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DRAFT BASIC ASSESSMENT REPORT

FOR THE

**PROPOSED PENTAGON BUSINESS AND RESIDENTIAL
DEVELOPMENT (PBRD) IN LYDENBURG, MPUMALANGA PROVINCE.**

TITLE PAGE

PROJECT TITLE: Basic Assessment Report

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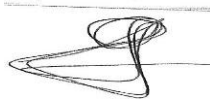
REPORT NO: 021829PH/KHSBAR2019. VER 1.0

SUBMISSION DATE: October 2020

REPORT STATUS: DRAFT

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Director

TERMS OF REFERENCE

Philo Environmental Management has been appointed by KHS (Pty) Ltd to undertake the Basic Assessment (BA) process for the proposed Pentagon business and residential development at Thaba Chweu Local Municipality. The proposed development will be undertaken in Portion 488 (of portion 453) of the farm Townlands of Lydenburg No. 31 JT that takes an approximate size of 17 ha.

This BA process is undertaken in terms of the Environmental Impact Assessment (EIA) Regulations (GN No.R.326, 2014, as amended) publicized in terms of Section 24(5) of National Environmental Management Act (Act No. 107 of 1998), as amended. To conduct the BA process the following should also be done as part of the BA application:

- EAP site evaluation (Conducted on the 15 October 2018)
- Public Participation as depicted on the NEMA (Act No. 107 of 1998) section 41 (Conducted from November 2018 to March 2019)
- Environmental Management Plan (Included on this report)

Project completion date: October 2020.

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DETAILS OF THE ENVIRONMENTAL ASSESSMENT PRACTITIONER (EAP)

Philo Environmental Management was appointed by the Applicant (KHS Construction and General Trading Pty Ltd) as the Environmental Assessment Practitioner (EAP) to compile this BA report. Table 1 below shows the contact details of the EAP consultants who compiled the BA report.

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EXECUTIVE SUMMARY

Philo Environmental Management has been appointed as the Environmental Assessment Practitioners (EAPs) to assist KHS Construction and General Trading Pty Ltd in conducting a Basic Assessment (BA) for their proposed Pentagon business and residential development at Thaba Chweu Local Municipality.

KHS Construction and General Trading Pty Ltd is proposing a Pentagon business and residential development (PBRD) in a 17-hectare land that is owned by them. The proposed development includes but not limited to Corporate office park, high rise townhouses or sectional title for rental and sales, full title houses, Medium sized shopping complex for commercial space rental, Private hospital, Public parking/taxi rank for access, Filling station, Hotel/Guesthouse, Indoor and outdoor pub and Leisure park.

The proposed development project triggers listed activities (activity listed on Table 2) as per the NEMA, Act 107 of 1998 (Environmental Impact Assessment (EIA) Regulations of 2014 as amended). The Department of Agriculture, Rural development, Land and Environmental Affairs (DARDLEA) is the competent authority for this BA process and the development needs to be authorised by this Department.

Specialist studies that were conducted as part of this BA process includes, Ecological Assessment, Heritage Impact Assessment, Geotechnical Investigation, Floodline Assessment and Wetland Baseline and Risk Assessment. The proposed project is said to meet Lydenburg housing needs thus reviving economic growth as per the IDP 2017-2022.

A thorough impact assessment was conducted through a risk matrix. Significant impacts in all phases of the development were identified and rated. Mitigation measures were provided for all impacts identified. The impacts are further addressed on the EMPr attached on **Annexure L** of this BAR.

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Annexure B – The Pentagon - Background Information Document

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Appendix 1: Initial Public Participation Report and

Appendix 2: Comments and Response Report from draft BAR

Annexure F – Ecological Assessment Report

Annexure G – Heritage Impact Assessment Report

Appendix 1 – Phase 1 Heritage Impact Assessment Report

Appendix 2 – Phase 2 – Lydenburg Museum Letter, appointment of Heritage Specialist and proof of payment to SAHRA

Annexure H – Floodline Assessment

Annexure I – Wetland Baseline and Risk Assessment

Annexure J – Engineering Service Report

Annexure K – CV EAP

Annexure L – Environmental Management Programme

Annexure M – Rezoning Application

Annexure N - Geotechnical Investigation

Annexure O – Baseline water quality results

LIST OF ABBREVIATIONS

DARDLEA	- Department of Agriculture, Rural development, Land and Environmental Affairs	
TLCM	-Thaba Chweu Local Municipality	
EDM	- Ehlanzeni District Municipality	
NEMA	- National Environmental Management Act, 1998 (Act 1998) as amended	No. 107 of
EMP	- Environmental Management Plan	
IAPs	- Interested and Affected Parties	
BID	- Background Information Document	
ECO	- Environmental Control Officer	
EAP	- Environmental Assessment Practitioner	
Philo	- Philo Environmental Management	
PPP	- Public Participation Process	
KHS	- KHS Construction and General Trading (Pty) Ltd	
IDP	- Integrated Development Plan	
SDF	- Spatial Development Framework	
EIA	- Environmental Impact Assessment	
SANS 241:2015	- South African National Standard for domestic use/drinking water	

1. INTRODUCTION

1.1 Purpose of this report

Philo Environmental Management CC has been appointed by KHS (Pty) Ltd to conduct BA process in terms of the NEMA (Act No. 107 of 1998, as amended). This BAR has been compiled in accordance with the regulatory requirements specified in the EIA Government Notice Regulations (GNR 326) publicized in terms of Section 24(5) of NEMA (Act No. 107 of 1998), as amended. The purpose of this BA report is to present:

- A detailed description of the proposed project;
- Detailed review of legislation, guidelines and strategies pertinent to the proposed Project and associated BAR;
- The outcomes associated with public participation process carried out to date;
- A detailed baseline review of the physical, biological and socio-economic characteristics of the project area;
- An assessment of impacts to the physical, biological and socio-economical environments related with the different phases of the proposed project;
- Mitigation measures that aim to avoid /minimise/manage the severity of identified impacts; and
- An assessment of cumulative impacts associated with other planned, existing or project-related developments in the broader project area.

1.2 Project Background

The proposed Pentagon business and residential development is situated in the Thaba Chweu Local Municipality (TCLM) that forms part of the Ehlanzeni District Municipality in Mpumalanga Province, South Africa. TCLM is a Category B municipality that is approximately 350km east of Johannesburg and 95km north-west of the provincial capital Mbombela, previously known as Nelspruit as indicated in the locality map shown in Figure 1 and Figure 2 below)

The TCLM is located in close proximity to the provincial capital of Mbombela, and well-connected regionally in terms of several major routes and highways. It is one of four municipalities in the Ehlanzeni District. The district is divided into eastern and western halves. The western half, Lydenburg district, is where the proposed development is situated. The area

is dominated by mining, agricultural and farming activities, while forestry is the main economic activity of the eastern half (Sabie/Graskop district).

Also, TCLM is located in the heart of one of the prime tourism destinations of the country. All the towns in the TCLM, including Lydenburg, are identified as tourism nodes in provincial planning schemes. In 2011 alone, Mpumalanga received over a million foreign tourists, contributing to a foreign direct spends of R4.7 Billion in the same year.

In terms of sector contributions, mining is the main sector where the TCLM makes a significant contribution to the economy of the District. It is the leading municipality in this sector, producing more than half of the mining sector's output (52%) according to the latest data. TCLM is one of the major tourist attraction areas in South Africa. Lydenburg district is also a hub of heritage where the famous Lydenburg Heads, which are said to date back to 400AD, were found in the 1950s, also see **Annexure B**, The Pentagon - background information document

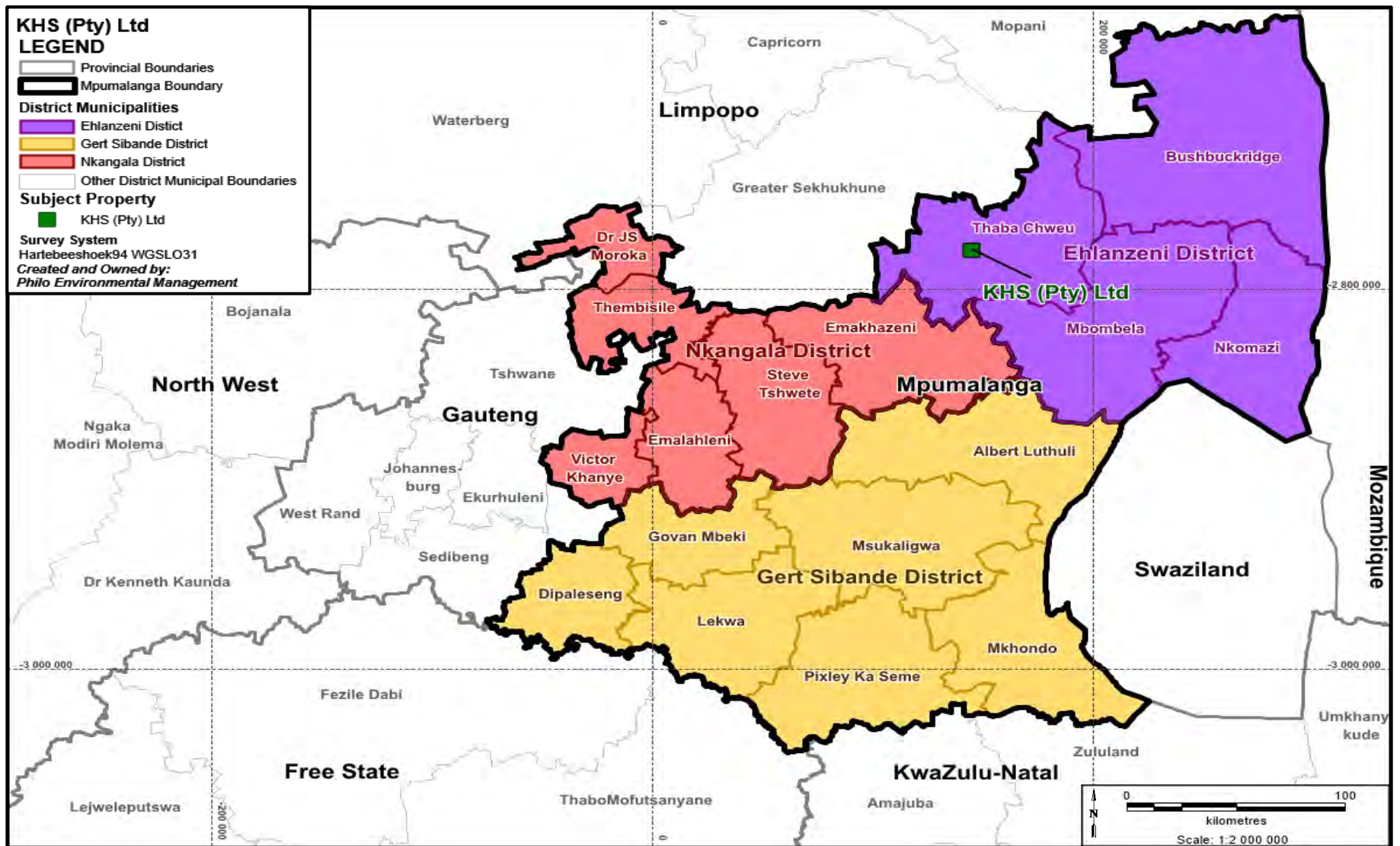
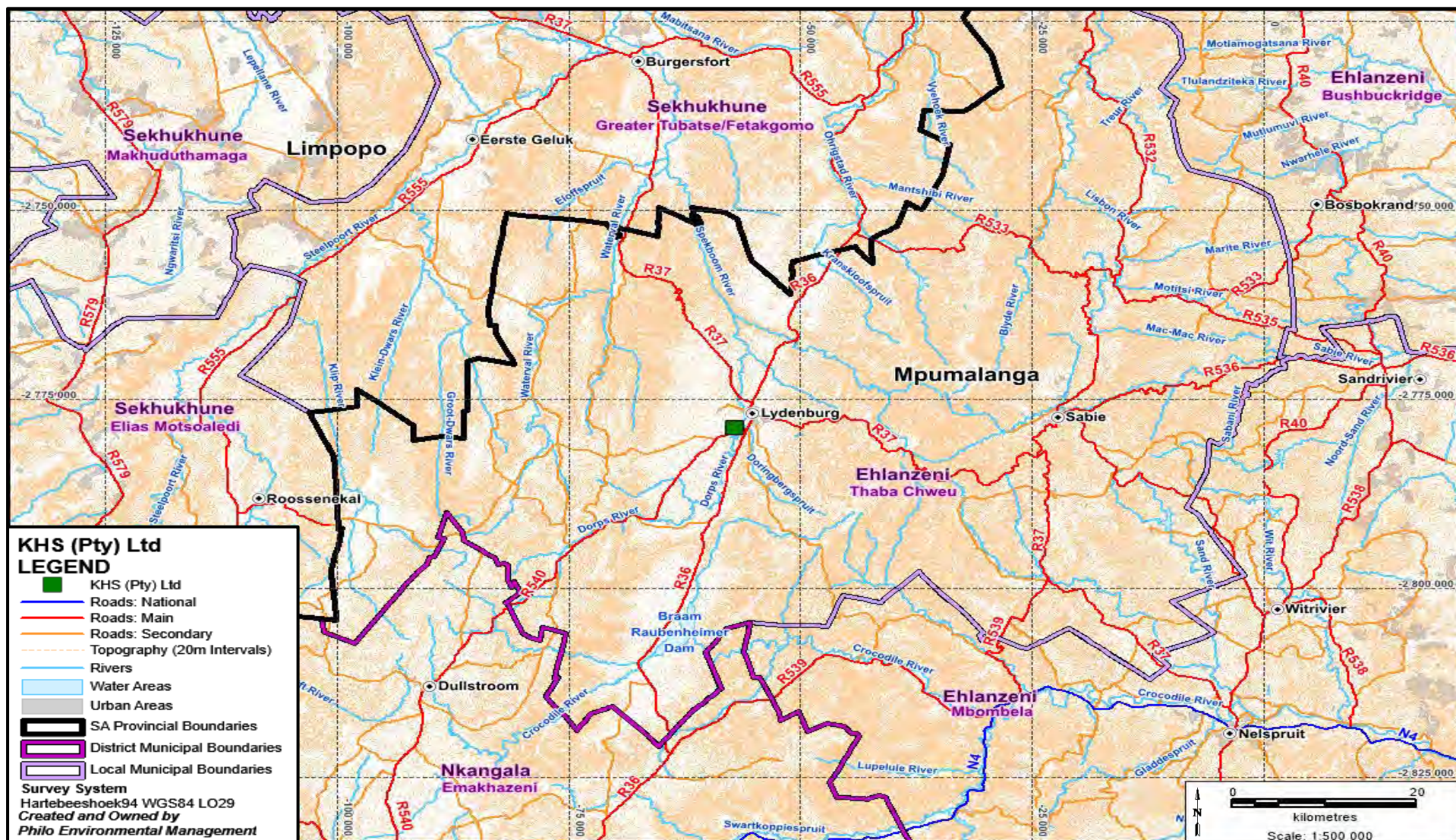


Figure 1: Locality Map of PBRD



2. ACTIVITY DESCRIPTION

2.1 Project Overview

The proposed Pentagon business and residential development is wholly owned by KHS (Pty) Ltd which in turn has full ownership of an area of approximately 17 ha in extent located in the Lydenburg town up-market area. Although this is a currently zoned agricultural land, according to the spatial vision and survey contained in the TCM Spatial Development Framework; this piece of land is suitable and earmarked for both residential and business development. See **Annexure M** for Rezoning application. The proposed land uses that makes up the proposed development includes but not limited to the following (As indicated in Figure 3 below):

- Corporate office park for KHS for own use and rental purposes
- 250 high rise townhouses or sectional title for rental and sales (50/50)
- 110 full title houses for sale
- Medium sized shopping complex for commercial space rental:
 - Anchor shop: Shoprite, Spar or Pick'nPay
 - Departmental stores or clothing shops
 - Bank
 - Restaurant (Franchise or otherwise)
- Private hospital
- Public parking/taxi rank for access
- Filling station (Shell/BP/Engen)
- Hotel or Guesthouse
- Indoor and outdoor pub
- Leisure park

Table 2: Listed Activities in terms of GN NO. R 982 dated December 2014 under NEMA, 1998.

Number and date of relevant notice	Activity No	Description
GN. No. R 983 Listing Notice 1 December 2014	27	Proposed development intends to clear an approximate area of 17 ha to allow for the construction of the houses and all other infrastructures.

2.2 Construction Specifications

The development will either be developed in a phased approach or in full depending on the prevailing economic conditions, project capital intensity and market forces. It is currently predicted that the corporate office park will be the most cost-effective aspect of the project with the highest net present value; thus proposed to be phase 1 of the development. This scheduling is also informed by the current medium to high demand for office space and lack thereof in the region. Office space rental ranges between R120 to R230 per square meter in the CBD and surrounding areas.

Water and electricity will be sourced from TCLM for construction and operation phases of PBRD, see **Annexure E** - Comments and Response Report from draft BAR

3. FEASIBLE AND REASONABLE ALTERNATIVES

There are no applicable alternatives for the development.

4. ACTIVITY LOCATION

Table 3 below indicates the farm portion on which the proposed development will be situated.

Table 3: Activity Location

Farm name	Portion 488 (a portion of portion 453) of the farm Townlands of Lydenburg No. 31 JT
Municipality	Thaba Chweu Local Municipality
Coordinates of the project area – WG31	A 57093.86 2778184.36 B 56844.84 2778245.66 C 56837.52 2778257.76 D 56949.73 2778713.36 E 56900.83 2778814.04 F 56921.68 2778824.16 G 57276.52 2778717.66
21 Digit Surveyor General Code:	T0JT00000000003100488

Layout plans of the project are attached as **Annexure C**.

5. SITE OR ROUTE PLAN

The proposed road plans for how the PBRD site will be accessed during construction and operation phase of the project is attached in **Annexure B** -The Pentagon - Background Information Document and **Annexure J** – Engineering Service Report of this BAR.

6. SITE PHOTOGRAPHS

The independent EAP site visit report compiled by Philo Environmental Management CC is attached in this report together with site photos taken during inspection, as **Annexure D**.

7. DEVELOPMENT MOTIVATION

7.1 Need and desirability of the activity

This development has been listed as one of the areas to be developed on the TCLM Integrated Development Plan 2017-2022 under R1 of the planned development by the municipality and all service delivery requirements (such as water and sanitation) have also been taken into account (TCLM IDP 2017-2022). The PBRD by KHS (Pty) Ltd will play an important role in assisting the TCLM to achieve housing and infrastructure development in the area. Lydenburg has been listed as one of the priority areas for future development of infrastructure and housing. Also, the area for development falls under ward 5 of the municipal area which the IDP 2017-2022 refers to as:

- *“Economic routes are at critical stages for refurbishment in our municipality are in need of urgent attention in order to revive the economy of our main towns whose economy depends largely on tourism”.*

The IDP 2017-2022 lists the human settlement and investor attraction as one of the priorities needed at TCLM and this project will open opportunities for the municipality to meet its objectives as also stated in the SDF 2014.

As indicated in the description of the proposed development will produce house for sale, shopping complex for the community, private hospital, taxi ranks and Leisure Park etc. This BAR application is undertaken for the purpose of the PBRD construction activities which comprises of all the mentioned properties. In the event that these developments require an environmental authorisation in future, a separate applicable environmental authorisation will be conducted in consultation with the relevant departmental authority.

Besides meeting the housing needs of the Lydenburg area, this development will aid in job creation and employment of local labour during the construction phase as well as during the operational phase. It is estimated that during construction, this development will create 250 jobs to local individuals and will retain 120 for operational phase. Also, after completion, it has the potential to bring industry to the area, which this aligns with the National, Provincial and Municipal development plans.

8. APPLICABLE LEGISLATION, POLICIES AND/OR GUIDELINES

Table 4 below shows all the applicable legislations that were taken into consideration during the compiling the BAR for this development.

Table 4: Applicable Legislation

Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
General Laws		
The Constitution of the Republic of South Africa, 1996 (Act No. 108 of 1996)	-	To establish a Constitution with a Bill of Rights for the RSA.
Environment Conservation Act, 1989 (Act No. 73 of 1989 as amended)	DARDLAE	To control environmental conservation
National Environmental Management Act, 1998 (Act No. 107 of 1998 as amended)	DARDLAE	To provide for the integrated management of the environment, and to regulate the 'Duty of Care' Principle
Promotion of Access to Information Act, 2000 (Act No. 2 of 2000 as amended)	-	To give effect to the constitutional right of access to any information held by the State and any information that is held by another person and that is required for the exercise or protection of any rights.
Air Quality and Noise		

National Environmental Management: Air Quality Act (Act No. 39 of 2004)	Ehlanzeni District Municipality	To reform the law regulating air quality to protect the environment by providing reasonable measures for the prevention of pollution. To provide for national norms and standards regulating air quality monitoring, management and control.
Government Notice 1123, dated 2007 under the NEM:AQA, 200	Ehlanzeni District Municipality	To declare the Highveld as a priority area in terms of the National Environmental Management: Air Quality Act, 2004 (Act No. 39 of 2004)
Title of legislation, policy or guideline	Administering authority	Aim of legislation, policy or guideline
Waste Management		
National Environmental Management: Waste Act (Act No. 59 of 2008)	DARDLAE	To reform the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution and ecological degradation
Water Management		
National Water Act (NWA), 1998 (Act No. 36 of 1998)	Department of Water and Sanitation	To provide for fundamental reform of the law relating to water resources.
WATER SUPPLY BY-LAWS	Thaba Chweu Local Municipality	To regulate water supply around the municipal areas.
Biodiversity		
National Environmental Management	DARDLAE	To provide for the management and conservation of South Africa's biodiversity within the framework of the National Environmental Management Act, 1998

Biodiversity Act, 2004 (Act No. 10 of 2004)		
Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983)	DARDLAE	To provide for control over the utilization of the natural agricultural resources of South Africa in order to promote the conservation of the soil, the water sources and the vegetation and the combating of weeds and invader plants
National Veld and Forest Fire Act, 1998 (Act No. 101 of 1998)	DARDLAE	To reform the law on veldt and forest fires.
Soil Management		
Environment Conservation Act, 1989 (Act No. 73 of 1989 as amended)	DARDLAE	To control environmental conservation

9. DESCRIPTION OF BASELINE ENVIRONMENT

All baseline information relating to the area were sourced from the Spatial Development Framework of the TCLM dated 2014.

9.1 Topography

The topography of the TCLM comprises of mountainous terrain, especially towards the eastern part of the TCLM not only scenic beauty but also makes the area suitable for forestry and provides the habitat supporting local ecosystems. In general, the area has moderate to high slopes making many areas unsuitable for high intensity development and intensive agriculture activities that require vast, evenly sloped land, see Figure 4 below for the topographical map.

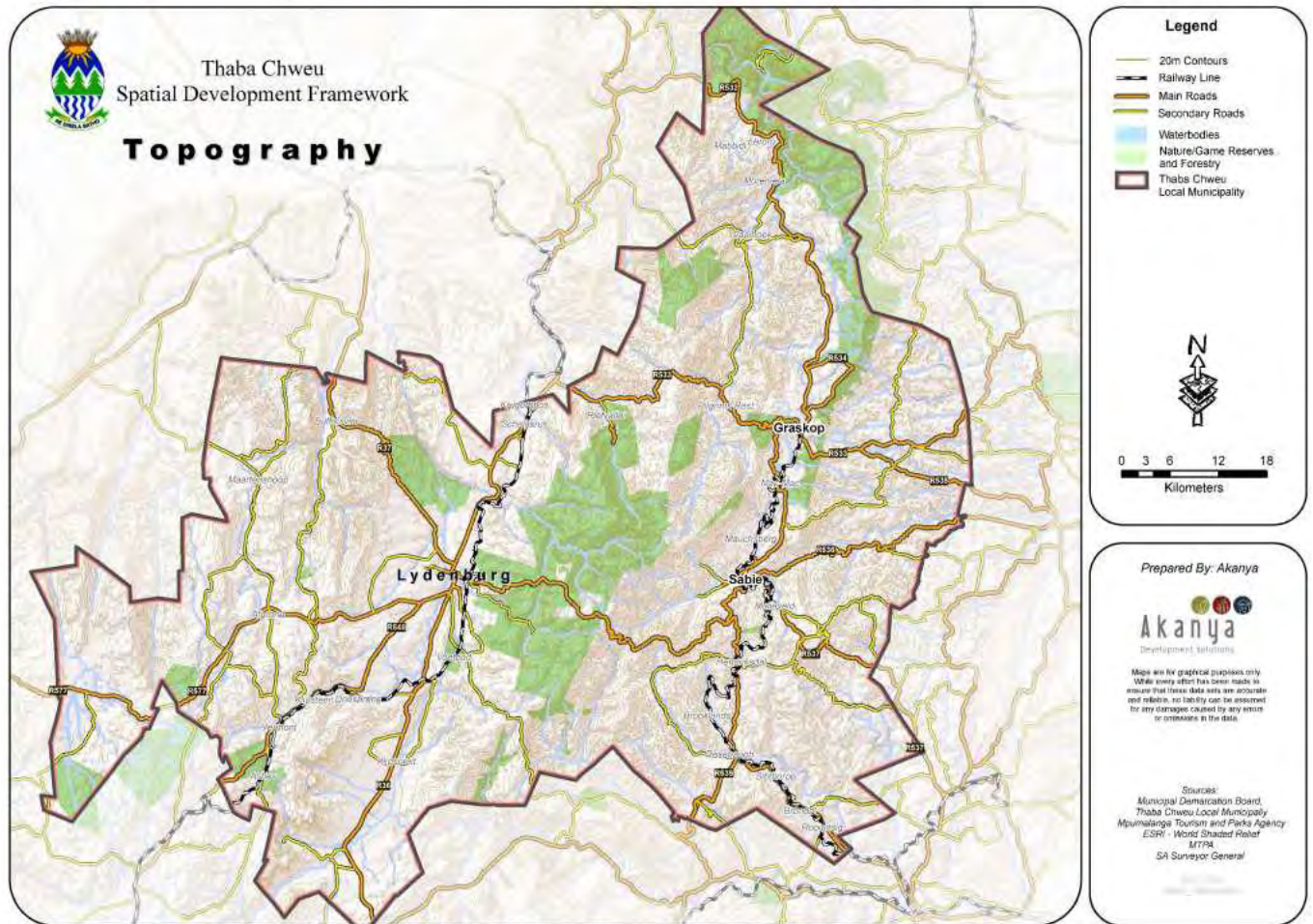


Figure 4: Topographical map of the TCLM in the Lydenburg area.

9.2 Geology

In terms of geology, vast areas of the TCLM are affected by dolomite rocks. In Mpumalanga Province, the carbonate formations comprise the Malmani Subgroup (Chuniespoort Group, Transvaal Supergroup). Alteration of dolomite to limestone (de-dolomitization) has occurred in many places due to the intrusion of the Bushveld Complex.

TCLM falls within the Malmani Subgroup that creates a vertical strip through the Mpumalanga Province. This belt is located more towards the eastern side of TCLM affecting the Matibidi, Moremela, Pilgrim's Rest, Leroro, Graskop and Sabie., see figure 5 below geology map

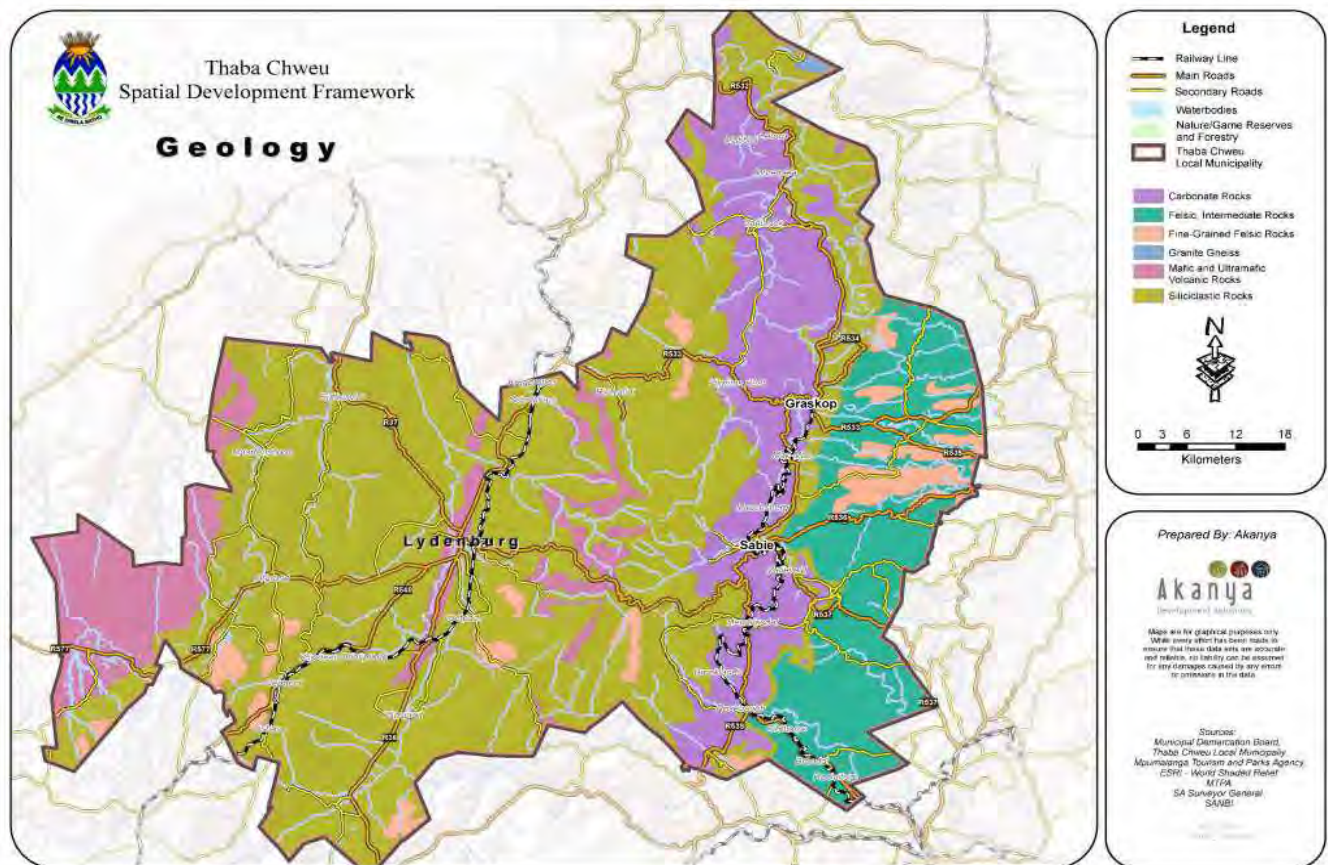


Figure 5: Geology of the TCLM municipality.

9.3 Hydrology

The entire municipality has an equal distribution of perennial rivers contributing to its predominantly moist and green environment. There are five major river systems namely the Elands, Blyde, Sabie, Timbavatie and Steelpoort rivers. These river systems flow from the Drakensberg Mountains, feeding into Mozambique before reaching the Indian Ocean, see figure 6 hydrology map below.

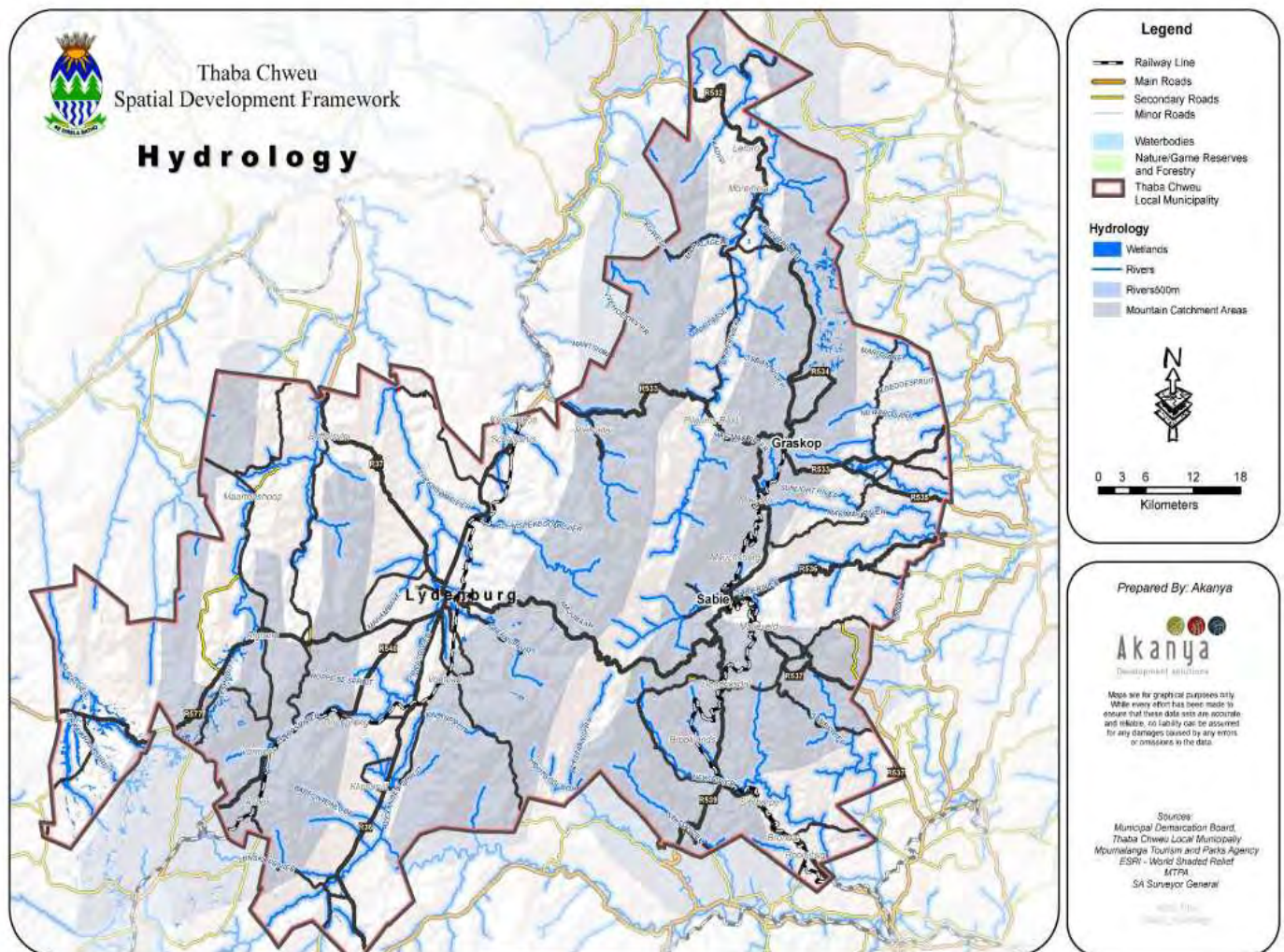


Figure 6: Hydrology situation within the TCLM municipality.

9.4 Climate

The climate data indicated that the warmest month of the year around TCLM is January at an average temperature of 20.3°C, with July having the lowest average temperature of the year at 10.6°C. During the year, the average temperatures vary by 9.7 °C. The difference in precipitation between the driest month and the wettest month is 129 mm. (www.climate – data.org)

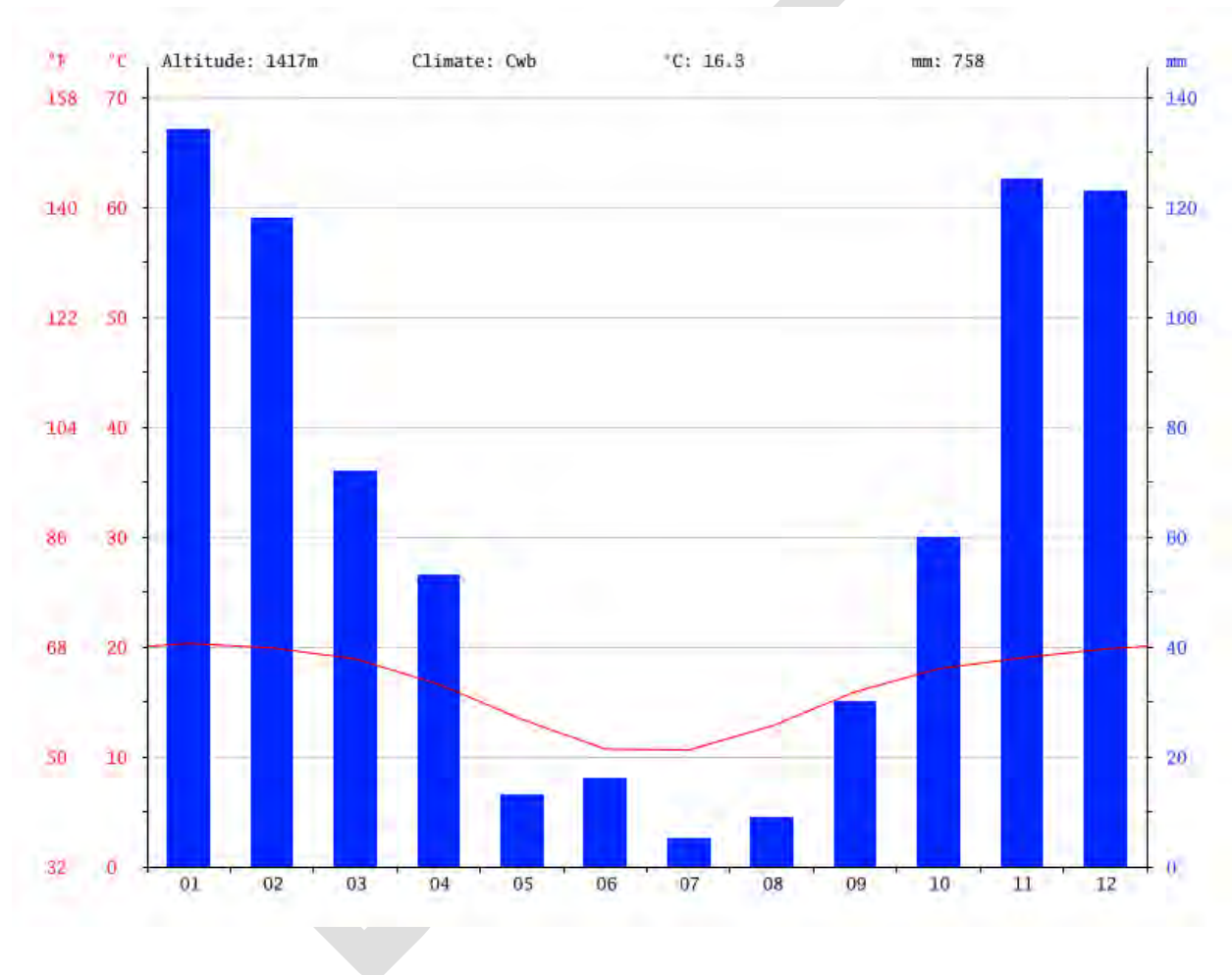


Figure 7: Annual rainfall and temperature for Lydenburg (Climate-data.org)

9.5 Current land use

The PBRD is located in undisturbed land that is zoned for agricultural usage. See Rezoning application **Annexure M**.

10. SOCIO - ECONOMIC

TCLM is situated in the northern part of Mpumalanga on the escarpment and forms part of the Ehlanzeni District Municipality together with Mbombela, Umjindi, Nkomazi and Bushbuckridge Local Municipalities. The total size of the municipal area is 5 719,06 km², comprising 20% of Ehlanzeni District (27 895,47 km²). Major towns in the area include Lydenburg, Sabie, Graskop, and Pilgrim's Rest (SDF, 2014).

There are four traditional authorities are present in the TCLM (SDF, 2014):

- Mogane Tribal Authority (Moremela village).
- Mashile Tribal (Matibidi B village).
- Mohlala Tribal Authority (Matibidi A village).
- Mahlangu Tribal Authority (Draaikraal, "informal" traditional authority).

According to the Census results of Stats SA the population size in 1996 was at 65909, 2001 it stood at 81681 and in 2011 at 98387 as well as in 2016 that was 101895, thus it is projected that by 2030 it will be around 113920. As per these statistics there has been an increase in population size from 1996 to 2016. The highest percentage of the age group is between 25-29 years followed by 0-4 years of both female and male. The number decreases as the age goes up. The age group of 80+ has the lowest proportion compared to the rest of the other groups. In terms of gender balance, the females have the highest proportion in almost all the age groups (IDP, 2017-2022).

The population of black people were the most dominant in the year 1996, 2001 and 2011 followed by that of white people. This means that the municipal planning in terms of socio-economic related up-liftment's programmes and projects will target groups or speak or respond to the race with the highest percentages. There is still a huge backlog for most black households in terms of basic infrastructure provision. The IDP development approach has identified all areas with black people dominance for basic service delivery back-log intervention and to address some of these socio-economic challenges facing this race, although the impact will be realised over a medium to long term period (IDP, 2017-2022).

The unemployment rate at TCLM was sitting at 18. 64% in 1996 whereas in 2001 it was at its highest percentage of 25.12% and 20.49% in 2011. Overall, unemployment remains high in

TCLM with the general unemployment of TCLM population comprising of classified persons i.e. People with disabilities, Women and Youth (IDP, 2017-2022).

10.1 Socio-economic impact assessment

According to the TCM Spatial Development Framework 2014 the nodal structure consists of Lydenburg, Sabie and Graskop. Lydenburg / Mashishing is recognised as the primary node in the area, both in terms of economic development and providing services to the surrounding area. It is located on a provincial corridor, linking Mbombela with Tubatse in Limpopo. It is also at the centre of various regional routes, serving the industrial / mining / agricultural sectors, as well as tourism. The development focus for the primary node is expansion of economic activity and residential areas, together with basic service upgrades and the provision of high-quality community services and amenities to make it attractive for potential investors and residents.

The framework indicates that the core of the current Lydenburg CBD, as well as a local node to service Mashishing, should be supported as high intensity mixed use. The general composition of a high intensity mixed use area should be:

- 50% - a mix of business activities is the predominant use and should include retail, offices and recreation activities.
- 20% - high to medium density residential (40-60 units per hectare); in the case of Lydenburg, this could also be in the form of tourist accommodation / guest houses. In Mashishing, a rental housing component should be included in or near the central node

According to TCM Spatial Development Framework 2014; the proposed area is suitable and earmarked for both residential and business development.

With regards to housing and land, the IDP states that within Thaba Chweu Local Municipality, there is a need: -

- To replace the asbestos roofs on old houses
- For new housing
- For the formalization of all informal settlements
- To maintain family hostels
- To complete housing projects

- For business sites
- For land for human settlement and commercial development purposes
- For township establishments
- To speed up land claims

In the year 2016, approximately 4 791 households in Thaba Chweu Local Municipality were informal dwellings. This accounts for 12.9% of the total number of households found in the municipality. In most instances, informal dwellings are an indicator of the fact that housing demand exceeds housing supply. The IDP also explains that the Thaba Chweu Municipality has 28 256 houses and a backlog of 13 294 houses (which is a backlog of 47%). It is crucial for new developments to provide formal houses that have secure tenure in order to eradicate informal dwellings (2017-2022 Ehlanzeni District Municipality's Final IDP and Budget: 51, 120).

During the public participation meeting that was conducted for the proposed project on the 26 March 2019, the adjacent landowners were in full support of the proposed project because it will bring much needed development and economic growth in the Lydenburg/Mashishing area which is the significant positive impact.

11. SPECIALIST STUDIES

11.1 Ecological Assessment

Sazi Environmental Consulting was appointed by KHS (Pty) Ltd together with the EAP (Philo Environmental Management CC) to conduct the ecological assessment of the PBRD portion 488 township. The ecological assessment concluded that:

- The proposed project site is located within the Lydenburg Thornveld Grassland which is considered to be Vulnerable with the sensitivity of the area considered to be Medium.
- The site is mostly dominated by the vegetation type that includes graminoids, megagraminoids, flowers and herbs.
- No reptile and amphibian species were recorded on site. However, amphibians that may occur within the study area, based on available distribution records and known habitat requirements, are *Amietia delalandii* species.
- No red data species
- No species of conservation value were observed on site.

- Although no sensitive or red data species were observed during the time of assessment, the Sazi Environmental Consulting has recommended that due care must be undertaken when developing on this area and all relevant mitigation measures must be implemented. **(A full detailed ecological assessment report is attached as Annexure F).**

11.2 Heritage Impact Assessment

Following an indication by the Interested and Affected Parties that the development area is a heritage site, Apelser Archeological Consultant were appointed by KHS Pty Ltd and EAP (Philo Environmental Management) to conduct the heritage assessment for this development and the assessment concluded the following:

A number of sites, features and some cultural material were identified and recorded during the assessment of the study area in March 2019. The most significant of these were a number of stone-walled features representing the remnants of a LIA stone-walled settlement most likely related to the Koni or Pedi

Two individual artifacts were identified in the study area during the assessment. These finds are out of context and are viewed of as low heritage significance as a result. The 1st object is a weathered Stone Age flake-tool (possibly dating to the Middle Stone Age), while the 2nd one is a horseshoe that could have an Anglo-Boer War (1899-1902) origin. With the location of the Fort Howard site relatively close by to the north of the study area this is a possibility.

Site 1 is the remains of a LIA stone-walled settlement.

- The site consists of a number of stone-walled circular enclosures and some terraces (used for agricultural purposes) extending over a fairly large area in the central and north-eastern section of the study area.
- The walling is generally fairly low and indistinct (mainly foundations) although some walls are better preserved. Some pieces of undecorated pottery as well as a lower grinding stone were also identified in the area.

Recommendations

- The site must be archaeologically investigated if the development cannot avoid impacting on it. This will entail detailed mapping of the site and some limited archaeological excavations to recover cultural material and information from it before it is demolished.
- A permit for the work needs to be obtained from SAHRA by an accredited archaeologist. Once the work has been completed the site can be demolished and development work can continue (HIA Phase 1 Report and permit to implement the Phase 2 mitigation measures were submitted to South African Heritage Resources Agency on the 6th February 2020 and 27th July 2019 respectively); or
- A second option is for the site to be preserved in situ by fencing it in and including it in a Site Management Plan as part of the proposed Township Development.
- This report further concluded that from a Cultural Heritage (archaeological & historical) point of view, the proposed Township Development on Portion 488 of Lydenburg Townlands 31JT should be allowed to continue once the recommended mitigation measures have been implemented. **(A full detailed archaeological report is attached Annexure G).**

11.3 Floodline Assessment

Gomelelo Environmental Consulting was appointed by KHS (Pty) Ltd to undertake a floodline determination study for an unnamed stream adjacent to this development. The assessment concluded that: The delineated 1:100-year floodlines indicates that the project boundary for the proposed development lies outside the delineated floodlines. Thus, this development poses no risk on the adjacent water resource in terms of flooding, while the development itself will also not be exposed to the risk of flooding during high rainfall events **(A full detailed floodline assessment is attached as Annexure H).**

11.4 Wetland Baseline and Risk Assessment for winter and summer

The Biodiversity Company was appointed by KHS (Pty) Ltd to undertake a wetland baseline and risk assessment for PBRD. Two wetland site visits were conducted, the first on the 22nd of June 2019 and the second on 11th of February 2020, this would constitute a dry and wet season survey respectively. Even though this system has channelled valley bottom characteristics associated with the non-perennial stream south of the proposed development and lacks meandering characteristics, a large floodplain area is located east of the proposed development

area, which has been formed by the adjacent streams over spilling their banks and has therefore been labelled as a floodplain.

Two wetlands were identified within the proposed development footprint's 500 m regulated area, namely a floodplain (HGM 1) and a hillslope seep (HGM 2). The floodplain wetland is fed by two perennial streams to the east of the proposed project area as well as a non-perennial stream flowing from west to east immediately south (approximately 0 to 15 m) of the project area. Additionally, two drainage systems have been identified, and even though the lack of wetland indicators have resulted in these systems not to be classified as wetlands, it has been recommended that they be conserved to ensure the conservation of the floodplain downslope.

This floodplain wetland is characterised by a Rensburg soil form and is covered in *Typha capensis* with HGM 2 covered in the Swartland soil form without any hydrophytes. HGM 1 is characterised by an intermediate ecosystem services score, an overall present ecological state of "Largely Modified", an ecological importance and sensitivity score of "High" and a direct human benefit score of "Low". As for HGM 2, the average ecosystem service score has been determined to be "Moderately Low", with the present ecological state calculated to be "Largely Modified". The ecological importance and sensitivity have been determined to be "Moderate" for this system.

The delineated watercourses impede into the proposed footprint area which emphasises the possibility of direct impacts and a loss of wetlands. It has therefore been recommended that the layout of the proposed development be changed in such a way that the delineated wetland and its buffer zone be avoided. Various mitigation measures have been recommended to minimise indirect impacts from "Moderate" significance to "Low" significance. The impact assessment has taken into account the avoidance of the wetland and its buffer zone, which ultimately eliminates direct impacts towards the wetland system.

Pre-mitigation aspects during the construction phase have been scored "Low" to "Moderate" significance ratings, of which all are expected to be decreased to a "Low" significance rating by means of relevant mitigation measures and recommendations. As for the operational phase, all of the associated aspects involved have been scored "Moderate" significance ratings of which all are expected to be decreased to "Low" with application of prescribed mitigation measures.

Recommendations

The following recommendations have been made to ensure the conservation of the delineated wetland during the construction and operational phase;

- All prescribed mitigation measures must be adhered to (see EMPr);
- The delineated wetland and its associated buffer zone must be stayed clear of during the construction and operational phases. The layout of the proposed development must therefore be changed accordingly, so that the wetland and its associated buffer zone be avoided; and
- A stormwater plan must be set-up for the proposed development, focussing on overland flow and the velocity of overland flow/stormwater channelled into the wetland to minimise erosion.
- It is the specialist's opinion that the proposed development proceeds on the condition that all of the recommendations made within this report as well as the prescribed mitigation measures be adhered to. **(A full detailed Wetland Baseline and Risk Assessment Reports (dry and wet season) is attached as Annexure I)**

11.5 Geotechnical Investigation

A geotechnical investigation was conducted on Portion 453 Townlands of Lydenburg 31 JR within the Thaba Chweu Local Municipality, Mpumalanga Province. A total of twelve (12) trial pits were excavated on the site. The geological map indicates that the investigated area is at depth underlain by shale and mudstone. The trial pits excavated across the site indicate that the site may be subdivided into two zones, namely: Zone A and Zone B.

- Zone A is characterized by the presence of a transported horizon comprising alluvial material overlying residual clay with subordinate mudstone in places classified as ML (inorganic silt), SM (Silty sand).) and MH (inorganic silts). Laboratory results indicate that the material encountered within this zone exhibits low to moderate collapse potential and medium to high compressibility based on the LL.
- Zone B is characterized by shallow and outcropping diabase bedrock with clay matrix in places. The laboratory results indicate that the material encountered within this zone exhibits low potential expansiveness along with medium compressibility based on the LL.

No groundwater or groundwater seepage was encountered in all the test pits excavated on the site. Pedogenic material in the form of ferruginised residual clay was encountered, indicating the presence of a fluctuating seasonal or perched water table.

•The site is sub-divided into two geotechnical zones: **Zone A: 2/H1/C/S1, Zone B: 2/R.** (more information detailed in the **Geotechnical Investigation: Portion 453 Townlands of Lydenburg 31JR report attached on Annexure N)**

11.6 Landscape and visual impact

The proposed project site is located within the Lydenburg Thornveld Grassland, the site is mostly dominated by the vegetation type that includes graminoids, megagraminoids, flowers and herbs.

A number of sites, features and some cultural material were identified in the proposed site. The most significant of these were a number of stone-walled features representing the remnants of a LIA stone-walled settlement most likely related to the Koni or Pedi.

Recommendations/mitigation measures have been put in place for both ecological impact assessment and heritage impact assessment to ascertain minimal impact on the landscape of the proposed project site.

11.7 Aviation impact Assessment

The Ecological Impact Assessment conducted for the proposed project indicated that the avifauna species observed on site were: *Vanellus coronatus*, *Vanellus armatus*, *Euplectes progne*, *Euplectes orix*, and evidence of *Numida meleagris*. The study further identified possible birds that may occur on the proposed site from Animal Demographic Unit website, http://vmus.adu.org.za/vm_view_db.php. Please see the attached **Ecological Impact Assessment (Annexure F)** for the detailed information regarding the avifauna on the proposed project area.

11.8 Civil aviation

There are no civil aviation infrastructures around the proposed project area. The closest privately-owned airport is the Kruger Mpumalanga International airport located 73 km away from

Lydenburg. The civil aviation activities will not pose any significant impact on the proposed project.

11.9 Defense Theme

The closest military camp to the proposed project area is located in Barberton 137 kilometers away. The defense activities will not impact on the proposed project.

11.10 Baseline water qualities

Baseline water quality samples were taken upstream and downstream of the proposed project area on the 24 February 2020. The upstream sampling point H93 the pH was neutral at 7.73 and all other measured parameters were compliant with SANS 241:2015 except turbidity which measured 223 NTU exceeding 1.0 NTU for operational and 5.0 NTU for aesthetic. The downstream sampling point H94 the pH was neutral at 7.53 and the following parameters were non –compliant with SANS 241:2015 (1) manganese at 1.14 mg/l exceeding 0.4 mg/l for chronic health and 0.1mg/l for aesthetic (2) turbidity at 778 NTU exceeding 1.0 NTU for operational and 5.0 NTU for aesthetic, see **Annexure O**.

12.WASTE, EFFLUENT, EMISSION AND NOISE MANAGEMENT

This BA application is for the purpose of the construction and operational activities for the development of the PBRD township development. However, in the event that the future development of the facilities require environmental authorisation and/or water licence, a separate environmental impact assessment application will be conducted.

The different waste generated during the construction activities of this proposed development will be stored on site in suitable waste containers and will then be transported by an appointed waste removal company for disposal at a suitably registered landfill site. During operational stage the TCLM will provide water, waste and effluent services. All emission and noise management will be in accordance with the bylaws of the TCLM.

13. PUBLIC PARTICIPATION PROCESS

- **Consultation letters to adjacent landowners and authorities**

Consultation letters to authorities were hand delivered to the Mayor, The Speaker of Parliament, Municipal Manager and the District Municipal Manager on the 23rd of November 2018 and ten adjacent landowners.

- **Site Notice**

Two site notices were placed at areas that are accessible and visible to the public, around the proposed site on the 23rd of November 2018. The notices include a brief description of the project and IA&Ps were invited to register on the database of the proposed project, to raise any issues concerning the proposed project, and to submit any comments or concerns about the project within 30 days.

- **Newspaper Advert**

Two newspaper adverts were placed in Steelburger/ Lydenburg local newspaper. The first advert placed on the 23rd of November 2018 that served to notify the public about the proposed project and invited the IA&Ps by the proposed project to register. The second advert was placed on the 8th March 2019, which served to invite all IA&Ps to participate in a public meeting that was held on the 26th of March 2019.

- **Comments and inputs from the public meeting with IA&Ps**

All the comments and input from the public meeting are attached on the Public Participation Report as **Annexure E**.

14. SITE DOCUMENTATION

The project owners are advised that the following documents should always be available on site;

- A copy of the Environmental Management Programme of this project (The EMP is attached in this report as **Annexure L**)

- A copy of the Environmental Authorization (Basic Assessment authorisation).

15. IMPACT ASSESSMENT AND MITIGATION MEASURES

15.1 Impact Assessment Methodology

The EIA Regulations (2014, as amended), prescribe requirements to be adhered to and objectives to be reached when undertaking Impact Assessments (IA). These are noted in the following sections contained within the EIA Regulations (2014, as amended):

- Regulation 982, Appendix 1, Section 2 and Section 3 – Basic Assessment Impact Requirements; and
- In terms of these Regulations, the following should be considered when undertaking an IA: A description and assessment of the significance of any environmental impact including:

Cumulative impacts that may occur as a result of the undertaking of the activity during the project life cycle;

- Nature of the impact;
- Extent and duration of the impact;
- The probability of the impact occurring
- The degree to which the impact can be reversed;
- The degree to which the impact may cause irreplaceable loss of resources; and
- The degree to which the impact can be mitigated.

Table 5: Risk Matrix - Consequence

Consequence Type	1 - Insignificant	2 - Minor	3 - Moderate	4 - High	5 - Major
Costs	Less than 1% impact on the overall budget of the project	May result in overall project timeline overrun of $\geq 1\%$ and $< 3\%$	May result in overall project timeline overrun of $\geq 3\%$ and $< 10\%$	May result in overall project timeline overrun of $\geq 10\%$ and $< 30\%$	May result in overall project budget overrun of 30% or more
Safety	First aid case	Medical treatment case	Lost time injury	single fatality or permanent disability	Numerous permanent disabilities or multiple fatalities
Environment	Lasting days or less; affecting small area (m); receiving environment highly altered with no sensitive habitats and no biodiversity value	Lasting weeks; affecting limited area (m); receiving environment altered with little natural habitat and low biodiversity value	Lasting months; affected extended area (k); receiving environment comprising largely natural habitat and moderate biodiversity value	Lasting years; affecting area on sub-basin scale; receiving environment classified as having sensitive natural habitat with high biodiversity value	Permanent impact; affecting area on a whole basin or regional scale; receiving environment classified as highly sensitive natural habitat with very high biodiversity value

Legal and Regulatory	Technical noncompliance. No warning received; no regulatory reporting required	Breach of regulatory requirements; report/involvement of authority. Attracts administrative fine	Minor breach of law; report/investigation by authority. Attracts compensation/ penalties/ enforcement action	Breach of the law; may attract criminal prosecution, penalties/ enforcement action. Individual Licence temporarily revoked	Significant breach of the law. Individual or company law suits; permit to operate substantially modified or withdrawn
Social / Communities	Minor disturbance of culture/ social structures	Some impacts on local population, mostly repairable. Single stakeholder complaint in reporting period	Ongoing social issues. Isolated complaints from community members/ stakeholders	Significant social impacts. Organized community protests threatening continuity of operations	Major widespread social impacts. Community reaction affecting business continuity. "License to operate" under jeopardy
Reputation	Minor impact; awareness/ concern from specific individuals	Limited impact; concern/ complaints from certain groups/ organizations period	Local impact; public concern/ adverse publicity localized within neighboring communities	Suspected reputational damage; local/ regional public concern and reactions	Noticeable reputational damage; national/ international public attention and repercussions

Table 6: Risk Matrix Rating

Probability		Consequence				
5 - Almost Certain >90%	90% and higher likelihood of occurring	11 (Medium)	16 (Significant)	20 (Significant)	23 (High)	25 (High)
4 - Likely 30%-90%	Between 30% and less than 90% likelihood of occurring	7 (Medium)	12 (Medium)	17 (Significant)	21 (High)	24 (High)
3 – Possible 10%-30%	Between 10% and less than 30% likelihood of occurring	4 (Low)	8 (Medium)	13 (Significant)	18 (Significant)	22 (High)
2 - Unlikely 3%-10%	Between 3% and less than 10% likelihood of occurring	2 (Low)	5 (Low)	9 (Medium)	14 (Significant)	19 (Significant)
1-Rare <3%	Less than 3% likelihood of occurring	1 (Low)	3 (Low)	6 (Medium)	10 (Medium)	15 (Significant)

15.2 Assessment of each identified potentially significant impact and risk for all phases of the project.

Table 7: Identified Impacts

Activity	Aspect	Potential Impacts	Consequence	Probability	Significance rating before mitigation measures	Mitigation measure	Significance rating
Pre – Construction Phase							
Identification of sensitive areas	Destroy fauna and flora	Ecological Impact	3	5	20	Independent ECO appointed prior to construction phase until completion of the project in order to conduct site compliance inspection report to ensure no sensitive areas are impacted	9
Roads usage	Destroy fauna and flora	Ecological Impact	3	5	20	Ensure that the roads are within the project area, demarcated and communicated to the contractors	3

						that these are the only roads to be used	
Hazardous materials, handling and usage	Deterioration of natural environment	Ecological Impact	3	4	17	Implementation of general requirement as per SANS 10263-0:2015	5
Contractor Accommodation	Deterioration of natural environment	Ecological Impact	3	4	17	Contractor accommodation should be within the project area and inspection should be done prior to construction to ensure that the area is suitable for the construction	9
Water supply	Over usage of natural resource	Depletion of natural resource	3	3	13	Communicate with the contractor about water minimisation usage importance. Install flow meters to measure water usage and determine ways of decreasing usage	5
Provide proper sanitation	Deterioration of natural environment	Natural environmental and human impact	3	4	17	Provide proper construction mobile toilets with wash basin and these should be cleaned regularly.	1

Construction and Operational Phase							
Clearing of the project area	Loss of vegetation cover and associated habitat due to vegetation clearing	Ecological Impact	3	5	20	Construction area should be demarcated and ECO should supervise construction activities regularly	9
Clearing of the project area	Soil loss/soil erosion	Ecological Impact	3	5	20	All areas susceptible to erosion must be protected. Where erosion occurs it should be rehabilitated immediately;	9
Clearing of the project area	Loss of fauna due to vegetation clearing and habitat loss	Ecological Impact	3	5	20	No snaring or hunting of animals will be allowed. Contractor must put signages around the site to ensure this.	9
Clearing of the project area	Alien vegetation encroachment.	Ecological Impact	3	3	19	Alien species (including their seedlings and saplings) identified within the study area should be removed (manually preferably) to prevent their spreading;	9

Construction associated activities	Potential water quality degradation of the nearby stream associated unnamed river (no.1) due to chemical or sewage spillages – during construction (although this is below 500m from the buffer zone)	Surface water pollution	3	5	20	Compile flood line delineation plan	5
Construction area	Contamination of clean water systems	Surface water pollution	3	5	20	Construction of storm water channels/drains around the site.	5
Construction associated activities	Contaminants seeping to ground water.	Groundwater impact	3	5	20	Undertake Geohydrological assessment and implement recommendations	5

Construction associated activities	Generation of dust	Air pollution	3	4	17	Dust suppression measures should be implemented i.e. using water trucks. Dust mask should be used by contractor employees	9
	Generation of nuisance noise	Noise pollution	3	4	17	All heavy machinery used on site should be serviced regularly and record kept	13
Construction and operational phase	Increase traffic	Road traffic impact	4	5	25	Conduct traffic impact assessment and implement recommendations	18
Construction and operational phase	Destroying of heritage areas	Heritage Impact	2	5	19	Implement Heritage Impact Assessment recommendations	16
Construction and operational phase	Waste generation	Environmental impact	3	5	20	During construction, waste separation using different colour labelled bins should be implemented. Waste must be disposed at appropriate landfill sites. During Operation phase municipality will provide services for waste removal	1

Construction and operational phase	Socio economic related issues such as unemployment	Socio economic impact	4	5	25	Regular liaison with IAPs. Employment of local contractors	5
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16. ENVIRONMENTAL IMPACT STATEMENT

As a necessary part of human settlement and business service, this development is bound to have a positive effect on the community of TLMC and it will provide housing and employment opportunities even to immediate surrounding areas.

From a purely biophysical perspective the area to be impacted is on 17 hectares of natural undisturbed grassland area. The area is considered to be vulnerable with medium sensitivity. One wetland was identified within the proposed development footprint's 500 m regulated area, namely a floodplain (HGM 1). Mitigation measures have been proposed on the table above and EMPr to ensure that all these impacts are low during construction and operational phases. The delineated 1:100 year floodlines indicates that the project boundary for the proposed development lies outside the delineated floodlines

Two Heritage artifacts were identified in the study area, mitigation measures are proposed on the above table and a permit from SAHRA will be obtained before construction activities

Impacts associated with the construction phase include:

- Ecological impact
- Heritage impact
- Road traffic impact
- Noise and air quality impact
- Surface water impact
- Safety and security impact
- Waste management

The construction phase will be associated with positive socio-economic impacts in terms of job creation. A number of mitigation measures to reduce or improve these impacts have been identified and are presented in the tables above and EMPr. A key environmental imperative of the construction phase would be to prevent soil, air, water and noise pollution and erosion on the site.

Impacts associated with the operation phase include:

- Waste management area
- Sanitation management of the area

The biophysical impact of the development will be limited in a regional context, and will be more than offset by the social benefits. The proposed activity can therefore proceed from an environmental perspective. This development received majority support by the IAPs at TLMC

17. RECOMMENDATIONS BY THE EAP

Based on the information provided it is the opinion of Philo Environmental Management CC that no fatal flaws have been identified for the proposed development and that the information contained in this report is sufficient enough to allow DARDLEA to make an informed decision.

Philo Environmental Management CC therefore recommends that Environmental Authorisation be granted for the proposed development based on the following recommendations:

- The proposed activity is not anticipated to have significant environmental impacts.
- The following recommendations should be implemented in order to ensure that potential impacts associated with the proposed PBRD are minimised:
 - Any areas disturbed during construction and operation must be rehabilitated.
 - The delineated wetland and its associated buffer zone must be stayed clear of during the construction and operational phases. The layout of the proposed development must therefore be changed accordingly, so that the wetland and its associated buffer zone be avoided
 - A stormwater plan must be set-up for the proposed development, focussing on overland flow and the velocity of overland flow/stormwater channelled into the wetland to minimise erosion
 - Construction to take place during working hours.
 - On completion of the project all litter and construction debris shall be immediately removed from the site.
 - Heritage permit from SAHRA should be obtained before commencement with construction activities
 - Ensure proper sanitation is provided during construction and operational phases.

18. ENVIRONMENTAL MANAGEMENT PROGRAMME

An Environmental Management Programme (EMPr) (**Annexure L**) has been produced and provides a set of practical and actionable mitigation, monitoring and institutional measures to be taken into account during the pre –construction, construction and operational phases of the proposed pentagon business and residential development, should environmental authorisation be granted. The aim of EMPr is to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels

19. PROPOSED CONSTRUCTION TIMEFRAME

This will be determined after this application is approved.

20. REFERENCES

www.en .climate –data. Org

Integrated Development Plan 2017 -2022 Term

Thaba Chweu Spatial Development Framework 2014

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