the tree *Vachellia karroo* and the shrub *Asparagus laricinus* is visible at some parts of the site. Various alien invasive herbaceous weeds are noticeable on site.

Riparian vegetation at the site is ecologically disturbed and contains conspicuously high covers of *Eucalyptus camaldulensis*. The indigenous tree species *Ziziphus mucronata* is conspicuous at the remaining more natural parts of the riparian zone of the site. Alien invasive *Melia azedarach* is also present at the riparian zone as well as exotic herbaceous species that prefer wet areas such as *Rumex crispus* and *Plantago major*.

Wetlands and rocky ridges appear to be absent. A major perennial river, the Vaal River, is present at the eastern boundary of the site. The riparian zone of the Vaal River is part of the site. A few granite boulders which result in small unique pockets of biodiversity and the Protected tree species, *Boscia albitrunca* is also present, occur at the site.

No threatened plant or animal species appear to be present at the site or use the site as particular habitat. No Near Threatened plant or animal species are likely to occur on the site, apart from one mammal species which could visit or be a resident in the area, the Near Threatened *Aonyx capensis* (African Clawless Otter). The riparian zone should be conserved ss a corridor or habitat for *Aonyx capensis*.

The site contains one protected tree species *Boscia albitrunca* (Shepherd's Tree). Few individuals of *Boscia albitrunca* are present at the riparian zone at the site (Figure 1). In terms of a part of section 15(1) of the National Forests Act No. 84 of 1998, no person may cut, disturb, damage or destroy any protected tree or possess, collect, remove, transport, export, purchase, sell, donate or in any other manner acquire or dispose of any protected tree, except under a license granted by the Minister.

The Vaal River and its riparian zone are a corridor of particular conservation importance in the larger area. Therefore, this area will not be developed.

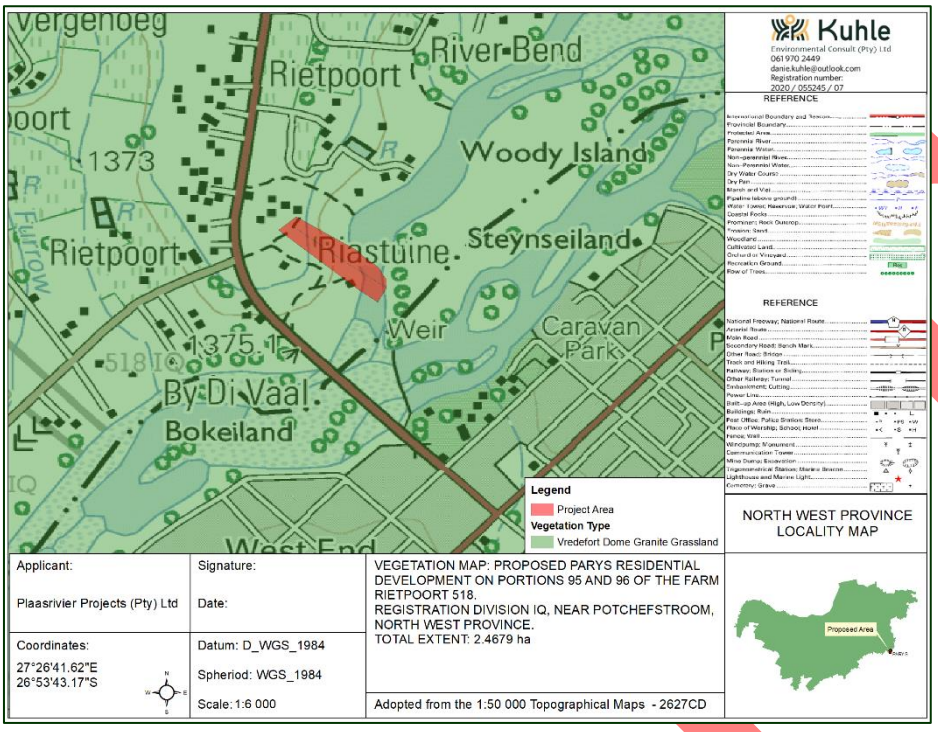


Figure 16: Vegetation map of the proposed site **(Appendix G(iv))**

Description of the Critical Biodiversity Areas (CBAs)

The Department of Economic Development, Environment, Conservation and Tourism (previously known as Department of Rural, Environmental and Agriculture Development (READ)) defines Critical Biodiversity Areas and Ecological Support Areas as follows:

Critical Biodiversity Areas (CBAs) are terrestrial and aquatic areas of the landscape that need to be maintained in a natural or near-natural state in order to ensure the continued existence and functioning of species and ecosystems and the delivery of ecosystem services. In other words, if these areas are not maintained in a natural or near-natural state then biodiversity targets cannot be met. Maintaining an area in a natural state can include a variety of biodiversity compatible land uses and resource uses.

Ecological Support Areas (ESAs) are terrestrial and aquatic areas that are not essential for meeting biodiversity representation targets (thresholds), but which nevertheless play an important role in supporting the ecological functioning of critical biodiversity areas and/or in delivering ecosystem services that support socio-economic development, such as water provision, flood mitigation or carbon sequestration. The degree or extent of restriction on land use and resource use in these areas may be lower than that recommended for CBAs.

According to the data for Critical Biodiversity Areas, the proposed area falls within Critical Biodiversity Areas type 1 (CBA) and Ecological Support Area type 1 (ESA 1). According to the North West Biodiversity Sector Plan (2015) the land management objectives for above mentioned is as follows:

CBA1

Maintain in a natural or near-natural state that maximises the retention of biodiversity pattern and ecological process:

- Ecosystems and species fully or largely intact and undisturbed.T
- hese are areas with high irreplaceability or low flexibility in terms of meeting biodiversity pattern targets. If the biodiversity features targeted in these areas are lost then targets will not be met.
- These are biodiversity features that are at, or beyond, their limits of acceptable change.

ESA1

Maintain in at least a semi-natural state as ecologically functional landscapes that retain basic natural attributes:

- Ecosystem still in a natural, near-natural state or semi-natural state, and has not been previously developed.
- Ecosystems moderately to significantly disturbed but still able to maintain basic functionality.
- Individual species or other biodiversity indicators may be severely disturbed or reduced.
- These are areas with low irreplaceability with respect to biodiversity pattern targets only.

See **Appendix G(v)**

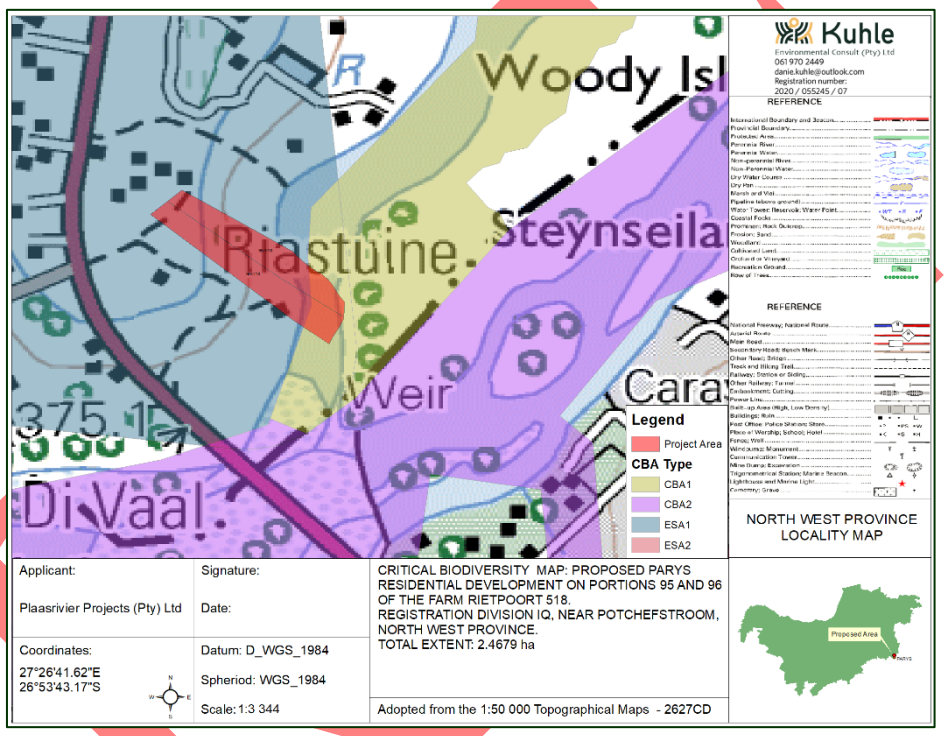


Figure 14: CBA map of the proposed site **(Appendix G(v))**

Strategic Water Source Areas (SWSAs)

The information below was obtained from BGIS (SANBI,2020)

Strategic Water Source Areas (SWSAs) are defined as areas of land that either: (a) supply a disproportionate (i.e. relatively large) quantity of mean annual surface water runoff in relation to their size and so are considered nationally important; or (b) have high groundwater recharge and where the groundwater forms a nationally important resource; or (c) areas that meet both criteria (a) and (b). They include transboundary Water Source Areas that extend into Lesotho and Swaziland (SANBI,2020).

A total of 22 surface water and 37 groundwater source areas that were considered to be strategically important at the national level for water and economic security for South Africa. They include portions of water source areas which extend into Lesotho and Swaziland. A total of 124 075 km^2 (or 10% of the area) as water source areas in South Africa. Together, these areas provide 24 954 million m^3/year or 50% of South Africa's mean annual runoff. The greatest

volume of mean annual runoff is generated by the southern Drakensberg (9% of mean annual runoff) followed by the Eastern Cape Drakensburg, Northern Drakensburg, Maloti Drakensberg and the Boland. The Boland has the highest mean annual runoff per unit area (2 588 m3/ha/year), followed by Table Mountain, the Northern Drakensberg and the Mpumalanga Drakensberg. The newly-defined strategic water source areas for groundwater cover around 9% of the land surface of South Africa. They have a key role in sustaining many towns, industry and irrigated agriculture. Some of the high-yielding surface water source areas are located in areas where baseflow is at least 11-25 mm/year, evidence of a strong link between groundwater and surface water in these areas. The aquifers are sustaining baseflow, contributing to runoff and especially to dry season flows. Sustained river flows are important because they support people and communities who depend directly on rivers for their water, especially during the dry season and droughts (SANBI,2020).

There are many water-related benefits that society obtains from water source areas, including water for urban and industrial purposes, and for irrigation. Water from water source areas are also critical for cooling at the power stations which generate most of South Africa's electricity. It is important to note that the major urban centres of South Africa source more than 90% of their water supply from these water source areas. Furthermore, about 12% of South Africa's population reside within sole groundwater-supply towns or settlements where groundwater provides more than 50% of total supply (SANBI,2020).

Only 11% of all the water source areas fall within protected areas. For example, only 10% of the critically important Northern Drakensberg source water area, which includes the Upper Wilge and Upper Thukela catchments, is protected. Much of this area is montane grasslands with extensive areas that have been severely degraded by overgrazing. This poses a threat to water security and requires restoration. The best protected water source areas are in the Western Cape, including the Swartberg, Boland and Groot Winterhoek (SANBI,2020).

The amount of rainwater which becomes stream flows or groundwater recharge depends on several factors, including the characteristics of the land and the vegetation growing on it because they affect key processes, including evaporation and infiltration. In general, tall, evergreen vegetation transpires and intercepts more water than short, seasonally green grasslands. Research has shown that commercial forest plantation species use more water than natural vegetation which is why the extent and location of plantation areas is regulated as a streamflow reduction activity (SFRA) under the National Water Act (SANBI,2020).

Most of the water source areas are still under natural vegetation, with the lowest proportions being found in Upper Usutu, Mpumalanga Drakensberg and Table Mountain. There is extensive dryland cultivation in several water source areas, including the Upper Vaal, and extensive irrigation in the Boland, Groot Winterhoek, Soutpansberg and Wolkberg. As expected, plantation forestry is important in the water source areas from KwaZulu-Natal to Limpopo. Mining occupies a relatively small percentage of the area of the surface water areas, but extensive prospecting licenses have been granted, particularly in Mpumalanga where most of the water source areas could be transformed by opencast and longwall coal mining (SANBI,2020).

The protection and restoration of strategic water source areas is of direct benefit to all downstream users. This dependence needs to be considered in decisions relating to these primary headwater catchments. The protection of both water quantity (flows) and quality must be addressed. Any failure to address impacts on water quality or quantity will have impacts on the water security of all those depending on that water downstream. Groundwater is the main or only source of water for numerous towns and settlements across the country so protecting the capture zone, specifically for municipal supply well-fields, the recharge area, and the integrity of the aquifers is important as well (SANBI,2020).

The protection and management of strategic water source areas is a responsibility that reaches across many government departments and all spheres of government, the private sector (particularly agriculture and mining) and even the public at large. Strategic water source areas must be recognised and valued by all for the role they play in sustaining the people and the economy of the country. Much can be done to protect, and even improve, the integrity of our strategic water source areas (SANBI,2020).

For this study the surface water and groundwater resources were plotted on 2 separate maps. These maps confirm that no SWSAs are present.

N/A

Figure 15: SWSA - Groundwater map of the proposed site (Appendix G)

N/A

Figure 16: SWSA - Wetlands map of the proposed site (Appendix G)

Description of the socio-economic environment

The Parys Community is found Adjacent/East of the proposed project area.

The main economic sector surrounding the proposed site can be classed as urban and agricultural. A short drive from the bridge crossing the Vaal River (R53) to the intersection of the R500 & R53 revealed that the near area is well developed with some legal and possible illegal land uses that are not only agricultural in nature but a mix of various land uses. The existing land uses comprise of shops, professional consultant offices, venues/ guest houses/ lodges/ conference centres, pubs & auction ground to name a few. These land uses are supporting and receiving support from Parys and its surrounding population.

JB Marks Local Municipality is part of Dr Kenneth Kaunda District Municipality.

MDB code: NW405

Description: The JB Marks Local Municipality is a Category B municipality situated within the Dr Kenneth Kaunda District in the North West Province. It is the largest municipality of three in the district, making up almost half its geographical area. It was established by the amalgamation of the Ventersdorp and Tlokwe City Council Local Municipalities in August 2016.

The N12 route that connects Johannesburg and Cape Town via the city of Kimberley runs through the municipality. The main railway route from Gauteng to the Northern and Western Cape also runs through one of the municipality's main cities, Potchefstroom. The City is 145km south-east of OR Tambo International Airport but has its own airfield, which can accommodate bigger aircraft and was formerly a military air base.

Gold mining is the dominant economic activity in the district, with Potchefstroom and Ventersdorp being the only exceptions. While Ventersdorp to the north-west of Potchefstroom focuses on agricultural activity, Potchefstroom's economic activity is driven by services and manufacturing. A big role-player in the provision of services in Potchefstroom is the world-class North-West University, which has its main campus in Potchefstroom.

Potchefstroom's industrial zone has many companies, focusing mainly on the industries of steel, food and chemicals, with big entities such as King Korn, Kynoch, Naschem and the Soya Protein Process (SPP) company. Within the city centre, the infrastructure of Potchefstroom supports roughly 600 businesses.

Area: 6 398km²

Cities/Towns: Potchefstroom, Ventersdorp

Main Economic Sectors: Agriculture, community services, manufacturing, trade, finance, transport, mining.

Cultural and heritage aspects

According to the National Heritage Resources Act no 25 of 1999, heritage resources including archaeological and paleontological sites over 100 years old, graves older than 60 years, structure older than 60 years are protected. Therefore if such resources are found during the proposed activities, they shall not be disturbed without a permit from the relevant heritage resource Authority, which means that before such sites are disturbed by development it is incumbent on the developer to ensure that a heritage impact assessment is done and the Provincial Heritage Resources Authority and SAHRA must be contacted immediately and work must stop.

According to the Phase 1 Cultural Heritage Impact Assessment conducted by Dr. Van Schalkwyk (2020) **(Appendix H(viii))**, the cultural landscape qualities of the region essentially consist of two components. The first is a rural area in which the human occupation is made up of a pre-colonial (Stone Age and Iron Age) occupation component and a much later colonial (farmer) component. The second component is an urban one, most of which developed during the last 150 years or less. During the physical survey the following sites, features or objects of cultural significance were identified:

- 7.3.1 An unpaved water furrow that was excavated across the site, bringing water from some point in the north all along the right-hand bank of the Vaal River, supplying water to numerous farms and smallholdings in the region. According to all evidence, it is older than 60 years and is still in use by local landowners.

However, Dr. Van Schalkwyk further states that considering the legal requirements related to heritage (that are specifically specified in Section 3 of this report) and the assessment; no sites, features or objects of heritage significance occur in the study area. If heritage features are identified during construction, as stated in the management recommendation, these finds would have to be assessed by a specialist, after which a decision will be made regarding the application for relevant permits.

Description of the current land uses.

The land uses on site and surrounding the site include:

- Natural
- Waterbodies (Vaal River)
- Cultivation and
- Urban

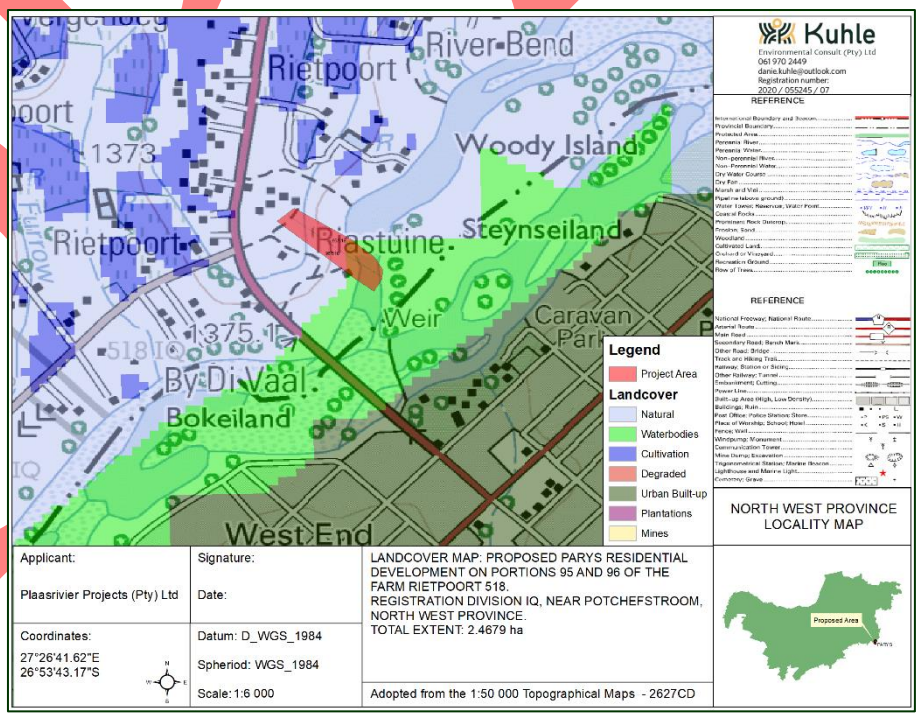


Figure 17: Landcover map of the proposed site **(Appendix G(vi))**

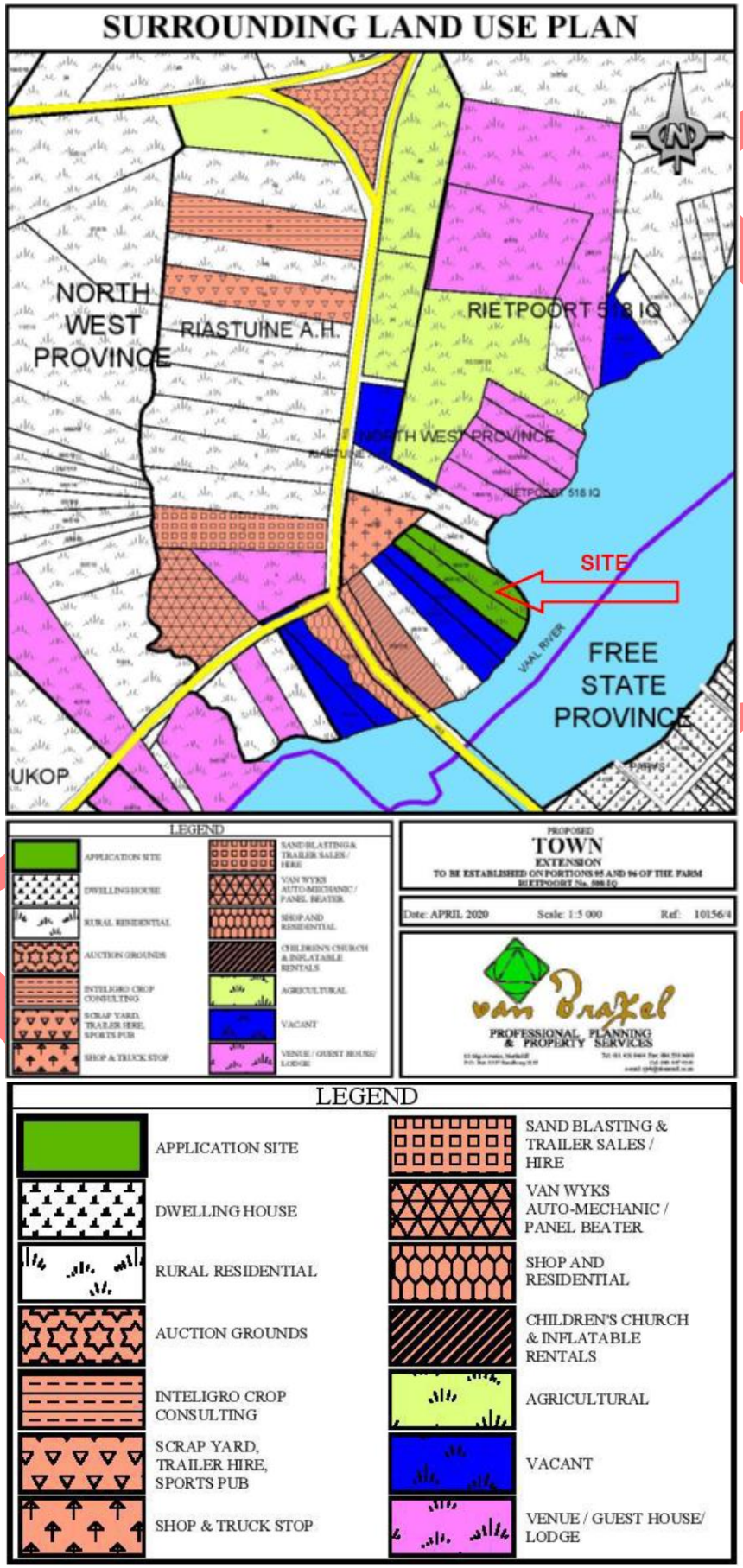


Figure 18: Surrounding Land Use Plan **(Appendix H(iii))**

v. Impacts & risks identified including the nature, significance, consequence, extent, duration and probability of the impacts, including the degree to which these impacts

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION				SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION				SIGNIFICANCE RATING (AFTER MITIGATION)
	EXTENT	DURATION	INTENSITY	PROBABILITY			EXTENT	DURATION	INTENSITY	PROBABILITY	
PLANNING AND DESIGN PHASE											
Policy and legal requirements											
Legal aspects and policies lined out, should be followed as failure to comply with them will result in a criminal offense and liable by penalties set out in various regulations	3	3	2	2	**Negative Medium (-16)**	• The applicant must obtain all relevant information and documentation before commencing with the proposed activity. • The contractor must ensure that the project is done in guidance of the Environmental Legislation Framework, the conditions set out in the Environmental Authorisation and is also compliant to the Environmental Management Programme (EMPr).	1	2	2	2	**Negative Low (-10)**
Socio-economic Impacts											
The development will result in job creation and provision of employment	2	3	2	1	**Positive Medium (+12)**	• All labour (skilled and unskilled) and contractors should be sourced locally where possible. • A labour and recruitment policy may be considered, displayed and implemented by the applicant.	2	3	2	3	**Positive Medium (+16)**
Environmental Awareness											
Training and awareness on proper environmental management practice	2	2	2	2	**Positive Medium (+12)**	• Communication of all Environmental Issues must be conducted (by the relevant EAP) to all personnel, stakeholders, interested and affected parties that shall be involved in the construction and operation of the development. • Only suitable, trained, competent and certified personnel must partake of particular duties at any point in the project implementation	2	3	3	3	**Positive High (+24)**
CONSTRUCTION PHASE											
Traffic Impacts											
Increased traffic congestion could possibly occur as a result of construction vehicles moving onto and off the site during construction. Trucks will be delivering the relevant material, as well as cement, however the number of construction trips is not expected to be high. Traffic on the road is generally low, thus the impact would not be significant.	3	2	2	2	**Negative Medium (-14)**	• It can be concluded that the impact on the traffic flows on the R53 will be negligible. • However, notice of construction work should be placed with speed limit of 30 km/h	2	1	1	1	**Negative Low (-4)**
Soil Erosion and Surface runoff											
Collapsible Soil; A low to moderate soil compressibility is anticipated, probably secondary to the collapse potential; Considering the slope angle, parental rock, depositional environment and grading of the upper	2	3	3	3	**Negative High (-24)**	• Clearing activities and earth scraping should preferably be restricted to the dry season in order to prevent erosion and siltation. • The dry months are also the period when the majority of species are either dormant or finished with their breeding activities. • Future soil stockpiling areas must follow environmentally sensitive practices and be situated a sufficient distance away from drainage areas. • The careful position of soil piles, and runoff control, during all phases of development, and planting of some vegetative cover after completion (indigenous groundcover, grasses etc.) will limit the extent of erosion occurring on the site. Sufficient measures must be implemented	1	1	2	2	**Negative Low (-8)**

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (AFTER MITIGATION)
soils inspected on site, an intermediate to high erodibility is assigned to the site; Loss of soil resources as a result of soil stripping of the construction footprint; Sterilisation of soil resources as a result of hydrocarbon/chemical/waste contamination; Possibility of erosion as a result of runoff from cleared and compacted areas resulting in the soil instability and loss of soil resources; Soil contamination as a result of uncontrolled sewage handing; Indirect impact on the loss of micro habitats following soil removal; and Erosion due to floods.						to prevent the possible contamination of the surface water and surrounding groundwater from runoff. • The use of water on the site must be carefully monitored to ensure that erosion on slopes does not take place. • Any erosion channels developed during the construction period shall be backfilled and compacted and the areas restored to a proper condition. • In terms of SABS 0400-1990 of the National Building Regulations, on site drainage will be provided prior to construction to combat soil erosion. • All disturbed areas that will require rehabilitation must be mulched to encourage vegetation re-growth • Installation of silt fences and erosion berms as necessary to minimize erosion. • Covering of any stormwater drains with a permeable material such as a geofabric to prevent sediment entering the system. • Stabilisation of cleared areas to prevent and control erosion shall be actively managed. The method of stabilisation shall be determined in consultation with the ECO. • Erosion control measures include use of sand bags, erosion berms and straw bales placed across overland stormwater flow to reduce runoff rate and sedimentation. • Excavated material, other than topsoil can be utilised for erosion control. • Traffic and movement over stabilised areas shall be restricted and controlled, and damage to stabilised areas shall be repaired and maintained to the satisfaction of the ECO.					
Waste management											
Mixing of waste and uncontrolled disposal; Pollution and aesthetical impacts as a result of uncontrolled waste storage; Uncontrolled storage of waste leading to pollution; Impact on groundwater as a result of uncontrolled waste handling; Impact on surrounding environment as a result of sewage control and waste water generation; and Possible contamination of surface water resources as a result of uncontrolled waste handling and disposal.	3	3	3	3	**Negative High** **(-27)**	• Portable sanitation facilities should be erected for construction personnel. Use of these facilities should be enforced (these facilities should be kept clean so that they are a desired alternative to the surrounding vegetation). These facilities should also be monitored and serviced regularly so as to prevent contamination of the water resources. • All solid waste generated during construction, other than natural materials such as soil and rock, shall be disposed of off-site to the landfill site. • Separation and recycling of different waste materials is supported. • Refuse collection and storage must be done in a way that will not cause a health nuisance. • Construction personnel should be instructed not to dump any building materials on the untransformed vegetation around the site. • All waste is to be disposed of at the local landfill site • Waste Bins should be positioned around the site for use by construction personnel. These bins should be emptied and waste transported to the landfill site. • Hazardous waste (Dead livestock) is not to be mixed or combined with general waste earmarked for disposal at the municipal landfill site. • Under no circumstances is waste to be burnt or buried on site.	1	2	2	2	**Negative Medium** **(-12)**
Fauna and Flora Impacts											

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION				SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION				SIGNIFICANCE RATING (AFTER MITIGATION)
	EXTENT	DURATION	INTENSITY	PROBABILITY			EXTENT	DURATION	INTENSITY	PROBABILITY	
During the construction phase of the project there will be disturbance and destruction of habitats, faunal species and vegetation.	1	4	4	4	**Negative Very High (-36)**	• Appoint an ECO to oversee the activities and ensure that ecological aspects are kept in mind. • All alien plant species must be removed and should be replaced with indigenous vegetation. • No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. • All informal fires on the property shall be prohibited specifically during the construction phase of the proposed development. • The applicant shall be responsible for informing all employees about the need to prevent any harmful effects on natural vegetation on or around the construction sites as a result of their activities. • The clearance of vegetation must be conducted in a phased manner and vegetation not interfering with the construction activities must not be disturbed. • Reseed cleared areas to prevent soil erosion. • All construction areas must be demarcated prior construction to ensure that the footprint of impacts are limited organic materials are removed from the area to be cleared. • Fencing should not impact on indigenous plants. • All indigenous plant material removed from the cleared areas shall be stockpiled and mulching. All remaining vegetation shall be removed and disposed-off in a landfill site. • Riparian zone must be demarcated and avoided if the development is approved because the riparian zone is an important corridor or habitat for Near Threatened African Clawless otters in the area. • Avoidance of a few individuals of Protected Tree species *Boscia albitrunca* (Shepherd's Tree). These trees are part of the riparian zone at the site and are to be marked and avoided so that they remain unharmed during construction. • Given the likely absence of Threatened species as well as the location, setting and current ecological status of the site a 10 m buffer zone from the edge of the riparian zone is recommended as a practical buffer zone for the conservation of the perennial river and riparian zone at the site. • Rubble or waste that could accompany the construction effort, if the development is approved, should be removed during and after construction. Measures should be taken to avoid any spills and infiltration of petroleum fuels or any chemical pollutants into the soil during construction phase.	1	3	2	2	**Negative Medium (-12)**
Impacts on fauna species of conservation importance (including suitable habitat)	1	2	2	3	**Negative Medium (-12)**	• No domestic pets are permitted on site during construction. • Structures (e.g. gutters, drains, sumps, ditches) must be designed, as far as possible, so that they do not act as pitfall traps for small creatures, i.e. they should either have gently sloping edges or be adequately covered to prevent creatures from falling into them.	1	1	1	2	**Negative Low (-4)**
Noise Impacts											
During the construction phase there is likely to be an increase in noise pollution from construction vehicles and construction staff.	3	2	3	4	**Negative High (-27)**	• All construction activities should be undertaken according to daylight working hours between the hours of 07:00 – 17:00 on weekdays and 7:30 – 13:00 on Saturdays. • No construction activities may be undertaken on Sunday.	1	2	2	3	**Negative Medium**

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (AFTER MITIGATION)
						• Provide all equipment with standard silencers. Maintain silencer units in vehicles and equipment in good working order. • All earth moving vehicles and equipment must be regularly maintained to ensure their integrity and reliability. • Construction staff working in area where the 8-hour ambient noise levels exceed 60 dBA must have the appropriate Personal Protective Equipment (PPE). • All operations should meet the noise standard requirements of the Occupational Health and Safety Act (Act No. 85 of 1993).					**(-14)**
Safety and security											
Safety risk of contractors, due to increased construction activity; Health risks as a result of waste generation and storage; and Possible increase in criminal activity.	**2**	**2**	**2**	**2**	**Negative Medium** **(-12)**	• Clear sign boards should be erected at the entrance to the site to indicate that a construction area is being entered and safety precautions should be followed. • Notification signs must be posted around the site warning residents and visitors about the hazards around the construction site. • See waste management mitigations. • The proponent of the development should appoint the services of a security company that will monitor the proposed development activity on a 24-hour 7-days per week basis. • Any construction personnel found to be trespassing must be subjected to a disciplinary hearing. •	**1**	**1**	**1**	**1**	**Negative Low** **(-3)**
Air quality											
Impact on air quality as a result of the dust generation from cleared areas and cement; Impact on air quality as a result of emissions from machinery and increased vehicle usage; Odour emissions; and Blasting of large boulders may result in increased vibration, dust and noise during construction.	**3**	**3**	**3**	**3**	**Negative High** **(-27)**	• The speed of vehicles within the site to be strictly controlled to between 20 - 30km/h. • Areas generating dust particles should be sprinkled with water to reduce dust blowing out over the area and should be enclosed where possible to mitigate effects of wind on them. • The clearing of vegetation should be limited to the development area and should be undertaken prior to the commencement of construction activities. • The Contractor shall be solely responsible for the control of dust arising from the Contractor's operations and for any costs against the Developer for damages resulting from the dust. • The Contractor shall take all reasonable measures to minimise the generation of dust as a result of construction activities to the satisfaction of the ECO. This applies particularly to the dust which may affect owners and occupiers of the surrounding areas. • Excavation, handling and transport of erodible materials shall be avoided under high wind conditions or when a visible dust plume is present. • Implement blasting using chemical means to reduce dust, noise and vibrations. • See waste management mitigations.	**2**	**2**	**1**	**2**	**Negative low** **(-6)**
Land Use and Land Capability Impacts											

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (AFTER MITIGATION)
Permanent loss of land use and land capability as a result of the clearance of land; and Sterilisation of land as a result of soil pollution and erosion.	2	4	4	4	**Negative Very High (-40)**	• See soil and vegetation mitigation measures.	2	2	2	2	**Negative Medium (-12)**
Groundwater Impacts											
Impact on groundwater quality as a result of soil pollution due to the usage of hazardous substances on site; Impact on groundwater as a result of uncontrolled waste handling; and Hydrocarbon contamination is possible due to accidental spills of diesel/oils, etc. from the usage of heavy machinery and construction vehicles on site. Impact on groundwater quality (contamination) from leakages, spillages or overflow – Package Plant	2	3	3	3	**Negative High (-24)**	• Appropriate stormwater / surface water management measures must be put in place before construction commences and maintained throughout the lifetime of the development. • An appropriate number of toilets (1 toilet for every 20 workers) must be provided for labourers during the Construction Phase. These must be maintained in a satisfactory condition and a minimum of 100 m away from any water resources and outside of the 1:100-year floodline. • Any contaminated water associated with construction activities must be contained in separate areas or receptacles such as Jo-Jo tanks or waterproof drums, and must not be allowed to enter into drainage lines. • Should any excavations require dewatering, this is to occur through an adequately designed silt trap prior to discharge. All silt traps are to be regularly monitored and maintained to ensure efficient and effective use. • Line all potential contamination sources with an impermeable liner. • Groundwater monitoring should be conducted as per Section 7 of the Hydrogeological Investigation – Milnex CC **(Appendix H(vii))**. Laboratory analysis techniques should comply with SANAS guidelines. • An annual compliance report should be compiled and submitted to the authorities for evaluation and comment. The monitoring network should be updated annually, and this report should be submitted annually. The site must develop a monitoring response protocol. This protocol will describe procedures if groundwater monitoring information indicates that action is required. • See soil and vegetation mitigation measures.	1	1	1	2	**Negative Low (-4)**
Surface Water Impacts											
Possible contamination of surface water resources as a result of contaminated runoff; Possible contamination of surface water resources as a result of uncontrolled waste handling and disposal; Surface water flowing from potential contaminant source areas during rainfall events will flow into	2	3	3	3	**Negative High (-24)**	• Appropriate stormwater / surface water management measures must be put in place before construction commences and maintained throughout the lifetime of the development. • An appropriate number of toilets (1 toilet for every 20 workers) must be provided for labourers during the Construction Phase. These must be maintained in a satisfactory condition and a minimum of 100 m away from any water resources and outside of the 1:100-year floodline. • Any contaminated water associated with construction activities must be contained in separate areas or receptacles such as Jo-Jo tanks or waterproof drums, and must not be allowed to enter into drainage lines.	1	1	1	2	**Negative Low (-4)**

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (AFTER MITIGATION)
the downgradient Vaal River should no adequate stormwater management plans be implemented.; Sedimentation of surface water resources as a result of runoff from cleared areas; Contamination of surface water resources as a result of uncontrolled waste handling and disposal; The development will increase storm water runoff resulting in erosion and possible sedimentation.						• Should any excavations require dewatering, this is to occur through an adequately designed silt trap prior to discharge. All silt traps are to be regularly monitored and maintained to ensure efficient and effective use. • Line all potential contamination sources with an impermeable liner. • See soil and vegetation mitigation measures.					
Cultural and Heritage Impacts											
Water Furrow- This feature is crossing the proposed development site and therefore there is a high possibility that it might be impacted on by the construction activities. As it is a linear site, an impact on even a small section would be an impact on the whole. Destruction of cultural and heritage artefacts found underground; and Destruction of alternation of buildings older than 60 years.	3	4	3	3	**Negative High (-30)**	• Avoidance/Preserve: Because of its age and significance in the larger landscape, the water furrow should be avoided and be preserved in place. • Should be clearly marked in order that they can be avoided during construction activities • The contractors and workers should be notified that archaeological sites might be exposed during the construction activities. • Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible. • All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken. • Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and • Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1). • Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the ECO. • In areas were the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, byt only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.	1	4	1	1	**Negative low (-6)**
Climate Change											

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (AFTER MITIGATION)
Utilisation of non-renewable energy sources resulting in the increased project carbon footprint; and Change in land use to accommodate the development.	2	4	3	3	**Negative High (-27)**	• See all mitigation measures. • It is recommended that renewable energy options and/or alternative energy sources be listed as the preferred options.	1	1	1	1	**Negative Low (-3)**
Visual Impacts											
Visual disturbance on adjacent land and road users as a result of the use of construction equipment, excavation and building material; Aesthetic impact as a result of litter dispersion and untidy housekeeping from contractors; and Visual impact as a result of the development (change of sense of place).	3	3	3	3	**Negative High (-27)**	• See Air Quality to minimize dust. • See Waste Management mitigations to limit untidy housekeeping. • Ensure that the architectural design of new buildings is in keeping with the character of the town; • Landscape the public open spaces and road verges with appropriate vegetation to soften the built form of the development. • Introduce visual screening (e.g. plant trees and shrubs and earthen berms) if needed.	1	3	1	1	**Negative Low (-5)**
OPERATIONAL PHASE											
Air Quality											
Impact on air quality as a result of increased social activities; Impact on air quality as a result of emissions from machinery and increased vehicle usage; Odour emissions due to uncontrolled waste disposal; Impact on air quality as a result of exhaust emissions and dust generation.	3	3	3	4	**Negative High (-30)**	• The speed of vehicles within the site to be strictly controlled to between 20 - 30km/h. • Areas generating dust particles should be sprinkled with water to reduce dust blowing out over the area and should be enclosed where possible to mitigate effects of wind on them. • The clearing of vegetation should be limited to the development area and should be undertaken prior to the commencement of construction activities. • See waste management mitigations.	1	2	2	2	**Negative Low (-10)**
Climate Change											
Energy consumption. •Utilisation of non-renewable energy sources resulting in the increased project carbon footprint;	2	4	3	3	**Negative High (-27)**	• It is recommended that renewable energy options and/or alternative energy sources be listed as the preferred options. • Quarterly water-monitoring tests should be conducted on the water quality of all reservoirs, borehole and canal. These tests should include measurements for at least ortho-phosphates, nitrates, total suspended solids, chemical oxygen demand and faecal coliform counts.	1	1	1	1	**Negative Low (-3)**
Safety and security											
Health risks as a result of waste generation and storage; and	2	2	1	2	**Negative Low (-6)**	• See waste management mitigations. • The proponent of the development should appoint the services of a security company that will monitor the proposed development activity on a 24-hour 7-days per week basis.	1	1	1	1	**Negative Low (-3)**

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (AFTER MITIGATION)
Possible increase in criminal activity.											
Traffic Impacts											
Increase in vehicular traffic.	2	2	2	2	**Negative Medium (-12)**	• It can be concluded that the impact on the traffic flows on the R53 will be negligible. • However, internal road speed limits must be enforced with a speed limit of 30 km/h. • The electric gates must be kept in working order, to prevent traffic backing up into the road. • No off-road driving is permitted. • Roads are regularly swept.	2	1	1	1	**Negative Low (-4)**
Solid Waste Management											
During operation, units will generate domestic and garden refuse.	3	2	2	2	**Negative Medium (-14)**	• Use an integrated waste management approach and ensure that all solid waste is disposed of / recycled legally. Encourage implementation of the waste hierarchy by reducing waste generated, re-using wherever possible, recycling recyclables, and disposing only as a final resort. • Non-hazardous waste generated during operation, must be disposed-off site at the landfill site. • No on-site dumping of any waste materials, vegetation, litter or refuse shall occur. • Refuse collection and storage must be done in a way that will not cause a health nuisance. • Bins should not be allowed to become overfull and shall be emptied at least once a week by the applicant. • No hazardous chemical must be discarded in the sewage or storm water system. • Proper storage of cleaning materials in a lockable, well ventilated building.	1	1	1	1	**Negative low (-3)**
Waste Management, Sewerage/Effluent											
There are no bulk sewer services located near this development that will allow the Local Authority to service this development. The developer will be responsible for the design, construction of the internal sewer network and the bulk services (processing) of the sewage.	3	3	3	3	**Negative High (-27)**	• Internal gravitational system will have to be connect to a proposed package plant. • The sewage shall be treated before being re-used for irrigation purposes. • The package plant effluent outflow should match or surpass the Special Condition as set out by DWS guidelines for private / single package plants.	1	2	2	1	**Negative low (-8)**
Soil Erosion and Surface runoff											
Possibility of erosion as a result of runoff from cleared and compacted areas resulting in the soil instability and loss of soil resources; Soil contamination as a result of uncontrolled sewage handing; and Erosion due to floods;	2	2	3	3	**Negative High (-21)**	• Implement stormwater management plan • The storm water system, especially the discharge points, must be inspected and damaged areas must be repaired if required. • Discharge points must be inspected for blockages of any kind; these must be removed timeously to ensure the efficient operation of the storm water management system.	1	1	2	2	**Negative Low (-8)**

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (AFTER MITIGATION)
						• Storm water should be channeled to avoid ponding on-site. • Any erosion channels developed during the operational period shall be backfilled and compacted and the areas restored to a proper condition. • All disturbed areas that will require rehabilitation must be mulched to encourage vegetation re-growth. • No unnecessary or un-permitted clearance of vegetation during the operational phase.					
Fauna and Flora Impacts											
Disturbance and destruction of habitats, faunal species and vegetation; and Impacts on fauna species of conservation importance (including suitable habitat)	1	3	2	2	**Negative medium (-12)**	• Appoint an ECO to oversee the activities and ensure that ecological aspects are kept in mind. • All alien plant species must be removed and should be replaced with indigenous vegetation. • No animals should be intentionally killed or destroyed and poaching and hunting should not be permitted on the site. • The applicant shall be responsible for informing all employees about the need to prevent any harmful effects on natural vegetation on or around the construction sites as a result of their activities. • Reseed cleared areas to prevent soil erosion. • Fencing should not impact on indigenous plants. • No unnecessary or un-permitted clearance of vegetation during the operational phase. • Riparian zone must be demarcated and avoided if the development is approved because the riparian zone is an important corridor or habitat for Near Threatened African Clawless otters in the area. • Avoidance of a few individuals of Protected Tree species Boscia albitrunca (Shepherd's Tree). These trees are part of the riparian zone at the site and are to be marked and avoided so that they remain unharmed during construction. • Given the likely absence of Threatened species as well as the location, setting and current ecological status of the site a 10 m buffer zone from the edge of the riparian zone is recommended as a practical buffer zone for the conservation of the perennial river and riparian zone at the site.	1	2	2	2	**Negative low (-10)**
Noise Impacts											
There is likely to be an increase in noise pollution from residents (social activities) and the increase of vehicles.	3	3	3	3	**Negative High (-27)**	• No loud noises from social activities before 7:00am and after 22:00pm. • Loud noises are prohibited on Sunday. • Internal road speed limits must be enforced with a speed limit of 30 km/h.	2	2	2	2	**Negative Medium (-12)**
Groundwater Impacts											

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION				SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION				SIGNIFICANCE RATING (AFTER MITIGATION)
	EXTENT	DURATION	INTENSITY	PROBABILITY			EXTENT	DURATION	INTENSITY	PROBABILITY	
Impact on groundwater quality (contamination) from leakages, spillages or overflow – Package Plant Over abstraction of groundwater.	2	3	3	3	**Negative High (-24)**	• Line all potential contamination sources with an impermeable liner. • Groundwater monitoring should be conducted as per Section 7 of the Hydrogeological Investigation – Milnex CC **(Appendix H(vii))**. Laboratory analysis techniques should comply with SANAS guidelines. • An annual compliance report should be compiled and submitted to the authorities for evaluation and comment. The monitoring network should be updated annually, and this report should be submitted annually. The site must develop a monitoring response protocol. This protocol will describe procedures if groundwater monitoring information indicates that action is required. • Appropriate stormwater / surface water management measures must be put in place before construction commences and maintained throughout the lifetime of the development. • Based on the aquifer test analysis, total volume of 15 768m3/a (43.2m3/day) is available from BH1. This volume should not be exceeded.	1	1	1	2	**Negative Low (-4)**
Surface Water Impacts											
Sedimentation of surface water resources as a result of runoff from cleared areas; Contamination of surface water resources as a result of uncontrolled waste handling and disposal; and The development will increase stormwater runoff resulting in erosion and possible sedimentation.	2	3	3	3	**Negative High (-24)**	• Appropriate stormwater / surface water management measures must be put in place before construction commences and maintained throughout the lifetime of the development. • See soil and vegetation mitigation measures.	1	1	1	2	**Negative Low (-4)**
Cultural and Heritage Impacts											
Water Furrow- This feature is crossing the proposed development site and therefore there is a high possibility that it might be impacted on by the construction activities. As it is a linear site, an impact on even a small section would be an impact on the whole. Destruction of cultural and heritage artefacts found underground; and Destruction of alternation of buildings older than 60 years.	3	4	3	3	**Negative High (-30)**	• Avoidance/Preserve: Because of its age and significance in the larger landscape, the water furrow should be avoided and be preserved in place. • Should be clearly marked in order that they can be avoided during construction activities • The contractors and workers should be notified that archaeological sites might be exposed during the construction activities. • Should any heritage artefacts be exposed during excavation, work on the area where the artefacts were discovered, shall cease immediately and the Environmental Control Officer shall be notified as soon as possible. • All discoveries shall be reported immediately to a heritage practitioner so that an investigation and evaluation of the finds can be made. Acting upon advice from these specialists, the Environmental Control Officer will advise the necessary actions to be taken. • Under no circumstances shall any artefacts be removed, destroyed or interfered with by anyone on the site; and	1	4	1	1	**Negative low (-6)**

POTENTIAL ASPECT AND/OR IMPACT	BEFORE MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (BEFORE MITIGATION)	MITIGATION AND MANAGEMENT MEASURES	AFTER MITIGATION EXTENT	DURATION	INTENSITY	PROBABILITY	SIGNIFICANCE RATING (AFTER MITIGATION)
						• Contractors and workers shall be advised of the penalties associated with the unlawful removal of cultural, historical, archaeological or palaeontological artefacts, as set out in the National Heritage Resources Act (Act No. 25 of 1999), Section 51. (1). • Known sites should be located and isolated, e.g. by fencing them off. All construction workers should be informed that these are no-go areas, unless accompanied by the individual or persons representing the ECO. • In areas were the vegetation is threatening the heritage sites, e.g. growing trees pushing walls over, it should be removed, byt only after permission for the methods proposed has been granted by SAHRA. A heritage official should be part of the team executing these measures.					
Visual Impacts											
Aesthetic impact as a result of litter dispersion and untidy housekeeping; and Visual impact as a result of the development (change of sense of place).	3	3	3	3	**Negative High (-27)**	• See Air Quality to minimize dust. • See Waste Management mitigations to limit untidy houskeeping. • Ensure that the architectural design of new buildings is in keeping with the character of the town; • Landscape the public open spaces and road verges with appropriate vegetation to soften the built form of the development. • Introduce visual screening (e.g. plant trees and shrubs and earthen berms) if needed. • Lighting must be kept to a minimum and restricted to low level, downward facing lights to reduce light spill. • Lighting must be inward and downward pointing to reduce glare in surrounding areas. • Security lighting should make use of down-lights to minimize light spill, and motion detectors where possible so that lighting at night is minimized. • Mitigation of lighting impacts includes the pro-active design, planning and specification lighting for the facility by a lighting engineer. • The area cleared during construction will be landscaped and vegetation establishment encouraged reducing landscape scarring. • Rehabilitation of surrounding areas must take place with indigenous species.	1	3	1	1	**Negative Low (-5)**
DECOMMISSION											
N/A											

vi. The methodology used in determining and ranking the nature, significance, consequences, extent, duration and probability of potential environmental impacts and risks associated with the alternatives

METHODOLOGY

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

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

EXTENT			
National (4)	**Regional (3)**	**Local (2)**	**Site (1)**
The whole of South Africa	Provincial and parts of neighbouring provinces	Within a radius of 2 km of the construction site	Within the construction site
DURATION			
Permanent (4)	**Long-term (3)**	**Medium-term (2)**	**Short-term (1)**
Mitigation either by man or natural process will not occur in such a way or in such a time span that the impact can be considered transient	The impact will continue or last for the entire operational life of the development, but will be mitigated by direct human action or by natural processes thereafter. The only class of	The impact will last for the period of the construction phase, where after it will be entirely negated	The impact will either disappear with mitigation or will be mitigated through natural process in a span shorter than the construction phase

	impact which will be non-transitory		
INTENSITY			
Very High (4) Natural, cultural and social functions and processes are altered to extent that they permanently cease	**High (3)** Natural, cultural and social functions and processes are altered to extent that they temporarily cease	**Moderate (2)** Affected environment is altered, but natural, cultural and social functions and processes continue albeit in a modified way	**Low (1)** Impact affects the environment in such a way that natural, cultural and social functions and processes are not affected
PROBABILTY OF OCCURANCE			
Definite (4) Impact will certainly occur	**Highly Probable (3)** Most likely that the impact will occur	**Possible (2)** The impact may occur	**Improbable (1)** Likelihood of the impact materializing is very low

CRITERIA FOR THE RATING OF CLASSIFIED IMPACTS	
Low impact **(3 -10 points)**	A low impact has no permanent impact of significance. Mitigation measures are feasible and are readily instituted as part of a standing design, construction or operating procedure.
Medium impact **(11 -20 points)**	Mitigation is possible with additional design and construction inputs.
High impact **(21 -30 points)**	The design of the site may be affected. Mitigation and possible remediation are needed during the construction and/or operational phases. The effects of the impact may affect the broader environment.
Very high impact **(31 - 48 points)**	Permanent and important impacts. The design of the site may be affected. Intensive remediation is needed during construction and/or operational phases. Any activity which results in a “very high impact” is likely to be a fatal flaw.
Status	Denotes the perceived effect of the impact on the affected area.
Positive (+)	Beneficial impact.
Negative (-)	Deleterious or adverse impact.
Neutral (/)	Impact is neither beneficial nor adverse.

It is important to note that the status of an impact is assigned based on the status quo – i.e. should the project not proceed. Therefore, not all negative impacts are equally significant.

Significance is determined through a synthesis of impact characteristics. Significance is an indication of the importance of the impact in terms of both physical extent and time scale, and therefore indicates the level of mitigation required.

The calculation of the significance of an impact uses the following formula: **(Extent + duration + probability) x magnitude/intensity.**

vii. The positive & negative impacts that the proposed activity (in terms of the initial site layout) and alternatives will have on the environment & the community that may be affected.

The main impacts associated with the proposed project include:

Socio – Economic Impacts

- The construction phase will result in additional temporary job opportunities;
- The proposed project will increase the local Gross Domestic Product (GDP) through the provision of employment and support to other businesses in the area;
- Auxiliary services required for the construction will be sourced from local businesses;
- Possible inflow of migrant workers;
- Permanent job opportunities will be made available for the operation and maintenance of the development; and
- Nuisance to surrounding landowners as a result of odour and emissions.

Soil Impacts

- Collapsible Soil
- A low to moderate soil compressibility is anticipated, probably secondary to the collapse potential.
- Considering the slope angle, parental rock, depositional environment and grading of the upper soils inspected on site, an intermediate to high erodibility is assigned to the site.
- Loss of soil resources as a result of soil stripping of the construction footprint;
- Sterilisation of soil resources as a result of hydrocarbon/chemical/waste contamination;
- Possibility of erosion as a result of runoff from cleared and compacted areas resulting in the soil instability and loss of soil resources;
- Soil contamination as a result of uncontrolled sewage handing;
- Indirect impact on the loss of micro habitats following soil removal.
- Erosion due to floods;

Surface Water Impacts

- Possible contamination of surface water resources as a result of contaminated runoff;
- Possible contamination of surface water resources as a result of uncontrolled waste handling and disposal;

- Surface water flowing from potential contaminant source areas during rainfall events will flow into the downgradient Vaal River should no adequate stormwater management plans be implemented.;
- Sedimentation of surface water resources as a result of runoff from cleared areas;
- Inadequately designed greywater and wash water disposal systems could result in overflow (due to increase in wastewater volume) and the subsequent contamination of surface water;
- Contamination of surface water resources as a result of uncontrolled waste handling and disposal;
- The development will increase storm water runoff resulting in erosion and possible sedimentation.

Groundwater Impacts

- Impact on groundwater quality as a result of soil pollution due to the usage of hazardous substances on site;
- Impact on groundwater as a result of uncontrolled waste handling;
- Hydrocarbon contamination is possible due to accidental spills of diesel/oils, etc. from the usage of heavy machinery and construction vehicles on site;
- Impact on groundwater quality as a result of over abstraction from the existing borehole; and
- Potential contaminant plume movement can take place from on-site faulty infrastructure (package plant) including, but not limited to, overflow and leakages;

Air Quality Impacts

- Impact on air quality as a result of the dust generation from cleared areas and cement;
- Impact on air quality as a result of emissions from machinery and increased vehicle usage;
- Blasting of large boulders may result in increased vibration, dust and noise during construction;
- Odour emissions; and
- Impact on air quality as a result of exhaust emissions and dust generation.

Noise Impacts

- Noise emissions as a result of machinery movement around the site;
- Noise from increased occupants; and
- Noise from increased traffic.

Land Use and Land Capability Impacts

- Permanent loss of land use and land capability as a result of the clearance of land;
- Sterilisation of land as a result of soil pollution and erosion.

Waste Impacts

- Mixing of waste and uncontrolled disposal;
- Pollution and aesthetical impacts as a result of uncontrolled waste storage;
- Uncontrolled storage of waste leading to pollution;
- Impact on groundwater as a result of uncontrolled waste handling;
- Impact on surrounding environment as a result of sewage control and waste water generation;

- Possible contamination of surface water resources as a result of uncontrolled waste handling and disposal.

Cultural and Heritage Impacts

- Water Furrow- This feature is crossing the proposed development site and therefore there is a high possibility that it might be impacted on by the construction activities. As it is a linear site, an impact on even a small section would be an impact on the whole;
- Destruction of cultural and heritage artefacts found underground; and
- Destruction of alternation of buildings older than 60 years.

Visual Impacts

- Visual disturbance on adjacent land and road users as a result of the use of construction equipment, excavation and building material;
- Aesthetic impact as a result of litter dispersion and untidy housekeeping from contractors; and
- Visual impact as a result of the development (change of sense of place).

Fauna and Flora Impacts

- Loss of habitat owing to the removal of vegetation at the proposed development;
- Loss of sensitive species (Threatened, Near-Threatened, Rare, Declining or Protected species) during the construction phase;
- Loss of connectivity and conservation corridor networks in the landscape;
- Killing of vertebrate fauna during the construction phase;
- An increased infestation of exotic or alien invasive plant species owing to disturbance;
- Disturbance of faunal species, including those of adjacent land owners, as a result of noise generation;
- Potential to indirectly increase the risk of the spread of alien vegetation;
- Potential impact on surrounding fauna and flora as a result of incorrect waste storage and handling; and
- Potential impact on surrounding biodiversity as a result of contaminated runoff;

Safety, Security and Health

- Increased economic activity may lead to the increase in crime;
- Safety risk of contractors, due to increased construction activity;
- Health risks as a result of waste generation and storage;
- Possible increase in criminal activity.

Traffic

- Increase in traffic.

Climate Change

- Utilisation of non-renewable energy sources resulting in the increased project carbon footprint;
- Change in land use to accommodate the development.

viii. the possible mitigation measures that could be applied and level of residual risk

Due to the scale of the project, significant environmental and social impacts associated with the proposed activity have been identified through the BAR process. Mitigation measures as set out in the Environmental Management Programme (EMPr) attached in Part B **(Appendix I)** must be implemented in order to minimise any potential impacts.

All comments received during the review period of the BAR report, as well as response provided is captured and recorded within the Comments and Response Report and will be attached in the final BAR.

ix. the outcome of the site selection matrix;

Matrix analysis

The matrix describes the relevant listed activities, the aspects of the development that will apply to the specific listed activity, a description of the environmental issues and potential impacts, the significance and magnitude of the potential impacts, and the mitigation of the potential impacts. The matrix also highlights areas of particular concern, which requires more in depth assessment. Each cell is evaluated individually in terms of the nature of the impact, duration and its significance – should no mitigation measures be applied. This is important since many impacts would not be considered insignificant if proper mitigation measures were implemented. The matrix also provides an indication if mitigation measures are available.

In order to conceptualise the different impacts the matrix specify the following:

• **Stressor**:	Indicates the aspect of the proposed activity, which initiates and cause impacts on elements of the environment.
• **Receptor**:	Highlights the recipient and most important components of the environment affected by the stressor.
• **Impacts**:	Indicates the net result of the cause-effect between the stressor and receptor.
• **Mitigation**:	Impacts need to be mitigated to minimise the effect on the environment.

x. if no alternatives, including alternative locations for the activity were investigated, the motivation for not considering such

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity.

No alternatives exist the proposed area is preferred due the need for the township being motivated through reference to general guidelines to ensure a sustainable urban environment. The proposed development complies with the NWSDF, Tlokwe SDF, Tlokwe Town Planning Scheme and SPLUMA.

Also, the various reports (Geotechnical, OSR and TIA) are in support of the proposed township, and the site is confirmed as suitable for development.

xi. a concluding statement indicating the preferred alternatives, including preferred location of the activity;

This alternative asks the question, if there is not, from an environmental perspective, a more suitable location for the proposed activity.

No alternatives exist the proposed area is preferred due the need for the development being motivated through reference to general guidelines to ensure a sustainable urban environment. The proposed development complies with the NWSDF, Tlokwe SDF, Tlokwe Town Planning Scheme and SPLUMA.

Also, the various reports (Geotechnical, OSR and TIA) are in support of the proposed township, and the site is confirmed as suitable for development.

I. FULL DESCRIPTION OF THE PROCESS UNDERTAKEN TO IDENTIFY, ASSESS AND RANK THE IMPACTS AND RISKS THE ACTIVITY WILL IMPOSE ON THE PREFERRED SITE (IN RESPECT OF THE FINAL SITE LAYOUT PLAN) THROUGH THE LIFE OF THE ACTIVITY.

i. A description of all environmental issues and risks that are identified during the environmental impact assessment process

Process for the identification of key issues

The methodology for the identification of key issues aims, as far as possible, to provide a user-friendly analysis of information to allow for easy interpretation.

- Checklist: The checklist consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts.
- Matrix: The matrix analysis provides a holistic indication of the relationship and interaction between the various activities, development phases and the impact thereof on the environment. The method aims at providing a first order cause and effect relationship between the environment and the proposed activity. The matrix is designed to indicate the relationship between the different stressors and receptors which leads to specific impacts. The matrix also indicates the specialist studies, which will be submitted as part of the Environmental Impact Report in order to address the potentially most significant impacts.

Checklist analysis

The site visit was conducted on 16/01/2020 (Appendix F) to ensure a proper analysis of the site specific characteristics of the study area. The table below provides a checklist, which is designed to stimulate thought regarding possible consequences of specific actions and so assist scoping of key issues. It consists of a list of structured questions related to the environmental parameters and specific human actions. They assist in ordering thinking, data collection, presentation and alert against the omission of possible impacts. The table highlights certain issues, which are further analysed in matrix format.

Table: Environmental checklist

QUESTION	YES	NO	Un-sure	Description
1. Are any of the following located on the site earmarked for the development?				
I. A river, stream, dam or wetland		X		The Vaal River.
II. A conservation or open space area		X		None

III. An area that is of cultural importance		X		An unpaved water furrow that was excavated across the site, bringing water from some point in the north all along the right-hand bank of the Vaal River, supplying water to numerous farms and smallholdings in the region. According to all evidence, it is still in use by local landowners.
IV. Site of geological significance			X	
V. Areas of outstanding natural beauty		X		However, the property is adjacent to the Vaal River and undisturbed. Thus, it contains some form of natural beauty, but not outstanding natural beauty.
VI. Highly productive agricultural land	X			Class 6 of agricultural potential, however the farm portion is still delivering a high yield of crops and sunflowers.
VII. Floodplain	X			Yes, due to the Vaal River.
VIII. Indigenous forest	X			Not quite indigenous, but undisturbed natural vegetation does occur.
IX. Grass land	X			According to the vegetation map, the area falls within the Vredefort Dome Granite Grassland.
X. Bird nesting sites	X			No recorded bird nesting sites, but general bird sites are expected due to trees and river being present.
XI. Red data species	X			Yes, the site contains one protected tree species *Boscia albitrunca* (Shepherd's Tree). Few individuals of Boscia albitrunca are present at the riparian zone at the site
XII. Tourist resort		X		None.
2. Will the project potentially result in potential?				
I. Removal of people		X		None.
II. Visual Impacts	X			Yes, but not significantly.
III. Noise pollution	X			Foreseen sources of noise associated with the activities may likely come from to include vehicles, employees & the houses. This is likely to be significant.
IV. Construction of an access road		X		None. However, the existing road will be upgraded and access will be obtained from the R53.

V. Risk to human or valuable ecosystems due to explosion/fire/ discharge of waste into water or air.		x		None. However, the sewage will be treated and then re-used for irrigation purposes. It should be noted that the package plant effluent outflow will match or surpass the Special Condition as set out by DWS guidelines for private / single package plants discharging into water courses (here it is the Vaal River).
VI. Accumulation of large workforce (>50 manual workers) into the site.		x		Approximately 20 Skilled & Unskilled people employment opportunities will be created during the construction and operational phase of the project.
VII. Utilisation of significant volumes of local raw materials such as water, wood etc.	x			The water supply to the development will be by means of single borehole connected to the Bulk storage tank(s) of 78 800ℓ. A 75mm uPVC class 9 gravity pipe will be installed from the tank(s) to supply the development.
VIII. Job creation	x			Approximately 20 Skilled & Unskilled people employment opportunities will be created during the construction and operational phase of the project.
IX. Traffic generation		x		None. The impact of this development on the traffic flows on R53 will be negligible and that the additional traffic generated will not significantly influence the capacity of the street. Reserve capacity of approximately 500 vehicles per hour is available on this road section with only an additional 40 vehicles trips generated by this development during the peak hour. The additional traffic generated will not significantly influence the adjacent intersections. The fluctuation in traffic flows are much more than the new traffic.
X. Soil erosion	x			Yes. Erosion control measures will be required, especially when vegetation is removed and the soil is exposed.
XI. Installation of additional bulk telecommunication transmission lines or facilities	x			Yes. ESKOM has indicated via Email that sufficient electrical capacity is available on the overhead rural network to accommodate the indicted 212kVA.
XII. Air Pollution	x			Limited dust will be generated during the construction phase by the offloading of construction material, the excavation of the topsoil and the removal of vegetation. Also, emissions from vehicles.
3. Is the proposed project located near the following?				
I. A river, stream, dam or wetland	x			The Vaal River..
II. A conservation or open space area	x			Vredefort Dome World Heritage Site
III. An area that is of cultural importance	x			Vredefort Dome World Heritage Site
IV. A site of geological significance	x			Vredefort Dome World Heritage Site

V. An area of outstanding natural beauty		×		Vredefort Dome World Heritage Site
VI. Highly productive agricultural land		×		The surrounding areas are productive agricultural land. However, the surrounding farm portions are not delivering a high yield.
VII. A tourist resort		×		The town of Parys and its surroundings on its own is a tourist attraction. African Olive Country Estate – Approx. 200m West Shiloh Shalom – Approx. 790m Norteast Mimosa Gardens – Approx. 595m South
VIII. A formal or informal settlement	×			Parys.

J. AN ASSESSMENT OF EACH IDENTIFIED POTENTIALLY SIGNIFICANT IMPACT AND RISK

i. Cumulative impacts

Cumulative impacts are those impacts which when assessed in isolation may produce impacts that are environmentally acceptable but which when combined with other impacts, may become significant. The potential cumulative impacts that have been identified for the proposed development are as follows;

- Waste Management;
- Noise Management;
- Air Quality;
- Storm water management;
- Security and Safety; and
- Water Quality and Quantity.

A management plan will have to be enforced through the EMPr **(Appendix I)** to ensure the proper mitigation of impacts.

ASPECTS OF THE DEVELOPMENT /ACTIVITY	POTENTIAL IMPACTS			SIGNIFICANCE AND MAGNITUDE OF POTENTIAL IMPACTS			MITIGATION OF POTENTIAL IMPACTS	SPECIALIST STUDIES / INFORMATION
	Receptors		Impact description	Minor	Major	Duration	Possible Mitigation	
CONSTRUCTION PHASE								
• Removal of vegetation • Excavations for foundations • Clearing of areas for infrastructure • Hardening of surface areas • Management of storm water • Site office, laydown and storage areas • Operation of equipment and machinery • Vehicle activity • Domestic and industrial waste • Storage of chemicals, mixes and fuel • Spills and leaks	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	• Loss or fragmentation of habitat for faunal and floral species • Loss of indigenous faunal and floral species diversity. • Loss of faunal and floral species of conservation significance • Degradation and/or destruction of natural pans.		–	L	Yes	-
		Air quality	• Air pollution due to the increase of traffic of construction vehicles. • Air pollution due to construction activities.	–		S	Yes	-
		Soil	• Soil degradation, including erosion. • Disturbance of soils and existing land use (soil compaction). • Loss of agricultural potential (low significance relative to agricultural potential of the site). • Soil Erosion caused by alteration of the surface characteristics		–	L	Yes	-
		Geology	• Hard/compact geology. • Steep slopes or areas of unstable natural slopes. • Areas subject to seismic activity. • Areas subject to flooding.		–	L	Yes	-
		Existing services infrastructure	• Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the local sewage plant. • Increase in construction vehicles on existing roads.	-		S	Yes	-
		Ground water	• Pollution due to construction vehicles.	–		M	Yes	-
		Surface water	• Increase in storm water run-off. • Pollution of water sources due to soil erosion. • Destruction of watercourses (pans/dams/streams).	–		M	Yes	-
	SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	• Job creation. • Skills development.		+	S	N/A	-
		Visual landscape	• Potential visual impact on residents of farmsteads and motorists in close proximity to proposed facility due to dust.	-		S	Yes	-

		Traffic volumes	• Increase in construction vehicles.	-		S	Yes	-
		Health & Safety	• Air/dust pollution. • Road safety. • Impacts associated with the presence of construction workers on site and in the area. • Influx of job seekers to the area. • Increased safety risk to farmers, risk of stock theft and damage to farm infrastructure associated with presence of construction workers on the site. • Increased risk of veld fires.		-	S	Yes	-
		Noise levels	• The generation of noise as a result of construction vehicles, and people working on the site.	-		S	Yes	-
		Tourism industry	• Noise. • Dust.	_		S	Yes	-
		Heritage resources	• Removal or destruction of buildings, structures, places and equipment of cultural significance. However, no significant cultural or heritage resources were identified on or around the site.	-	N/A	N/A	N/A	HIA Study to confirm
OPERATIONAL PHASE								
The key components of the proposed project are described below: • <u>Roads</u> – No major roads will be constructed for this project, Access will be obtained from South street off to Kommandodrift road	BIOPHYSICAL ENVIRONMENT	Fauna & Flora	• Fragmentation of habitats. • Establishment and spread of declared weeds and alien invader plants (operations).		-	L	Yes	-
		Air quality	• Air pollution due to the vehicles in & out of the application area.	_		L	Yes	-
		Soil	• Soil degradation, including erosion. • Disturbance of soils and existing land use (soil compaction). • Loss of agricultural potential (low significance relative to agricultural potential of the site). • Soil Erosion caused by alteration of the surface characteristics		_	L	Yes	-
		Geology	• Collapsible soil. • Seepage (shallow water table). • Active soil (high soil heave). • Erodible soil. • The presence of undermined ground. • Instability due to soluble rock. • Steep slopes or areas of unstable natural slopes. • Areas subject to seismic activity. • Areas subject to flooding.	-		S	Yes	-
		Existing services infrastructure	• Generation of waste that need to be accommodated at a licensed landfill site. • Generation of sewage that need to be accommodated by the developer.	-		S	Yes	-

		Ground water	• Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies. • Increased consumption of water.		-	L	Yes	-
		Surface water	• Increase in storm water runoff. The development will potentially result in an increase in storm water run-off that needs to be managed to prevent soil erosion. • Destruction of watercourses (pans/dams/streams). • Leakage of hazardous materials. The machinery on site require oils and fuel to function. Leakage of these oils and fuels can contaminate water supplies.		-	L	Yes	-
	SOCIAL/ECONOMIC ENVIRONMENT	Local unemployment rate	• Job creation. • Skills development.		+	L	N/A	-
		Visual landscape	• Change in land-use/sense of place. • Potential visual impact on residents of farmsteads and informal settlements and travellers in close proximity to proposed facility		-	L	Yes	-
		Traffic volumes	• Increase in vehicles.	-		L	Yes	-
		Health & Safety	• Air/dust pollution. • Road safety.	-		L	Yes	-
		Noise levels	• The proposed development will result in noise pollution during the operational phase.	-		L	Yes	-
		Tourism industry	• Noise. • Dust. • Change in land-use/sense of place.	-		S	Yes	-
		Heritage resources	• It is not foreseen that the proposed activity will impact on heritage resources or vice versa.	N/A	N/A	N/A	N/A	HIA Study to confirm

(N/A) No impact (+) Positive Impact (-) Negative Impact (S) Short Term (M) Medium Term (L) Long Term

K. SUMMARY OF THE KEY FINDINGS OF THE ENVIRONMENTAL IMPACT ASSESSMENT

(This summary must be completed if any specialist reports informed the impact assessment and final site layout process and must be in the following tabular form):-

LIST OF STUDIES UNDERTAKEN	RECOMMENDATIONS OF SPECIALIST REPORTS	SPECIALIST RECOMMENDATIONS THAT HAVE BEEN INCLUDED IN THE EIA REPORT (Mark with an X where applicable)	REFERENCE TO APPLICABLE SECTION OF REPORT WHERE SPECIALIST RECOMMENDATIONS HAVE BEEN INCLUDED.
Ecological Fauna and Flora Habitat Survey - Anthene Ecological CC (Appendix H(iv))	- Because the Protected Tree species *Boscia albitrunca* occurs in the riparian zone at the site, which is to be excluded from proposed development, these few trees that must be marked and avoided if the development is approved, could be conserved as part of the riparian zone. - The Vaal River and its riparian zone are a corridor of particular conservation importance in the larger area. - Given the likely absence of Threatened species as well as the location, setting and current ecological status of the site a 10 m buffer zone from the edge of the riparian zone is recommended as a practical buffer zone for the conservation of the perennial river and riparian zone at the site. - Ecological sensitivity at the terrestrial zone at the site is medium. Ecological sensitivity at the perennial river, its riparian zone and its buffer zone is high because of its importance as a conservation corridor. - Following the mitigations which will be upheld and planned footprint for development all the impact risks listed above are moderate or low. - If the development is approved an opportunity exists to cultivated indigenous plant species and contribute to urban biodiversity conservation.	**X**	
Electrical Services Report – Denobili Consulting (Appendix H(v))	The following electrical services are proposed: a) Bulk Supply: Existing and new ESKOM MV infrastructure b) Point of Connection (POC): New bulk metering point from ESKOM c) MV Reticulation: ESKOM to design	**X**	

	d) LV Reticulation: Internal design e) LV Connections: ESKOM f) Street & Area Lighting: Internal g) Communication Services: Internal h) Servitudes: To be determine at planning and design stage. When energy efficiency measures are considered the following guidelines are to be followed: Regulatory standards: a) SANS 204 Energy Efficiency in Building & b) SANS 10400 Part X & XA Application of the National Building Act – Energy Usage. Architectural point of design: a) Aluminium windows, larger northern openings to maximize solar radiation in winter and minimize it in summer; b) Smaller southern windows to prevent cold radiation in winter; & c) Correct orientation, north facing. From an energy usage point of design: a) Energy efficient electrical stoves or Gas stoves; b) Gas and/or Solar geysers or Heat pumps; c) Energy efficient lighting such as LED's; & d) Solar PV.		
Hydrogeological Investigation – Milnex CC (Appendix H(vii))	The following recommendations are made: - An ultraviolet light should be installed in the water reticulation system; - The submersible pump should be installed at a depth of 136mbgl; - Groundwater monitoring should be conducted as per Section 7 of this report. - Laboratory analysis techniques should comply with SANAS guidelines; - The groundwater monitoring database should be updated on an annual basis as information becomes available. The database should be used to analyse the information and evaluate trends noted; - An annual compliance report should be compiled and submitted to the authorities for evaluation and comment. The monitoring network should be updated annually, and this report should be submitted annually. The site must develop a monitoring response protocol. This protocol will describe procedures if groundwater monitoring information indicates that action is required; and - Mitigation measures should be implemented to prevent groundwater contamination.		
Basic Preliminary Engineering Geological Investigation -	The following can be concluded and recommended: a) **The majority of the site is deemed suitable for the proposed development, provided the**	**X**	

RockSoil Consult (Pty) Ltd (Appendix H(vi))	**constraints highlighted are considered and incorporated into the planning and design**. b) The areas affected by flooding should not be developed (**Zone V**). c) The localised areas of steep slopes should be considered in the layout and planning of the development. d) The existing canal should be considered in the planning. The canal may require re-direction or improvement. The canal, at its current state, is presenting a flood risk for down-slope development. e) The presence of shallow rock, rock outcrop and expected large-size boulders should be considered during the feasibility calculations for earthworks and underground service selection and installations. f) The presence of collapsible/compressible soils will require earthwork and foundation precautionary measures. The conditions should be confirmed, with site class designations and foundation options and recommendations to be provided in the more detailed assessments to follow. g) The planners/designers should consider the site slope and impact of the slope on services and earthwork preparations, in combination with the shallow rock. h) Erosion control measures will be required, especially when vegetation is removed and the soil is exposed. Details on control measures should be provided in the more detailed assessments. i) The erodability of the soils and potential for undercutting in the area of the determined 1:100 year floodline should be assessed in the event of a 100-year flood. j) The structural engineers should consider the seismic zone (refer to **report section 9.11**) and ensure that the structural measures for the relevant zone are according to the relevant national standard (SANS10160-4, 2017). k) Construction materials should be available in the region, given the regional geology and presence of borrow areas in close proximity to the site. The sources and material quality should be confirmed in the more detailed assessments if deemed necessary by the planners/designers. The residual and weathered granites are expected to provide suitable material for all earthworks considerations. The granite rock should be a suitable source for most coarse aggregate requirements. The availability of fine aggregates should be confirmed from commercial sources or nearby existing borrows. l) This investigation serves as a SANS634:2012 Preliminary investigation only. This assessment should be followed by a SANS634:2012 Phase 1 detailed investigation for layout planning and design-level purposes. The Phase 1 detailed investigation should be followed by a SANS634:2012 Phase 2 detailed investigation. The Phase 2 investigation is commissioned by the client during the installation of township services to confirm the findings of the Phase 1 investigation.		

	The expected geological hazards and constraints are outlined in this report and the planners/designers should consider the listed constraints during the feasibility assessment. Intrusive investigations (test pitting with a backhoe or excavator) will be recommended if excavatability may render the installation of services and earthworks unfeasible. The site is deemed suitable for township establishment, however the constraints identified should be considered during the feasibility studies, layout considerations, planning and design phases. An intrusive investigation will be recommended, given the nature of the bedrock and expected financial impact it may have on installation of services and preparation of earthworks.		
Phase 1 Cultural Heritage Assessment – Dr. J A van Schalkwyk (Appendix H(viii)	Water furrow Mitigation measures: • (1) Avoidance/Preserve: This is viewed to be the primary form of mitigation and the site should be retained in situ and a buffer zone should be created around it, either temporary (by means of danger tape) or permanently (wire fence or built wall). Should archaeological sites or graves be exposed during construction work, it must immediately be reported to a heritage practitioner so that an investigation and evaluation of the finds can be made.	**X**	
Engineering Services Planning Report – GTEGNO Consulting Engineers CC (Appendix H(i))	N/A	**X**	
Floodline (Appendix H(x))	N/A	**X**	
Traffic Impact Statement – GTEGNO Consulting Engineers CC (Appendix H(ix))	It can be concluded that the impact of this development on the traffic flows on R53 will be negligible and that the additional traffic generated will not significantly influence the capacity of the street. Reserve capacity of approximately 500 vehicles per hour is available on this road section with only an additional 40 vehicles trips generated by this development during the peak hour. The additional traffic generated will not significantly influence the adjacent intersections. The fluctuation in traffic flows are much more than the new traffic. It can be concluded that the impact of this development on the traffic flows on the R53 will be negligible.	**X**	

Please see Appendix H

L. ENVIRONMENTAL IMPACT STATEMENT

i. Summary of the key findings of the environmental impact assessment:

This section provides a summary of the assessment and conclusions drawn from the proposed residential development. In doing so, it draws on the information gathered as part of the environmental impact assessment process and the knowledge gained by the Environmental Assessment Practitioner during the course of the process and presents an informed opinion on the environmental impacts associated with the proposed project. The following conclusions can be drawn for the proposed activity:

- **Potential impacts on biodiversity:** According to the CBA Map, the proposed farm portions falls majorly within CBA1 and ESA 1. The following main significant impacts were identified: Habitat loss, loss of indigenous species, Loss of sensitive species (Note no Threatened species). One protected tree species which is at riparian zone to be excluded in development, Fragmentation of landscape and loss of connectivity.
- **Potential impacts on land use**: From agricultural to Residential. Change of sense-of place
- **Positive impacts:** Development will have socio-economic benefit to the area
- **Potential social impacts:** The presence of construction workers poses a potential risk to family structures and social networks. While the presence of construction workers does not in itself constitute a social impact, the manner in which construction workers conduct themselves can impact on local communities. The most significant negative impact is associated with the disruption of existing family structures and social networks.
- **Potential negative impacts:** (noise, dust, soil degradation, storm water, traffic, health and safety) associated with the operation of the development are expected to be of high-medium impact. These can be mitigated or negated through the implementation of practical and appropriate mitigation measures.

All the identified possible negative impacts and risks in this report can be effectively mitigated and managed by implementing the migratory measures as set out in the Environmental Management Programme (EMPr) **(Appendix I)**.

ii. Map at an appropriate scale which superimposes the proposed overall activity and its associated structures and infrastructure on the environmental sensitivities of the preferred site indicating any areas that should be avoided, including buffers.

According to the CBA Map, the proposed farm portions falls majorly within CBA1 and ESA1. But through implementing mitigation measures, no adverse impacts are expected. Furthermore, an Environmental Building line is implemented to ensure that the sensitive zones and *Boscia Albitrunca* Flora is protected. However, the significant impact of vegetation clearance will still be a reality. The reason being that vegetation would have to be cleared in order for the construction to continue.

iii. Summary of the positive and negative implications and risks of the proposed activity and identified alternatives

All the identified possible significant negative impacts and risks in this report may be effectively mitigated and managed by implementing the mitigation measures as set out in the Environmental Management Programme (EMPr) attached in Part B **(Appendix I)**. However, the significant impact of vegetation clearance will still be a reality. The reason being that vegetation would have to be cleared in order for the construction to continue.

M. PROPOSED IMPACT MANAGEMENT OBJECTIVES AND THE IMPACT MANAGEMENT OUTCOMES FOR INCLUSION IN THE EMPr

Based on the assessment and where applicable the recommendations from specialist reports, the recording of proposed impact management objectives, and the impact management outcomes for the development for inclusion in the EMPr as well as for inclusion as conditions of authorisation.

Management objectives include:

- Ensure that the activity does not cause pollution to the environment or harm to persons.
- All activities must be conducted in a manner that minimises noise impact, litter, environmental degradation and health hazards i.e. injuries.

N. FINAL PROPOSED ALTERNATIVES.

(Provide an explanation for the final layout of the infrastructure and activities on the overall site as shown on the final site map together with the reasons why they are the final proposed alternatives which respond to the impact management measures, avoidance, and mitigation measures identified through the assessment)

No alternatives exist the proposed area is preferred due the need for the township being motivated through reference to general guidelines to ensure a sustainable urban environment. The proposed development complies with the NWSDF, Tlokwe SDF, Tlokwe Town Planning Scheme and SPLUMA.

Also, the various reports (Geotechnical, OSR and TIA) are in support of the proposed township, and the site is confirmed as suitable for development.

O. DESCRIPTION OF ANY ASSUMPTIONS, UNCERTAINTIES AND GAPS IN KNOWLEDGE.

(Which relate to the assessment and mitigation measures proposed)

All the data and information supplied by the applicant, Plaasrivier Projects (Pty) Ltd, to Kuhle Environmental Consult (Pty) Ltd are assumed to be accurate and reflective of the current condition of the affected area. It is assumed that the baseline information scrutinised and used to explain the environmental profile is accurate.

The applicant will comply with all legislation pertaining to the activities of the township establishment and that all permits and licenses that may be required will be identified and applied for prior to commencement of construction activities.

The Stakeholder Engagement Process is deemed sufficiently effective in identifying the critical issues needing to be addressed in the BAR/EMPr by the EAP. The Stakeholder Engagement Process has sought to involve key stakeholders and individual landowners. Wherever possible the information requested and comments raised by Interested and Affected Parties (I&APs) has been sufficiently addressed and incorporated into the Basic Assessment Report for perusal and comment. A monitoring and evaluation system, including auditing, will be established and operationalized to track the implementation of the EMPr **(Appendix I)** ensuring that management measures are effective to avoid, minimize and mitigate impacts and that corrective action is being undertaken to address shortcomings and/or non-conformances.

Plaasrivier Projects (Pty) Ltd will adopt a process of continual improvement when managing and mitigating negative environmental impacts arising from the project. The EMPr **(Appendix I)** will be used as the basis of environmental management and will regularly be improved and refined where applicable.

The scope of this investigation is limited to assessing the potential biophysical, social and cultural impacts associated with the proposed feedlot establishment.

P. REASONED OPINION AS TO WHETHER THE PROPOSED ACTIVITY SHOULD OR SHOULD NOT BE AUTHORISED

Reasons why the activity should be authorized or not.

Taking the information, contained in this report and its attached specialist studies, into account it is the opinion of the EAP that it may be considered to authorise the proposed development and its associated activities.

The proposed area is preferred due the need for the township being motivated through reference to general guidelines to ensure a sustainable urban environment. The proposed development complies with the NWSDF, Tlokwe SDF, Tlokwe Town Planning Scheme and SPLUMA.

Also, the various reports (Geotechnical, OSR and TIA) are in support of the proposed township, and the site is confirmed as suitable for development.

The option of not approving the activities will result in a significant loss to the localised income and the investments made by the applicant. And all economic benefits will be lost.

Q. CONDITIONS THAT MUST BE INCLUDED IN THE AUTHORISATION

- A copy of the EMP **(Appendix I)** should be made available onsite at all times.
- Implementation of the proposed mitigation measures set out in the EMPr **(Appendix I)**.
- The EMPr **(Appendix I)** should be binding on all managers and contractors operating/utilizing the site.
-

Period for which the Environmental Authorisation is required.

Maximum period.

R. UNDERTAKING

Confirm that the undertaking required to meet the requirements of this section is provided at the end of the EMPr and is applicable to both the Basic assessment report and the Environmental Management Programme report.

The undertaking required to meet the requirements of this section is provided at the end of the EMPr **(Appendix I)** and is applicable to both the Environmental Impact Assessment report and the Environmental Management Programme report.

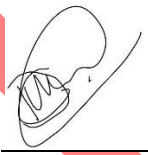
I, Danie Labuschagne (EAP) herewith confirms

i. the correctness of the information provided in the reports ☒

ii. the inclusion of comments and inputs from stakeholders and I&APs ; ☒

iii. the inclusion of inputs and recommendations from the specialist reports where relevant; ☒

iv. the acceptability of the project in relation to the finding of the assessment and level of mitigation proposed; ☒



Signature of the environmental assessment practitioner:

Kuhle Environmental Consult (Pty) Ltd – Environmental Consultants

Name of company:

12 – 11 - 2020

Date:

S. FINANCIAL PROVISION

State the amount that is required to both manage and rehabilitate the environment in respect of rehabilitation.

Not applicable

i) Explain how the aforesaid amount was derived.

Not applicable

ii) Confirm that this amount can be provided for from operating expenditure. (Confirm that the amount, is anticipated to be an operating cost and is provided for as such in the Mining work programme, Financial and Technical Competence Report or Prospecting Work Programme as the case may be).

Not applicable

T. OTHER INFORMATION REQUIRED BY THE COMPETENT AUTHORITY

- None

U. OTHER MATTERS REQUIRED IN TERMS OF SECTIONS 24(4)(A) AND (B) OF THE ACT.

(the EAP managing the application must provide the competent authority with detailed, written proof of an investigation as required by section 24(4)(b)(i) of the Act and motivation if no reasonable or feasible alternatives, as contemplated in sub-regulation 22(2)(h), exist.

Section 24(4)(A) and (B) was taken into consideration by investigating potential consequences or impacts, investigating mitigation measures, investigating, assessing and evaluating impacts.