PRELIMINARY ENVIRONMENTAL ASSESSMENT OF ERF 174 OF THE SLANG SPRUIT TOWNSHIP, MSUNDUZI LOCAL MUNICIPALITY

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1. INTRODUCTION

1.1. PROJECT BACKGROUND

This report provides an overview of the current environmental status for the following site which were identified to form part of the Msunduzi Local Municipality CRU project:

- Erf 174 of the Slang Spruit Township

The report is focused on the socio-economic factors of the Msunduzi Local Municipality and biophysical aspects of the project area. It is based on a combination of existing available desktop information sources as well as the findings and observations derived from the recent on-site survey conducted by members of the project team.

Available desktop information sources include information derived from STATSsa, SANBI, Ezemvelo KZN Wildlife, Water Research Council and the Department of Water and Sanitation. As a supplement to the information provided and discussed as part of this assignment a number of accompanying thematic maps have also been included within the report, which provide a graphical representation of various biophysical factors at play within the project area.

The report has been structured as follows:

- **Section 2:** Regulatory Framework
- **Section 3:** Statistical Analysis of the Msunduzi Local Municipality
- **Section 4:** Biophysical Analysis
- **Section 5:** Environmental Management Zones
- **Section 6:** Recommendations and Conclusion

1.2. SITE DESCRIPTION

The proposed site is approximately 6.92 ha and is located within Ward 18 of the Msunduzi Local Municipality. Majority of the site is currently vacant with residential dwellings situated on a south western portion of the site. The project area in relation to the municipal ward boundaries is depicted in Map 1.1 below. Photos 1.1 to 1.4 provide an overview of the existing condition on site.

Map 1.1: Project Area

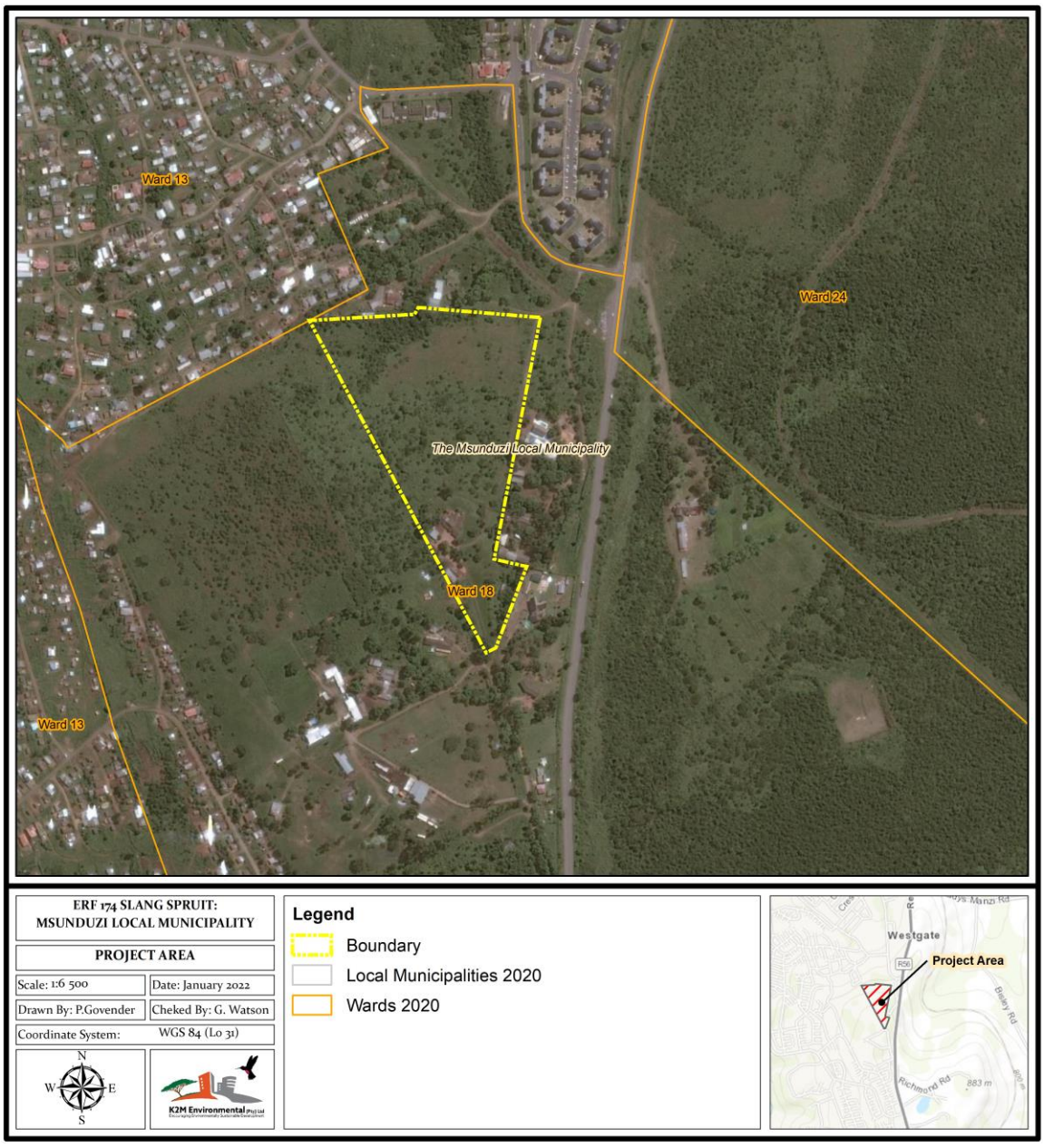


Photo 1.1: Access point to the site

Photo 1.2: Alien invasive plants and neighboring dwelling

Photo 1.3: Grassland cover and dispersed boulders on site

Photo 1.4: Vegetation cover on site

1.3. PROPERTY DESCRIPTION

1.3.1. GPS Co-ordinates

Table 1.1 below provides the co-ordinates of the site.

Table 1.1: GPS Co-ordinates

Latitude /Longitude	Degrees	Minutes	Seconds
South	29°	39’	58.31’’
East	30°	22’	36.10’’

1.3.2. Property Description

Table 1.2 provides the property description information of the site.

Table 1.2: Property Description

Property Description	21- Digit Surveyor Code	Title Deed No.
Erf 174 Slang Spruit	N0FT04160000017400000	T2355/1948

2. REGULATORY FRAMEWORK

2.1. NATIONAL ENVIRONMENTAL MANAGEMENT ACT (ACT NO. 107 OF 1998)

The National Environmental Management Act (No. 107 of 1998) provides for the control of certain listed activities which "may have a detrimental effect on the environment." In terms of the Environmental Impact Assessment (EIA) Regulations Listing Notice 1, Listing Notice 2 and Listing Notice 3 of 2014 (as amended), such activities are prohibited until written authorisation is obtained from the Minister or his delegated authority. Activities listed in EIA Regulations Listing Notice 1 and Listing Notice 3 of 2014 (as amended) will require a Basic Assessment to be conducted while activities listed EIA Regulations Listing Notice 2 of 2014 (as amended) will require a thorough EIA process which includes a Scoping Report and an Environmental Impact Assessment Report.

Table 2.1 below identifies a list of potential activities that could be triggered for the project area.

Table 2.1: Potential EIA Activities Triggered

Activity Number	Listed Activity	Activity in relation to the proposed project
Activity 27 of GN.R.327	The clearance of 1 hectare or more, but less than 20 hectares of indigenous vegetation, except where such clearance of indigenous vegetation is required for – (i) the undertaking of a linear activity; or (ii) maintenance purposes undertaken in accordance with a maintenance management plan.	The proposed development may entail the clearance of 1 ha or more of indigenous vegetation.
Activity 12 of GN.R.324	The clearance of an area of 300 square metres or more of indigenous vegetation except where such clearance of indigenous vegetation except where such clearance of indigenous vegetation is required for maintenance purposes undertaken in accordance with a maintenance management plan. **d. KwaZulu Natal** xii. Sensitive areas as identified in an environmental management framework as contemplated in chapter 5 of the Act and as adopted by the comptent authority; or	The proposed development may entail clearance of indigenous vegetation in an area classified as having a high biodiversity constraint and extremely steep slopes as per the Msunduzi Municipal EMF.

2.2. NATIONAL WATER ACT (ACT NO.36 OF 1998)

The purpose of the NWA, (Act No.36 of 1998) is to ensure that the nation's water resources are protected, developed, conserved, managed and controlled.

Section 21 of NWA defines a water use as:

a) Taking water from a water resource;
b) Storing water;
c) Impeding or diverting the flow of water in a watercourse;
d) Engaging in a stream flow reduction activity;
e) Engaging in a controlled activity;
f) Discharging waste or water containing waste into a water resource through a pipe, canal, sewer or other conduit;
g) Disposing of waste in a manner which may detrimentally impact on a water resource;
h) Disposing in any manner of water which contains waste from, or which has been heated in, any industrial or power generation process;
i) Altering the bed, banks, course or characteristics of a watercourse;
j) Removing, discharging or disposing of water found underground if it is necessary for the efficient continuation of an activity or for the safety of people.

As per the Department of Water and Sanitation, should there be any development/activity that falls within 500m of a wetland, and there is potentially no impact to the wetland, the Department of Water and Sanitation will require a signed letter from the wetland specialist indicating that the drivers of the wetland (surface, interflow and ground water flow) as well as Water Quality, Habitat (physical structure and vegetation) and Biota will not be impacted upon by the activity. It will then be a possibility of the application not triggering the Section 21(c) and (i) water uses, which in turn implies no need for a water use authorisation application for these uses specifically.

General Authorisations will only be applied to low risk activities located within the 500m buffer of the wetlands. Medium and High risk activities will require a Section 21 (c) and (i) water use licence. A wetland specialist will need to undertake a Wetland Delineation and Functional Assessment together with a Risk Assessment to determine if the proposed development will be considered a low, medium or high risk.

3. STATISTICAL ANALYSIS OF THE MSUNDUZI LOCAL MUNICIPALITY

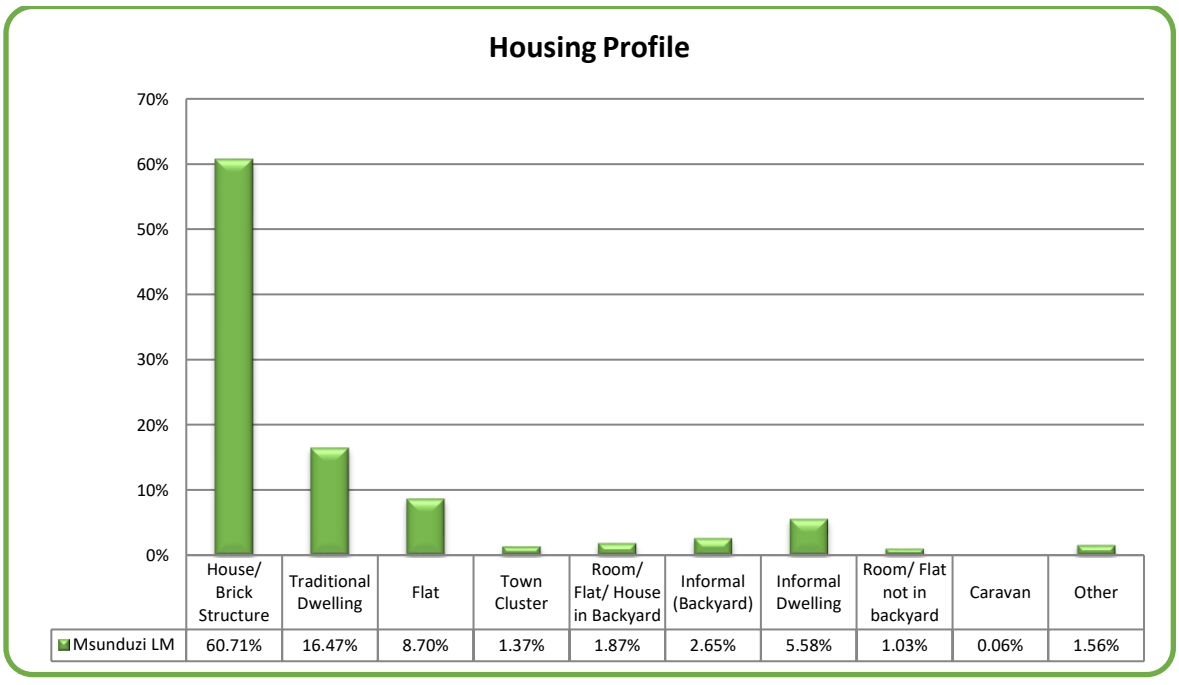
3.1. SOCIO- ECONOMIC ANALYSIS

The figures illustrated below were prepared from the Census 2011 data and present a socio-economic overview of the Msunduzi Local Municipality. The purpose of this section is to illustrate the need for the CRU project within the municipality.

3.1.1. Housing Profile

As can be seen from Figure 3.1, the most predominant housing type within the Msunduzi Local Municipality (LM) is the “House/Brick Structure” with approximately 60.71% falling into this category. The second most dominant housing type is “Traditional dwellings” with 16.47% of houses falling into this category. Traditional dwellings include mud houses, clay houses and huts made of animal manure. Although the percentages for Flats (8.70%), Informal Dwellings (8.23%) and Rooms (2.9%) are much less than the “House/Brick Structures” and “Traditional dwellings” percentage, the individuals who rent these dwellings may have an interest in the community residential units.

Figure 3:1: Housing Profile

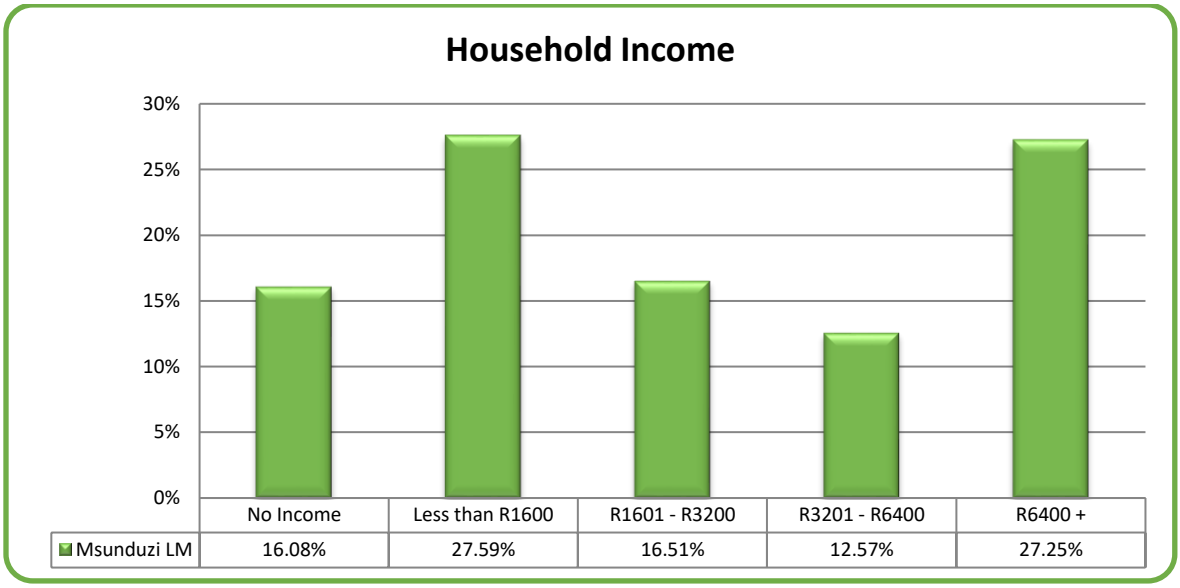


Source: Statistics SA, Census 2011

3.1.2. Household Income

Figure 3.2 below illustrates the household income profile within the Msunduzi Local Municipality. The 2011 Census data also shows that 16.08% of the population within the LM has no form of income. As much as 27.59% of the total number of households within the LM indicated a collective monthly household income of R1600 and less, 16.51% fall within the income range of R1600 – R3200, 12.57% earn between R3200 and R6400 while 27.25% of the total number of households indicate a collective monthly household income of more than R6400.

Figure 3:2: Household Income

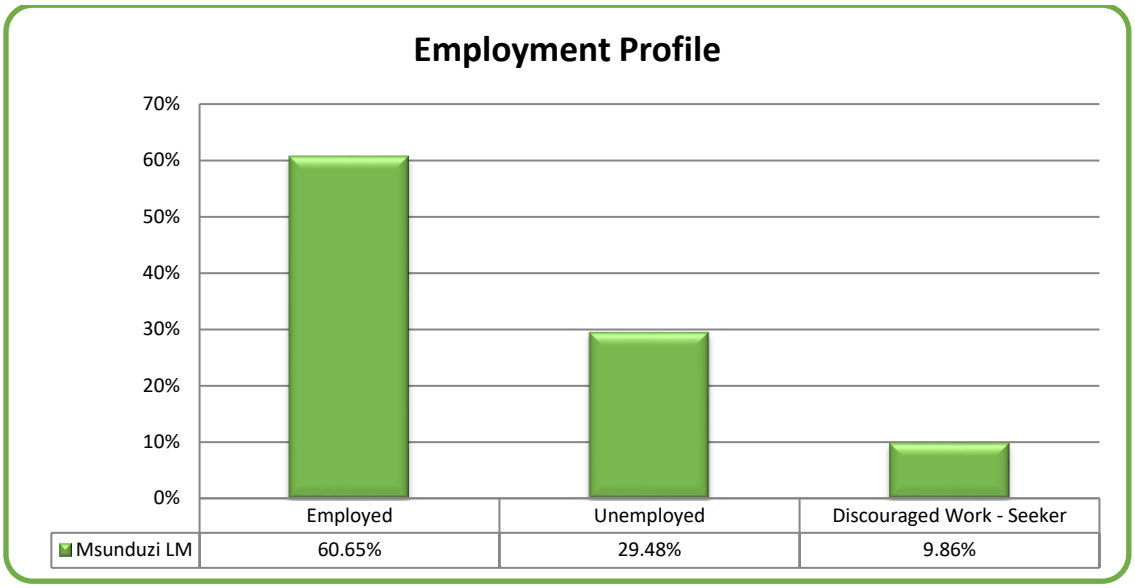


Source: Statistics SA, Census 2011

3.1.3. Employment Profile

Figure 3.3 below illustrates the employment profile of the Msunduzi Local Municipality. Approximately 29.48% of the adult economically active population within the LM indicated to be unemployed. These figures include persons older than the age of 16 who indicated that they were unemployed at the time of the survey but seeking employment and are willing to take up any employment position should it be presented. Approximately 60.65% of the economically active population within the LM indicated that they were employed at the time of the survey and 9.86% were discouraged work seekers.

Figure 3:3: Employment Profile



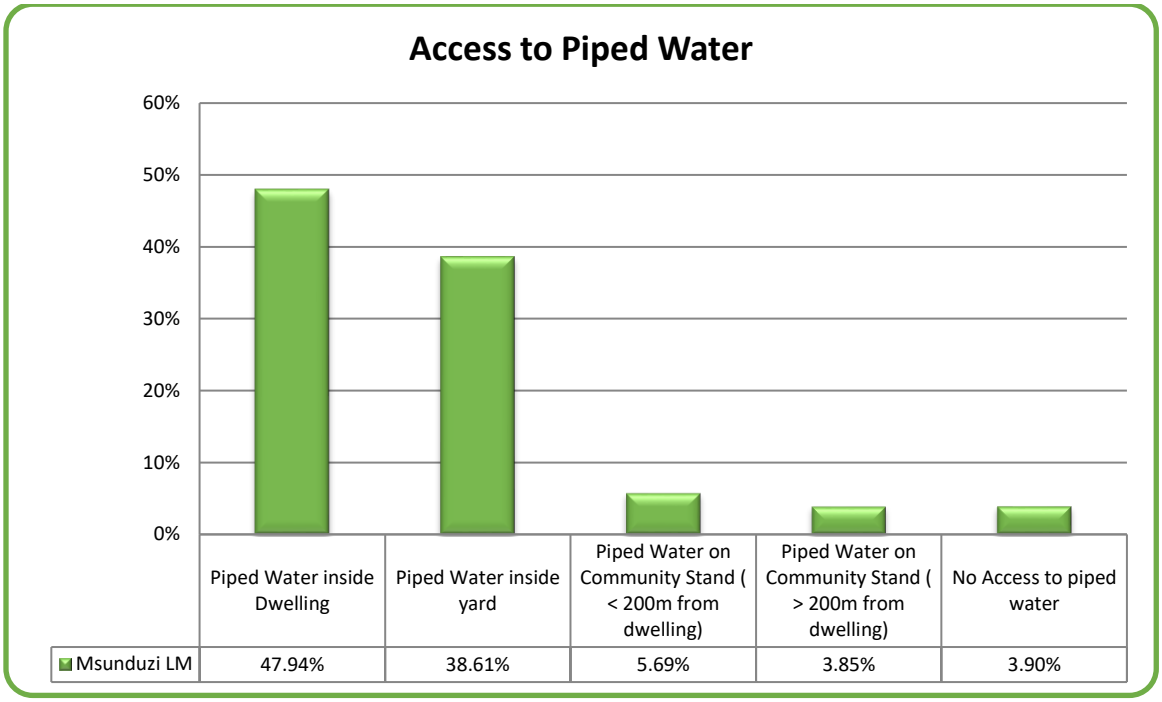
Source: Statistics SA, Census 2011

3.2. SERVICE DEMOGRAPHICS

3.2.1. Water Services

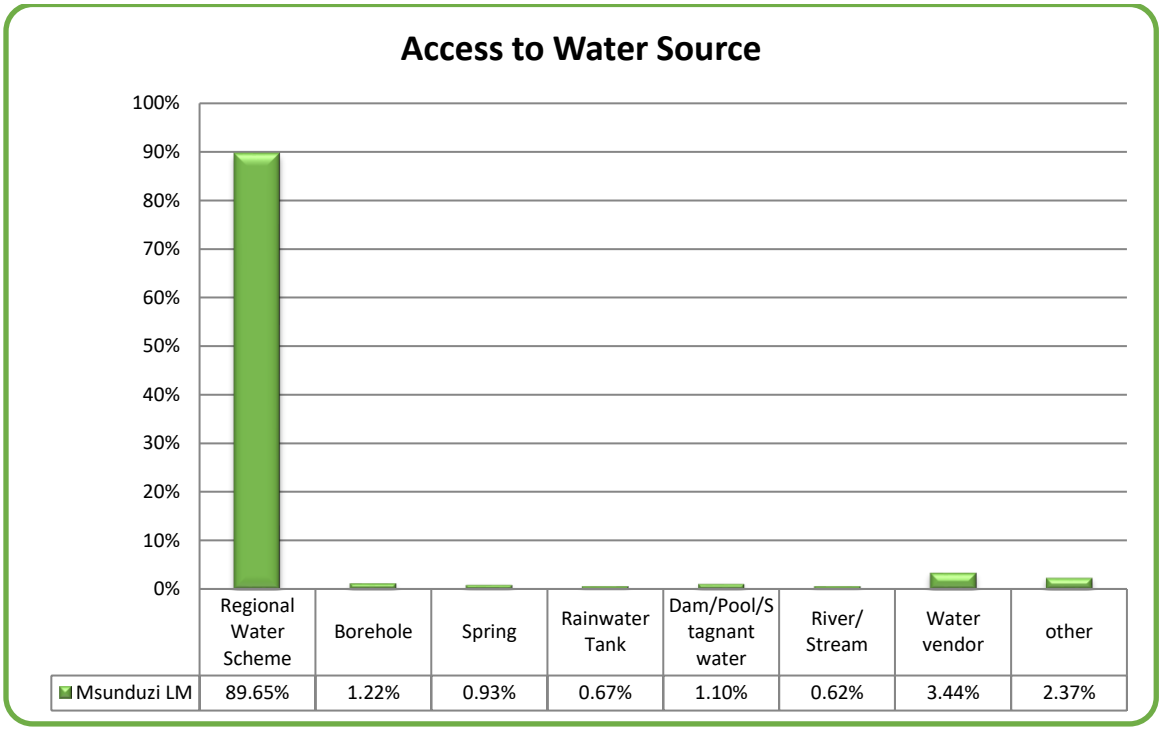
Figure 3.4 and 3.5 below illustrates the various sources of water, for drinking and other auxiliary household uses, for communities residing within Msunduzi Local Municipality. The figure shows relatively good access to running water with 47.94% of the total number of households having access to piped water “inside dwelling” and 38.61% having piped water “inside the yard”. Approximately 5.69% of households within the LM have to walk less than 200m to get water, whilst 3.85% of households have to walk more than 200m to get water. Approximately 1.22% of households within the LM make use of boreholes, and 0.62% utilise water from a river or stream. Approximately 3.4% of the households buy water from a vendor who probably sources it from the above mentioned sources which are situated at a greater distance from the households.

Figure 3:4: Piped Water



Source: Statistics SA, Census 2011

Figure 3:5: Water Infrastructure

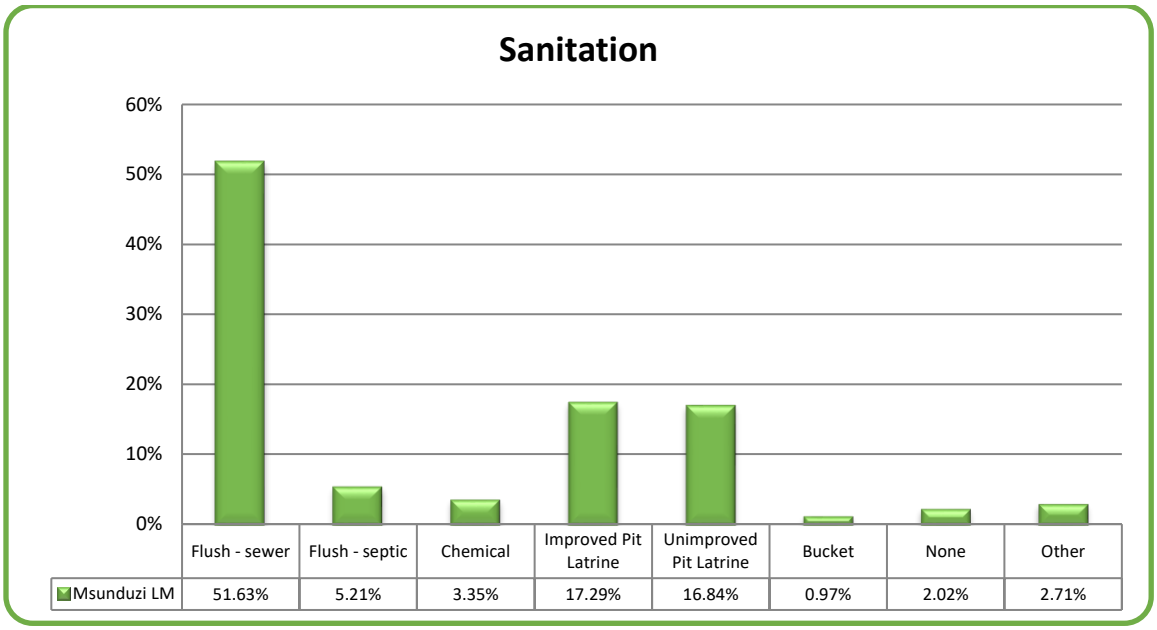


Source: Statistics SA, Census 2011

3.2.2. Sanitation

Figure 3.6 below indicates the various sanitation systems used by households within the Msunduzi Local Municipality. From the figures below, approximately 51.63% make use of flush toilets connected to a sewer system and 5.21% use flush toilets connected to a septic tank. Approximately 16.84% of households have the “unimproved pit latrines” and 17.29% have the “improved pit latrines”. Furthermore, approximately 3.35% utilize chemical toilets.

Figure 3:6: Sanitation

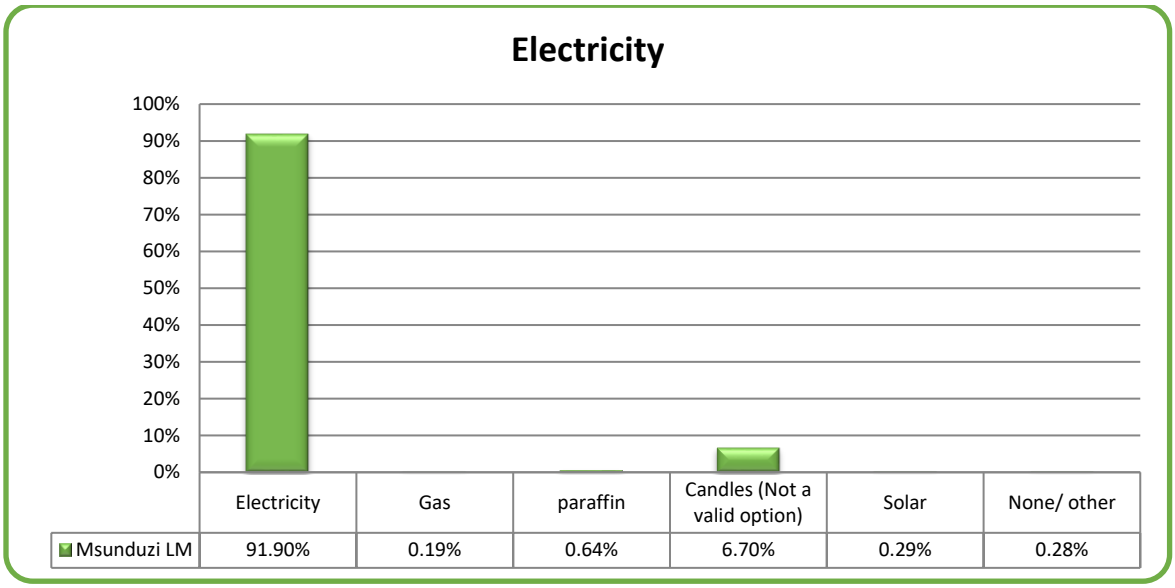


Source: Statistics SA, Census 2011

3.2.3. Electricity

Figure 3.7 below indicates the various energy sources used for lighting purposes by households within the Msunduzi Local Municipality. During the time of the survey, 91.90% (the majority) of households within the LM utilized electricity whilst 6.70% utilized candles.

Figure 3:7: Electricity

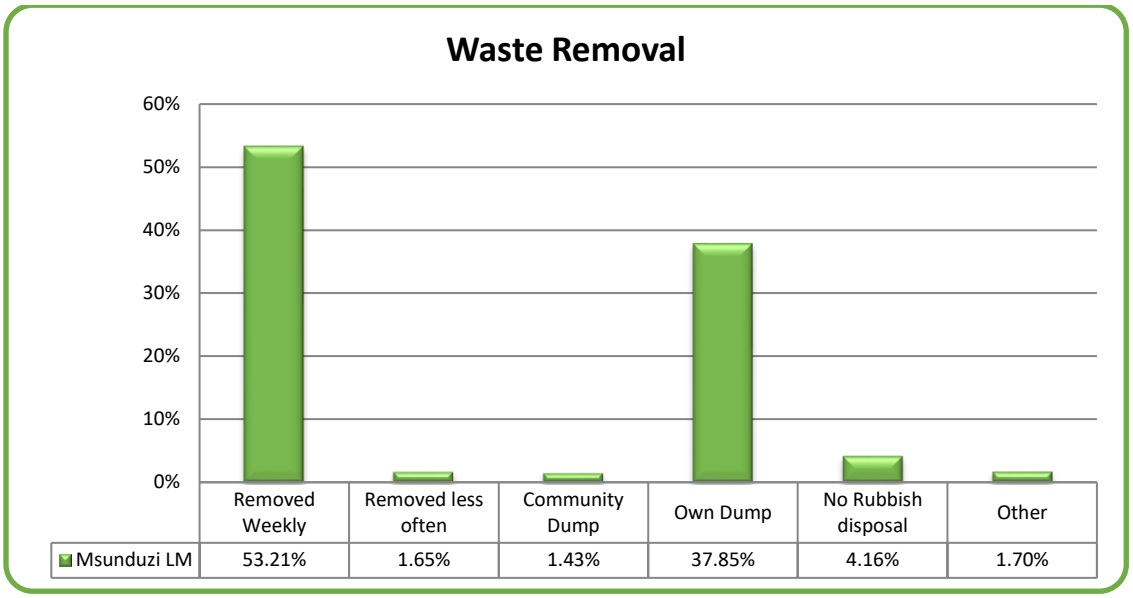


Source: Statistics SA, Census 2011

3.2.4. Waste Removal

The graph in Figure 4.5 below depicts the various waste management/ removal methods recorded as being used by the various households within the Msunduzi Local Municipality. As much as 53.21% of the total number of households had their refuse collected once a week and 1.65% collected less often than on a weekly basis. Approximately 37.85% of households within the LM indicated that they make use of their own refuse dump, be it pit holes in the yard or in close proximity to the house. As can be seen, approximately 4.16% of the LM do not have any form of waste removal services.

Figure 3:8: Waste Removal



Source: Statistics SA, Census 2011

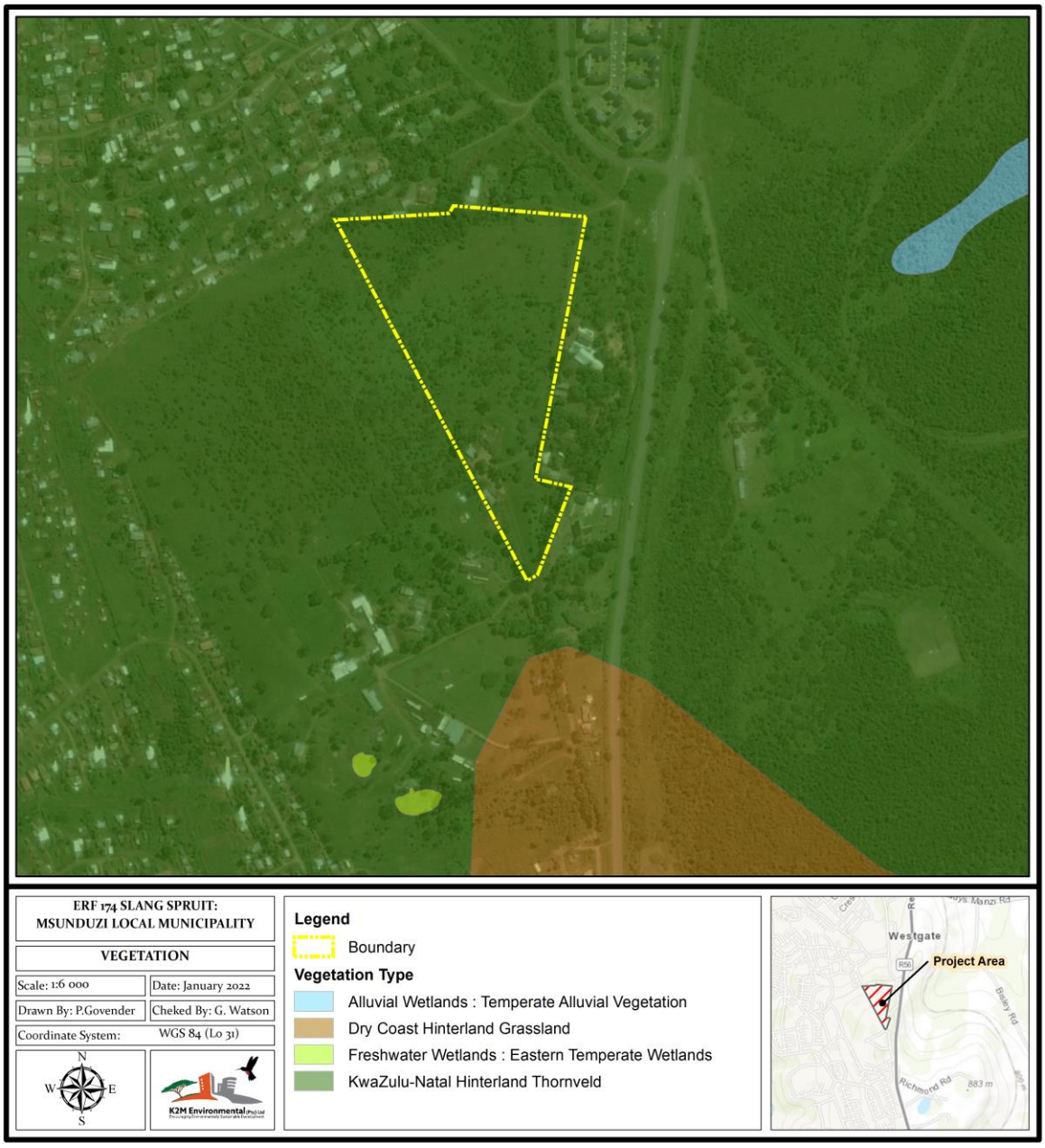
4. BIOPHYSICAL ANALYSIS

4.1. VEGETATION

Map 4.1 below provides an illustration of the vegetation types that are found within the project area. The vegetation found in project area is identified below and briefly discussed thereafter.

The entire site is classified as the “KwaZulu Natal Hinterland Thornveld” vegetation type.

Map 4.1: Vegetation



4.1.1. KwaZulu Natal Hinterland Thornveld (Mucina & Ratherford, 2006)

KwaZulu-Natal and Eastern Cape Provinces: Patches scattered immediately above Eastern Valley Bushveld, at altitudes 450-900 m in river valleys of mainly the Mpisi (in the Thukela River catchment), Mvoti, Umgeni (below the Howick Falls), Mlazi, and Lufafa and Mtungwane.

This vegetation type is open thornveld dominated by Acacia species on undulating plains found on upper margins of river valleys.

The vegetation type is listed as Vulnerable (Mucina & Rutherford, 2006). None conserved in statutory conservation areas. Some 22% already transformed by cultivation and some urban or built up areas.

4.1.2. Onsite Vegetation

The photos below provided an illustration of the condition existing vegetation that is found within the project area. It can be seen that the vegetation on site is contain naturally occurring grasslands as well as alien invasive plant encroachment on portions of the site.

Photo 4.1: Existing Vegetation on site






4.2. PROTECTED AREAS

According to the Protected Areas Act (57 of 2003), protected areas are:

a) special nature reserves, national parks, nature reserves (including wilderness areas) and protected environments;

b) world heritage sites;

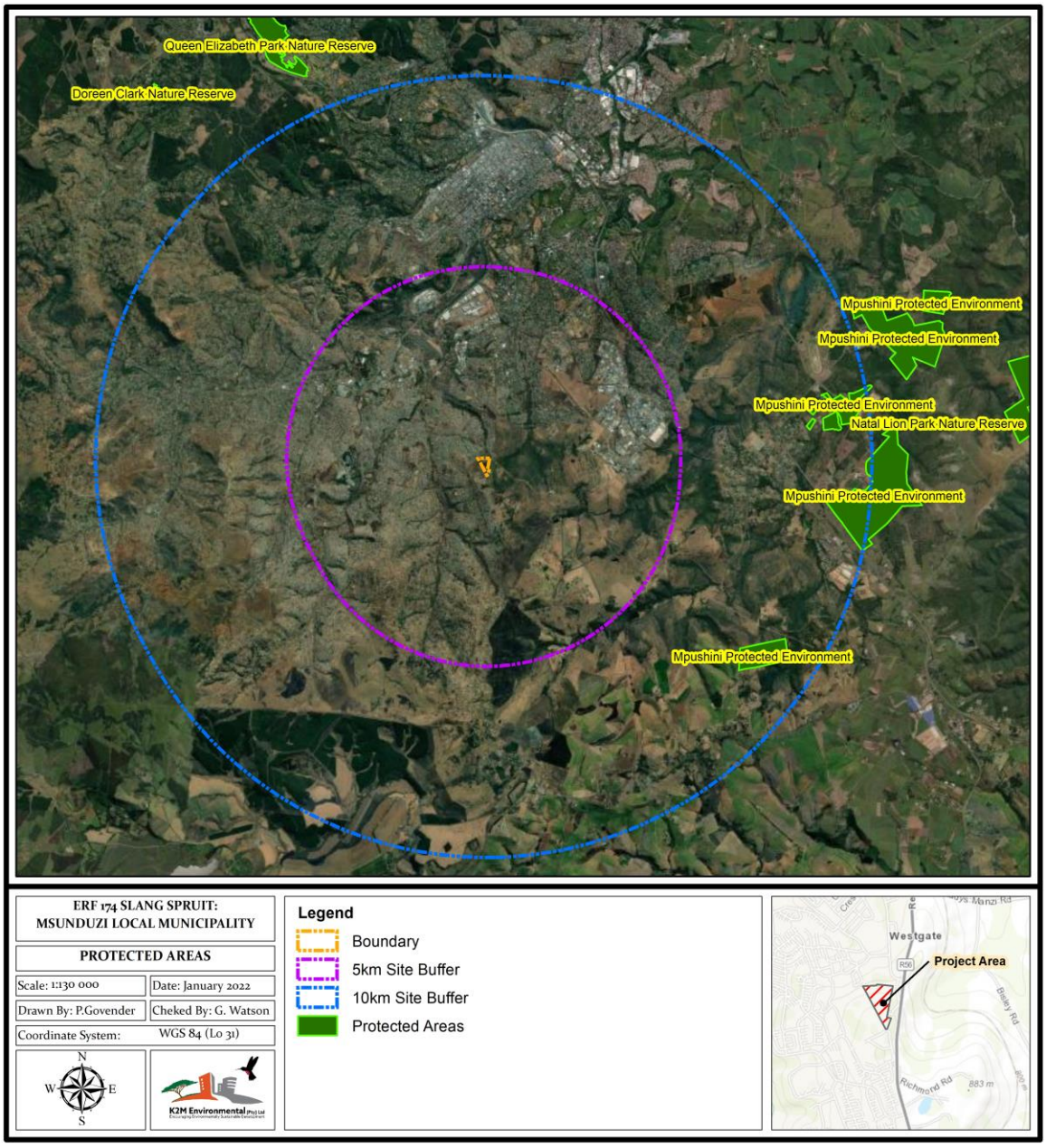
c) marine protected areas;

d) specially protected forest areas, forest nature reserves and forest wilderness areas declared in terms of the National Forests Act, 1998 (Act No. 84 of 1998); and

e) mountain catchment areas declared in terms of the Mountain Catchment Areas Act, 1970 (Act No. 63 of 1970).

Map 4.2 below indicates that there are no protected areas within the project area. The closest protected area is the Mpushini Protected Environment which is located approximately 8.87km south east of the site.

Map 4.2: Protected Areas



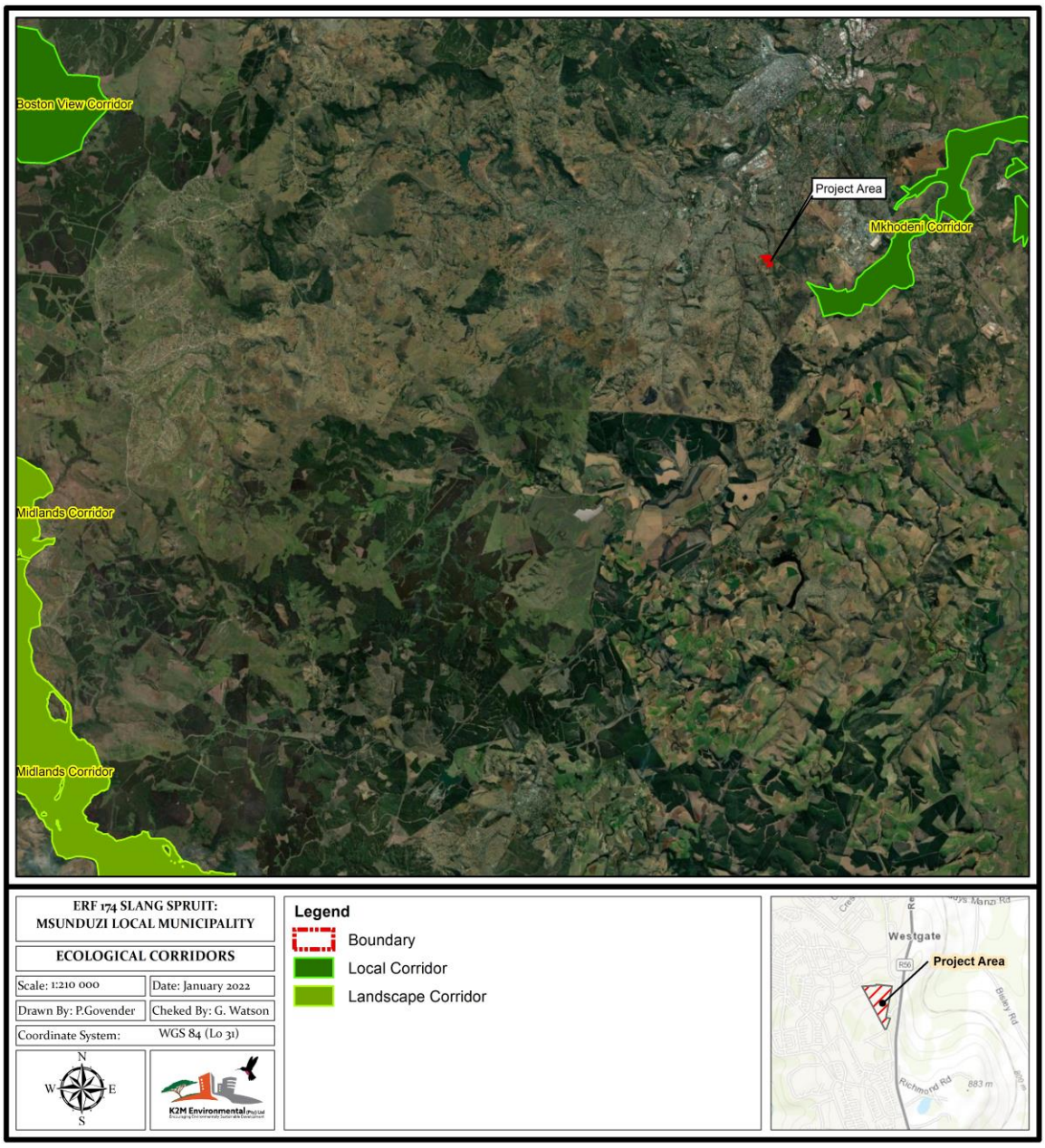
Source: Ezemvelo KZN Wildlife

4.3. ECOLOGICAL CORRIDORS

There are two different types of corridors that have been created by Ezemvelo KZN Wildlife, namely, the Landscape Corridors and the Local Corridors. Landscape Corridors are a series of bio-geographic corridors, created to facilitate evolutionary, ecological and climate change processes to create a linked landscape for the conservation of species in a fragmented landscape. Local corridors were developed at a district scale to create fine scale links within the landscape that facilitate ecological processes and ensure persistence of critical biodiversity features.

As illustrated in Map 4.3 below, there are no ecological corridors within the project area. The Mkhodeni Local Corridor is located approximately 2.48km south east of the site.

Map 4.3: Ecological Corridors



Source: Ezemvelo KZN Wildlife

4.4. AGRICULTURAL POTENTIAL

According to the Agricultural Land Potential Categories External Report, agricultural potential refers to, the potential of the land to produce sustainably over a long period without degradation to the natural resources base. This includes land under production for cultivation purposes (arable land) and for grazing purposes.

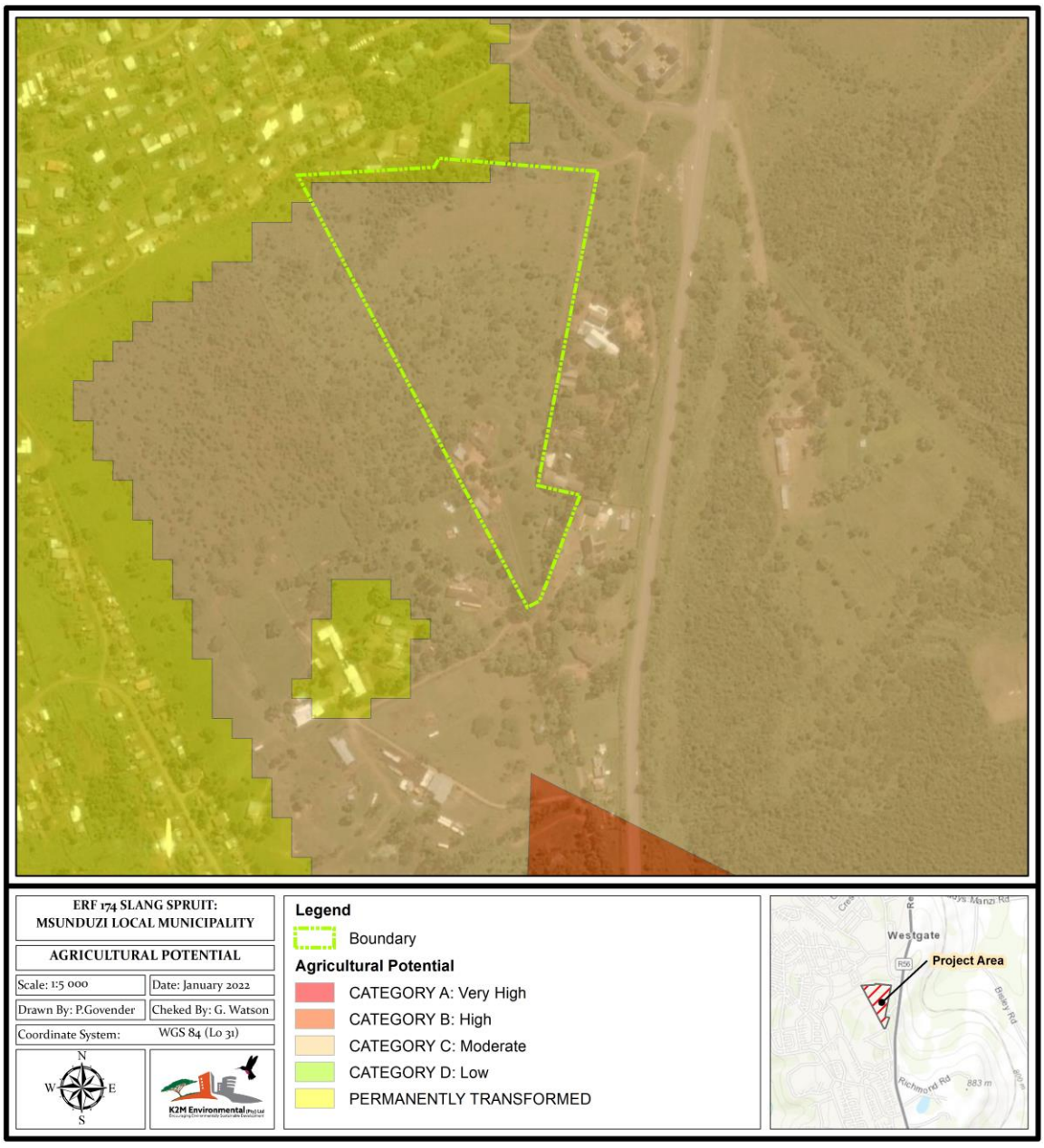
As indicated in Table 4.1 below and Map 4.4, majority (95.81%) of the site is classified as being permanently transformed. Areas that are demarcated as “Permanently Transformed”, applies to land that has been converted irreversibly to non-agricultural land uses. This includes urban/built up areas, roads, mines and quarries and which can therefore no longer be utilized for agricultural production purposes. This Category will also require regular updates due to on-going non-agricultural development. This may also include previously mined areas which are polluted and/or degraded to the point that safe utilization of the land for food production is not possible (Collett and Mitchell, 2013).

Approximately 0.29 ha (4.19%) is categorised as Category C: Moderate Agricultural Potential and is located in the northern portion of the site. Land with moderate agricultural potential would be required to achieve viable and sustainable food production, although agriculture is the still the majority land use in the rural landscape (Collett and Mitchell, 2013). This Category is more limited in the extent of arable land available for cultivation. These areas are more suitable for extensive grazing, the production of fodder crops in support of livestock production, and, from a natural rangeland grazing perspective, additional feed may be required during winter months to supplement the seasonal grazing provided by existing rangeland (Collett and Mitchell, 2013).

Table 4.1: Agricultural Potential

Description	Area (Ha)	Percentage (%)
Category C: Moderate Potential	0.29	4.19
Permanently Transformed	6.63	95.81
Total	**6.92**	**100**

Map 4.4: Agricultural Potential



Source: Department of Agriculture and Rural Development

4.5. GEOLOGY AND MINERAL DEPOSITS

There are no known mineral deposits occurring within the boundary of the project area.

4.6. ARCHAEOLOGICAL, HISTORICAL AND CULTURAL SITES

No detailed information is currently available on existing archaeological, historical or cultural sites within the boundaries of the study area. According to the KwaZulu-Natal Heritage Act, it is required that Amafa Akwazulu-Natali (Heritage KwaZulu Natal) comment on the need for a Heritage/ Archaeological assessment for a proposed development if:

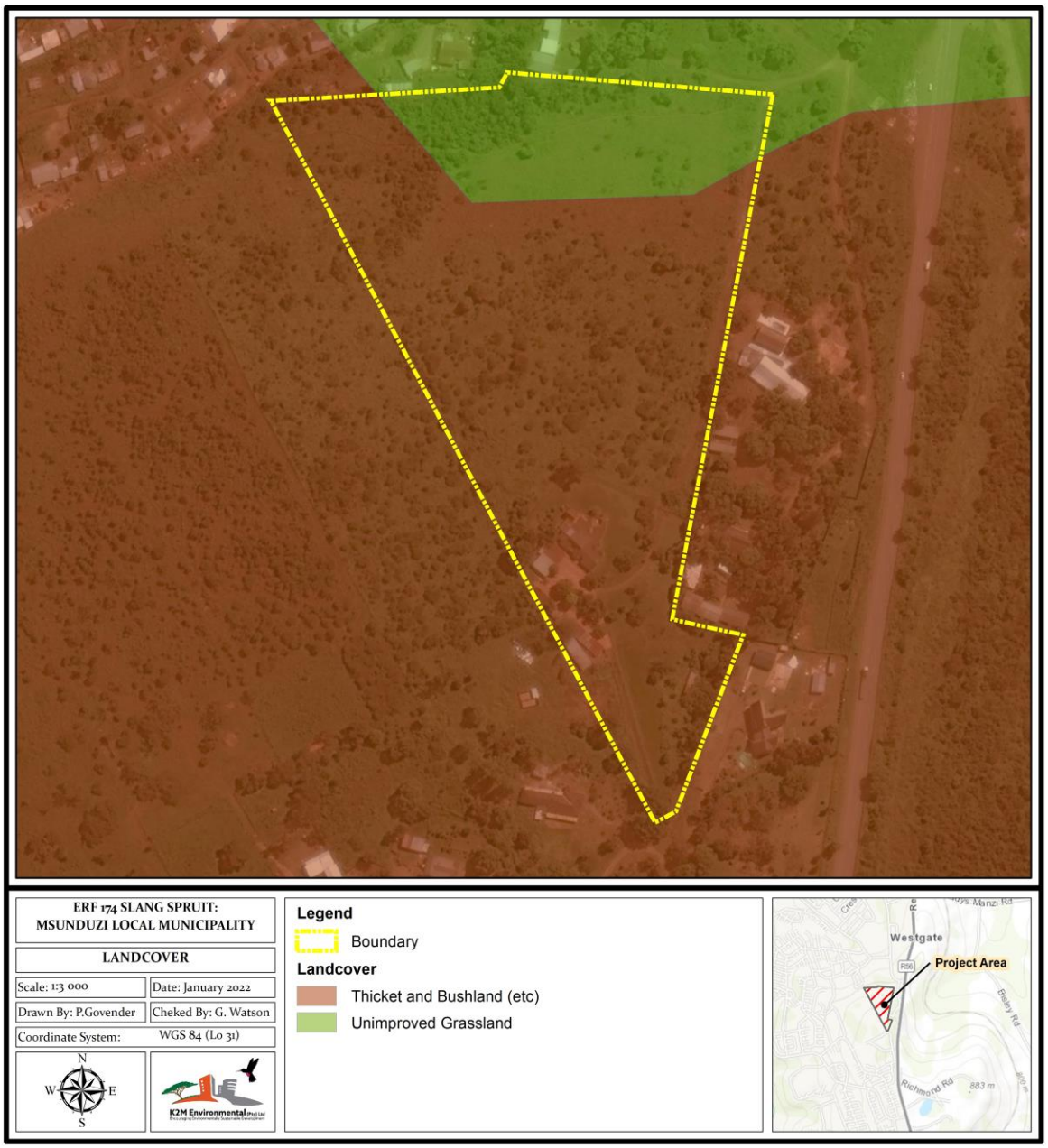
- Development area is larger than 5000m²
- Development is longer than 300m
- The development area contains known archaeological sites.

The project area is larger than 5 000m², therefore it is imperative that documentation be submitted to AMAFA prior to construction, in order for AMAFA to determine if a Heritage / Archaeological assessment is required.

4.7. LANDCOVER

As indicated on Map 4.6, the majority landcover for the site is classified as “Thicket and Bushland” and a small northern portion of the site as “Unimproved Grassland”.

Map 4.5: Landcover



4.8. CRITICAL BIODIVERSITY AREAS

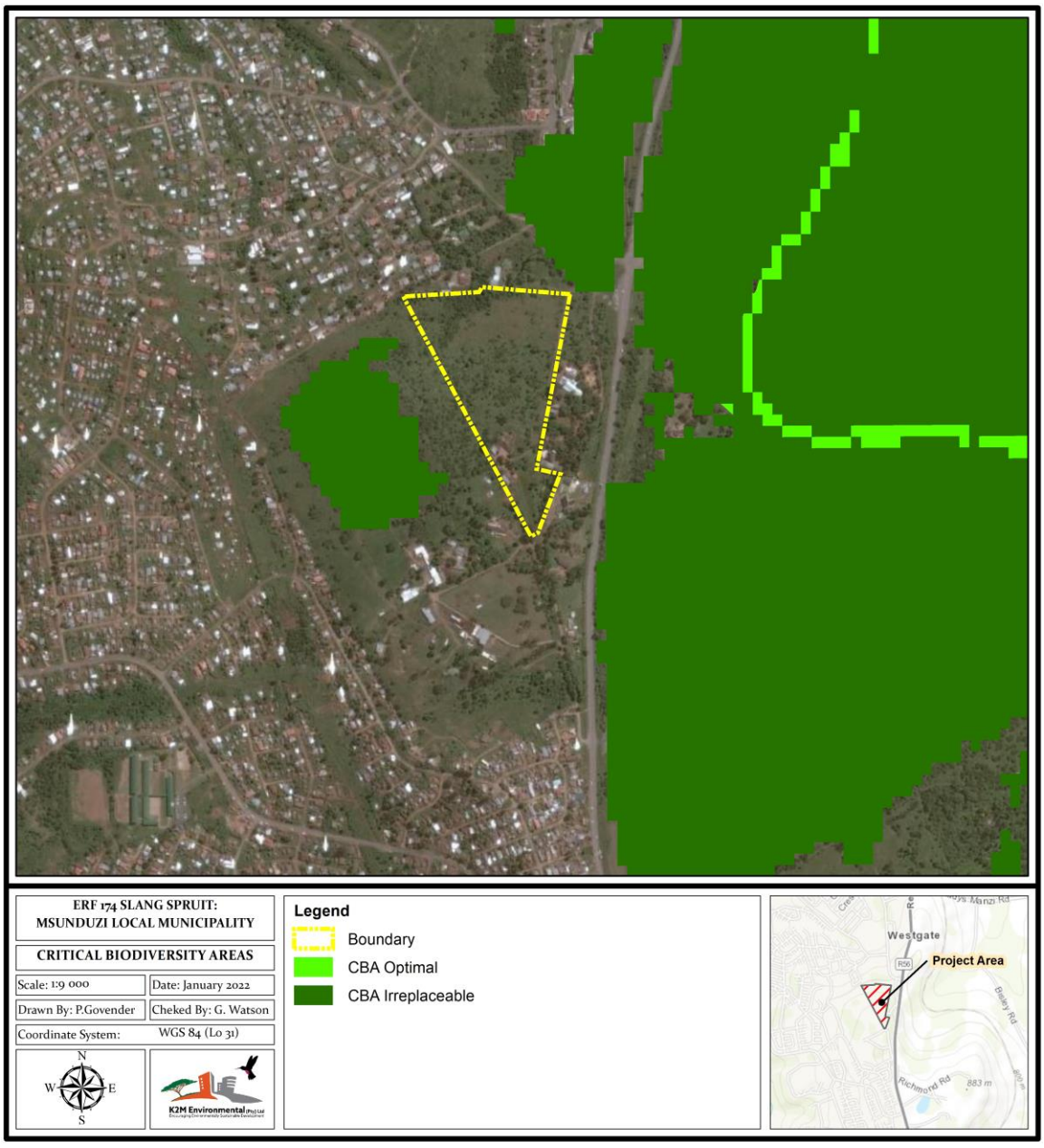
The Critical Biodiversity Areas (CBAs) can be divided into two subcategories, namely Irreplaceable and Optimal. The CBA categories are based on the optimised outputs derived using systematic conservation planning software, with the Planning Units (PU) identified representing the localities for which the conservation targets for one or more of the biodiversity features contained within can be achieved.

The CBA Irreplaceable Areas represent the localities for which the conservation targets of one or more of the biodiversity features that can be achieved. These areas are considered critical for meeting biodiversity targets and thresholds, and which are required to ensure the persistence of viable populations of species and the functionality of ecosystems. The CBA: Irreplaceable Areas are identified as having an Irreplaceability value of 1.

The CBA: Optimal Areas are areas which represent the best localities out of a potentially larger selection of available PU's that are optimally located to meet both the conservation target but also the criteria defined by either the Decision Support Layers or the Cost Layer. The CBA Optimal Area has an Irreplaceability score of >0 and < 0.8.

As indicated in Map 4.6, there are no CBAs within the property.

Map 4.6: Critical Biodiversity Areas

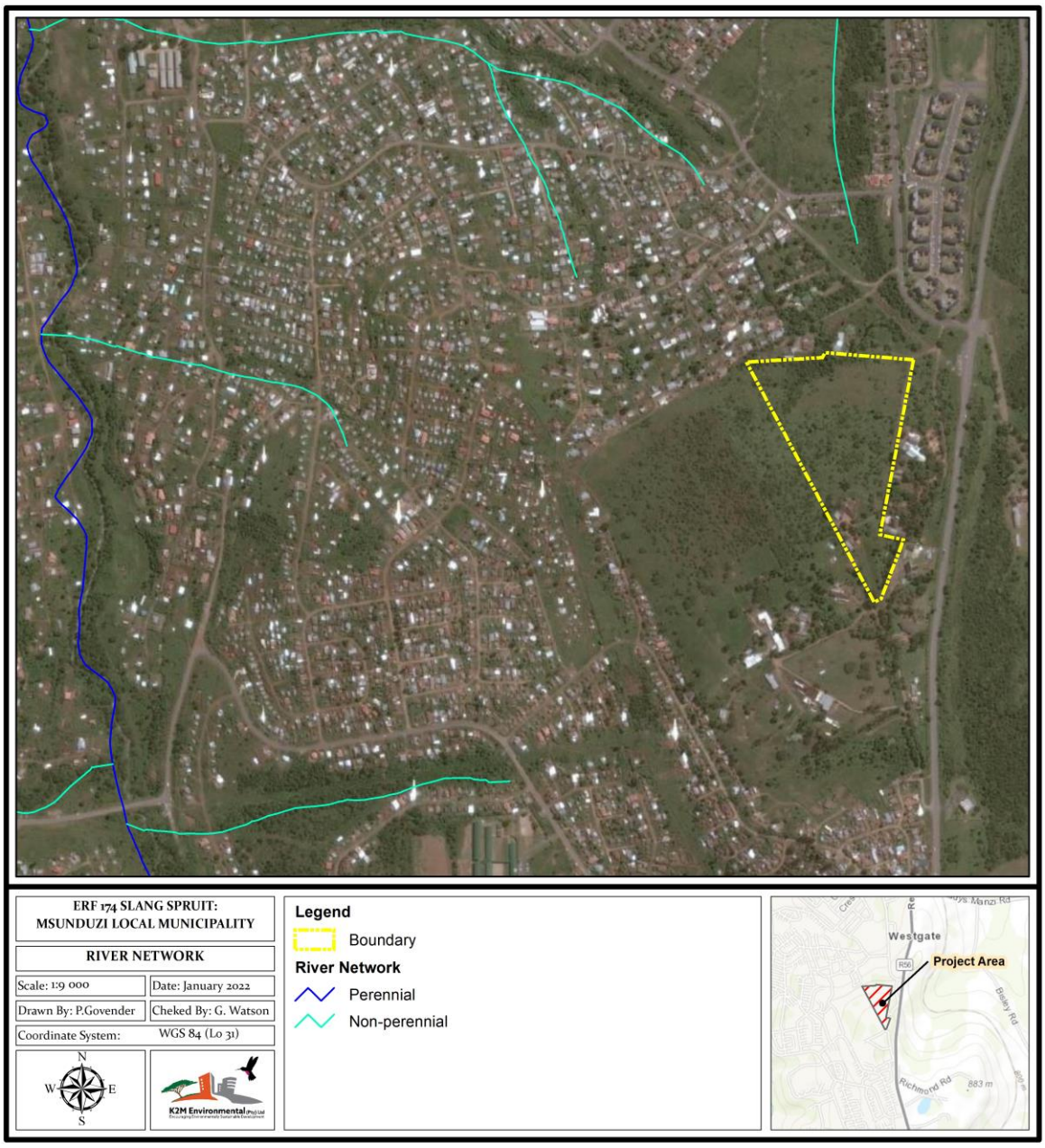


Source: Ezemvelo KZN Wildlife

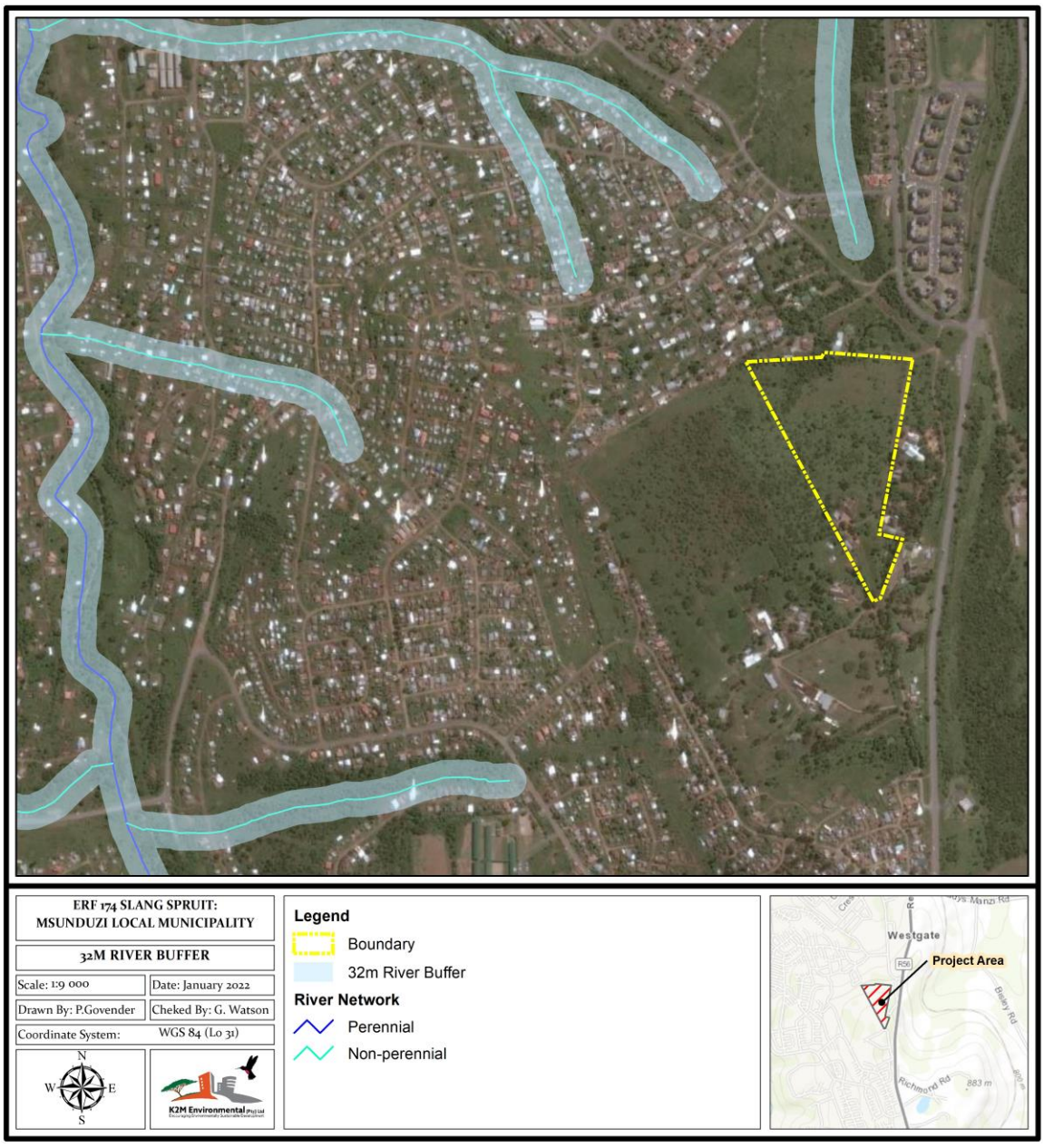
4.9. RIVERS

As indicated in Map 4.7, there are no perennial or non-perennial watercourses have been identified within the site. In terms of the National Water Act, no development is to take place within the 1:100-year flood line. In accordance with the 2014 EIA Regulations (as amended), no development should occur within 32m of a watercourse (see Map 4.8 below).

Map 4.7: River Network



Map 4.8: 32m River Network Buffer



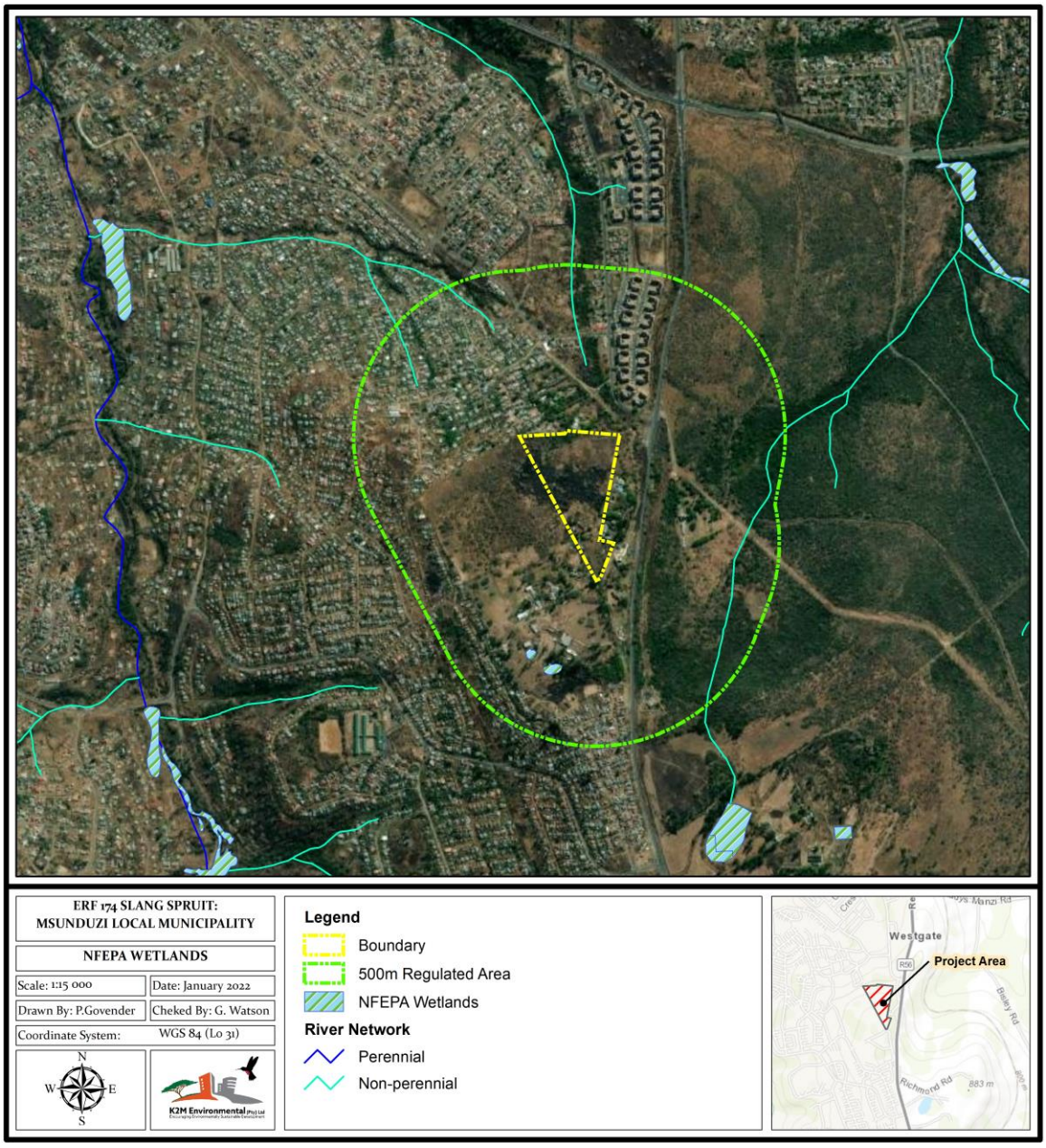
4.10. FEPA WETLANDS

Freshwater Ecosystem Protected Areas (FEPA's) according to the Water Research Council are strategic spatial priorities for conserving freshwater ecosystems and supporting sustainable use of water resources. Freshwater ecosystems refer to all inland water bodies whether fresh or saline, including rivers, lakes, wetlands, sub-surface waters and estuaries. FEPAs are often tributaries and wetlands that support hard-working large rivers, and are an essential part of an equitable and sustainable water resource strategy. FEPAs need to stay in a good condition to manage and conserve freshwater ecosystems, and to protect water resources for human use (Water Research Council).

According to the National Water Act (1998), a wetland is defined as "*Land which is transitional between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is periodically covered with shallow water, and which land, in normal circumstances, supports or would support vegetation typically adapted to life in saturated soil".*

As indicated on Map 4.9, there are no FEPA wetlands located within the site however there are two wetlands located to the south west and non-perennial watercourses located to the north and east of the 500m regulated area. It is recommended that a wetland specialist be appointed to undertake a detail wetland delineation for the site.

Map 4.9: FEPA Wetlands



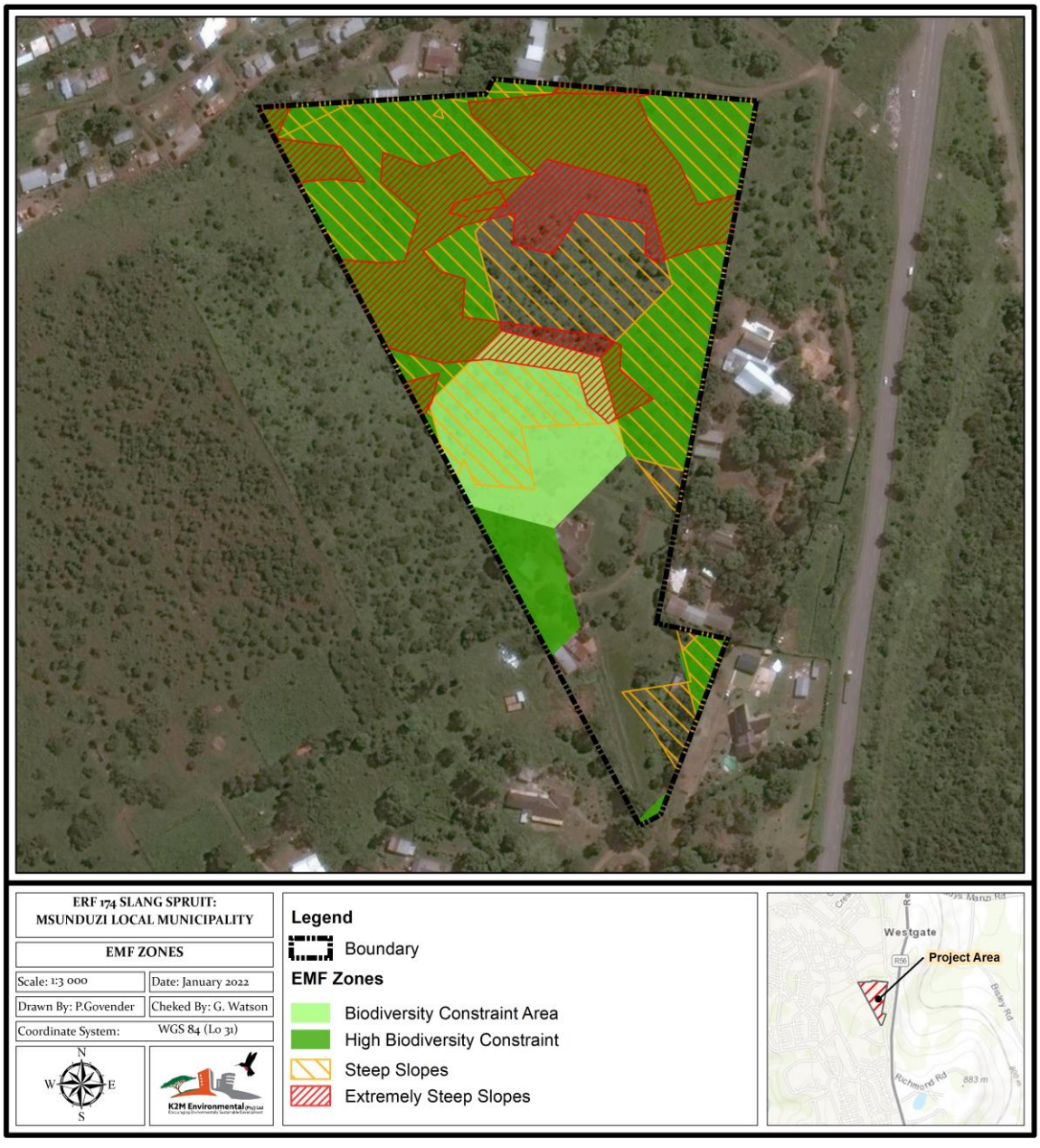
4.11. SLOPE

There was no detailed slope analysis done for the site due no detailed contours are available at this time. Doing a slope analysis on 20 meter contours will create an inaccurate illusion of the slope across the site, due to the small surface area. A detailed slope analysis will be done once the project feasibility is determined and a land surveyor can provide more detailed contours.

5. ENVIRONMENTAL MANAGEMENT ZONES

As per the Msunduzi Environmental Management Framework (EMF), majority of the site has been identified as areas with high biodiversity constraints as well as portions having steep to extremely steep slopes (see Map 5.1 below). The Msunduzi EMF states that prior to development commencing, biodiversity resources on-site should be identified and the impact of the proposed development on these resources must be assessed.

Map 5.1: Msunduzi Environmental Management Framework Zones



6. RECOMMENDATIONS AND CONCLUSION

Recommendations for the project area is discussed below:

- Based on the information presented above, the proposed site occurs within areas classified as having a high biodiversity constraint and extremely steep slopes as per the Msunduzi EMF. As such, the proposed development may require Environmental Authorisation subject to a Basic Assessment Process. However, should there be no development that occurs within these areas, Environmental Authorisation will not be required for the proposed project.

- It is recommended that the developer lodge an EIA Inquiry with KZN DEDTEA to confirm whether Environmental Authorisation will be required for the proposed development.

- The Department of Water and Sanitation will need to be contacted as there are FEPA wetlands and non-perennial watercourses within the 500m regulated area. A wetland specialist will need to undertake a Wetland Delineation and Functional Assessment together with a Risk Assessment to determine if the proposed development/activity will be considered a low, medium or high risk.

- Due to the project area being 6.92 ha, documentation is required to be submitted to AMAFA during the detailed planning phase in order for AMAFA to comment on the need for an Heritage/ Archaeological Assessment of the site.

7. REFERENCES

A. Driver, J.L. Nel, K. Snaddon, K. Murray, D.J. Roux, L. Hill, E.R. Swartz, J. Manuel and N. Funke, 2011. *Implementation Manual for Freshwater Ecosytem Priority Areas,* s.l.: Water Research Council.

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