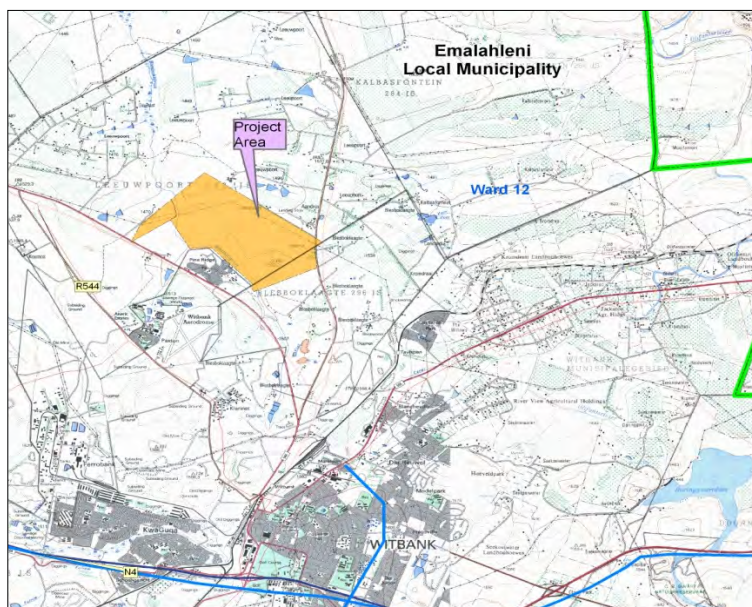


ENVIRONMENTAL OVERVIEW REPORT
SAROVIC DEVELOPMENT
WITBANK, MPUMALANGA PROVINCE- SOUTH AFRICA
Remainder of the Farm Leeupoort No 283 JS and portion 79 of the
Farm Blesboklaagte No. 296 JS



NOVEMBER 2011

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TABLE OF CONTENTS

1	BACKGROUD INFORMATION	1
1.1	INTRODUCTION AND BACKGROUND	1
1.2	APPROACH AND METHODOLOGY	1
2	RELEVANT LEGISLATION, POLICIES AND GUIDELINES.....	2
2.1	RELEVANT POLICIES AND STRATEGIES	2
2.1.1	Environmental Impact Assessment Regulations of 18 June 2010	2
2.1.2	Spatial Development Framework	3
3	DESCRIPTION OF PROJECT AREA.....	4
3.1	SOCIO-ECONOMIC OVERVIEW	4
3.1.1	Population and Age Profile	4
3.1.1.1	Implication for the Development	5
3.1.2	Gender	5
3.1.2.1	Implication for the Development	6
3.1.3	Education	6
3.1.3.1	Implication for the Development	6
3.1.4	Employment	7
3.1.4.1	Implication for the Development	7
3.1.5	Economic Sector	8
3.1.5.1	Implication for the Development	8
3.1.6	Housing Profile	9
3.1.6.1	Implication for the Development	9
3.1.7	Household Income	10
3.1.7.1	Implication for the Development	10
3.1.8	Access to Electricity	11
3.1.8.1	Implication for the Development	11
3.1.9	Access to Water	12
3.1.9.1	Implication for the Development	12

3.1.10	Access to Sanitation	13
3.1.10.1	<i>Implication for the Development</i>	13
3.1.11	Waste Collection Services.....	14
3.1.11.1	<i>Implication for the Development</i>	14
4	BIO-PHYSICAL COMPONENT	15
4.1	LANDSCAPE CHARACTERISTICS	15
4.2	GEOLOGY AND GEOTECHNICAL STABILITY.....	15
4.3	SOIL CHARACTERISTICS.....	17
4.3.1	General soil description and occurrence of problematic soil.....	17
4.3.2	Soil compaction, trampling and open patches	18
4.3.3	Soil erosion	19
4.4	LAND CHARACTERISTICS	20
4.5	CLIMATE	21
4.5.1	Macro and meso climate	21
4.6	SURFACE WATER.....	21
4.6.1	General description of surface water drainage.....	21
4.6.2	Stormwater and flood risk.....	22
4.7	VEGETATION CLASSIFICATION	23
4.8	HERITAGE RESOURCES	26
4.9	CONCLUSION AND SUMMARY OF ENVIRONMENTAL IMPLICATIONS	27
4.10	DEVELOPMENT RECOMMENDATIONS	27
5	ENVIRONMENTAL AUTHORISATION REQUIREMENTS	28
5.1	ENVIRONMENTAL IMPACT ASSESSMENT PROCESS.....	28
5.1.1	Task 1: Project registration.....	28
5.1.2	Task 2: Public Participation Process (Scoping Phase)	29

5.1.3	Task 3: Compilation of Scoping Report.....	29
5.1.4	Task 4: Submission of Scoping Report and Plan of Study for Environmental Impact Assessment to DEDET	30
5.1.5	Task 5: Environmental Impact Assessment Report and Environmental Management Plan	30
5.1.6	Task 6: Final Report, Submission to DEDET	31
5.2	ESTIMATED TIMEFRAME OF THE EIA PROCESS	31
5.3	COST ESTIMATE	31

1 BACKGROUND INFORMATION

1.1 INTRODUCTION AND BACKGROUND

K2M Environmental was requested by Townscape Planning Solutions to undertake a environmental overview of the Remainder of the Farm Leeupoort No 283 JS and portion 79 of the Farm Blesboklaagte No. 296 JS. The site falls within the jurisdiction of the eMalahleni Local Municipality and is located approximately 8km north of Witbank adjacent to the exiting Pine Ridge residential settlement in the province of Mpumalanga – South Africa. The locality of the site is illustrated on the attached “Map 1: Locality”. A GIS based calculation of the surface area indicates the property to be approximately 507.45ha in extent. The purpose of this report is to provide an environmental overview of the total extent of the site as well as to highlight environmental sensitive areas within the project area.

1.2 APPROACH AND METHODOLOGY

The environmental overview is based on the following information sources:

- Available desktop data sources such as reports, GIS based information and aerial photography.
- Findings of a brief site assessment conducted by a physical walk over on the site.
- Consultation with the Town Planners from Townscape Planning Solutions

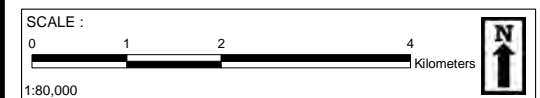
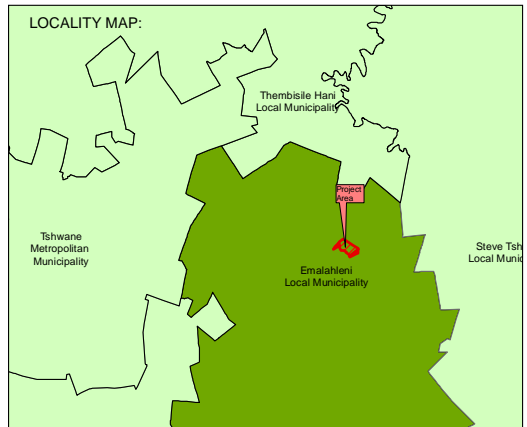
It should be noted that the findings of this environmental overview are purely based on the information outlined above that could be sourced in the timeframe of this assignment and does not constitute an Environmental Scoping Report as contemplated in Regulation 28 of the EIA Regulations of 2010. The terms of the project did not allow for any detailed analysis or specialist studies however, the level of detail covered in this report is sufficient to inform the preliminary Town Planning Process.

ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 1: LOCALITY

- Project_Area
- Local Municipal Boundary
- Settlements
- Primary
- Secondary
- Tertiary
- Metropolitan core areas and major cities
- Higher order medium sized towns and equivalent metro nodes
- Lower order medium sized towns and equivalent metro nodes
- Higher order small towns and equivalent metro nodes
- Lower order small towns and equivalent metro nodes
- Very small hamlets/Villages
- Other









DATE : November 2011

MAP REFERENCE/ VERSION NUMBER : Version 1

COORDINATE SYSTEM : Municipal WGS84 (Lo31)

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2 RELEVANT LEGISLATION, POLICIES AND GUIDELINES

2.1 RELEVANT POLICIES AND STRATEGIES

There is a number of legislation and policies governing development at national, provincial and local municipal level. These set out guidelines aimed at channeling the use of land into sustainable, managed and coordinated practices focused at protecting the natural environment, social welfare of citizens and economic interests of respective stakeholders.

The following guidelines deemed relevant to the protection and management of the natural environmental management were considered in this environmental overview assessment:

2.1.1 Environmental Impact Assessment Regulations of 18 June 2010

The Environmental Impact Assessment (EIA) Regulations of 2010; promulgated under the National Environmental Management Act (Act No. 107 of 1998); make reference of certain “listed activities” that are likely to cause adverse environmental impacts if not controlled and therefore require environmental authorisation from the Minister of Water and Environmental Affairs; or a Competent Authority delegated by the Minister. Such activities are prohibited until written authorisation is obtained from the minister or a delegated authority. An environmental authorisation is subject to an Environmental Impact Assessment which could include a Basic Assessment Process or a Scoping & EIA Process.

Activities listed in EIA Regulations Listing Notice 1 (Gov. Notice No. R544) and Listing Notice 3 (GNR R546) of 18 June 2010 will require a Basic Assessment to be conducted while activities listed EIA Regulations Listing Notice 2 (GNR R545) of 18 June 2010 will require a Full EIA process which includes a Scoping phase and an Environmental Impact Assessment phase. Any future development on the site must be screened in light of these regulations and authorisation must be acquired should it be concluded that the development

2.1.2 Spatial Development Framework

The following “Development Objectives” were outlined in the Spatial Development Framework of the eMalahleni Local Municipality as contained in the 2011/12 municipal IDP:

- **Definition of a clear settlement hierarchy and consolidation of dispersed rural settlements in the area and optimizing existing resources.**
- Optimizing service delivery to the entire community by way of establishment or formalization of multi-purpose service delivery centers throughout the area.
- **Protection and enhancement of the natural environment.**
- **Identification of areas for growth and expansion of residential uses and economic activities based on existing development needs.**
- Strengthening the spatial structure of eMalahleni by clearly defining a hierarchy of nodes and activity spines.
- Provision of principles for land use management by broadly defining desirable and undesirable land uses.
- Consolidation and integration of fragmented urban structure of the eMalahleni complex.
- Concentration of investment in areas with potential for sustainable economic development.
- Focusing development on activity corridors (N4 and N12) and nodes, especially the Maputo Development Corridor.

The planning aspects of the development must be aligned with the development objectives and spatial guides set out in the municipal Spatial Development Framework to ensure development sustainability and correspondence with

3 DESCRIPTION OF PROJECT AREA

3.1 SOCIO-ECONOMIC OVERVIEW

The assessment of the socio-economic status of the study area made use of GIS-based analysis of the Census 2001 information, this spatial analysis study included settlements within a radius of approximately 8 km from the site to yield an overall social and economic overview of the immediate surrounding study area. The analysis of information of this nature enables the assessment of social and economic implications of developments within the locality of development sites; and will inform planning and methods of operation at the various stages/ levels of development.

3.1.1 Population and Age Profile

The 2001 population of the study area was estimated to be 80 953 people of various age groups as indicated in Figure 3.1 below. A significant proportion (45.1%) of the population within the study area fell in the age category of “20-44 years” while as much as 38.4% were aged “0 -19 years”. Approximately 13.3% of the population was aged “45-64 years” while only 3.2% was recorded to be over the age of “65 years” as indicated in the graph below.

Figure 3.1: Age Profile



Data Source: Statistics SA, Census 2001

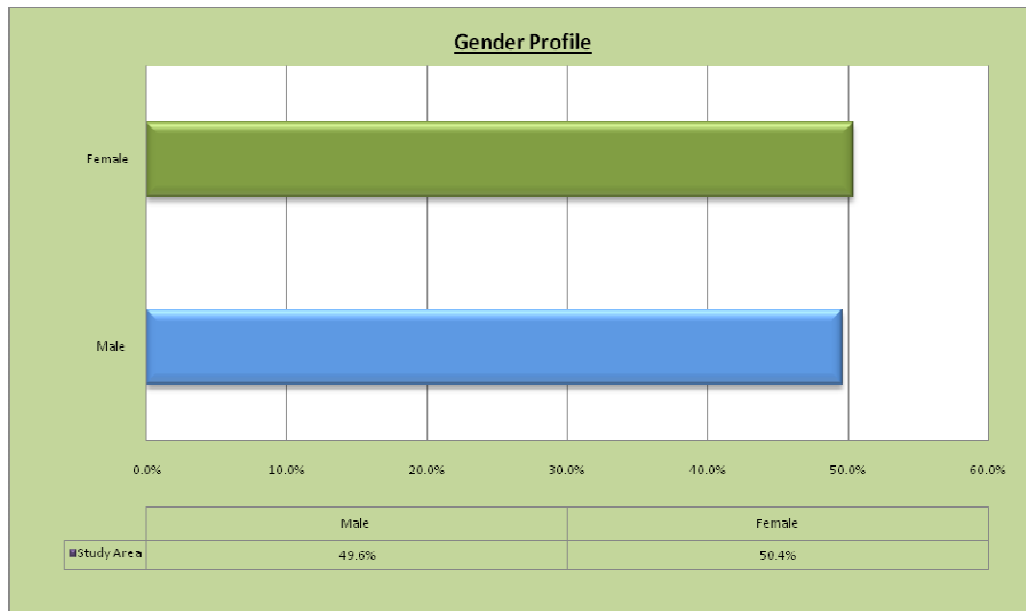
3.1.1.1 Implication for the Development

Based on the age profile information discussed and depicted Figure 3.1 above, it is evident that the population within the study area has a relatively young/ youthful age structure and therefore it is anticipated that community participation in development & planning initiatives will be relatively high and that old age will not be a limiting factor on attendance at public participation meetings. It can also be deduced that there will be availability of economically active age groups to take up employment and economic opportunities arising during construction and operation of development within the study area.

3.1.2 Gender

The representation of gender within the study area is relatively fair with 50.4% of the population being Female and 49.4% Male. There is a relatively small margin between male and female population numbers within the study area.

Figure 3.2: Gender Profile



Data Source: Statistics SA, Census 2001

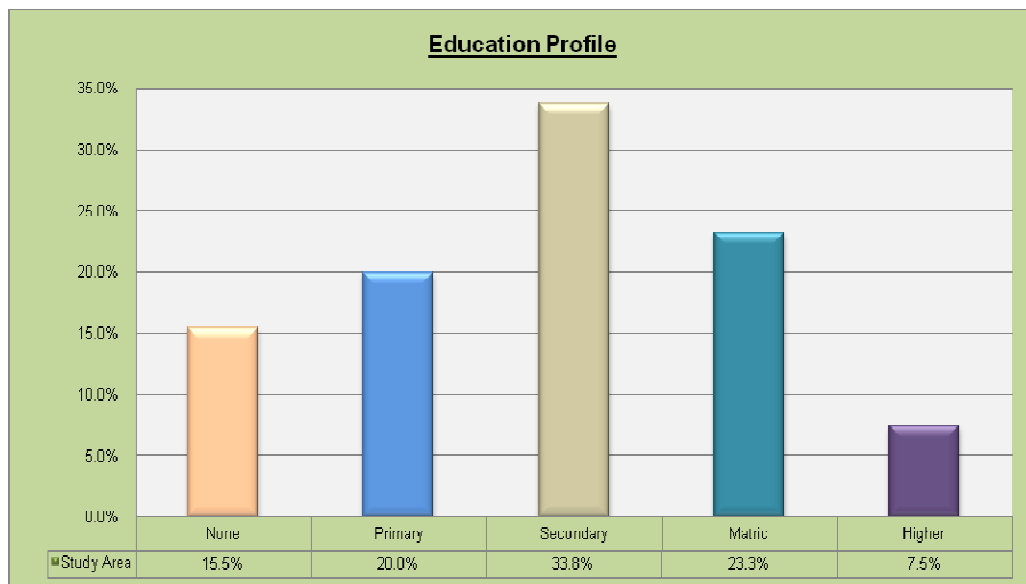
3.1.2.1 Implication for the Development

Developments of all types always result in the creation of a number of economic opportunities during the planning, construction and operation phases. The planning and implementation of development within the area must give particular attention to the aspect of gender equality.

3.1.3 Education

As much as 23.3% of the economically active population (aged 15 – 65 years) within the study area has completed “Grade 12” while 7.5% progressed to “Tertiary” level education. Only 15.5% of the economically population was recorded to have received “no formal of education”, 20% have completed ‘Primary” schooling and as much as 33.8% received “Secondary” level education.

Figure 3.3: Education Profile



Data Source: Statistics SA, Census 2001

3.1.3.1 Implication for the Development

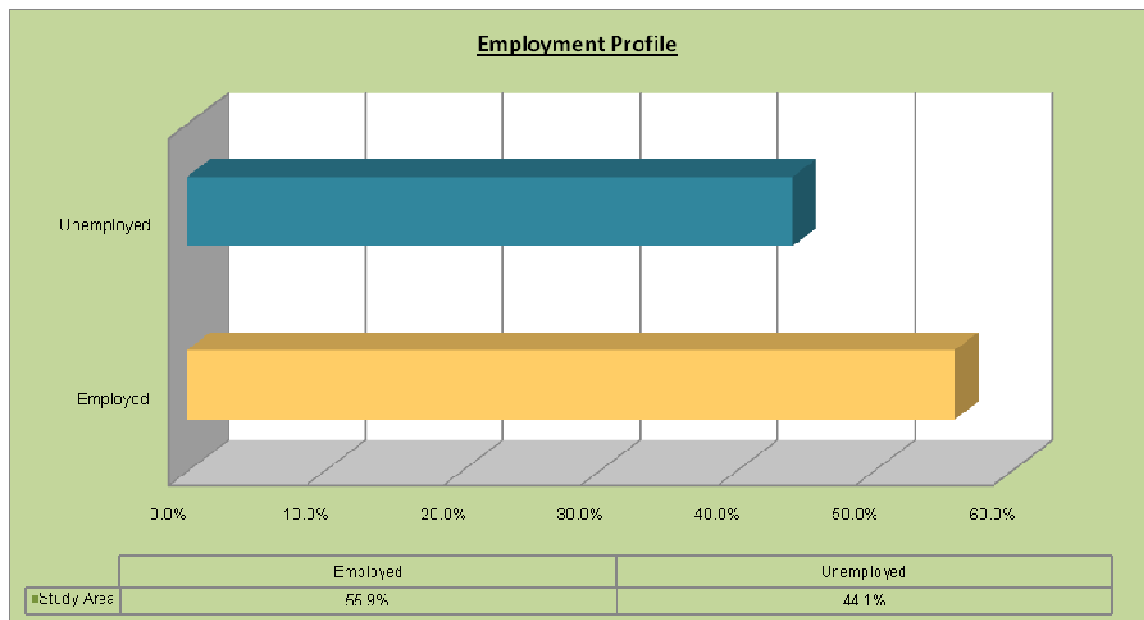
Education and literacy are significant factor to consider during project development planning processes as often the inputs of communities are required therefore the medium of communicating during public participation process must take literacy levels &

linguistic into consideration. The level of education of the population within the study area is relatively high and therefore the traditional method of written communication is deemed sufficient when liaising important information with communities. High literacy levels are indicative of suitability of persons to pursue employment and economic opportunities.

3.1.4 Employment

As much as 55.9% of the economically active population in the study area indicated to be employed in 2001 while 44.1% was recorded as unemployed. These figures are generally within acceptable range given that the statistics include persons at high school and tertiary level and therefore not necessarily seeking employment.

Figure 3.4: Employment Profile



Data Source: Statistics SA, Census 2001

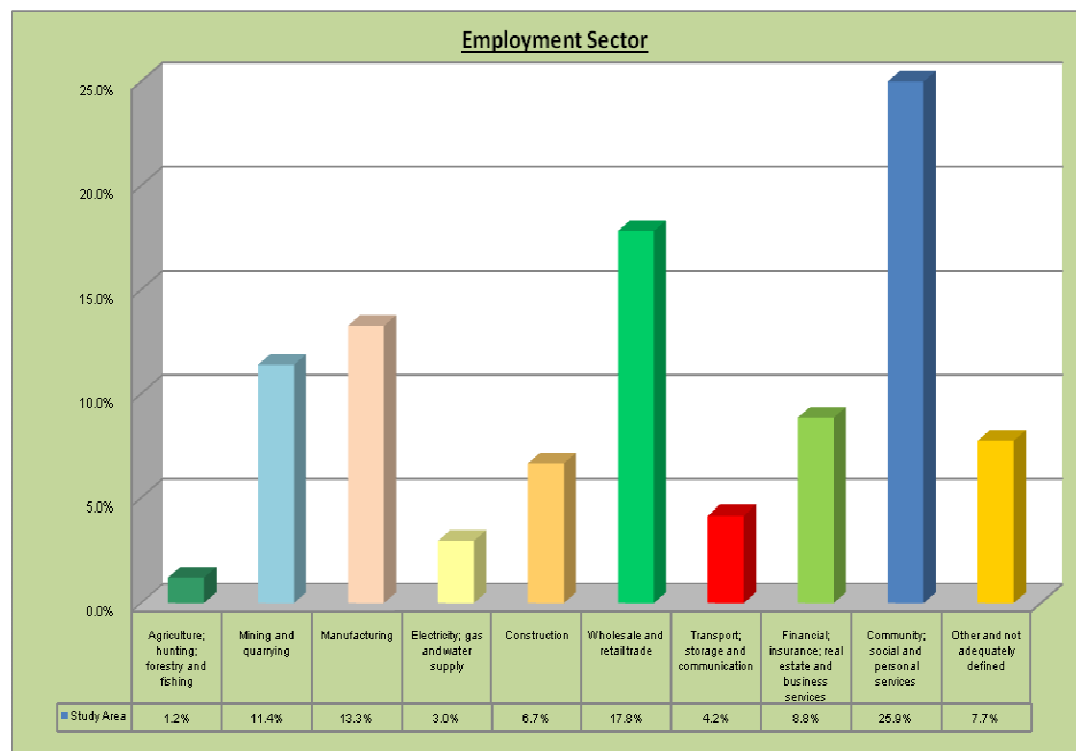
3.1.4.1 Implication for the Development

Development within the area will result in creation of temporary and permanent employment and economic opportunities which will result in additional employment opportunities in the area.

3.1.5 Economic Sector

The most predominant sector of employment within the study area is the “community, social & personal service” sector which accounts for 25.9% employment in the area. Other prominent sectors include “Wholesale & Retail” sector which employs 17.8%, “Manufacturing” 13.3%, “Mining” 11.4% and “Financial & Business” sector which accounts for 8.8% of employed persons. Other employment sectors exist but account for low percentages of employment as depicted in Figure 5 below.

Figure 3.5: Economic Sector



Data Source: Statistics SA, Census 2001

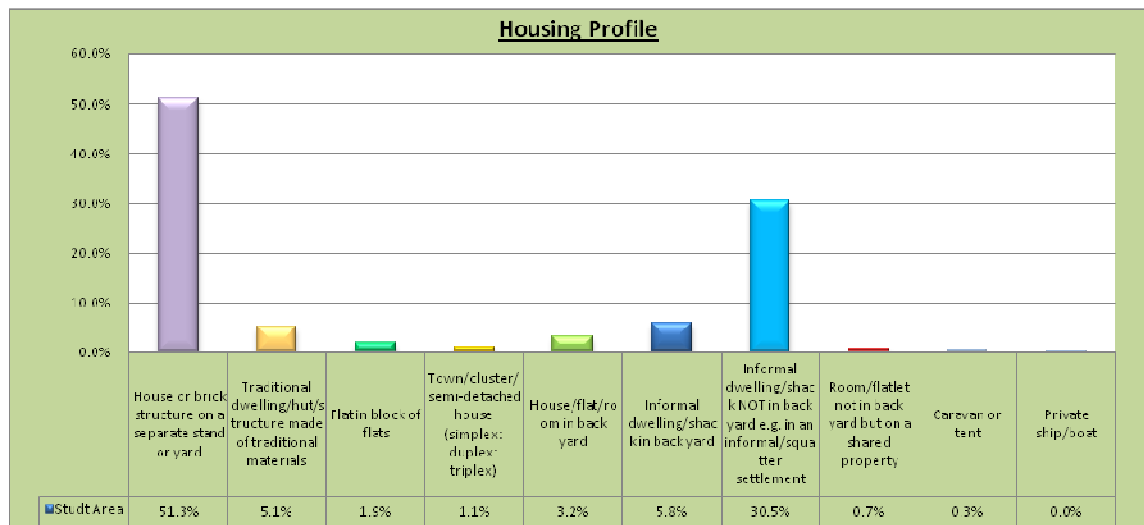
3.1.5.1 Implication for the Development

Introduction of development in the area will create employment that will fall into the abovementioned sectors. It is also evident that employment experience in the area is diverse and therefore various kinds of industries and business will be supported by the presence of relevant skills.

3.1.6 Housing Profile

As much as 51.3% of households within the study area were recorded to reside in “House or brick structure on a separate stand”, 30.5% in “informal dwelling/ shacks not in backyard”, 5.8% in “informal dwelling/ shack in backyard” and 5.1% of households were reported to reside in “Traditional dwelling/hut/ structure made of traditional material”- this includes huts and structures made of mud, stones and sticks. Other forms of housing types occur within the area but account for relatively low households as depicted in Figure 3.6 below.

Figure 3.6: Housing Profile



Data Source: Statistics SA, Census 2001

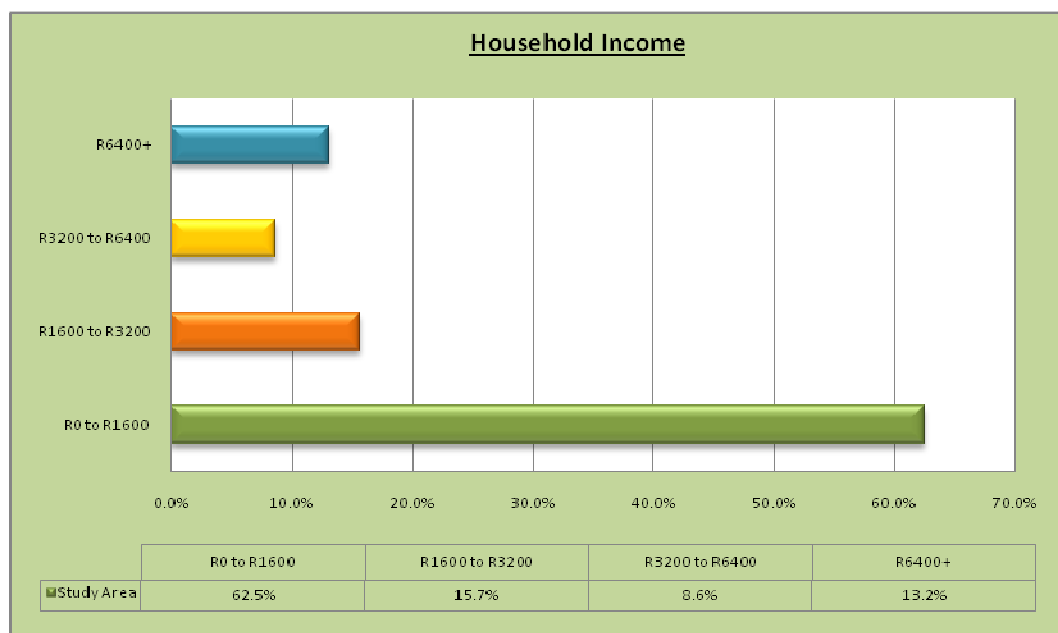
3.1.6.1 Implication for the Development

The presence of high numbers of informal structures is indicative of the low income and affordability levels within the area and introduction of developments within the area will go a long way to answer the need for formal housing in the area.

3.1.7 Household Income

A significant proportion (62.5%) of households within the study area indicated to earn a collective monthly household income of less than R1600, 11.4% earn between “R 1600 and R3200” 5.6% “R3200 to R6400” and only 4.7% of the households register an income greater than R6400. Figure 3.7 below indicates the household profile of the study area.

Figure 3.7: Income and Affordability Profile



Data Source: Statistics SA, Census 2001

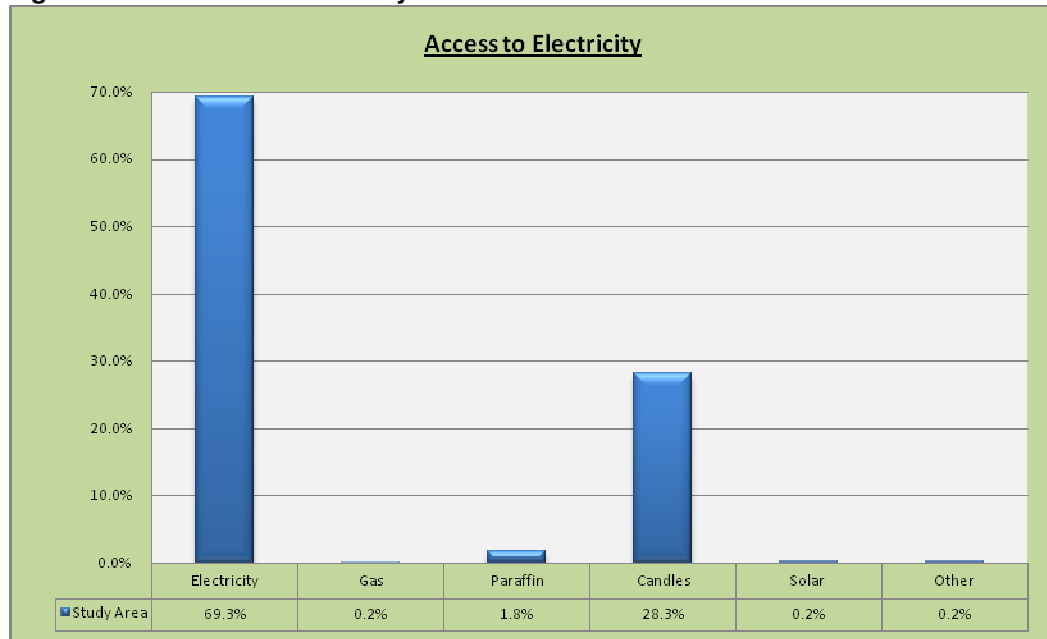
3.1.7.1 Implication for the Development

The income and affordability level within the study area are very low. The introduction of a development or industry in the area will assist in creation of employment opportunities at various levels of the income profile and therefore improving the state economic and social state of communities and households within the study area.

3.1.8 Access to Electricity

As much as 69.3% of households within the study area were reported to make use of “Electricity” for lighting purposes, 28.3% “Candles” and 1.8% make use of “Paraffin” base lighting technology. Other alternative sources were recorded but at relatively low occurrences/ usage.

Figure 3.8: Access to Electricity



Data Source: Statistics SA, Census 2001

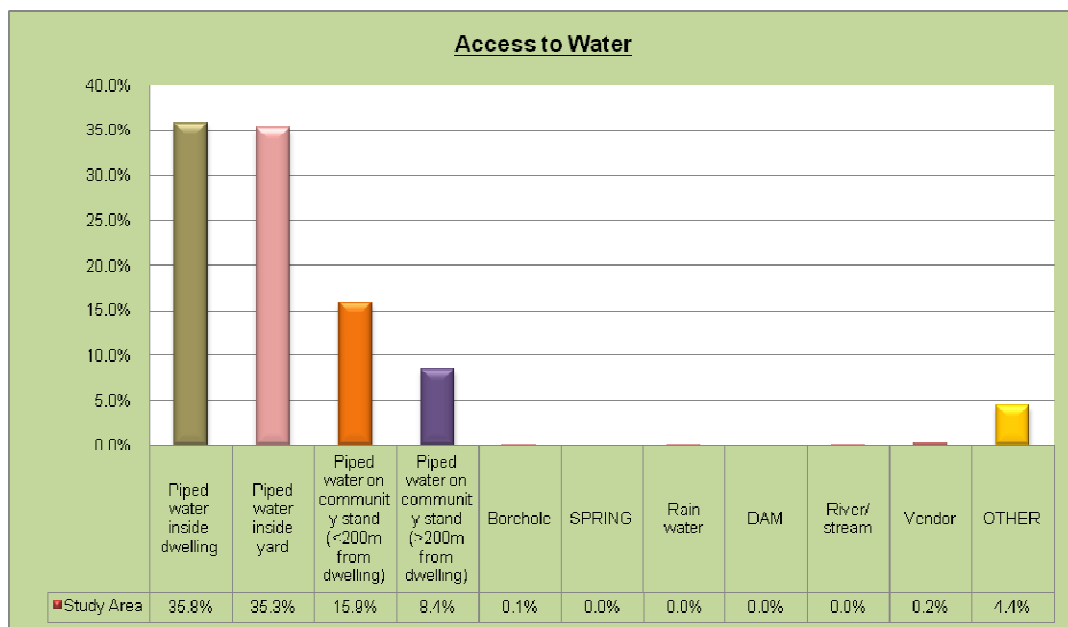
3.1.8.1 Implication for the Development

It is evident that the study area is relatively well serviced with electrical infrastructure, it would however be important to determine the availability of electricity.

3.1.9 Access to Water

As much as 35.8% and 35.3% of households within the project area indicated to have access to “Piped water inside dwelling” and “Piped water inside yard respectively. This totals to approximately 71.1% households with easily accessible water for drinking and household uses. A further 24.3% of households indicated to access water from communal stand pipes situated outside their yard which includes 15.9% “less than 200m from dwelling” and 8.4% “more than 200m from dwelling”. Other sources of water were recorded but at relatively lower occurrences.

Figure 3.9: Access to Electricity



Data Source: Statistics SA, Census 2001

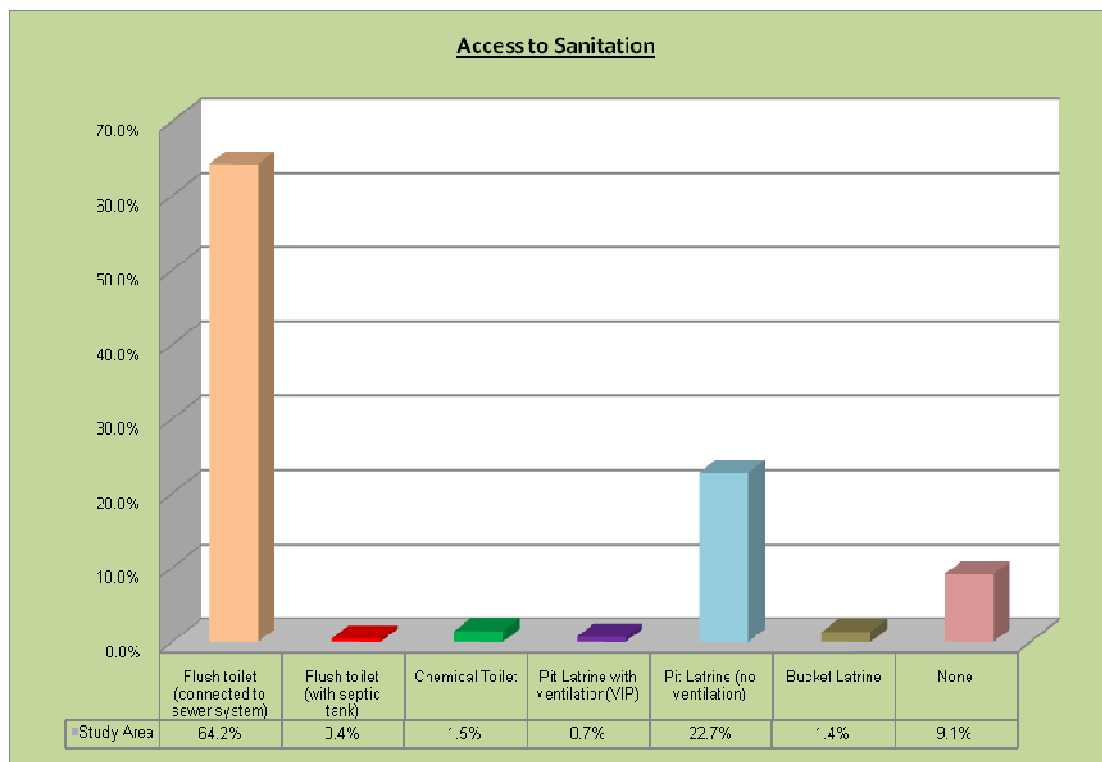
3.1.9.1 Implication for the Development

It is evident that the study area is relatively well serviced with piped water services and that this will be favorable to developments in the area however, the local authorities must be consulted to confirm ability of capacity to provide for large scale industrial and business operations in the area.

3.1.10 Access to Sanitation

As much as 64.2% of households within the study area indicated to make use of “Flush toilet connected to sewer system” and 0.4% “connected to septic tank”. Approximately 22.7% of households indicated to make use of “unimproved Pit latrine” toilet facilities and 0.7% “improved pit latrine”. Other sanitation methods were reported in the area as indicated in the graph below.

Figure 3.10: Access to Sanitation Infrastructure



Data Source: Statistics SA, Census 2001

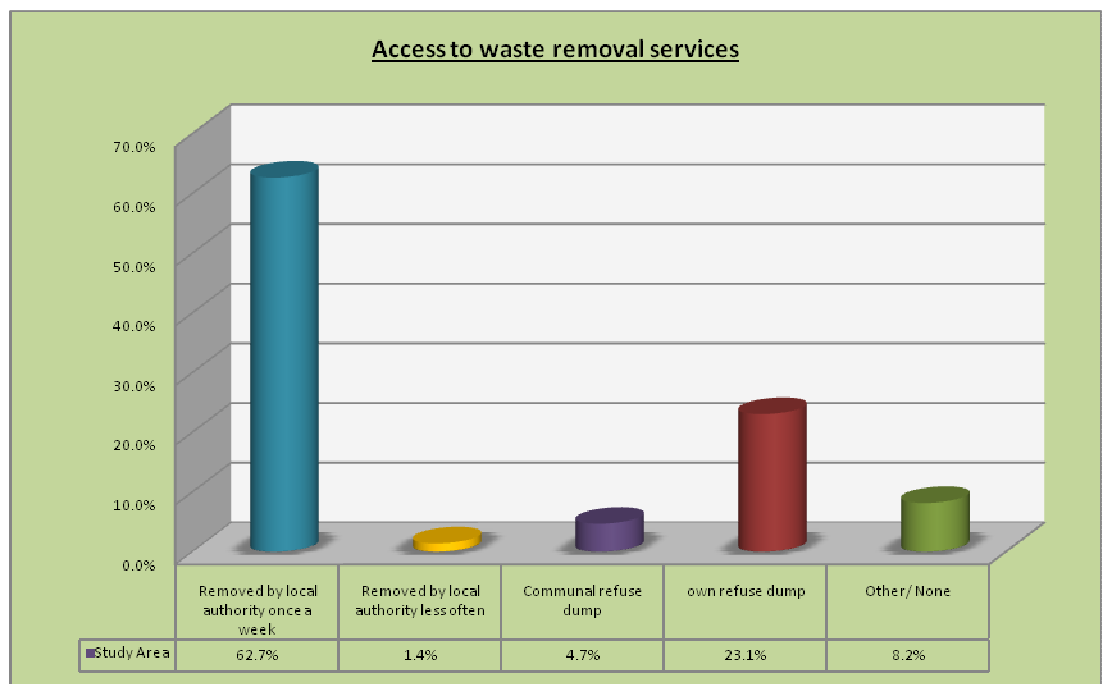
3.1.10.1 Implication for the Development

It can be deduced that the study area was relatively well serviced with sanitation facilities at the time of the survey and that the services could have improved to date. The presence of a sanitation services provision system will be favourable for development in the area provided capacity is confirmed with local authorities in cases of large industries and businesses.

3.1.11 Waste Collection Services

As much as 62.7% of the households within the study area was recorded to have their refuse collected “by local authority once a week” while 1.4% “less often”. A significant proportion (23.1%) of the project area was recorded to make use of “own refuse dump” and 4.7% made use of “Communal dump” to dispose off their household waste.

Figure 3.11: Access to waste collection



Data Source: Statistics SA, Census 2001

3.1.11.1 Implication for the Development

It will be the responsibility of the eMalahleni Local Municipality to provide refuse removal services to the project area. From the information depicted in Figure 3.11 it can be clearly seen that the municipality currently provide waste removal services to residential areas adjacent to the project area.

4 BIO-PHYSICAL COMPONENT

4.1 LANDSCAPE CHARACTERISTICS

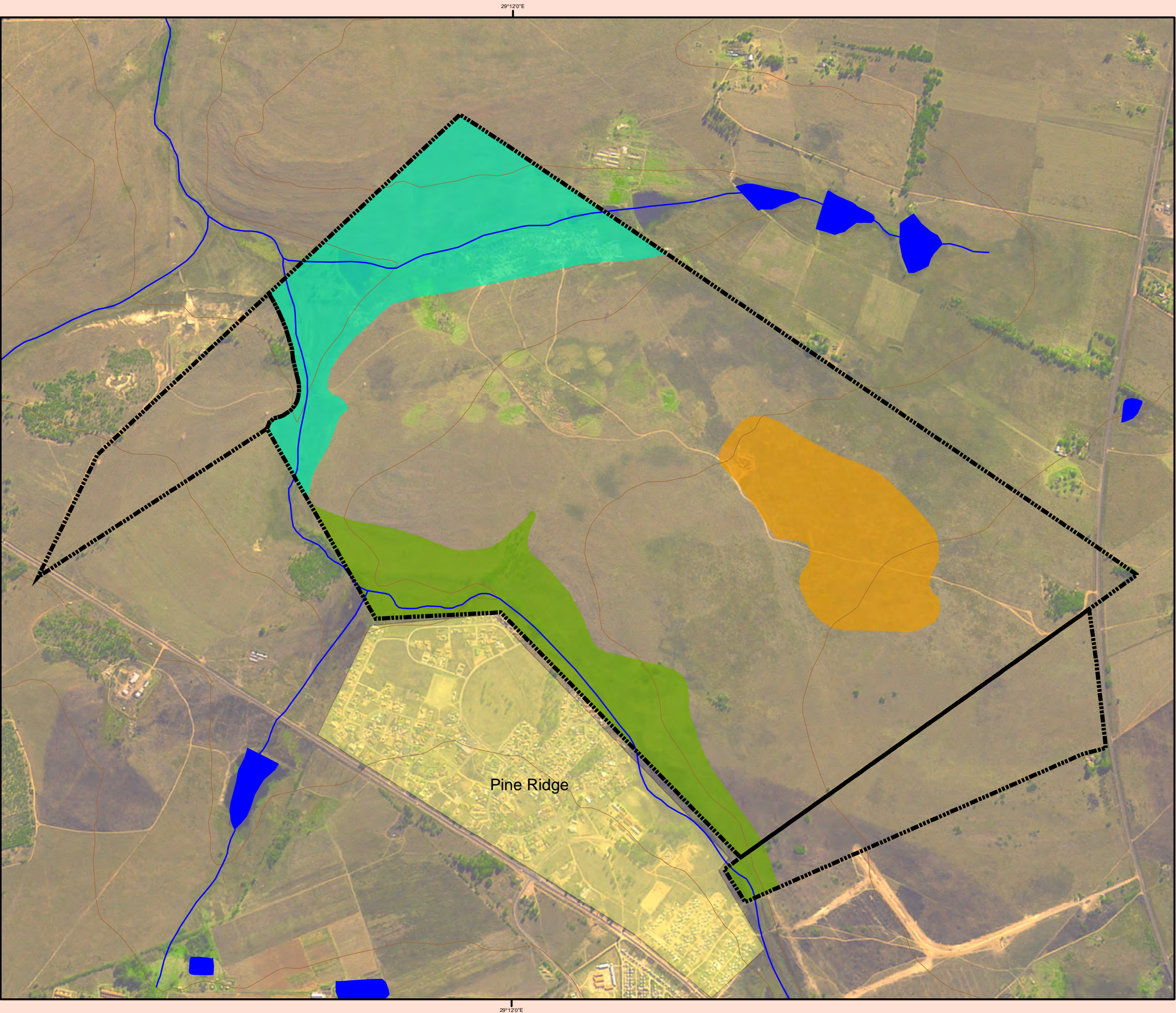
The property is characterized by a relatively “flat” terrain with the occurrence of “rocky outcrop” along the western boundary. A “wetland” feature was identified on the northern extent of the site which generally constitutes surface water body and marsh-like vegetation suggesting a shallow water table beneath the underlying soil.

The significant landscape characteristics occurring on the site are illustrated in the attached thematic “Map 2: Significant Environmental Features”. A “perennial river” passes through the site and follows a north to south drainage. The site has a general slope following a north-eastern direction.

4.2 GEOLOGY AND GEOTECHNICAL STABILITY

The area occurs in the Soutpansberg Supergroup as depicted in the attached thematic “Map 3: Geology”, and consists of quartzite and sandstone. There are no signs of current or historic collapsed surfaces and no information indicating underground mining excavations beneath the surface. There are however sand mining and processing activities currently operational on the eastern parts of the property but the excavation are relatively shallow and small scale.










The largest part of the property is situated on relatively flat terrain with a very gentle slope descending towards the south-eastern sections. A low, narrow rocky outcrop was occurs on the western extent of the property along the boundary in a north-to-south direction. Excavation relating to the provision of services (water, sewage and electricity) is likely to be difficult in the western parts of the property due to the rocky nature of the surface.

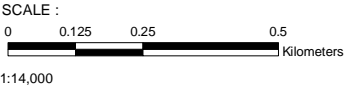
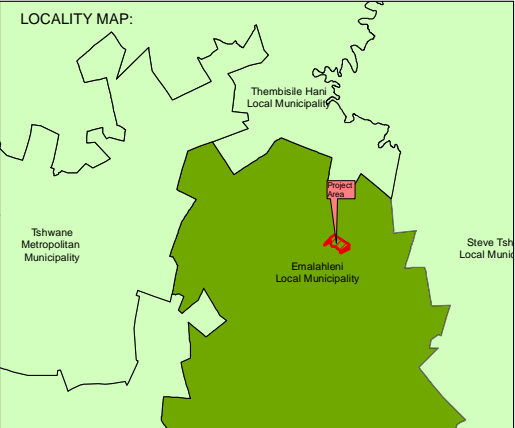


ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 2: SIGNIFICANT ENVIRONMENTAL FEATURES

-  Project_Area
-  Settlements
-  Contours
- Rivers**
-  NON-PERENNIAL CENTER LINE
-  PERENNIAL CENTER LINE
-  Water Bodies
- Significant Environmental Features**
-  Excavated Areas
-  Wetland Areas
-  Wetland and Rocky Outcrops



DATE : November 2011

MAP REFERENCE/ VERSION NUMBER : Version 1

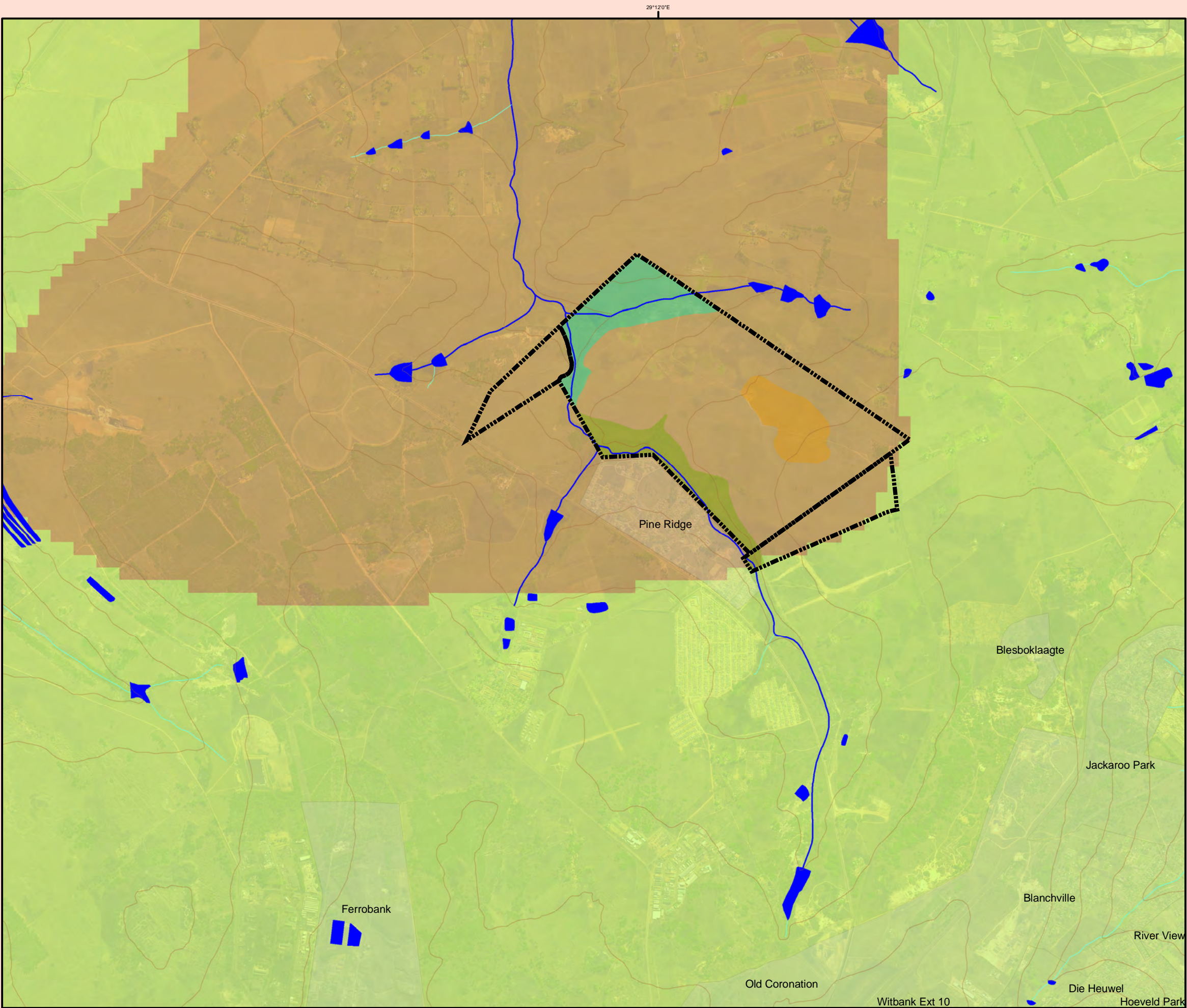
COORDINATE SYSTEM : Municipal WGS84 (Lo31)

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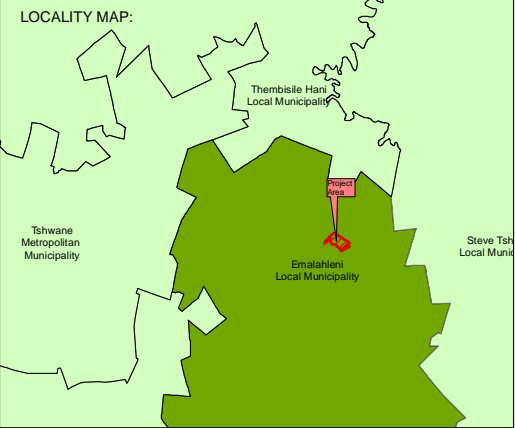
ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP3: GEOLOGY

- Project_Area
- Settlements
- Contours
- Rivers**
 - PERENNIAL CENTER LINE
 - NON-PERENNIAL CENTER LINE
- Water bodies**
 - Water bodies
- Environmental Sensitive Features**
 - Excavated Areas
 - Wetland Areas
 - Wetland and Rocky Outcrops
- Simplified Geology**
 - Ecca
 - Soutpansberg

Source: AGIS www.agis.agric.za



SCALE :
0 0.25 0.5 1 Kilometers
1:35,000



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Photo 4.1: Landscape character of the site	Photo 4.2: Landscape character of the site
	
Photo 4.3: Rocky outcrop along the western extent of the site	Photo 4.4: Rock types occurring along the rocky outcrops
	
Photo 4.5: Geology characteristics on the site	Photo 4.6: General Slope of the site
	

4.3 SOIL CHARACTERISTICS

4.3.1 General soil description and occurrence of problematic soil

The site occurs on generally loam soil with a profile described as “Red, yellow and/ or greyish soils with low to medium dase status” as depicted on the attached thematic “Map 5: General Soil Profile”. The water-holding capacity of the soils on the site, as illustrated on Map 6, is in the range of 61 -80mm while the soil drainage of the site is classified as being “Somewhat Impeded” on Map 7 which illustrates soils with characteristic poor or impeded drainage. The soils occurring on the site hold a certain degree of beneficial physical attributes which could be favorable to both agriculture and structural development. These attributes include the “Beneficial water-retaining characteristics without risk of water-logging” and therefore pose no danger to structural damage or agricultural uses as illustrated on Map 8. The soils on the site are also characteristic “Soils with structure favoring arable landuse if climate permits” as depicted on Map 9 attached; and therefore are suitable for agricultural uses.

Photo 4.7: Example of soil types in the area site as appearing on excavated parts on the eastern parts of the site.



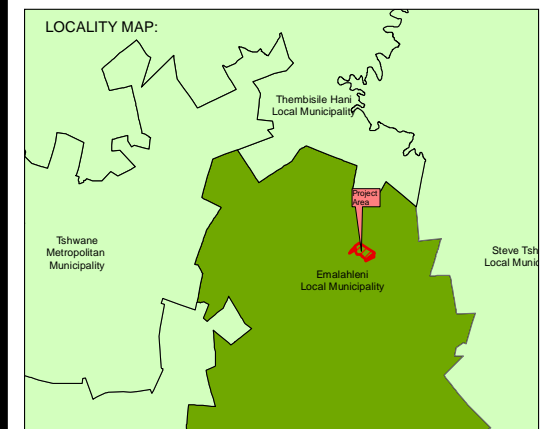
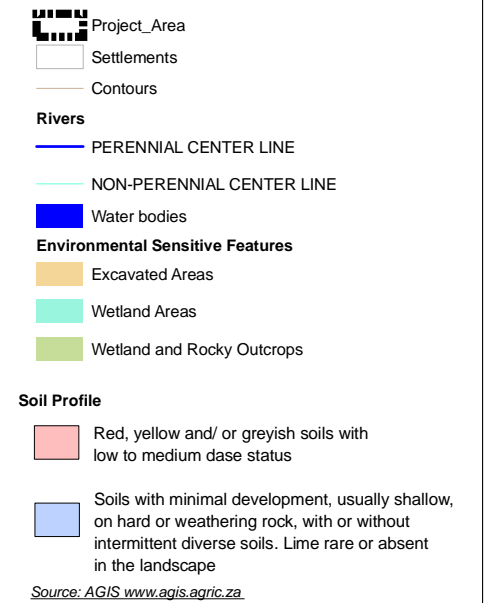
Photo 4.8: Illustration of soils in the area



ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 5: SOIL PROFILE- General



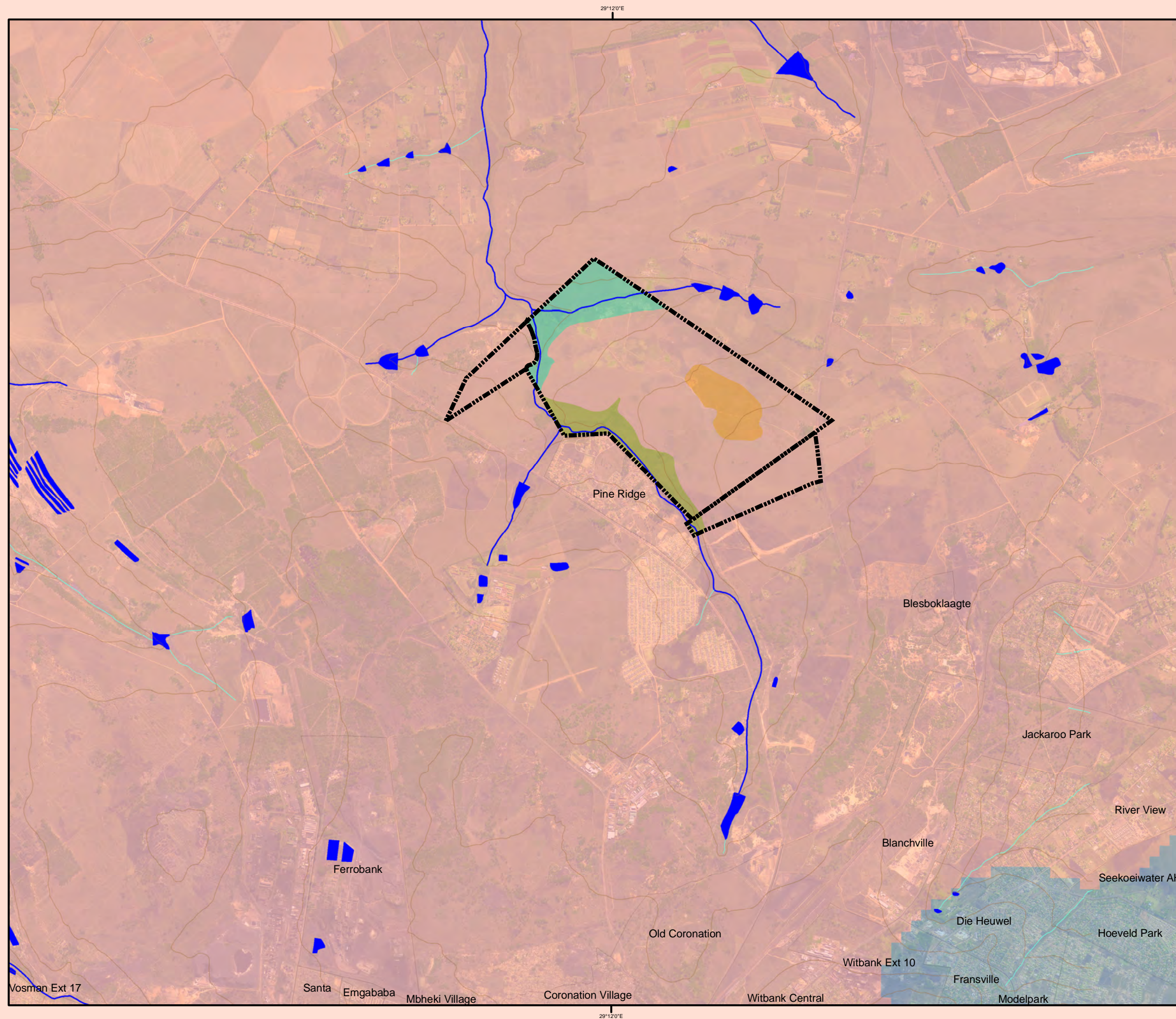






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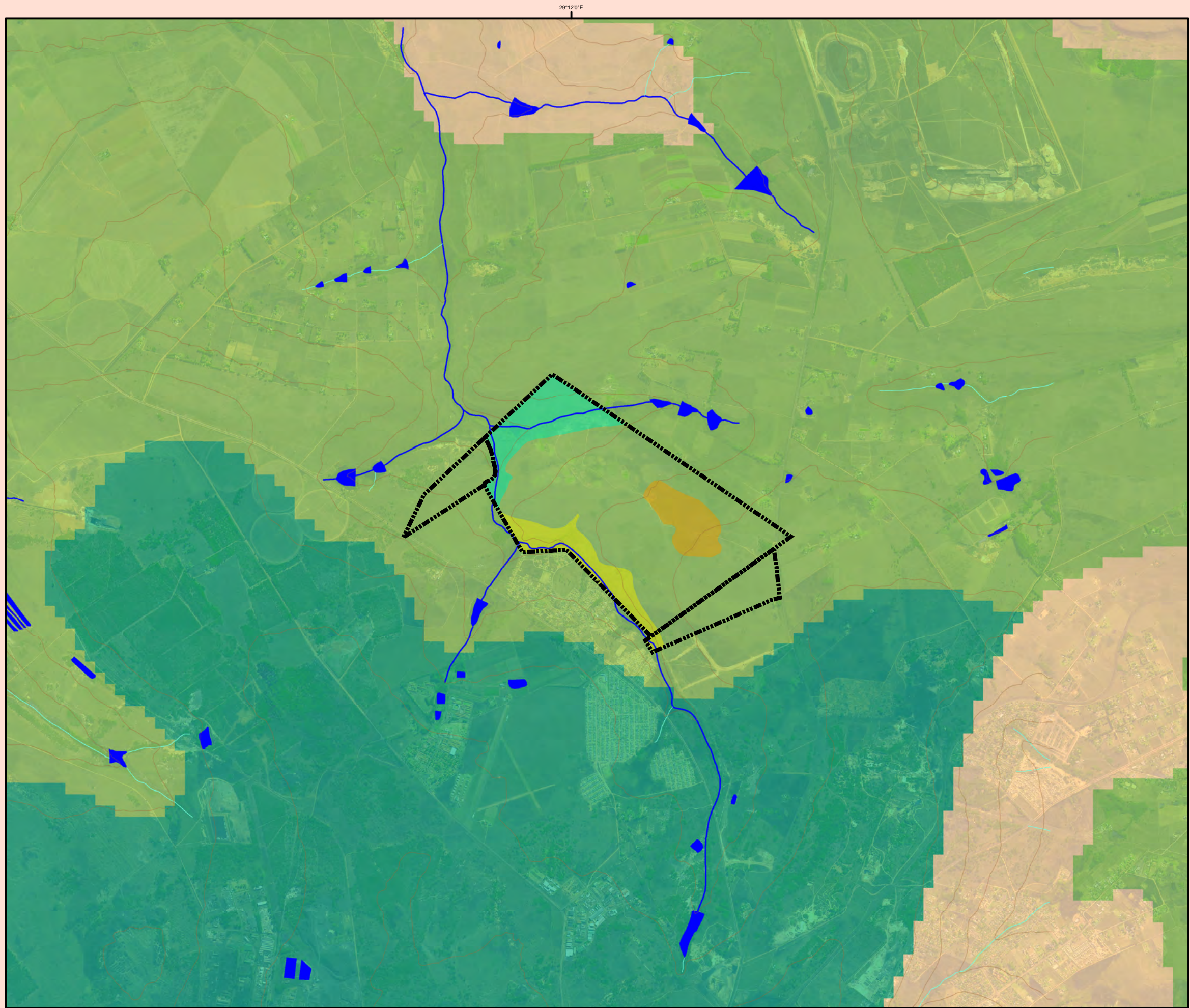
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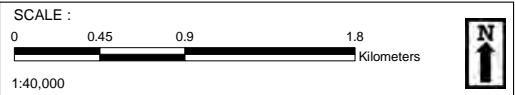
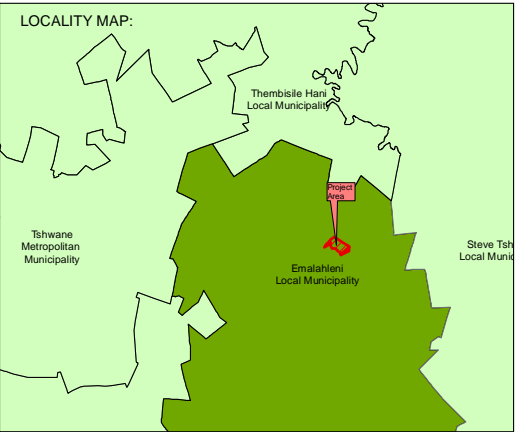


ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 6: SOIL PROFILE Waterholding Capacity

- Project Area
 - Contours
 - Rivers**
 - PERENNIAL CENTER LINE
 - NON-PERENNIAL CENTER LINE
 - Water bodies
 - Environmental Sensitive Features**
 - Excavated Areas
 - Wetland Areas
 - Wetland and Rocky Outcrops
 - Soils water-holding capacity**
 - 21 - 40 mm
 - 61 - 80 mm
 - 81 - 100 mm
- Source: AGIS www.agis.agric.za*



DATE : November 2011



MAP REFERENCE/ VERSION NUMBER : Version 1

COORDINATE SYSTEM : Municipal WGS84 (Lo31)

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









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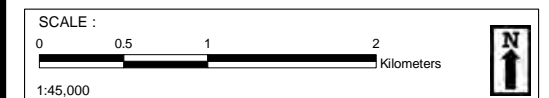
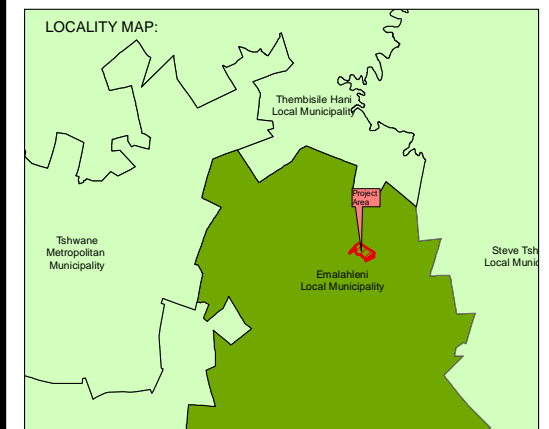


ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 7: SOIL PROFILE Drainage

-  Project Area
-  Settlements
-  Contours
- Rivers**
-  PERENNIAL CENTER LINE
-  NON-PERENNIAL CENTER LINE
-  Water bodies
- Environmental Sensitive Features**
-  Excavated Areas
-  Wetland Areas
-  Wetland and Rocky Outcrops
- Soils with poor or impeded drainage**
-  Somewhat Impeded
-  Other
- Source: AGIS www.agis.agric.za*









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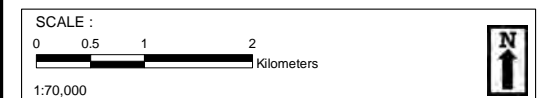
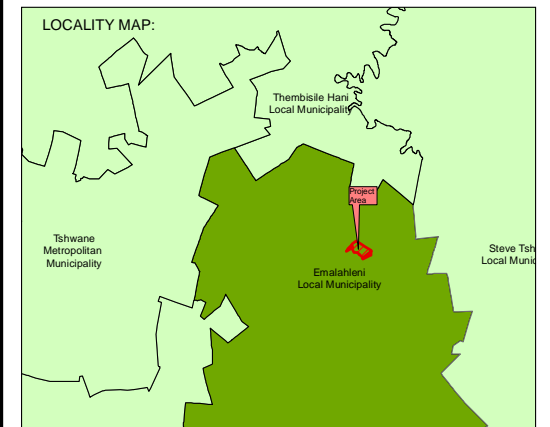
SAROVIC DEVELOPMENT

MAP 8: SOIL PROFILE BENEFICIAL PHYSICAL ATTRIBUTES Water Retention

-  Project Area
 Contours
- Rivers**
 PERENNIAL CENTER LINE
 NON-PERENNIAL CENTER LINE
 Water bodies
- Environmental Sensitive Features**
 Excavated Areas
 Wetland Areas
 Wetland and Rocky Outcrops

- Soils with beneficial water-retaining layers
below the rooting zone:**
-  Beneficial water-retaining characteristics without risk of water-logging
 -  Beneficial water-retaining characteristics scarce or absent

Source: AGIS www.agis.agric.za









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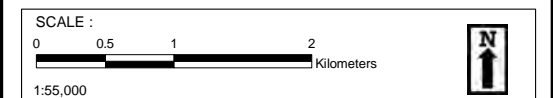
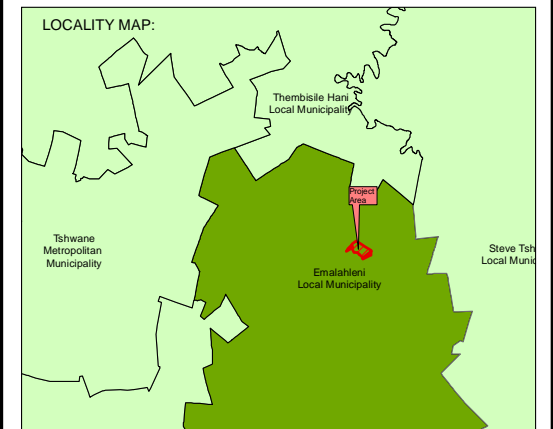
    

ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 9: SOIL PROFILE BENEFICIAL PHYSICAL ATTRIBUTES Structurally favourable soils

- Legend:**
- Project Area
 - Settlements
 - Contours
 - Rivers**
 - PERENNIAL CENTER LINE
 - NON-PERENNIAL CENTER LINE
 - Water bodies
 - Environmental Sensitive Features**
 - Excavated Areas
 - Wetland Areas
 - Wetland and Rocky Outcrops
 - Structurally favourable soils:**
 - Soils with structure favouring arable lanuse if climate permits
 - Soils with structure favouring arable land use scarce or absent
- Source: AGIS www.agis.agric.za





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4.3.2 Soil compaction, trampling and open patches



Large portions of the project area is in an advance state of degradation and visible evidence of loss of vegetation is noticeable. The appearance of the soil and vegetation are evident of previous physical disturbances most likely from agriculture and sand mining related activities. Unmanaged over grazing is a major agent of vegetation loss that could have acted a major role in this instance.

The patches where vegetation is absent are covered with a relatively hard sandy loam soil and are frequently susceptible to horizontal displacement and weathering. Trampling also occurs at cattle watering and feeding points. The negative effect of trampling is however mitigated by high levels of organic material input in the form of straw and cattle droppings. Compacted soils are also found along the farm's road surfaces and along narrow cattle paths.

Photo 4.9: Illustration of vegetation loss on site	Photo 4.10: Illustration of state of vegetation on disturbed portions of the site
	
Photo 4.11: Grazing on site and adjacent properties	Photo 4.12: Illustration of soils susceptible to horizontal displacement and weathering
	

4.3.3 Soil erosion












The soil-erosion relation/ character of the site are depicted on the attached Map 10, Map 11 and Map 12. Map 10 indicates that “Rainfall Erosivity” in region is estimated at 201 – 300mm; while the relation between soil and water erosion in area is illustrated on Map 11 which indicates that the land on which the site is situated is characterized as being “Land with low to moderate susceptibility to water erosion” with “Soils that have low to moderate erodibility”. The soils on the site are therefore generally not susceptible to water erosion but are “Moderately susceptible” to wind erosion as depicted on Map 12. “Rainfall erosivity” is the measure of the potential of rainfall to cause soil erosion and is relatively low in the regions of the study area. The nature of the soil types occurring on the site generally allow for easy infiltration (Map 7) therefore reducing horizontal displacement however erosion on the site is evident in section where vegetation is trampled, removed or absent. Erosion is limited to section along storm water paths on the southern and western parts of the site. Earth moving activities and grazing occurring on the site lead to trampling and loss of vegetation.

Photo 4.13: Exposed soils on the site- susceptible to agent of erosion	Photo 4.14: Erosion along surface water paths
	

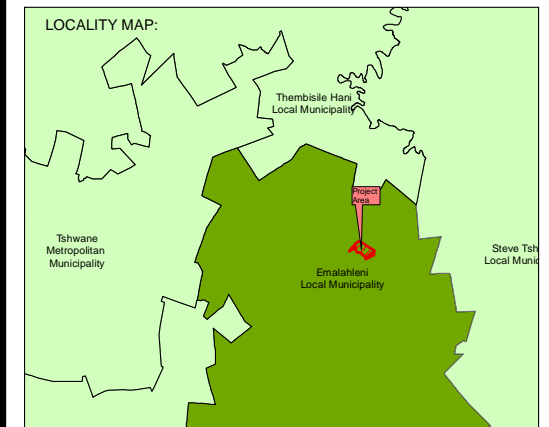
ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 10: SOIL PROFILE EROSION Rainfall erosivity

-  Project Area
-  Settlements
-  Contours
- Rivers**
-  PERENNIAL CENTER LINE
-  NON-PERENNIAL CENTER LINE
-  Water bodies
- Environmental Sensitive Features**
-  Excavated Areas
-  Wetland Areas
-  Wetland and Rocky Outcrops
- Rainfall Erosivity**
-  201 - 300mm
-  301 - 400mm

Source: AGIS www.agis.agric.za



SCALE :
0 0.25 0.5 1
Kilometers
1:40,000









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29°12'0"E

29°12'0"E


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MAP 11: SOIL PROFILE EROSION Water erosion

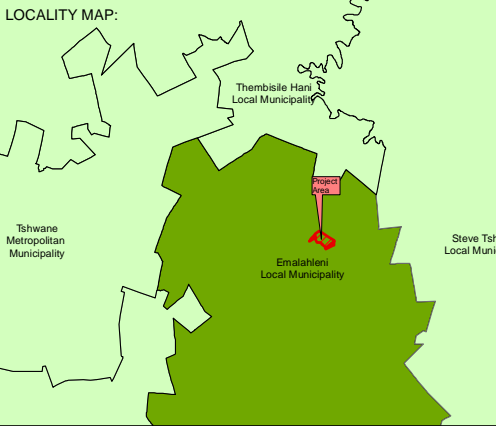
-  Project Area
-  Settlements
-  Contours
- Rivers**
-  PERENNIAL CENTER LINE
-  NON-PERENNIAL CENTER LINE
-  Water bodies
- Environmental Sensitive Features**
-  Excavated Areas
-  Wetland Areas
-  Wetland and Rocky Outcrops

Soil susceptible to water erosion

 Land with low to moderate susceptibility to water erosion,
Generally gently to moderately sloping
Soil have low to moderate erodibility

 Land with low to moderate water or wind erosion hazard,
Generally level to gently sloping land;
soils may have low to very high erodibility

Source: AGIS www.agis.agric.za



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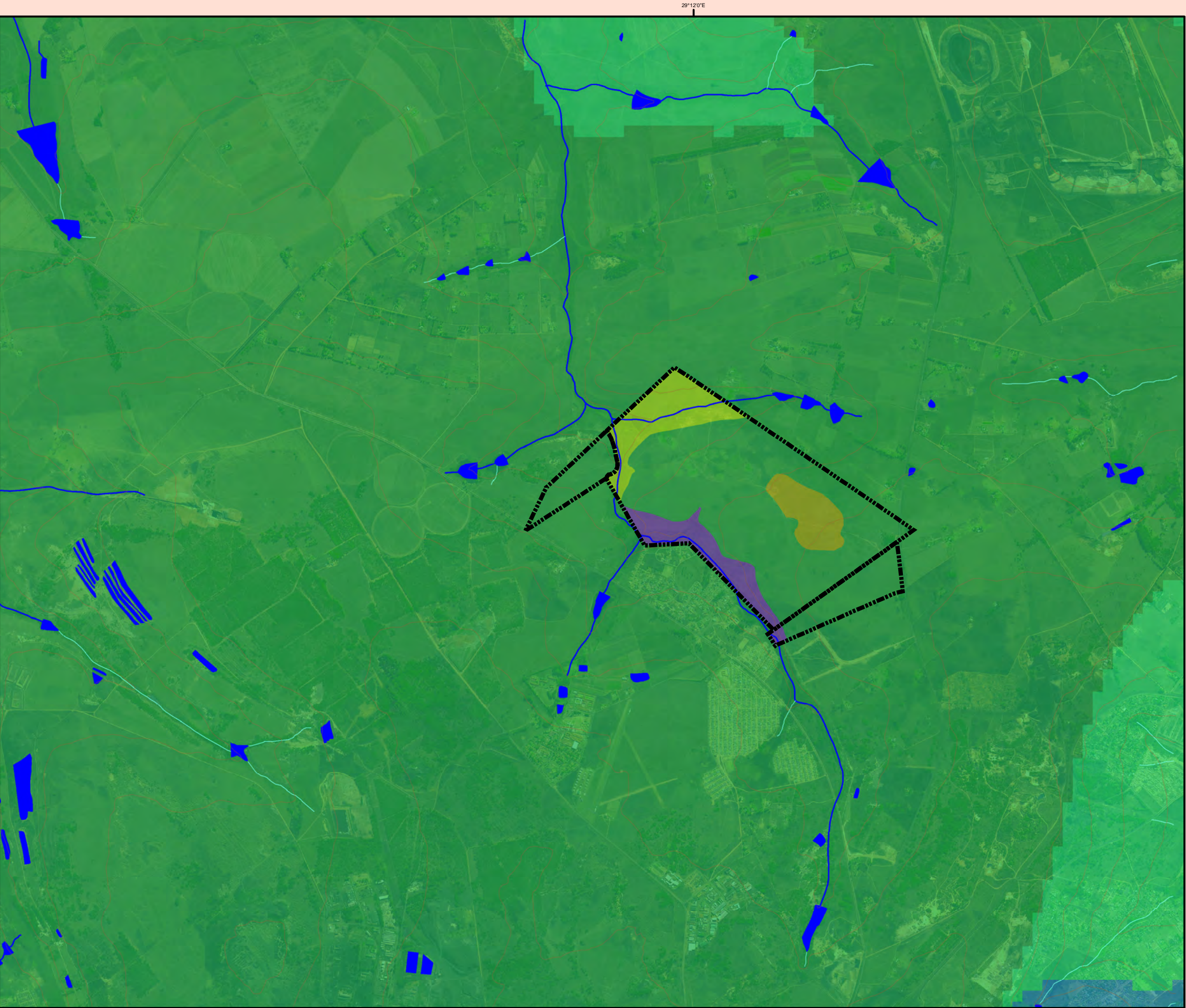
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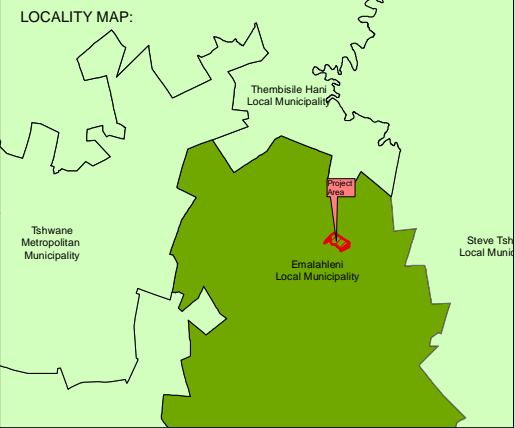


ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 12:
SOIL PROFILE
EROSION
Wind erosion

-  Project Area
 Contours
- Rivers**
 PERENNIAL CENTER LINE
 NON-PERENNIAL CENTER LINE
 Water bodies
- Environmental Sensitive Features**
 Excavated Areas
 Wetland Areas
 Wetland and Rocky Outcrops
- Soil susceptible to wind erosion**
Moderately susceptible
 Loamy sands strongly dominant
 Loamy sands dominant
Source: AGIS www.agis.agric.za



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 Environmental Management Plan
 Environmental Overview Reporting
 Development Planning
 Geographic Information Systems

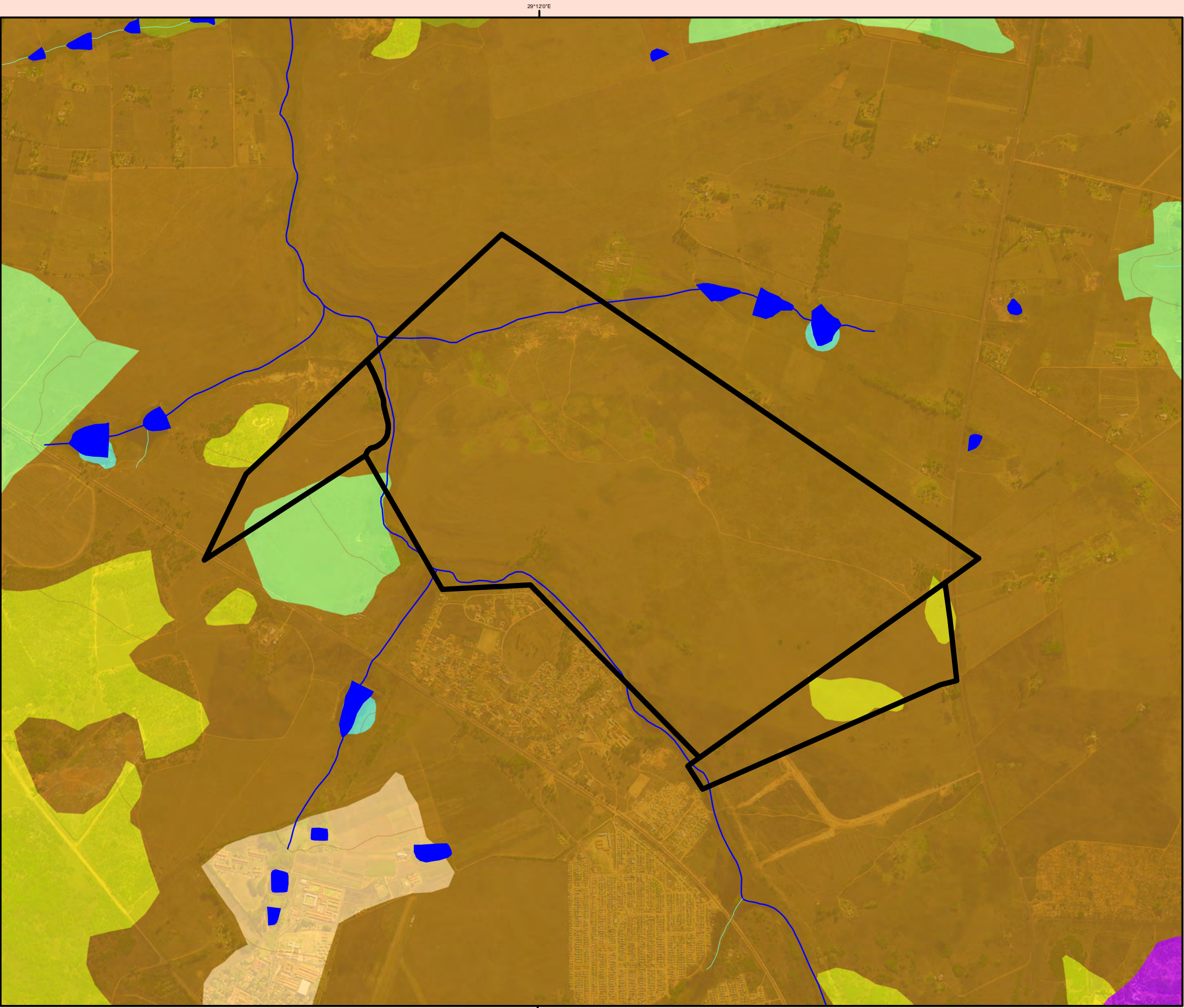
4.4 LAND CHARACTERISTICS

The property is currently vacant with the exception of the sand mining activities on the eastern section of the site. The area is generally being utilized for grazing purposes and a herd of cattle was encountered on the site.

The Land Cover of the site is indicated on the attached thematic Map 13. The significant majority of the surface area of the site is covered by “Unimproved grassland” with the occurrence of “Cultivated: temporary - commercial dryland” and “Forest plantations” type of land cover.

The attached Map 14 illustrates “Land Capabilities” in the region which depict the value of the land for agricultural uses. The site is situated on land characterized as being “High potential arable land” however the data does not indicate the preferred agricultural use.

Photo 4.15: View across the site- grass land vegetation	Photo 4.16: Agriculture related activities on the property- grazing
	

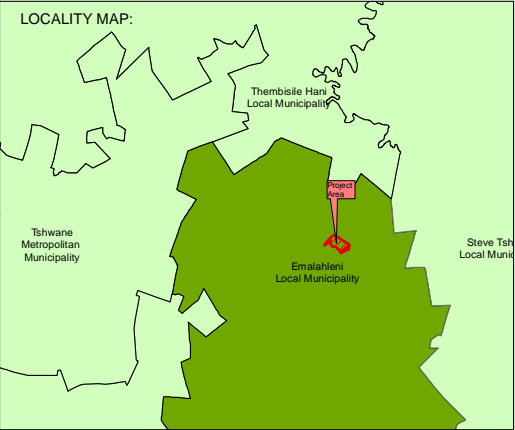


ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 13: LAND COVER

- Project_Area
- Contours
- Rivers**
 - PERENNIAL CENTER LINE
 - NON-PERENNIAL CENTER LINE
 - Water bodies
- Land Cover**
 - Cultivated: temporary - commercial dryland
 - Forest plantations
 - Mines & quarries
 - Thicket & bushland (etc)
 - Unimproved grassland
 - Urban / built-up land: industrial / transport
 - Waterbodies



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










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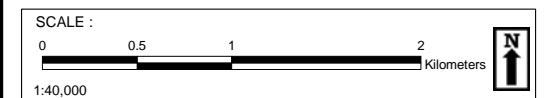
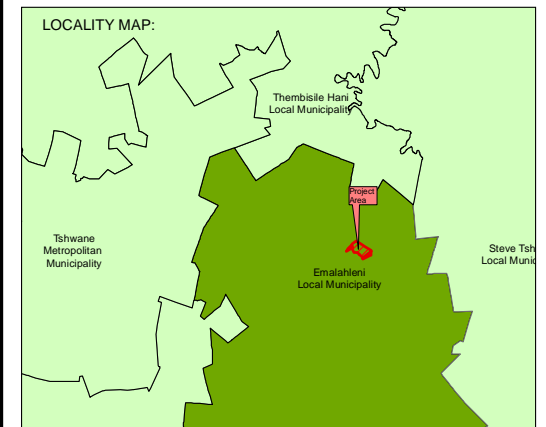
ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 14: AGRICULTURAL POTENTIAL Land Capabilities

-  Project Area
-  Settlements
-  Contours
- Rivers**
-  PERENNIAL CENTER LINE
-  NON-PERENNIAL CENTER LINE
-  Water bodies
- Environmental Sensitive Features**
-  Excavated Areas
-  Wetland Areas
-  Wetland and Rocky Outcrops
- Land Capabilities**
-  High potential arable land
-  Moderate potential arable land
-  Non arable, low to moderate potential grazing land

Source: AGIS www.agis.agric.za



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4.5 CLIMATE

4.5.1 Macro and meso climate

The site is situated in an area with a mean maximum temperature of 27.1°C – 29°C as depicted on the attached Map 15; the maximum temperature during summer months was recorded at 24.7°C – 26.9°C (Map16) while maximum winter temperature was recorded to be 20.2°C – 21.8°C as illustrated on the attached thematic “Map 17”.

Rainfall in the area is very variable with the mean annual rainfall recorded to be in the range of “601mm - 800 mm” and evaporation was estimated at “1801mm – 2000mm”.

Availability of water is an aspect of great importance when evaluating the viability of a development in any given area as abundance/ uninterrupted access to water from natural sources such as precipitation will have bearing on the technology and cost alternatives of the development.

4.6 SURFACE WATER















4.6.1 General description of surface water drainage

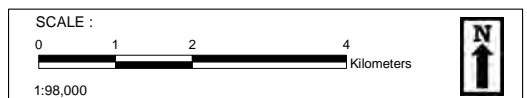
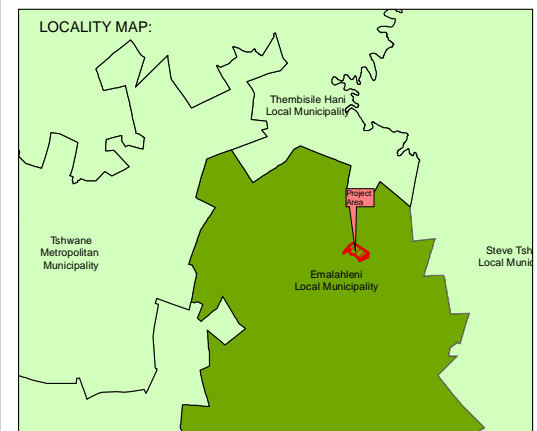
There are two drainage lines which enter the project area at the far northern extent and transverse the project area along the western and north-eastern boundaries of the site as depicted on the attached thematic Map 20. Although there are no permanent water bodies on the property, there are a number of small water bodies occurring on properties adjacent to the site. The river networks that transverse the site drain into these water bodies situated on properties towards the north and eastern directions outside the boundary of the site.

ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 15: TEMPERATURE Mean maximum annual

-  Project_Area
-  Local Municipal Boundary
- Mean maximum Annual Temperature
-  25.1 - 27 Degree Celcius
-  27.1 - 29 Degree Celcius
- Road Network
-  Primary
-  Secondary
-  Tertiary
- Central Places
-  Metropolitan core areas and major cities
-  Higher order medium sized towns and equivalent metro nodes
-  Lower order medium sized towns and equivalent metro nodes
-  Higher order small towns and equivalent metro nodes
-  Lower order small towns and equivalent metro nodes
-  Very small hamlets/Villages
-  Other




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




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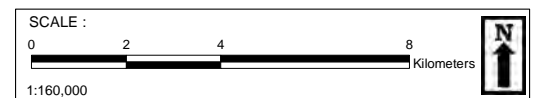
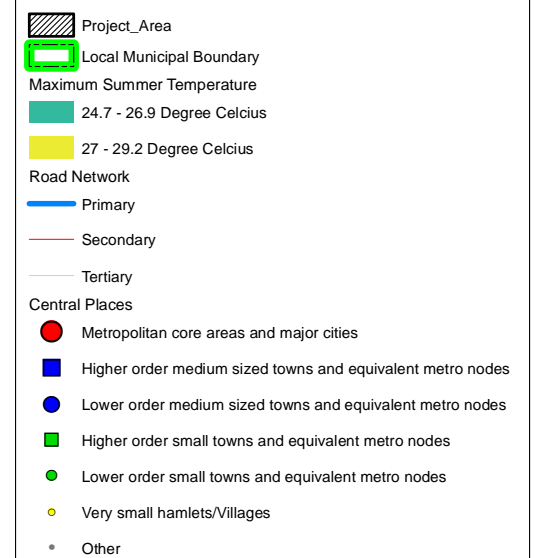
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MAP 16 TEMPERATURE Maximum-Summer



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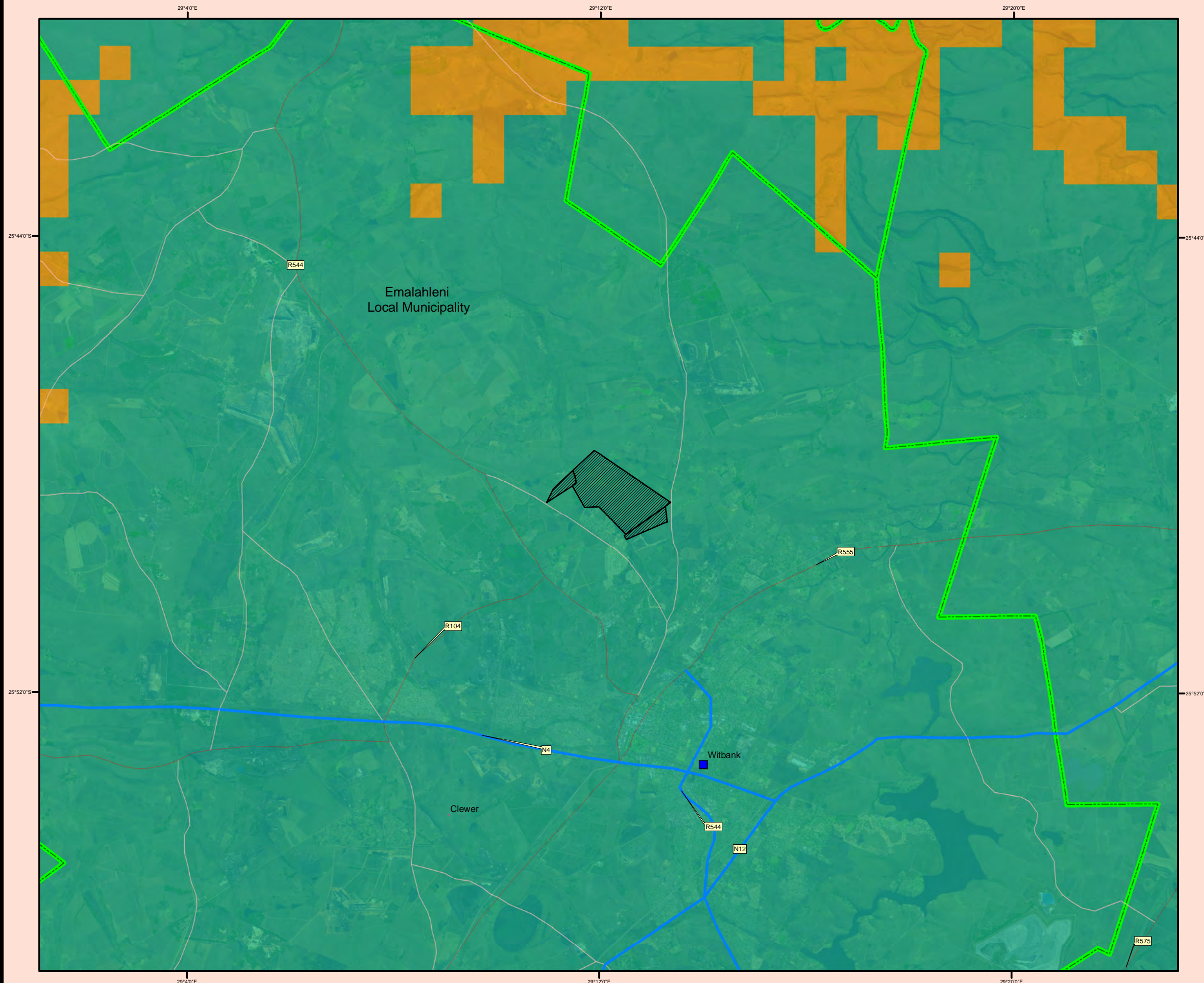
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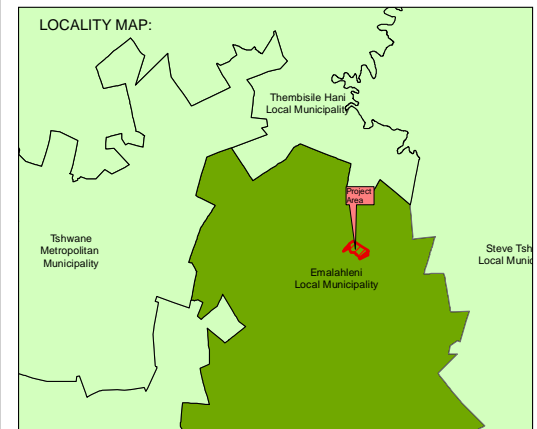
ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 17: TEMPERATURE Maximum-Winter



- Project Area**
- Local Municipal Boundary**
- Maximum Winter Temperature**
- 20.2 - 21.8 Degree Celcius
 - 21.9 - 24 Degree Celcius
- Road Network**
- Primary
 - Secondary
 - Tertiary
- Central Places**
- Metropolitan core areas and major cities
 - Higher order medium sized towns and equivalent metro nodes
 - Lower order medium sized towns and equivalent metro nodes
 - Higher order small towns and equivalent metro nodes
 - Lower order small towns and equivalent metro nodes
 - Very small hamlets/Villages
 - Other



SCALE : 0 1.5 3 6 Kilometers

1:120,000

N

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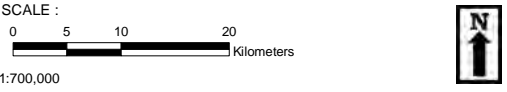
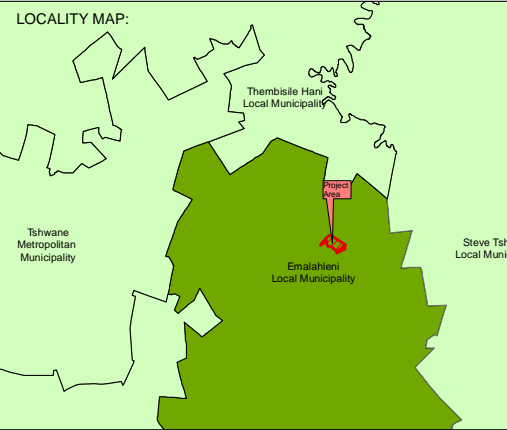
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MAP 18:
MEAN ANNUAL RAINFALL

- Project_Area
- Local Municipal Boundary
- Mean Annual Rainfall
- 401 - 600 mm
- 601 - 800 mm
- 801 - 1000 mm
- > 1000 mm




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Management
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Overview
Reporting






Development
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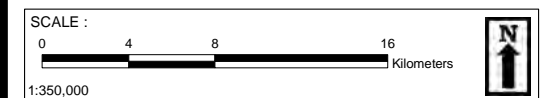
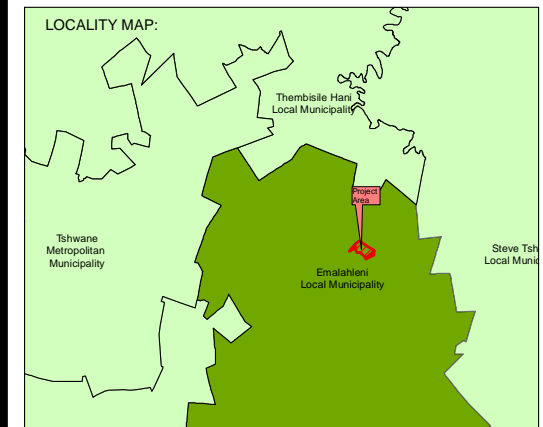
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MAP 19: EVAPORATION

-  Project Area
-  Local Municipal Boundary
- Evaporation
-  1601 - 1800 mm
 -  1801 - 2000 mm
 -  2001 - 2200 mm



DATE : November 2011



MAP REFERENCE/ VERSION NUMBER : Version 1

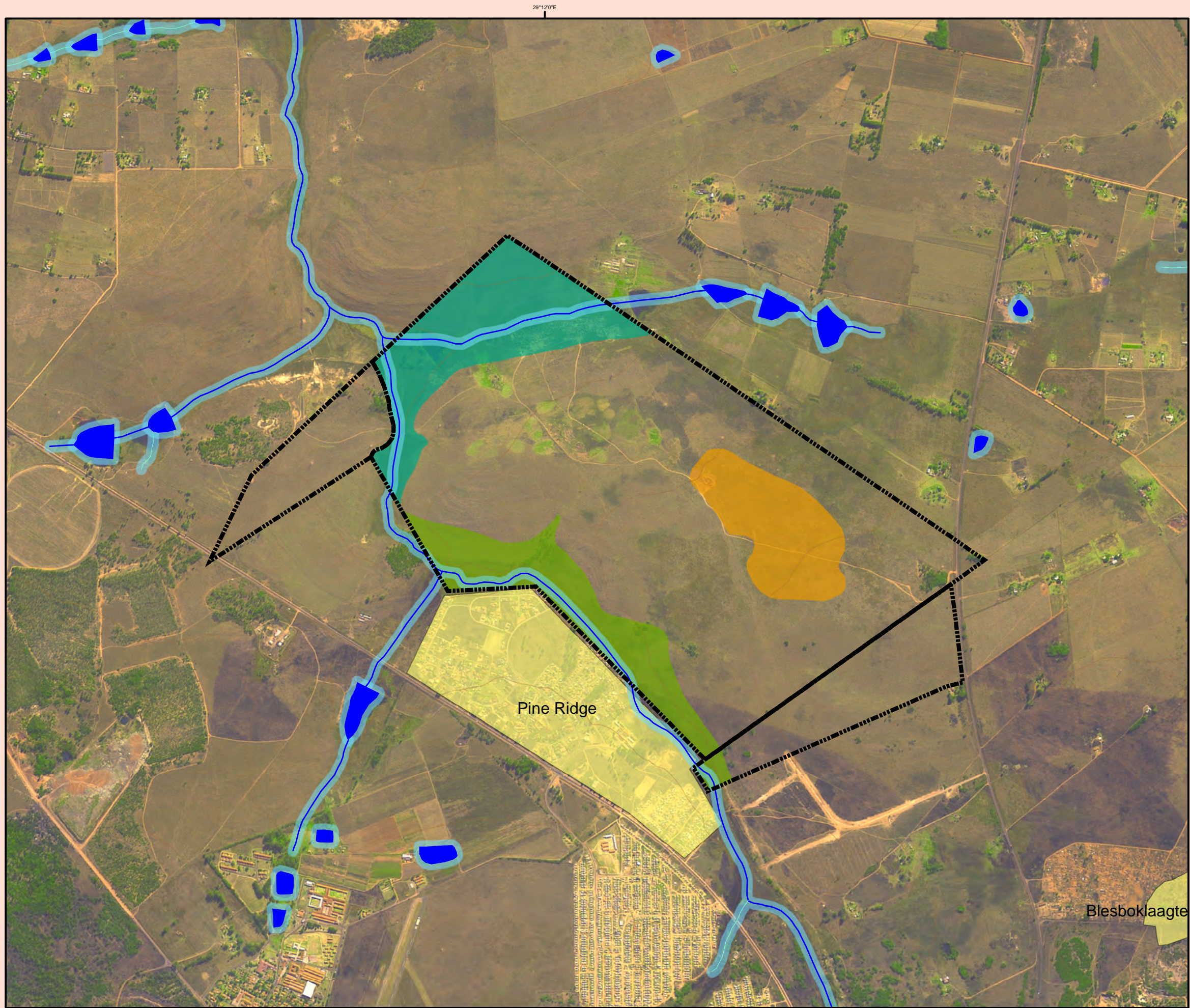
COORDINATE SYSTEM : Municipal WGS84 (Lo31)

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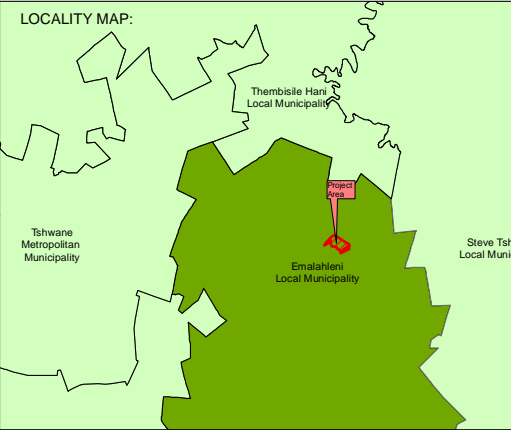


ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 20: SURFACE WATER Rivers, wetlands and waterbodies

- Project_Area
- Settlements
- Contours
- Rivers**
 - PERENNIAL CENTER LINE
 - NON-PERENNIAL CENTER LINE
 - Water bodies
 - 32 Buffer of Rivers, Dams and Wetlands
- Environmental Sensitive Features**
 - Excavated Areas
 - Wetland Areas
 - Wetland and Rocky Outcrops



DATE : November 2011

MAP REFERENCE/ VERSION NUMBER : Version 1

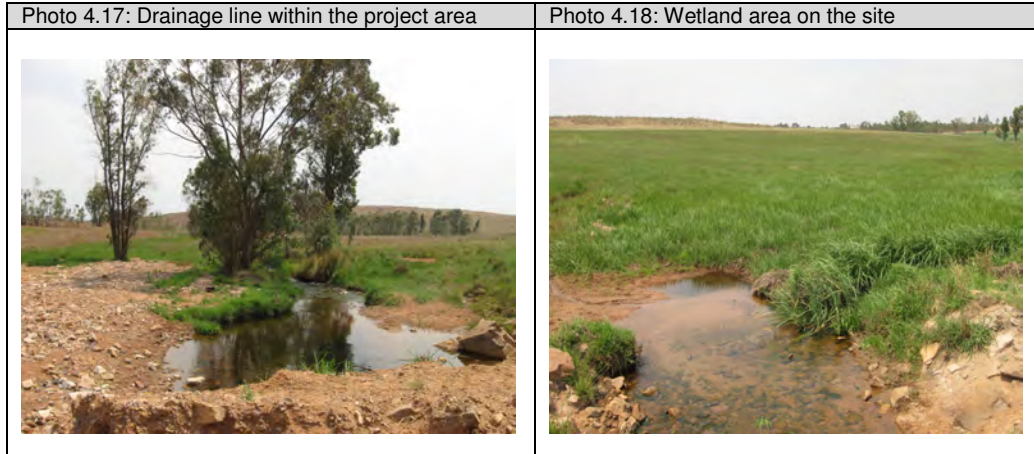
COORDINATE SYSTEM : Municipal WGS84 (Lo31)

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4.6.2 Stormwater and flood risk

Due to the relatively gentle slope of the site, there are no foreseen major impacts/ concerns of flooding however proper stormwater management will be to be formulated and implemented should the site be developed. The wetland areas on the site will be of great assistance in reducing the impact of excess stormwater and flooding as wetlands are able to absorb large volumes of water runoff and reduce the speed and force of the runoff and therefore minimizing damage to property and structures.

A 32m development buffer zone must be maintained around the rivers and wetlands on the property to ensure minimal damage developmental impacts on these features of great significance and importance. The sections on the site dermarcated as “Wetland Area” and “Wetland” must remain undeveloped and should be incorporated in the site development plan as “open space”; no solid barrier is to be erected around these features as this will hinder movement of stormwater runoff.

4.7 VEGETATION CLASSIFICATION

The site of proposed development occurs within the Rand Highveld Grassland vegetation as depicted on the attached "Map 21: Vegetation Cover". According to Mucina & Rutherford (2006), this vegetation unit predominantly occurs in the Gauteng, North-West, Free State and Mpumalanga Provinces and is distributed along areas between rocky ridges from Pretoria to Witbank, extending onto ridges in the Stoffberg and Roossenekal regions as well as west of Krugersdorp centred in the vicinity of Derby and Potchefstroom, extending southwards and north-eastwards from there. Rand Highveld Grassland is found at altitude range between 1 300m and 1 635 m, but is known to occur at 1 760 m in some places.

The vegetation and landscape features associated with the Rand Highveld Grassland, as indicated by Mucina & Rutherford (2006), can be generally described as highly variable landscape with extensive sloping plains and a series of ridges slightly elevated over undulating surrounding plains; while the vegetation is said to be species-rich, wiry, sour grassland alternating with low, sour shrubland on rocky outcrops and steeper slopes.

Most common grasses on the plains belong to the genera *Themeda*, *Eragrostis*, *Heteropogon* and *Elionurus*. High diversity of herbs, many of which belong to the Asteraceae, is also a typical feature. Rocky hills and ridges carry sparse (savannoid) woodlands with *Protea caffra* subsp. *caffra*, *P. welwitschii*, *Acacia caffra* and *Celtis africana*, accompanied by a rich suite of shrubs among which the genus *Rhus* (especially *R. magalismonata*) is most prominent. (Mucina & Rutherford, 2006)

Important taxa occurring in the Rand Highveld Grassland include (Mucina & Rutherford, 2006): Graminoids: *Ctenium concinnum* (d), *Cynodon dactylon* (d), *Digitaria monodactyla* (d), *Diheteropogon amplexans* (d), *Eragrostis chloromelas* (d), *Heteropogon contortus* (d), *Loudetia simplex* (d), *Monocymbium cerasiiforme* (d), *Panicum natalense* (d), *Schizachyrium sanguineum* (d), *Setaria sphacelata* (d), *Themeda triandra* (d), *Trachypogon spicatus* (d), *Tristachya biseriata* (d), *T. rehmannii* (d), *Andropogon schirensis*, *Aristida aequiglumis*, *A. congesta*, *A. junciformis* subsp. *galpinii*, *Bewisia biflora*, *Brachiaria nigropedata*, *B. serrata*, *Bulbostylis burchellii*, *Cymbopogon caesius*, *Digitaria tricholaenoides*, *Elionurus muticus*, *Eragrostis capensis*, *E. curvula*, *E. gummiflua*, *E. plana*, *E. racemosa*, *Hyparrhenia hirta*, *Melinis nerviglumis*, *M. repens* subsp. *repens*, *Microchloa caffra*, *Setaria nigrirostris*, *Sporobolus pectinatus*,









29°12'0"E

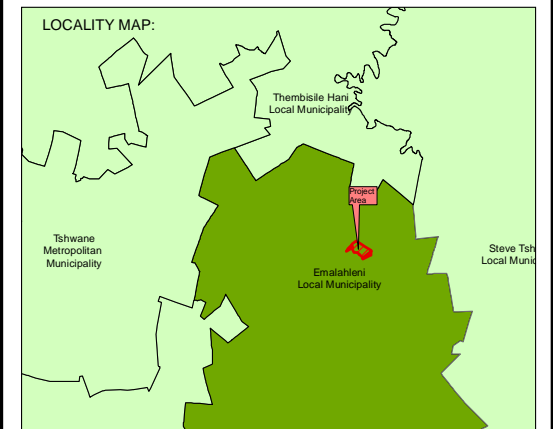
29°12'0"E

ENVIRONMENTAL OVERVIEW REPORT

SAROVIC DEVELOPMENT

MAP 21: VEGETATION COVER

-  Project_Area
-  Settlements
-  Contours
- Rivers**
-  PERENNIAL CENTER LINE
-  NON-PERENNIAL CENTER LINE
-  Water bodies
- Vegetation**
-  Eastern Highveld Grassland
-  Rand Highveld Grassland



SCALE :
0 0.375 0.75 1.5
Kilometers
1:39,063



DATE : November 2011


MAP REFERENCE/ VERSION NUMBER : Version 1


COORDINATE SYSTEM : Municipal WGS84 (Lo31)


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 Environmental
Impact
Assessment

 Environmental
Management
Plan

 Environmental
Overview
Reporting

 Development
Planning

 Geographic
Information
Systems







Trichoneura grandiglumis, *Urelytrum agropyroides*. Herbs: *Acanthospermum australe* (d), *Iusticia anagalloides* (d), *Pollichia campestris* (d), *Acalypha angustata*, *Chamaecrista mimosoides*, *Oicoma anomala*, *Helichrysum caespitium*, *H. nudifolium* var. *nudifolium*, *H. rugulosum*, *Ipomoea crassipes*, *Kohautia amatymbica*, *Lactuca inermis*, *Macledium zeyheri* subsp. *argyrophyllum*, *Nidorella hottentotica*, *Oldenlandia herbacea*, *Rotheca hirsuta*, *Selago densiflora*, *Senecio coronatus*, *Sonchus dregeanus*, *Vernonia oligocephala*, *Xerophyta retinervis*. Geophytic Herbs: *Boophone disticha*, *Cheilanthes hirta*, *Haemanthus humilis* subsp. *humilis*, *Hypoxis rigidula* var. *pilosissima*, *Ledebouria ovatifolia*, *Oxalis coiniculata*. Succulent Herb: *Aloe greatheadii* var. *davyana*. Low Shrubs: *Anthospermum rigidum* subsp. *pumilum*, *Indigofera comasa*, *Rhus magalismontana*, *Stoebe plumosa*. Succulent Shrub: *Lopholaena coriifolia* (d). Geoxylic Suffrutex: *Elephantorrhiza elephantina*.

Rand Highveld Grassland provides habitat to Biogeographically important taxon including (all Northern sourveld endemics) i.e. Geophytic Herbs: *Agapanthus inapertus* subsp. *pendulus*, *Eucomis vandermerveii*. Succulent Herb: *Huernia insigniflora*. Low Shrub: *Melhania randii*.

Musina & Rutherford (2006) describe the conservation status of Rand Highveld Grassland as Endangered. The conservation target of this vegetation type is 24%, with only 1% currently formally protected in protected statutory reserves such as Kwaggavoeitpad, Van Riebeeck Park, Bronkhorstspuit, Boskop Dam Nature Reserves; and in private conservation areas including the Doornkop, Zemvelo, Rhenosterpoort and Mpopomeni private nature reserves. Musina & Rutherford (2006) also stated that almost half of the Rand Highveld Grassland been transformed; mostly by cultivation, plantations, urbanisation or dam-building. Cultivation may also have had an impact on an additional portion of the surface area of the unit where old lands are currently classified as grasslands in land-cover classifications and poor land management has led to degradation of significant portions of the remainder of this unit (D.B. Hoare, personal observation). Scattered aliens (most prominently *Acacia mearnsii*) occur in about 7% of this unit. Only about 7% has been subjected to moderate to high erosion levels.





The recent on-site assessment by the project team concluded that the vegetation on the site is largely disturbed and/ absent in most parts however a significant proportion of the property still holds its pristine natural character. Most of the disturbance occurs on the central and western portion of the site while the vegetation along the northern and far south-eastern parts, along the wetland and rocky outcrop features, is still intact and

currently undisturbed. The main cause of vegetation loss on the site was due to trampling and overgrazing and the currently operational sand mining operation on the western parts of the property.

Photo 4.19: Illustration of typical undisturbed Rand Highveld Grassland vegetation (source: Musina & Rutherford, 2006)	Photo 4.20: Current state of vegetation on the site
	
Photo 4.21: Vegetation on the site	Photo 4.22: Vegetation on the site
	
Photo 4.23: Vegetation along wetland features	Photo 4.24: Sand mining activities on the site- vegetation disturbance
	

4.8 HERITAGE RESOURCES

A number of gravesites were identified during the recent visit to the site. A derelict structure/ portion of a stone wall was noted, this structure appears to have been either utilized as a dwelling or a place of safe keeping of small animals or equipment. A qualified Archeologist or Heritage Resources Assessor must be consulted to identify any other significant sites, determine the value of the identified sites and develop recommendations from a heritage resources perspective. Development planning and site layout plans must take cognizance of the occurrence of objects and sites of historic value.

Photo 4.25: Graves situated within close proximity to the site	Photo 4.26: Structure of historic significance on the site
	
Photo 4.27: Structure of possible historic significance	Photo 4.28: Site of possible historic significance
	

4.9 CONCLUSION AND SUMMARY OF ENVIRONMENTAL IMPLICATIONS

A summary of the key environmental characteristics and potential implications portrayed on the attached map and can be summarized as follows:

- A number of wetland areas occur on the site, these will have to be delineated and as part of the Environmental Impact Assessment Process.
- Sand Mining activities are currently being undertaken on the subject property. It is important to establish the legality of the sand mining operations as this could have a negative impact on the Environmental Impact Assessment Application.
- Remnants of the endangered Rand Highveld Grassland vegetation type occur on site. These areas should be excluded from development.
- The majority of the site is degraded due to over grazing and sand mining activities.
- Areas with possible Heritage Importance have been noted and a Heritage Impact Assessment should be conducted as part of the Environmental Impact Assessment process.

4.10 DEVELOPMENT RECOMMENDATIONS

The estimated environmental sensitive areas has been delineated by the consultant to enable the Town Planner to prepare a preliminary development layout for the developer. Should the developer decide to continue with the development he would be required to obtain Environmental Authorisation in terms of the National Environmental Management Act. The Environmental Authorisation application process have been summarized in Section 5 of this report.

5 ENVIRONMENTAL AUTHORISATION REQUIREMENTS

Although the exact nature of the proposed development is currently not available, it will probably be classified as a listed activity under EIA Regulations Listing Notice 2 (R545) of 18 June 2010, Activity 15:

*“Physical alteration of undeveloped, vacant or derelict land for **residential**, retail, commercial, recreational, industrial use where the total area to be transformed is 20 hectares or more*

Except where such physical alteration takes place for:

- i) linear development activities or*
- ii) agriculture or afforestation where activity 16 in this schedule will apply*

The proposed development will thus require an environmental authorisation subject to a **Scoping and Environmental Impact Assessment** process as contemplated in Regulations 26 – 35 of EIA Regulations of 2010.

5.1 ENVIRONMENTAL IMPACT ASSESSMENT PROCESS

The Scoping and Environmental Impact Assessment process is briefly outlined in the subsections below.

5.1.1 Task 1: Project registration

The purpose of this task is to register the proposed project with the Mpumalanga Department of Economic Development, Environment and Tourism (DEDET). An official from DEDET will be identified as designated official on the project. Specific activities that form part of this task include the following:

- Completion of relevant registration forms;
- Identification of relevant contact persons;
- Possible involvement of other authorities.

5.1.2 Task 2: Public Participation Process (Scoping Phase)

An important aspect of scoping is the identification and notification of parties who would be interested in, or affected by, the proposed development. Relevant parties will be afforded the opportunity to comment on the proposed development. Specific activities to be undertaken as part of this task include:

- Setting up on-site notice boards at a place conspicuous to the public at the boundary or on the fence of the proposed site;
- Give written notice to –
 - (i) the owners and occupiers of land adjacent to the site where the activity is to be undertaken;
 - (ii) the owners and occupiers of land within 100 metres of the boundary of the site who are or may be directly affected by the activity (the application of this requirement may differ from project to project, depending on the practicality thereof in individual circumstances).
 - (iii) the municipal councillor of the ward in which the site is situated and any organisation of ratepayers that represents the community in the area;
 - (iv) the municipality which has jurisdiction in the area; and
 - (v) any organ of state having jurisdiction in respect of any aspect of the activity
- Placing an advertisement in one local newspaper;

During the public participation process a register of Interested and Affected Parties will be opened and maintained.

5.1.3 Task 3: Compilation of Scoping Report

The **scoping report** will contain the required information to establish a proper understanding of the nature of issues identified during scoping, and will include the following main components:

(i) Description of project and environment

This component will involve a description and analysis of the proposed development and the project area.

(ii) Situation Assessment

The Situation Assessment focuses on the characteristics of the area in which the proposed development will take place and describes the environment that may be affected by the activity and the manner in which the environment may be affected by the proposed activity.

(iii) Impact assessment

The impact assessment aims at identifying possible environmental impacts with a view to determine the critical issues to be addressed in the management plan.

5.1.4 Task 4: Submission of Scoping Report and Plan of Study for Environmental Impact Assessment to DEDET

The final scoping report will be submitted to DEDET, together with all comments received from interested and affected parties. The department will then within 30 days of receipt of the scoping report, consider the report, and in writing accept the report and the plan of study for environmental impact assessment contained in the report and advise the Environmental Assessment Practitioner to proceed with the tasks contemplated in the plan of study for environmental impact assessment. The department may also request amendments to the scoping report or the plan of study for environmental impact assessment.

5.1.5 Task 5: Environmental Impact Assessment Report and Environmental Management Plan

The **Environmental Impact Assessment report** will contain the information necessary for the Environmental Officer to consider the application and to reach a decision on the application and will be conducted as specified in the plan of study for scoping for environmental impact assessment.

The **environmental management plan** provides guidelines to be adopted during the construction and operational phases of the proposed development.

5.1.6 Task 6: Final Report, Submission to DEDET

The EIA report and EMP will be submitted to DEDET. The Department will review this report for the purposes of reaching a decision on the application for environmental authorisation.

5.2 ESTIMATED TIMEFRAME OF THE EIA PROCESS

The overall timeframe for completion of the process outlined above (based of the timeframes specified in the regulations) is approximately 8 to 10 months and is summarised in the programme below. Aspects which may impact on this timeframe include the following:

- If the competent authority requires any specialist studies as part of the EIA process (e.g. botanical survey, red data plant etc.), these surveys can normally only be undertaken during summer months and after the first rainfall.
- Extent and type of comments raised by Interested and Affected Parties during the public participation processes. If any individual or organisation registers as an Interested or Affected Party during the notification period, all reports must be made available to those parties for comments (30 days) prior to submission of reports to DEDET.

5.3 COST ESTIMATE

The cost estimate for undertaking the environmental authorization process outlined above will consist of two main components i.e. Professional fees and other costs of the Environmental Assessment Practitioner managing the process, and the cost of specialist studies that may be required during the EIA phase. It is at this stage not possible to predict with certainty what specialist studies may be required, as this will only be confirmed during the scoping phase of the EIA process. However, from previous

experience with similar types of projects, it is likely that at least a Phase 1 Heritage Impact Assessment, as well as a specialist Ecological study and Wetland Delineation of the project site will be required. It is assumed that a detailed geotechnical study will be undertaken as part of the overall process and will thus not have to be budgeted separately as part of the EIA process. Based on the assumptions outlined above, the overall cost estimate for this project are thus as follows:

- Professional Fees of EAP managing the process, including compilation of the various documents to be submitted to the Limpopo Department of Finance, Economic Affairs, Tourism and Environment: **R90 000 (incl. disbursements, excl VAT).**
- Specialist Phase 1 Heritage Impact Assessment: **R7 500 (excl. VAT)**
- Specialist Ecological Study: **R10 000 (excl. VAT)**
- Wetland Delineation: **R12 500 (excl. VAT)**

It is however important to take cognizance of the fact that the cost provide above are estimates only and official quotations still needs to be obtained.

ENVIRONMENTAL OVERVIEW REPORT
SAROVIC DEVELOPMENT
WITBANK, MPUMALANGA PROVINCE- SOUTH AFRICA
Remainder of the Farm Leeupoort No 283 JS and portion 79 of the
Farm Blesboklaagte No. 296 JS

It should be noted that this document does not constitute an Environmental Scoping Report and that the findings of this environmental overview are purely based on the information sources stated in Section 1.2 above. The terms of the project did not allow for any detailed analysis or specialist studies however the level of detail covered in this report is sufficient to inform the preliminary Town Planning Process.



Mr. Gert Watson
K2M Environmental (Pty) Ltd
DIRECTOR

November 2011

Date