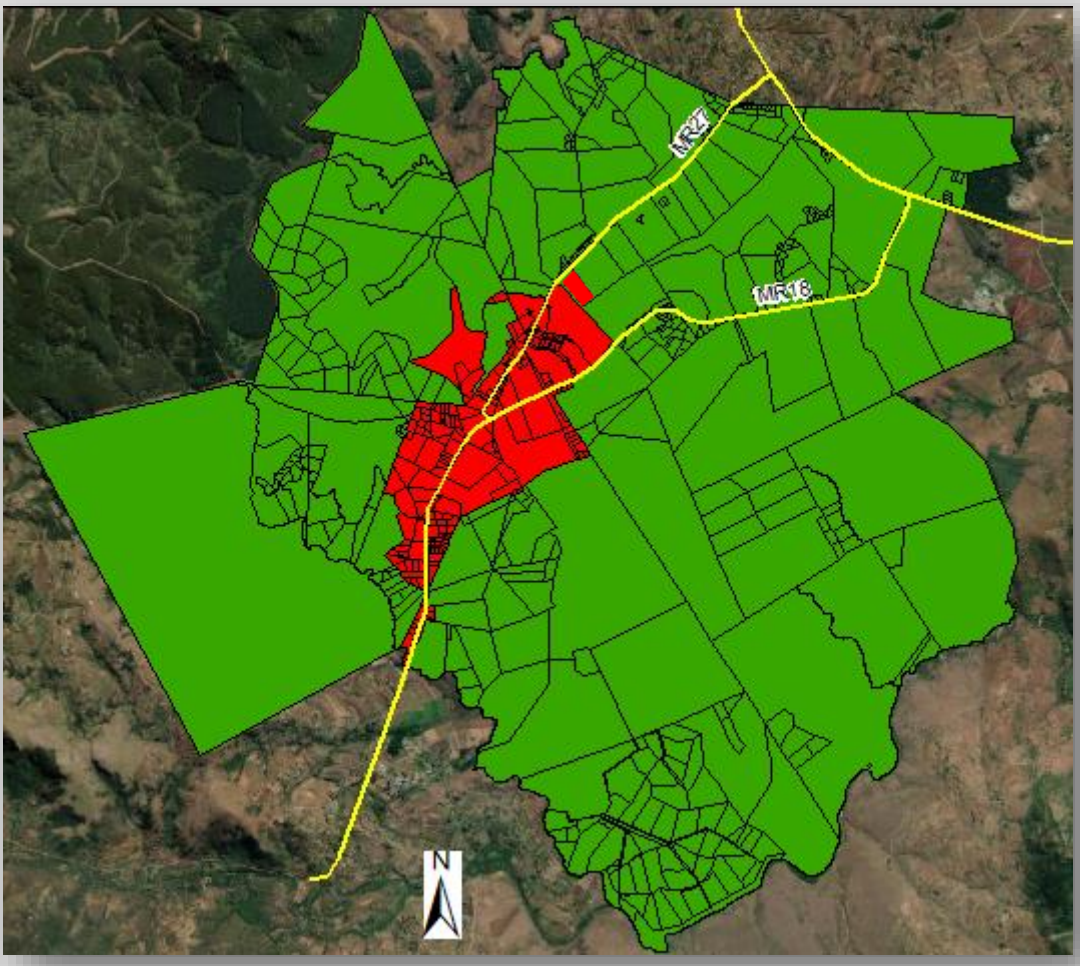
MALKERNS TOWN PLANNING SCHEME

2022 - 2032

STRUCTURE PLAN:
VOLUME II



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1.1 INTRODUCTION

A structure plan is informed by the situational analysis, whereby the relevant area's status quo is analysed and possible and sensible spatial and developmental conclusions are drawn in the form of implications for the spatial development plan. It also assimilates many components giving consideration to various elements that currently influence spatial form and would inform it in the future and proposes what, how and where development would be desirable. Section 1.3 outlines the physical planning implications from the issues discussed in the background study.

1.2 SCHEME DEVELOPMENT OBJECTIVES

To achieve vision for sustainable agriculture and urbanization in Malkerns, the following objectives should be met:

i. Strategic planning to provide for the long term security of the human and capital investment in agriculture as well as natural resources,
ii. Land use planning to provide for a balance between sustainable agriculture and other urban land uses.
iii. Recognition of the planning constraints to agriculture in achieving the identified vision.
iv. Facilitate development of the local area in an orderly and coordinated manner,
v. Provide expedient development control guidelines and regulations to guide potential investors, landowners, residents and decision makers in the process of development of the local area,
vi. Enhance the competitive advantage of the locality in terms of business development, commercial activities, agricultural development, tourism, social facilities and a well-defined, structured and developed urban form,
vii. Ensure environmental protection and conservation for sustainable local area development,
viii. The utilization of the local land and infrastructure in an efficient and effective manner,
ix. Create an effective management institution to manage the local area,
x. Link the area's development with all national and regional policies,
xi. Assess all current and future infrastructure and service needs,
xii. Create a conducive investment environment and a sustainable livable environment, and
xiii. Estimate cost of development, evaluation of financing options and phased implementation over the next 3-5-10 years.

1.3 PLANNING IMPLICATIONS AND SWOT ANALYSIS

This section will give a situational summary analysis of the Malkerns Municipality, which include strength, weaknesses, opportunities, and threats. This will give form to the physical elements proposed in the spatial development framework for the next ten years. The analysis is as per the diagram below.

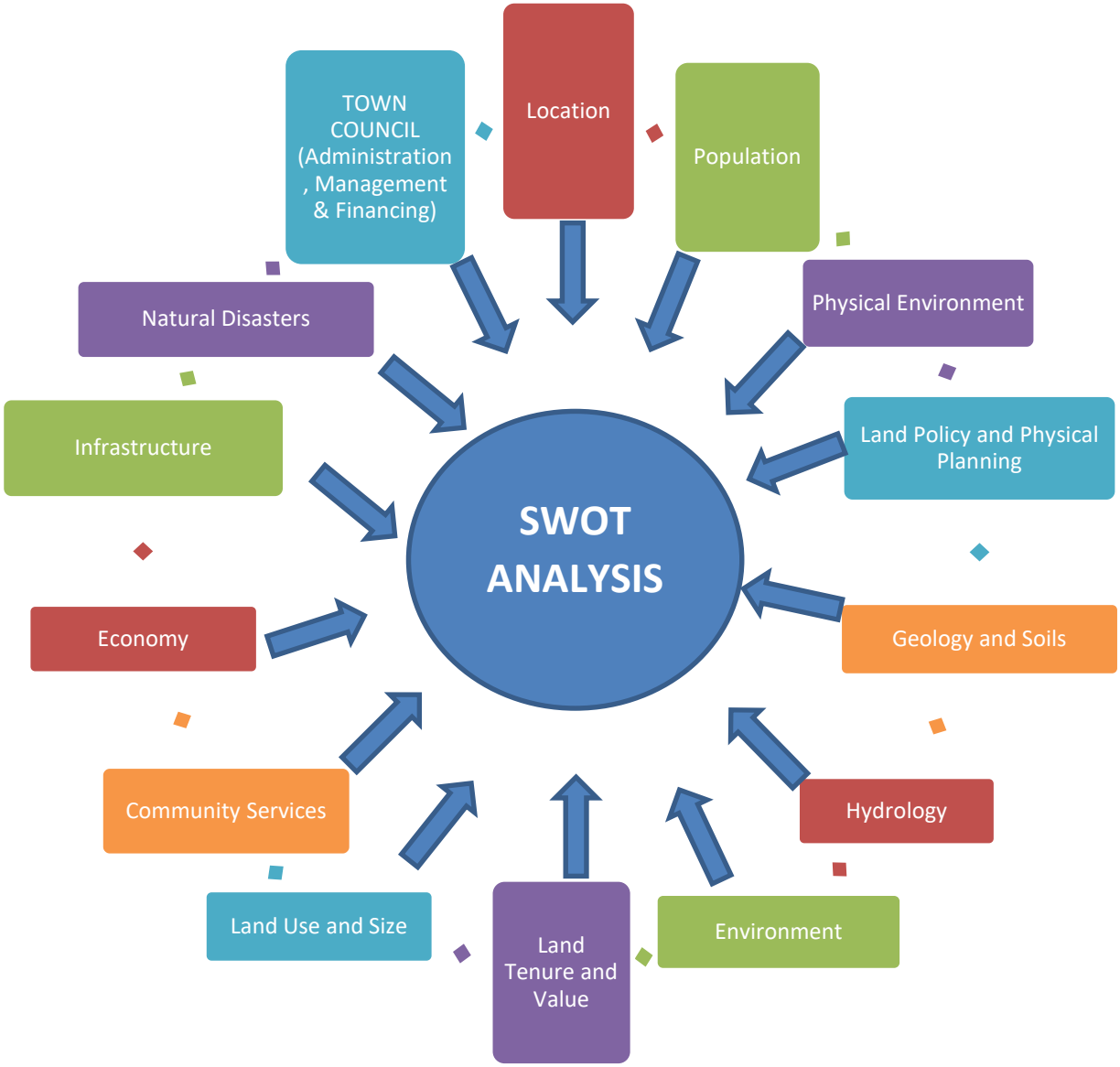


Table 1.1: Location

PHYSICAL PLANNING IMPLICATIONS Location	
• Malkerns is ideally located within the region of Manzini, making it investor friendly. The surrounding rural communities passing through the municipality create an attractive location for social and economic services and residential purposes. • The urban densification in Manzini, Mbabane and recently Ezulwini have prospective property owners looking at Malkerns and Mhlambanyatsi moving out of the busy areas. • Malkerns is easily accessible to all parts of the country and outside borders with South Africa and Mozambique all on tarred good roads. • Production in the municipality and sale of goods and services to other towns in the country and outside remains a prospect and advantage.	
STRENGTH	• Accessibility on tarred roads MR18, MR27 & MR103

	• Within 10km proximity to Mbabane/Manzini Corridor MR3 • Established local authority • Existing Commercial Agriculture area
WEAKNESSES	• Attracting investors in residential and commercial sectors rather than agriculture • Inadequate urban services and traffic passage
OPPORTUNITIES	• Provide services to surrounding areas • Take advantage of vehicular traffic for benefit of the municipality • Maintain roads and improve access
THREATS	• Increased traffic and accidents • Poor traffic management • Slowing traffic on Main Road due to urbanization

Table 1.2: Population

PHYSICAL PLANNING IMPLICATIONS **Population**	
Preferred Growth Scenario • Scenario 3 is the preferred population growth option where 11 000 people (inclusive of the present population) plus (20% leeway) people should be accommodated within the study area by 2035. Achieving an average plus a 20% leeway for the aforesaid scenarios is deemed to be a more sustainable solution to apply for purposes of planning in the municipality. It is therefore recommended that a population of 11 000 people be planned for. The delivery of engineering services should be phased accordingly and accommodate at least twice the population, given the potential day population of the municipality with improved services for the hinterland. The scenario should be utilised as a guide and will greatly depend on the level to which uncontrolled influx of people can be managed on the one hand, and the ability to deliver sufficient engineering services on the other. • The emphasis in Malkerns should be on upgrading the informal settlements. • Within the human settlement section of the municipality ongoing agricultural activities should be encouraged and services directed to settlement areas including those in the agricultural areas. The agricultural activities in the human settlement area should be rated under agriculture rating. • Rapid urbanization should be discouraged. • The working population for the municipality in 10 years is estimated at 11 000 and should be utilized for projections and calculating infrastructure and services demands for the municipality.	
STRENGTH	• Increasing population for services demands • Slow growth rate per annum
WEAKNESSES	• Low population and mostly in informal settlements • Low buying power
OPPORTUNITIES	• Provide requisite services and infrastructure • Plan for service delivery • Density has important benefits for both production and consumption, primarily because it lowers transport costs. In production, cities traditionally lower the cost of moving goods, people, and ideas.
THREATS	• Affordability of services • Low business success • Rapid and unplanned urbanization can also quickly lead to urban violence and social unrest.

Table 1.3: Land Policy and Physical Planning

PHYSICAL PLANNING IMPLICATIONS Land Policy and Physical Planning	
• The **declaration** and establishment of the Malkerns Town Council means all operations under the gazetted area will be managed by the local authority as provided by the Urban Government Act 1961. • **Building and development of structures** on individual plots/ farms will be guided by the Building and Housing Act 1968, as amended. Plans for intended buildings have to be submitted to the local authority for approval before construction. "*As Built*" plans will be required for existing structures. • **Land use** will be guided by the Town Planning Act 1961, which requires the preparation of a Town Planning Scheme with respective plots/farms development guidelines. • **Land or farm subdivision** (up to 4 plots) ceases to be handled under the Natural Resources the Subdivision of Land Act 1957 and will now be guided by the Urban Area (Subdivision) Regulations 1930 and current operational guidelines. Applications will be made through municipality to the minister responsible for local authorities. • Any **subdivision of land** for 5 or more plots will be made to the Human Settlements Authority as per the Human Settlements Authority Act 1992. • Payment of ***quitrent*** ceases and ***property tax (Rates)*** to the local authority are required pursuant to the Rating Act 1995.	
STRENGTH	• Town Management to bring order and decency • Eswatini Building (Grade II) Regulations, 1996 gives directive for upgrading of informal settlements
WEAKNESSES	• Difficulty of introducing controls on all operations of in the municipality and getting citizens buy in
OPPORTUNITIES	• Create a liveable and sustainable environment balancing urban and agricultural uses
THREATS	• Rating of agricultural land • Rapid urbanisation • Peri-urban rapid urbanisation creating an imbalance to the municipality's order and decency

Table 1.4: Physical Environment

PHYSICAL PLANNING IMPLICATIONS Physical Environment	
Climate, rainfall, temperature, flora and fauna • Good climate for living and agriculture. • Flat to gentle sloping with a few steep areas is good for development and agriculture. • Gentle slope is good for stormwater flows. • Flora is limited, indigenous vegetation areas are along rivers because most areas are agricultural and cropped this require a state of environment study in order to develop the environmental master plan. • Abundance of wetlands is good for open space and tourism • Fauna conservation at Mlilwane Game Reserve boosts the tourism sector in the Municipality.	
STRENGTH	• Good climate for urbanization and agriculture • Slope good for use of machinery and urban services • Stormwater flows direction to streams • Indigenous flora along river courses

	• Existence of wetlands • Mlilwane game reserve tourism facility
WEAKNESSES	• Some steep areas along river courses • Agricultural soil converted to urbanization
OPPORTUNITIES	• Conservation opportunities • Landuse management • Protection of wetlands • Development and use of solar energy • Storage of stormwater
THREATS	• Soil erosion • Water pollution form urban and agricultural activities • Urbanisation taking water from agriculture

Table 1.5: Geology and Soils

PHYSICAL PLANNING IMPLICATIONS **Geology and Soils**	
• Malkerns Municipality area is one of the areas in Eswatini which is predominantly comprised of the M set soils. Malkerns area soils are still used for agricultural purposes other areas like Ezulwini and eMtilane with such sets have been overcome by urbanization and limited land is available for meaningful agricultural activities. • It is therefore essential that the Malkerns agriculture potential is maintained and enhanced with urbanisation in a meaningfully controlled approach.	
STRENGTH	• Dominant fertile soils (M set) • Agricultural soils mostly under commercial farming • Area for urbanization excised from agricultural land
WEAKNESSES	• Agricultural activities not monitored concerning environmental impact. • Fallow land and not used for productive agriculture • Good agricultural land used for urbanisation
OPPORTUNITIES	• Management of agricultural land • Management and development control of human settlement area • Environment protection • Limit subdivision and structures on agricultural land
THREATS	• Informal settlements • Pressure for development of farms for tourism, business and residential purposes • Increased population

Table 1.6: Hydrology

PHYSICAL PLANNING IMPLICATIONS **Hydrology**
<u>Agriculture</u> • To avoid increased development in agricultural land, residential development and industrial developments should be directed to the human settlement zone. • No agricultural farms should be subdivided and sold without its appropriate quota of water. • With establishment of the local authority it will be essential that the Town Clerk also participates in the Malkerns Irrigation District activities.

- Given the water pecking order, rapid urbanization high density development should come with the extension of the water reservoir.
- Land not suitable for crop production may be suitable for livestock, grazing or other agricultural uses and should not be given automatic permission for development use without due diligence.
- Agricultural activities within the human settlement area should be allowed to continue and development concentrated in the human settlements area.
- The agricultural activities in the human settlement sector should be rated as such and agricultural activities allowed to expand where feasible.

Human Settlement

- The viable mode of operation adopted by the EWSC entails metered water connection to each house/unit/commercial stand. The corresponding sanitation system is a waterborne sewerage system. The proposed network should ideally be a ring feed. This will allow for maintenance with the least disturbances to the supply area.
- Using the projected population of 11 000 it is estimated that 5.5Ml reservoir is required with 24 hours' capacity or 11 Ml for 48 hours' capacity. *[EWSC standards are in volume 4: Development Code]*.
- Further studies at preliminary design would be required to determine the available water flows during extraction. This reservoir could be constructed in stages based on the demands and population increase rate.
- The option to keep the existing water treatment plant and expand the plant for future demand could be a possibility, provided the site is considered ideal to serve the whole municipality. The challenge will be to pump the water to the reservoir that will be needed to be located on higher elevation.
- It is estimated that a 11 Ml Wastewater Treatment Plant (WWTP) is required. The Treatment Plant could be constructed in stages based on the demands. The ideal location would be for the WWTP to be closer to the river at the lower levels. This will reduce the requirements for pumps stations.
- The establishment of proper human settlements with property boundaries is essential for determining the appropriate water services requirements and development standards. This is expensive for individuals, and for the informal sector it will be essential for the local authority to initiate a comprehensive upgrading (land /plots demarcation) and infrastructure (roads, water, sewerage installation) project in conjunction with the property owners, informal settlements residents, relevant stakeholders and the Government. The lack of government property in the municipality will pause some development challenges for the local authority.
- The Grade II Building Regulations and Building and Housing Act 1968 legislation provisions should be applied to ensure appropriate setback siting of septic tanks and pit latrines and prevention of further development on unsafe sites and environmental degradation.

STRENGTH	• Availability of water for irrigation • Canal servicing agriculture sector well • Financing of water infrastructure lie with EWSC
WEAKNESSES	• Canal water sometimes switched off at expense of urban sector with limited storage capacity • Urbanisation water should not come from canal water as Malkerns quota in Lusutfu river fixed • Urbanisation water limited
OPPORTUNITIES	• Improve storage capacity for agriculture and urbanisation use • Develop sewer facilities • Plan for water servicing human settlement area • Increase accessibility to water services • Storage and use of stormwater

THREATS	• Increased demand of water from human settlements activities • Reduced water availability for agriculture • Climate change with reduced water in rivers

Table 1.7: Environment

PHYSICAL PLANNING IMPLICATIONS **Environment**	
• The local authority has to have an environment masterplan and identify all critical areas which will need continuous monitoring especially water courses, wetlands, groundwater, soils, fauna and flora. This will be possible with cooperation of the property owners especially the farmers. • The effect of agricultural activities will need to be monitored in the long term to ensure environmental sustainability. • Roads without servitudes should be declared and have appropriately sized road reserves to enable development of stormwater drainage and location of other development infrastructure. • Wetland should be protected from all forms of development. • Upgrading of informal settlements should be a priority for the municipality to ensure the implementation of development control standards for safety and health. • There should be waste and waste water management programs to ensure environmental sustainability for the population. • The requirements of the Eswatini Environment Management Act 2002 and other related legislation should be adhered to for all prospective developments. • Sustainable agriculture should be practiced where feasible especially for the non-commercial farming community. • The development code should also provide options for environmental protection, health and safety both for the agricultural and urban sector. • Land requirements with regards to environment mainly pertains to provision of open spaces and refuse disposal sites. • The population of Malkerns does not as yet warrant development of a landfill site, so the arrangements with Matsapha municipality for refuse disposal should continue. • Open spaces will be provided within development, along environmental sensitive areas and water courses. • The need for a future central storage facility for refuse will be investigated when the need arises. • Public facilities zoned land will be available for the refuse storage infrastructure.	
STRENGTH	• Farmers conscious of wetlands protection • Some areas worthy of environmental protection • Bhamsakhe where young girls fetch reed during the Reed Dance ceremony is located along the Mdutshane River forming the boundary of the municipality with the Luyengo campus of the University of Eswatini.
WEAKNESSES	• Absence of municipality state of environment report • No identification of environment worthy protection areas • Poor refuse management • Poor septic tank and pit latrine monitoring and management
OPPORTUNITIES	• Prepare state of environment report with respective environment management requisite monitoring standards • Conserve and protect land and wetlands for tourism and ecosystem goods and services • Plants that are found in wetland areas provide economic livelihood to many women who make goods such as food mats, sleeping mats, bags, and baskets. • Prevent pollution from agriculture and urban services • Management of solid waste

THREATS	• Undetermined pollution from agricultural activities • Capacity constraints in implementing environmental standards

Table 1.8: Land Tenure and Value

PHYSICAL PLANNING IMPLICATIONS Land Tenure and Value	
• The Ingwenyama and Indlovukazi in trust for the Swazi Nation own at least 15% of the land by valuation which is not subject to rating. This is a significant figure which will need to be cushioned by the Government to support the municipality operations and avoid extra burden to the 85% property owners. This in necessary to ensure the viability of the municipality and its agricultural industry. • Government will have to purchase land from individuals and companies to enable its investment in the municipality. • The Town Council will have to work with Government, property owners and stakeholders with the aim to deal with the informal settlements upgrading and management. This is necessary to safeguard the prosperity of the municipality and to increase its attractiveness for investments. The process will also require the participation of the respective chiefs of the people in the informal settlements. • About 130 land parcels are below 0.9hectares and have residential establishment in the agricultural district, if such farm sizes expand this may overwhelm the ground water uptake by boreholes and contamination by septic tanks, and may require infrastructure service demands as the human settlement area. • The role of the municipality is to ensure that the attributes contributing to land value are protected and improved by the town planning scheme and its policies.	
STRENGTH	• Private farms and title deed land • Attractive land value
WEAKNESSES	• Land Concessions restrict upgrading informal settlements • No vacant Government land for municipal public services
OPPORTUNITIES	• Increase Government land by purchasing private property • Upgrade informal settlements. • Conversion of concession land with informal settlements into township and title deeds.
THREATS	• Informal sector affordability challenges • Delays in Politics of Converting Concerting Leaseholds • Town Council management capacity constraints

Table 1.9: Land Use and Size

PHYSICAL PLANNING IMPLICATIONS Land Use and Size	
• Separate from the agricultural area all land uses should be accommodated in the human settlement area as guided by the population and service standards.	
STRENGTH	• The municipality has an estimated total of 7406 hectares of farms sizes that are 20hectares and above. • Forty percent of the human settlement area is vacant.
WEAKNESSES	• Existing residential development in the Agricultural area. • Existing Conflicting uses such as the informal settlements in key commercial precinct of the Human Settlement area.
OPPORTUNITIES	• Introduction of Development control. • Introduction of Land districting and provision of service standards.

	• Protection of agricultural land from densification. • Plan for services delivery.
THREATS	• Conflicting land uses in agriculture area • Development pressure on agriculture area. • Pressure to further subdivide farms in the agricultural area. • Increase of development faster than infrastructure services.

Table 1.10: Community Services

PHYSICAL PLANNING IMPLICATIONS **Community Services**
Education: • Based on the population, the municipality is well provided with education facilities. • Land will need to be provided for internal school facilities such as sporting facilities and teachers housing. • Private school may acquire land within the Municipality which may be rezoned where necessary. • Expansion of schooling facilities within the agricultural area will be discouraged and strictly controlled. **Health:** • AMICAALL outreach clinic which include community based promotion, prevention and basic curative care. The Luyengo Government clinic which is type B is located on the southern boundary edge of the municipality along MR18. • Based on the standards for provision of health institutions, the Malkerns projected future population will require a type B Clinic. Future land needs will be accommodated and establishment of private health facilities will be dealt with on a case by case bases as advised by the Ministry of health. **Police Service:** • The police facilities will need to be upgraded to meet the demands for an expanding population and municipality. **Recreational Facilities:** • There is a need for land for the provisions of additional services for the different social groups of the population and schools. • Areas of active and passive open spaces should be provided to encourage population recreation. **Cemetery:** • No formal cemetery is located within the municipality. • Land should be identified for this service. **Public Transport Terminal and Public Market:** • The town does not have a well-planned public transport terminal and public market. The existing trend since inception of the town is that vendors have agglomerated in temporal structures within the key economic precincts at the Shoprite complex and major bus stops along major road MR27. **Local Authority Challenge:** • The limited government land in the municipality means funds will be required to acquire certain lands for some of the public facilities. • The local authority also has to ensure that development by the property owners accommodate land for public services provision by government. • The Land Concession 195L is prime land that could cater for some of the needed public facilities, however the delays is transferring ownership to government delays upgrading of the central business district.

STRENGTH	• Adequate provision of school facilities • Availability of police services
WEAKNESSES	• Poor sporting facilities for schools • No cemetery, public transport terminal, public market, clinic, parks, etc. • Limited vacant Government land to cater for required services
OPPORTUNITIES	• Identify land suitable for services • Plan for provision of required services • Management of services
THREATS	• Protracted leasehold land issues • Limited funding to acquire land for services • Limited funding to develop the required services.

Table 1.11: Economy

PHYSICAL PLAANINING IMPLICATION **Economy**	
• The upgrading of the informal settlement and establishment of formal townships is essential for the development of CBD of the municipality. • The development of the human settlement area of the municipality should be controlled in a pace that will enhance the agricultural nature of the municipality. The agricultural preeminence must be maintained and sustained appropriately. • The reliability of electricity for irrigation, industrial and administration activities should be improved to ensure the continued prosperity of the businesses. Engagements with EEC should enhance the power. • The effect of property rates on agriculture should be carefully studied and implemented to ensure that it does not impinge the agricultural development prospects. • Malkerns is ideally positioned to capture business from Mbabane – Manzini to service its hinterland, and this potential need to be developed. • The plan should provide plots for various uses including commercial, industrial, residential and recreational on the development sphere whilst the agricultural sphere should be dedicated to agricultural uses and limitation of human settlements development.	
STRENGTH	• Commercial agriculture for export and local services. • Employment opportunities in the agriculture sector. • Located on tarred roads and ease access to Manzini/Mbabane corridor. • Attractive for business development.
WEAKNESSES	• Large population employed in low paying farm activities. • Uncontrolled Informal sector.
OPPORTUNITIES	• Increase economic activities and employment. • Informal sector management. • Informal settlements upgrading. • Development control. • Provision of infrastructure services.
THREATS	• Uncontrolled informal sector. • Increased crime on agriculture activities. • Rates on agricultural land restricting productivity.

Table 1.12: Infrastructure

PHYSICAL PLANNING IMPLICATIONS **Infrastructure**

Electricity

- Electricity distribution is accommodated within the road reserves and this will continue to be accommodated as such.
- Demand for land for substation is limited and the company will negotiate with relevant property owner when required.
- The preparation of the town planning scheme should aid the company in its infrastructure planning.
- Proposed development are required to get EEC approval before being approved and this should ensure a seamless supply when project implementation occurs.
- Some commercial establishment complained on the unreliability of the supply in the municipality. This impinge on their operations and as such they have installed generators to ensure business continuity and sustainability. There is a need for the company to ensure the reliability of their supply to enhance the municipality's business prosperity and attractiveness for investments.

Telecommunications

- Telecommunication distribution is accommodated within the road reserves and this will continue as normal.
- Demand for land for specific infrastructure building structures is limited and the company will negotiate with relevant property owner when required.
- The preparation of the town planning scheme should aid the corporation in its infrastructure planning.
- Proposed development are required to get EPTC comments before being approved to ensure provision of required servitudes and this should ensure a seamless supply when project implementation occurs.
- The introduction of mobile communication drastically reduced the business of the fixed line but they remain important for most business operations and service costs are cheaper that the mobile networks.

Mobile Network

- Malkerns is sufficiently covered by the network and there is limited land demand with regards to its infrastructure. Service provider acquires the land they require for their infrastructure from respective land owners.

Solid Waste

Waste problems identified in the municipality include:

- Lack of a solid waste management system.
- Lack of enforcement of solid waste disposal regulations.
- Lack of landfill or waste disposal site in the municipality.
- Developing and maintenance of a landfill site is expensive and the local authority lacks the finance, population and expertise to justify its establishment.
- In the short to medium term it will be essential to identify land for a transfer station, where waste can be centrally stored whilst waiting for the weekly transportation to Matsapha as some industries like shopping centres produce wastes in bulk daily.
- Land will be identified for the facility whilst development in regards to waste management will be monitored as per the guidance of the solid waste management strategy.
- The skip services is vital for the informal sector and the house collections for the formally developed and farming areas.

Water and Sanitation

Water

- Water distribution is accommodated within the road reserves and along plot survey lines this will continue as normal.
- Demand for land for specific infrastructure building structures is limited and the company will negotiate with relevant property owner when required.
- The preparation of the town planning scheme should aid the corporation in its infrastructure planning.

- Proposed development are required to get EWSC comments before being approved to ensure provision of required servitudes and this should ensure a seamless supply when project implementation occurs.
- Water services connection to individual plots are made by property owners and developers provide all water infrastructure using ESWC standards.

Sanitation

- Further investigation is required in order to assess the sanitation services demand in the municipality
- The upgrading of the informal settlements should encompass the water and sewer infrastructure.
- Options should be worked out with prospective developers, current formal property owners and business (Malkerns Square, Swazican, etc) and Government and ESWC to provide sewer system in Malkerns to facilitate development as EWSC does not manage private sewer systems.
- Sewer lines are usually accommodated along plot boundary lines and ESWC shall identify the land and servitudes for such infrastructure once project identified. Land will be purchased as per project dictates and rezoned accordingly. No land will be zoned for this facility in the plan until after advise from EWSC.
- The Development Code and Building and Housing Act, 1968, as amended will give guidance on the development and location of pit latrines, septic tanks and soakaways in order to manage the sewage disposal and avoid environmental pollution.

Roads and Transport

- The Main and District roads are for connecting towns and side roads are essential to service the municipality and ensure the limited encumbrances of the main road. Limiting access and exit points on these roads will ensure the smooth flow of passing traffic.
- The establishment of the local authority means they will be responsible for maintaining the MR and D roads within their boundary.
- The status of the *public* and *undetermined* roads needs to be sorted out before they can be maintained by the local authority.
- The servitudes are access roads and the municipality will assume responsibility for their maintenance.
- It will be essential for the municipality to declare all their respective roads and facilitate necessary discussions with all stakeholders to ensure the public continuous access to infrastructure and facilitate proper maintenance and planning.
- Once the roads status has been sorted the municipality will have to make a maintenance program and identify funding source for program.
- Roads servitude sizes shall be provided by the road standards used in other municipalities in the country.
- Land should be identified for satelight public transport terminals around the town to accommodate for the different precincts.
- Pedestrian traffic improvement should be provided
- Railways services to utilize are in Matsapha

STRENGTH	• Availability of services • Demand for services
WEAKNESSES	• Inadequate services • Poor services in informal sector • Poor roads outside main roads • Most roads outside servitudes or right of ways • No roads management plan
OPPORTUNITIES	• Improve services provision • Provide suitable solid waste services in informal settlements • Formalize roads and prepare management plan • Management of services delivery • Establish bus rank, market, cemetery, civic centre, etc.
THREATS	• Limited capacity Town Council for services delivery

	• Budgetary limitations • Political challenges • Dispersed servicing areas

Table 1.13: Natural Disasters

PHYSICAL PLANNING IMPLICATION Natural Disasters	
• Natural disasters are on the rise and they continue to target the world's poorest and least-developed. The exchange of global and regional climate monitoring and prediction information is necessary. There is a need to mitigate the effects of droughts and floods through improved use of climate and weather information and forecasts, early warning systems; land and natural resource management, agricultural practices and ecosystem conservation. Planning, early warning and well-prepared response strategies are the major tools for mitigating the losses. • Appropriate water management systems in the municipality are essential to mitigate a drought situation. The water channels should be kept open to ensure continuous flow of stormwater downstream during heavy rains. • The increasing temperatures raises the fire risks. Fire breaks should be maintained throughout the farming community to reduce the potential of rapid spread of fire. There is a need for a fire management plan in the municipality and need of a fire station. Limiting the non-agriculture communities in the farms will also help ensuring farmers have responsibility over whole farming area. • The performance of the private lakes and dams in the municipality should be monitored and quarterly reports given to the local authority, where potential risks arise e.g. during heavy rainfall. • Floodplain areas will be identified in the municipality and zoned conservation areas. Standards shall be made to minimize impacts of natural disasters. There's no land requirement implications for natural disasters, but development standards should encompass prevention and protection from natural disasters.	
STRENGTH	• Limited flood plains • Limited disasters in municipality
WEAKNESSES	• No disaster preparedness plan • No disaster risk assessment • Soil erosion
OPPORTUNITIES	• Prepare disaster risk assessment in liaison with NDMA • Preparation of Disaster preparedness plan • Environment management and conservation
THREATS	• Climate change – drought, fire, flooding, etc. • Dams overspill • Health outbreak in the informal settlements

Table 1.14: TOWN COUNCIL (Administration, Management & Financing)

PLANNING IMPLICATION TOWN COUNCIL (Administration, Management & Financing)

• Some of the management positions are not filled which can be a hindrance to efficient service provision due to capacity limitations;
  o Town Treasurer (MHUD appointment)
  o HR Officer (vacant)
  o Agricultural Extension (vacant)
  o Town Engineer (vacant)
  o Town Planner (vacant)

• The town planning scheme will propose a development plan which will identify projects that will have to be incorporated in the IDP in order to be accommodated in the annual budget periods as per priority. • The total revenue and expenditure of the Malkerns Town Council will give a clear indicative of whether proposed projects in the development plan are within the local authority's financial capacity or external funding will need to be solicited in order to fund essential projects proposed by the TPS. • The introduction of wards will create a greater interest on development by constituents.	
STRENGTH	• Malkerns is town being upgraded to a Municipality and governed by a Town Council enables the powers of establishing of local authority tariffs, which is a positive aspect towards increasing the local authority's income.
WEAKNESSES	• The town council is not able in most cases to support itself financially or otherwise without reliance on external government funding or organisations. • The management of departments is not fully capacitated
OPPORTUNITIES	• Ensure that residents and property owners are informed and understand the principles of a Town Planning Scheme and Building Regulations –through workshops and other information platforms. • Place emphasis on the administrative and operational capacity of the Council in order to empower it in the implementation of the Town Planning Scheme's goals and objectives. • Formulate by-laws and systems in order to effectively manage development control in the Municipality.
THREATS	• Rate payers not complying with their obligation to pay rates and taxes. • Human capacity to effectively and efficiently carry out all public services might not be adequate due to financial constraints.

CHAPTER 2:

DEVELOPMENT GROWTH OPTIONS

2.1 DEVELOPMENT OPTIONS

Two development options become apparent when envisioning the development direction of the Municipality. Urban Inclusion, becoming part of the Mbabane - Manzini Development Corridor, entails primary focus on urbanisation and competing with other towns or an Agricultural Town in support of the urban corridor, retaining its agricultural role as a primary focus. As illustrated in *Figure 2.1* below, the options are opposing and it is essential a balance is achieved between them.

Figure 2.1: Development Growth Options

2.2 DEVELOPMENT OPTION 1 – URBAN INCLUSION

This option puts economic development above all else and seeks to achieve growth and development by tapping into the most obvious commercial source, viz. the Mbabane Ezulwini Matsapha Manzini Economic Development Corridor (MEMMDC). The corridor situated between Mbabane, Ezulwini, Matsapha and Manzini, connecting the administrative, industrial and commercial centres of Eswatini along one major transportation corridor (MR3) could provide new impetus for Malkerns.

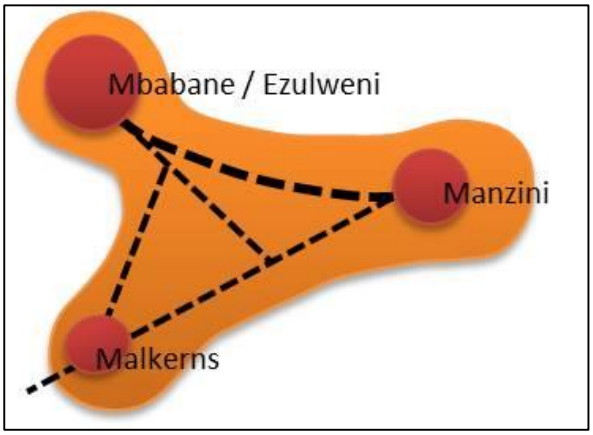


Figure 2.2: Development Growth Option 1

Malkerns is a sought after residential destination because of its beautiful environment, easy access and rural appeal. There is significant pressure especially in the farming areas to increase residential densities at the expense of agricultural activities. There is mention of lifestyle estates, rural-residential enclaves and satellite urban development. This scenario makes no attempt to retain the agricultural hinterland or agricultural sector. Residential, urban and economic development prevail. Such growth will invite social and infrastructure development and improve the urban environment as a whole. This growth if not adequately controlled will deplete the agricultural land, natural features and beautiful scenery.

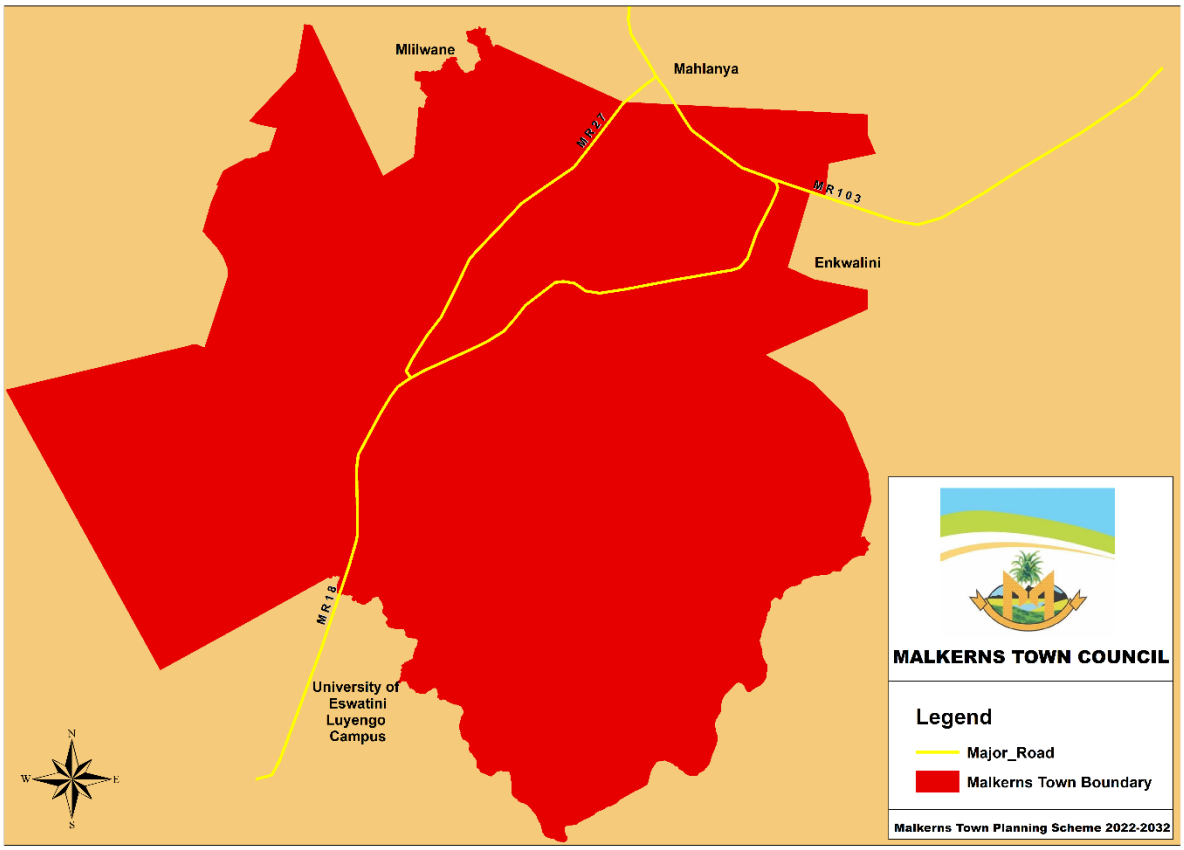


Figure 2.3: Entire Malkerns Town Boundary as an economic hub- Development Growth Option 1

2.3 DEVELOPMENT OPTION 2 – AGRICULTURAL TOWN IN SUPPORT OF THE URBAN CORRIDOR

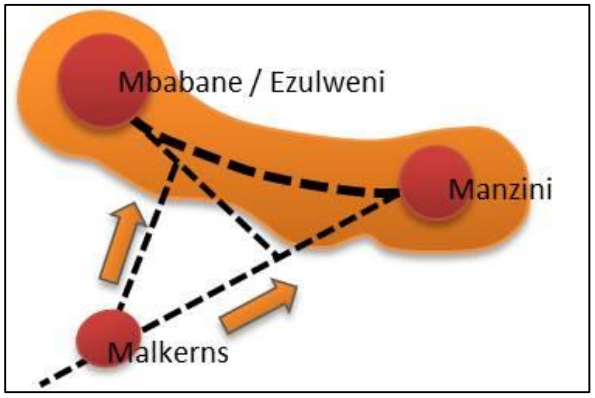


Figure 2.4: Development Growth Option 2

This option is less drastic than option 1, it seeks economic development whilst retaining the towns focus on agricultural as a primary role to sustain Malkerns in the long term. Economic development is a necessity, for the Town Council to develop its area, provide for its people and improve the quality of life and work opportunities. This option seeks to develop Malkerns as a fully-fledge agriculture town with its own role and function focused on its agricultural strength whilst benefitting from MEMM corridor benefits. The focus is to actively promote the agriculture and tourism sectors through incentives and to encourage agro-establishments to locate in Malkerns and for the corridor to absorb the overflow.

This option consolidates development efforts building on the strengths of the agricultural sector, expanding it where feasible and improving the urban environment without overly emphasizing urbanisation. Urban growth will only be accepted within the boundaries of the human settlement (urban) area.

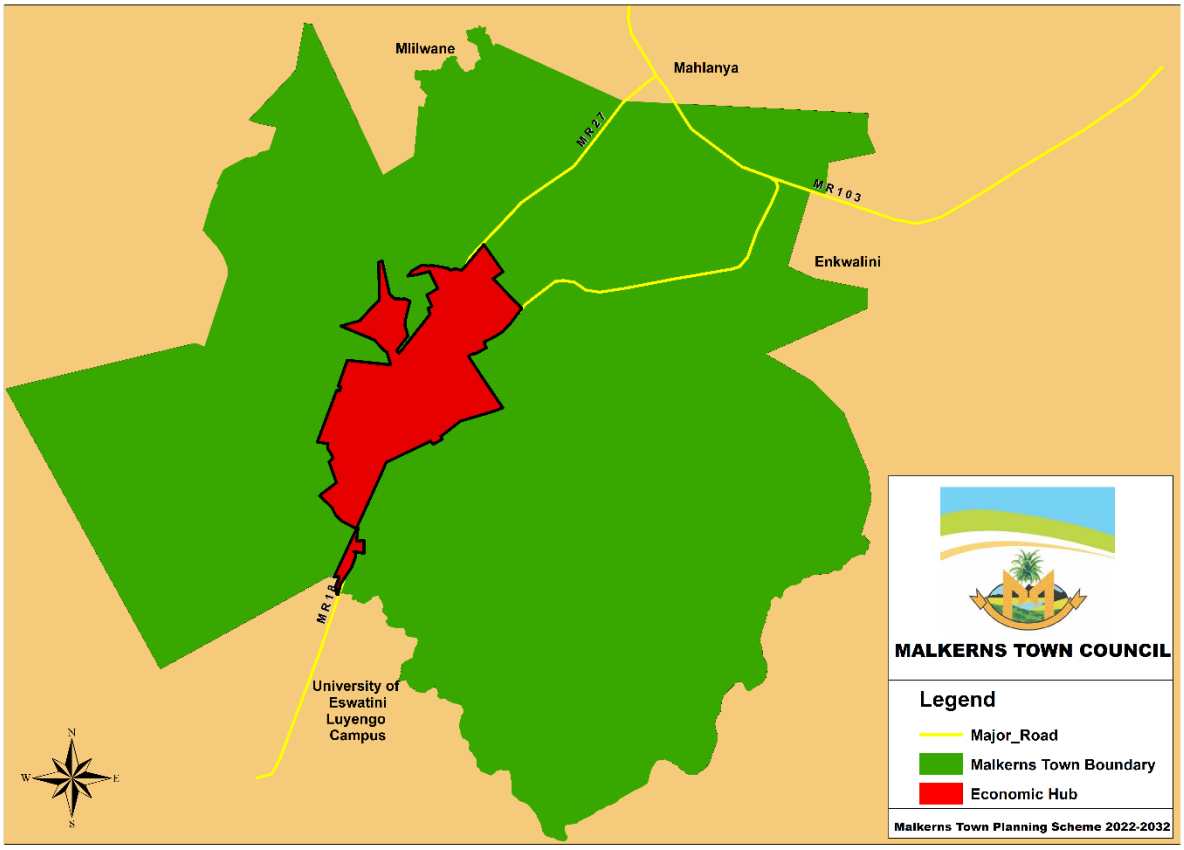


Figure 2.5: Malkerns Human Settlement Area as an economic hub – Development Growth Option 2

2.4 EVALUATION OF OPTIONS

This factors were utilised to evaluate the options:

- Community requirements;
- Status of the Town Council;
- History;
- Resource base;
- Locality (distance from main centres); and
- A SWOT analysis.

Table 2.1: Evaluation of Development Growth Options

Critical Factors	Development Option 1: Urban inclusion	Development Option 2: A Agricultural town in support of the urban corridor
Community Requirements	• The community requires economic growth in order to have its needs met. Growth in this option will be profound and will change the urban landscape, perhaps not immediately but certainly over the short to medium term. The community would like more work opportunities and improved social facilities and a wider scope of amenities. Improved engineering services and formal housing is also desirable. This growth option will draw more people to Malkerns and will increase the need for social, economic and engineering services beyond the needs of the prevailing community.	• The community requires economic growth in order to have its needs met. However, it has not specifically required major urban growth and development on farm land parcels and its needs are also not benchmarked at that level. Growth in moderation within the human settlement area will suffice for the community. The community requires improvement in work opportunity, services and amenities.
Status of the Town Council	• The Town Council will require much investment in infrastructure and services to, for one, improve the existing urban area and for another, to prepare the area of noteworthy influx, growth and development. With a growing urban area it will have a growing tax base, but only once infrastructure is established and charged for.	• The impact of growth of this option will be less severe on the Town Council than option 1 although it will still be quite demanding. Yet the Council will be able to handle this option better in the short and medium term than option 1.
History	• While history determines where Malkerns comes from it does not have to dictate where Malkerns is going. Malkerns can use its history as the basis on which to build and like many major cities evolve from its agricultural foundation into a stronger economic centre. The natural and agricultural environments will succumb to urban growth.	• History dictates that agriculture is important to Malkerns. It has shaped the town and forms the basis of its identity. Its history cannot and should not be ignored and should prescribe the future of the Municipality. This is even more important given that agriculture is a scarce and to be a protected resource.
Resource Base	• Urban growth will trigger other economic development which will progressively transform Malkerns into an urban development centre. Over time, which might only be in the medium to long term the town will expand and will encroach on the agricultural area. While this may affect the	• In this scenario agriculture, tourism and the environment will be Malkerns' resource bases upon which its future must be built. These resources work together to establish economic growth which support one another and upon which can be built to give a new and stronger identity to the Municipality and area.

Critical Factors	Development Option 1: Urban inclusion	Development Option 2: A Agricultural town in support of the urban corridor
	agricultural resource by then agriculture may have become a less important economic sector.	Agriculture will be used as the primary resource base to advance Malkerns. The Municipality will be the agricultural hub in the MEMM Development Corridor, and will therefore have to focus on agricultural activities.
Locality	• Ideally the Municipality should adjoin the MR3 to gain full and optimal access to the corridor. Nevertheless, being removed from it does not prohibit its development as a residential sub-node along the corridor. It may indeed provide ample space for future growth and infill towards the MR3.	• The Municipality is far enough from the MR3 to be isolated from it to protect its agricultural heritage and future, yet close enough to gain good access to it and the towns it accesses. It has a beneficial position. With the potential development of agro-businesses it is also near to facilitate good access and mobility for the transportation of agricultural produce.

Option 1 will bring about stronger transformation than option 2, but along with it there would be more economic growth and employment opportunities. However, option 1 moves away from the history, foundation and primary agriculture resource. Option 2 does not negate urban development rather proposes a managed and controlled urban environment.

CHAPTER 3:
STRUCTURE PLAN PROPOSALS

3.1 PLANNING PRINCIPLES

VISION:

An innovative high-tech agro-tourist town which is environmentally and economically sustainable in Southern Africa.

MISSION STATEMENT:

Provide quality urban and agro-tourist services through ecologically sensitive technology, ensuring sustained growth and development by partnering with stakeholders.

Taking into consideration of all the above issues, including the current water and electricity services all the land uses shall encapsulate the following principles:

i. ***Healthy Living Environment****:* Land uses such as Open Space Areas and Public Facilities (libraries, recreational areas, etc.) intent to ensure wholesome communities.

ii. ***Safety****:* Certain Land Uses are harmful to public health and safety and should be positioned where they can be controlled. These include utility services such as solid waste landfill areas, sewerage ponds, cemeteries, etc. Other land uses such as light industrial uses could be a nuisance (noise, pollution, etc.) and should be separated from sensitive areas such as residential and recreational / tourism areas.

iii. ***Conservation:*** Certain environmentally sensitive and pristine areas, river courses, dams as well as historical buildings need to be conserved for future generations and at the same time provide relief from continual development within the local area.

iv. ***Order:*** An effective land use arrangement to ensure a harmonic, organised and logical agriculture and urban setting. Non-compatible land uses shall be separated, thus protecting residents, as well as property values and integrity of agricultural activities.

v. ***Amenity & Convenience****:* Provision and proximity of required facilities and services to ensure the perception of safety, comfort and convenience within specific residential or business areas.

vi. ***Efficiency and Economy:*** Cost *e*ffective Land Use and Management to maximise the use of Infrastructure.

vii. ***General Welfare:*** Good land use management to benefit the whole community - resident, entrepreneur, business or visitor - through the creation of a conducive environment for home, work, play and conservation by ensuring adequate provision, linkage and coordination of all the necessary services and facilities and good character of each respective district.

The spatial framework proposals have been structured to accommodate the following aspects of land uses and services:

1) Residential Sector Development

2) Economic Sector Development
3) Social Services and Utility Services
4) Open Space Development
5) Conservation
6) Tourism Sector
7) Land Subdivision
8) Road Hierarchy Development

A Spatial Development Map is also provided with all the eight (8) components

3.2 SPATIAL DEVELOPMENT FRAMEWRK

MALKERNS TOWN COUNCIL

MALKERNS SPATIAL DEVELOPMENT FRAMEWORK

LEGEND

SOCIAL SERVICES
- Schools
- Religous Facilities
- Juvenial Prison
- Civic Offices
- Community Hall
- Satelite Busrank
- Government Offices
- Public Market
- Firestation
- Clinic

UTILITY INFRASTRUCTURE SERVICES
- Cemetary
- EEC station
- SPTC
- MPWT
- MOA research
- EWSC plant
- Solid waste transfer station
- Bulk Sewerline
- Future Tar Road
- Future ByPass Road

OPEN SPACE DEVELOPMENT
- Environmental Sensitive Area
- Parks, Gardens etc,
- Public Sporting Facilites
- Stadium

RESIDENTIAL SECTOR
- Low Density Residential
- Meduim Density Residential
- High Density Residential
- Informal Settlement Upgrading
- Private Informal Settlements Upgrading

CONSERVATION
- 30m-50yr Floodline
- Historical Heritage
- Nature Reserve

ECONOMIC SECTOR
- Commercial Corridor
- Industrial Corridor
- Commercial Precinct
- Commercial Core
- Industrial Precinct

FARM SUBDIVISION
- No further Subdivision
- Subdivision permitted

TOURISM SECTOR
- Existing Tourism Acitivity
- Tourism Potential
- Tourism-Sensitive Habitats

1:15 500

Coordinate System: Swaziland
Projection: Transverse MercatorCape

0 0,45 0,9 1,8 2,7 Kilometers

Vol II: SPATIAL DEVELOPMENT FRAMEWORK

Malkerns Town Planning Scheme 2022-2032

3.3 RESIDENTIAL SECTOR DEVELOPMENT

3.3.1 Introduction

Research suggests that urban population densities beyond the limit of central business district decline exponentially with distance from the centre of the city, this hypothesis is relevant for Malkerns, due to the designation of human settlement in the core of the Municipality which is 584 hectares and agricultural area 8452 hectares.

When making residential density proposals we are cognisant that rapid urbanisation can be caused by the explosion of industrialization and manufacturing enterprises within a certain urban area which gives rise to more employment opportunities. With Malkerns being an agricultural town in nature rapid urbanization can be bad because intensive urban growth can lead to greater poverty, with local governments unable to provide services for all people, some of the services include affordable housing.

Areas of higher residential density are often exposed as very 'liveable' places because, when well planned, they offer benefits such as: a variety of housing options, walkable neighbourhoods, easy access to transport options and shops, and access to employment. However, when areas for non-residential land uses are over-allocated, this can have the unintended impact of undermining the very urban advantages that higher net residential densities were intended to provide.

Human capital is an important determinant of economic performance. An economy's stock of knowledge, talent and creativity determines its ability to increase productivity, innovate and sustain growth. The type, price and quality of housing can have a significant impact on the attractiveness of cities to different types of workers. Where expansion of the housing stock fails to keep up with demand, affordability pressures can price existing employees out of the area and discourage new ones from moving in.

A flexible housing system one with adequate supplies of a range of housing, including high quality rental stock -can be essential to sustaining growth and labour market mobility. Housing investment needs to be carefully planned alongside a high quality local environment, public realm, accessibility and social and community infrastructure if it is to have a positive economic impact.

3.3.2 The Residential Sector Development Proposal –Vol II Map 1

The structure plan proposes a low density in the agricultural area and a medium to high density in the human settlement area, in order to balance allocation of other land uses and residential uses it is proposed that 65% of the human settlement area should be allocated to the residential uses which is 379.6 hectares. This proposal has potential to produce 9 686 dwelling units and a population size of 38 647. The following type of densities are proposed for the municipality and table 3.1 outlines dwelling units and population generated by the proposed residential densities:

a) Agricultural low residential density establishments in the agricultural area on the 8452 hectares;
b) Medium residential density in the human settlement area on 80% of 379.6 hectares; and
c) High residential density in the human settlement area on 20% of 379.6 hectares.

a) Agricultural low residential density establishments in the agricultural area on the 8452 hectares:

This category consists of two (2) dwelling units per land parcel. The agricultural area consists mostly of large operational farm size land parcels and the major aim is for families to have homes within their farms. Proposing higher residential densities will result into a conflict of farming practices and residents

thus resulting into the extinction of all types of husbandry. This proposal estimates that the future population will be 3495 with 876 dwelling units.

b) High Density Residential in the human settlement area on 80% of 379.6 hectares:

about 303.68 hectares is reserved for medium residential density establishments. This density category consists of a residential density of 26 dwelling units per hectare, its main aim is to accommodate upgrading of informal settlements and formal residential settlements without creating a sprawl town. Since 584 hectares of Malkerns is the human settlement area the main goal is to maximise development in a sustainable approach. This means the proposed residential densities will have to allow for relevant increased population growth for cost *e*ffective land use that maximises the use of Infrastructure. Thirty-eight percent (38%) is for the upgrading of informal settlements and sixty-two percent (62%) for private residential establishments. This residential density category has the potential to produce an estimated future population of 26 529 with 6 649 dwelling units.

c) High Rise Residential density in the human settlement area on 20% of 379.6 hectares:

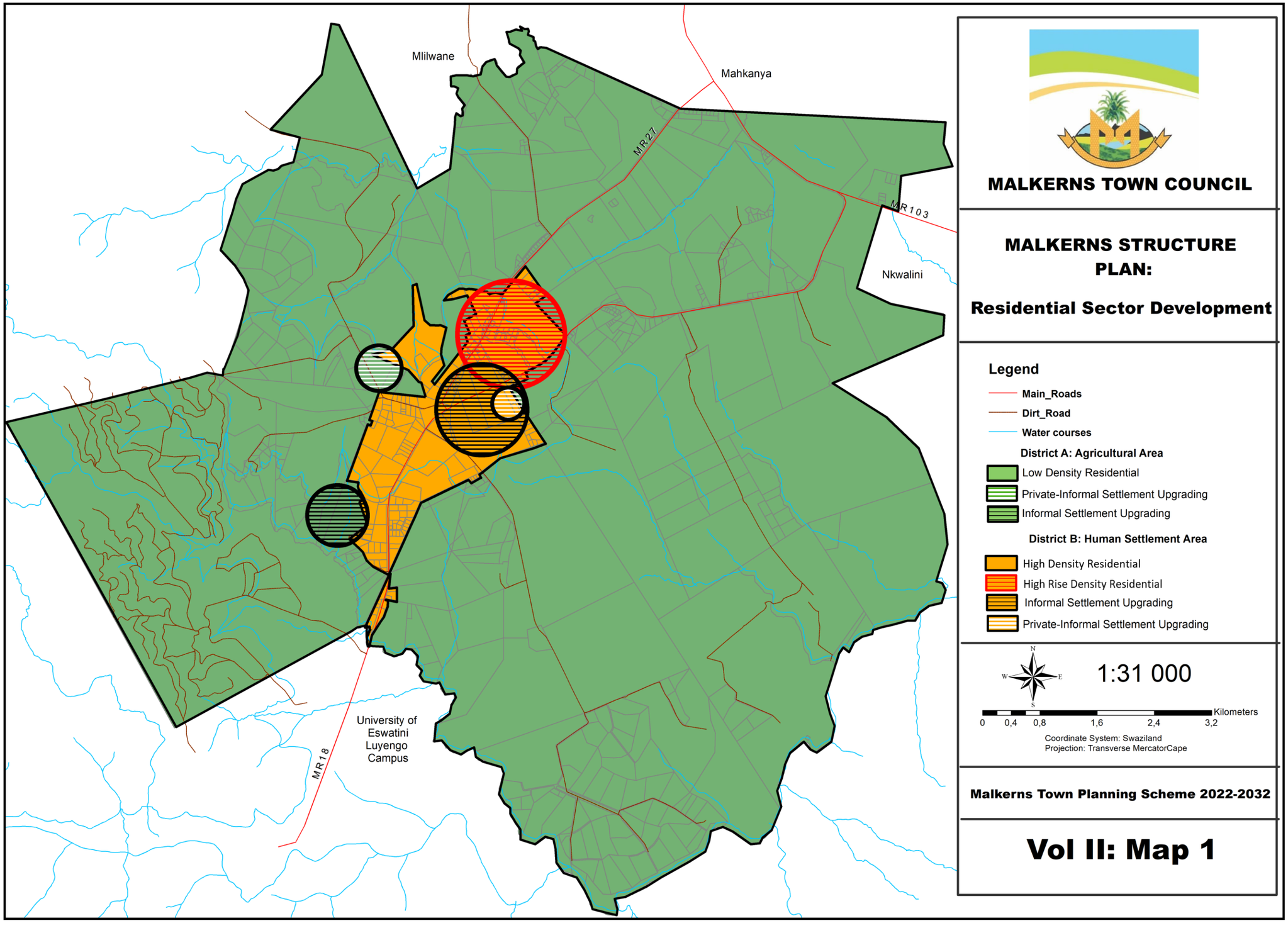
About 76 hectares will be allocated for high residential density establishments which has a potential to produce an estimated 3037 dwelling units and population of 12 118.

Table 3.1: Dwelling units and Population Generated by The Proposed Residential Densities

AGRICULTURAL AREA				
RESIDENTIAL DENSITY PROPOSED	**NUMBER OF DWELLING UNITS PER FARM PARCEL**	**NUMBER OF LAND PARCELS**	**TOTAL DWELLING UNITS ON AGRIC AREA**	**ESTIMATE POPULATION WITH 3.99 FAMILY SIZE**
Agricultural Low Density Development	2 dwelling units per farm parcel	438 farm parcels	876 dwelling units	3495 population
HUMAN SETTLEMEMT AREA				
RESIDENTIAL DENSITY PROPOSED	**NUMBER OF DWELLING UNITS PER HECTARE**	**ALLOCATION WITHIN THE HUMAN SETTLEMENT**	**TOTAL DWELLING UNITS ON 65% HSA**	**ESTIMATE POPULATION WITH 3.99 FAMILY SIZE**
High Density Residential	25 dwelling units per hectare	115 hectares	2875 dwelling units(upgrading project)	11 471 population
	20 dwelling units per hectare	188.68 hectares	3774 dwelling units (private land)	15 058 population
High Rise Density Residential	40 dwelling units per hectare	75.92 hectares	3037 dwelling units	12 118 population
TOTAL			**9 686 dwelling units**	**38 647 population**

3.3.3 Infrastructure Requirements for Residential Sector

In order actualise the urban growth proposal in a sustainable way, this proposal will require sewer infrastructure and upgraded water reservoir. The local authority will stage this growth by making development controls in the development code which will consider the existing infrastructure as well as the upgraded infrastructure. The main aim is to prevent over saturation of septic tanks systems which can negatively impact groundwater as well as compromised the health of the ecosystem. The proposal does not want to suffocate the water supply as it is currently being consumed for agriculture and human settlement, an external water supply is required.



MALKERNS TOWN COUNCIL

MALKERNS STRUCTURE PLAN:

Residential Sector Development

Legend

- Main_Roads
- Dirt_Road
- Water courses

District A: Agricultural Area

- Low Density Residential
- Private-Informal Settlement Upgrading
- Informal Settlement Upgrading

District B: Human Settlement Area

- High Density Residential
- High Rise Density Residential
- Informal Settlement Upgrading
- Private-Informal Settlement Upgrading

N W E S

1:31 000

0 0,4 0,8 1,6 2,4 3,2 Kilometers

Coordinate System: Swaziland
Projection: Transverse MercatorCape

Malkerns Town Planning Scheme 2022-2032

Vol II: Map 1

3.4 ECONOMIC SECTOR DEVELOPMENT

3.4.1 Introduction

The declaration of Malkerns into two districts (agriculture and human settlement) was to enable the continuation of agriculture whilst economic development and structures expand within the human settlement district.

When making economic growth proposals we need to understand that urbanisation results to large numbers of people permanently concentrating in small areas in cities as a result of industrialisation and manufacturing enterprises which give rise to more employment opportunities. The type of economic development will attract the relevant income group.

Malkerns history of bad rapid urbanisation was a consequence of the establishment of Rhodes Food Group fruit factory. This rapid urbanisation created an explosion of large number of people (low-income group) permanently concentrating in the human settlement area in an unplanned manner, thus compromising the order, health and general welfare of the citizens in the town.

When proposing the economic sector growth, we need to acknowledge the available type of housing available within the Municipality (*fig. 3.1*). Map 1 of Vol 2 has proposed 2475 low-cost housing units which largely consists of the existing informal settlements 1828 dwelling units, and a growth leeway of 647 dwelling units with a population of 11 471. This information is crucial in considering the type of industries that need to be proposed within the context of Malkerns.

We need to learn the lesson of Matsapha industrial town which gave priority employment opportunity to low-income group however with no low-cost housing plan, consequently this caused the explosion of informal high density residential establishments on the periphery of the Municipality.

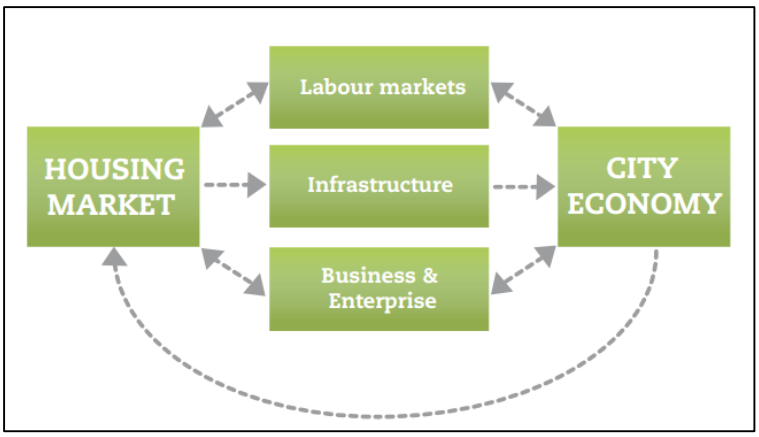


Figure 3.1: Housing markets and city economies

3.4.2 The Economic Sector Development Proposal –Vol II Map 2

Malkerns' economic sector development proposal will be proposed according to the two districts agricultural area and human settlement area.

a) Agriculture Development Area

This district will primarily cater for all husbandry establishments, the Agricultural Policy/Guideline which accompanies the town planning scheme realises that in order to meet operation distance/setback

requirements the land parcels within the agricultural area must be categorised into farms below 20hectares and farms above 20hectares.

- *Farms below 20 hectares:* will be capable of performing small to medium scale crop and animal husbandry.
- *Farms above 20 hectares:* will be capable of performing small to large scale crop and animal husbandry.

The work force for agricultural sector will reside within the human settlement area, as it is within close proximity.

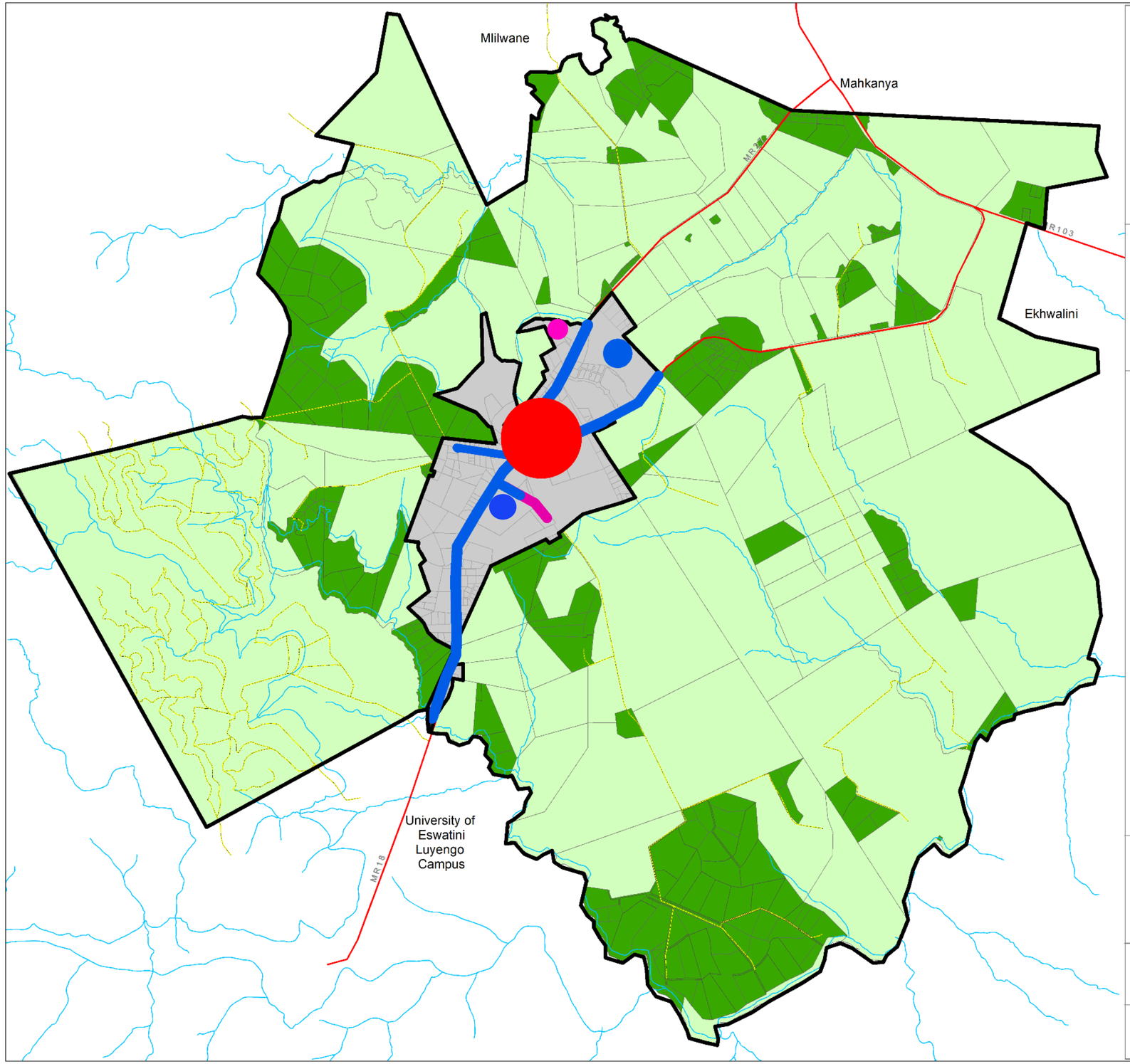
b) Human Settlement Development Area

The human settlement area is intended to accommodate most of the development within the Malkerns area relieving the pressure on agricultural land. The economic sector will cover 30% of the 584 hectares of the human settlements which is 175.2 hectares. The activity intensity of the 175.2 hectares will determine the infrastructure requirements and work force population. It is projected that there will be a 40% increase on the existing 6150 employees. The five (5) type of economic categories proposed on map 2 are:

i. *Commercial Core*: this category proposes commercial services such as shops, offices, retail, medical services and other related commercial uses of high intensity.
ii. *Commercial Precinct*: this category proposes offices, cooperate and financial institutions, shops and related and compatible services.
iii. *Commercial Corridor*: this category proposes mixed used establishments along the MR 18, D52, D9 & MR 27 roads which consisting of retail, residential, offices, or social or other related / compatible land uses in support of the urban environment.
iv. *Industrial Precinct*: this category proposes that the existing Fruit Canning Factory (RFG) be the main anchor of the town and no other heavy industries be established in the Municipality.
v. *Industrial Corridor:* this category proposes general and service industrial establishments in support of the commercial, residential, and agricultural sector along the D9 road.

Table 3.2: Economic Sector Land Allocation

Economic Development Category	Land Allocation Size	Land Allocation Percentage
i. Commercial Core:	70ha	40%
ii. Commercial Precinct:	43 ha	24.5%
iii. Commercial Corridor:	45ha	25.5%
iv. Industrial Precinct:	11.6ha	7%
v. Industrial Corridor:	5.6ha	3%
TOTAL	**175.2ha**	**100%**



MALKERNS TOWN COUNCIL

MALKERNS STRUCTURE PLAN:

Economic Sector Development

LEGEND

- Main_Roads
- Dirt_Road
- Water courses

DISTRICT A: AGRICULTURAL DEVELOPMENT AREA

- 20ha -above Farms -Small-Large Crop & Animal Husbandry
- 0ha-19.999ha Farm -Small-Medium Crop & Animal Husbandry

DISTRICT B: HUMAN SETTLEMENT AREA

- Commercial Corridor
- Industrial Corridor
- Industrial Precinct
- Commercial Precinct
- Commercial Core

1:31 000

0 0,45 0,9 1,8 2,7 3,6 Kilometers

Coordinate System: Swaziland
Projection: Transverse MercatorCape

Malkerns Town Planning Scheme 2022-2032

Vol II: Map 2

3.5 SOCIAL SERVICES AND UTILITY SERVICES

3.5.1 Introduction

Infrastructure is defined as activities that provide society with the services necessary to the quality of life of its citizens, therefore it plays a vital role in shaping the quality of life of societies. Infrastructure services helps to reduce poverty and improve living standards through bringing out a strong positive relationship between the level of town planning development and available infrastructure services.

Infrastructure services are categorized in; (1) economic and physical services grouped into "Hard" infrastructure refers to the large physical networks necessary for the functioning of a modern industrial nation, whereas "soft" infrastructure refers to all the institutions which are required to maintain the economic, health, and cultural and social standards of a country, such as the financial system, the education system, the health care, the system of government, and law enforcement, as well as emergency services. Changes in the technology, access and demand for these services imply a re-thinking of models of service provision to include rural-peri-urban boundaries.

Social infrastructure can be a focal point for community activity and also a place for people to meet and connect. The role of social infrastructure lies in that it is a catalyst in enhancing social cohesion and sense of belonging. Therefore, it is important to think now about how social infrastructure can meet the high demand by population in and around the city center, and the best location of these facilities and services.

The provision of social infrastructure must be appropriate at all of spatial scales from neighbourhood to town scale. Sustainable and successful neighbourhood requires the distances people have to walk to access daily facilities within 10–20 mins walk (800–1600 m) of the majority of homes, as well as the presence of a sufficient range of such facilities to support their needs, and spaces where a variety of activities can be taken place.

Table 3.3 draws up the list of some social infrastructure facilities and services that provide favourable and secure conditions of life and comfort of the urban environment. Additionally, it is anticipated that changes to population density will place new demands on the existing social infrastructure network, therefore an increased density in population will create increased demand 'soft' social infrastructure activities for communities.

Table 3.3: The list of social infrastructure and services

Services	Measurements
Education and Culture centres	Primary School Cultural institutions and library
Health centres	Hospital Primary medical Centre Civil defense
Recreation spaces	Playgrounds, parks, emergency services, open spaces
Public institutional buildings	Police center. ….. .etc
Public services	Bus stations, Mosques, churches Commercial markets establishments

3.5.2 Social Infrastructure Services

The Malkerns social services proposals was done using table 3.5, taking into consideration the population projection of 38 647. As much as the plan projects a 11000 population for the next ten years, for the purposes of this plan, social services will be proposed to meet the development potential projected especially using the residential densities proposal which proposes 9 686 dwelling units and a population size of 38 647. The table below outlines some key social infrastructure services that are needed to meet the future growth of the human settlement area:

Table 3.4: Proposed Social Infrastructure Services

FACILITY	*EXISTING*	*PROPOSED*	*COMMENT*
EDUCATIONAL FACILITIES			
Crèche	11	4	This facility will be developed by private entities, the establishment of townships in the human settlement area will entail the accommodation of such facility, existing homes along the MR18 & MR27 may obtain rights upon meeting standards.
Primary School	7	7	This facility will be developed by private entities, within the human settlement area, within set standards and regulations.
Secondary/High School	4	3	This facility will be developed by private entities, within the human settlement area, within set standards and regulations.
HEALTH FACILITIES			
Day-Hospital	0	1	This facility will be developed by partnership of national and local government within the human settlement area. Private entities may develop private hospital within the human settlement area, within set standards and regulations.
SOCIAL FACILITIES			
Library	0	5	This facility will be developed by local government and others private stakeholders.
Community Centre	0	2	This facility will be developed by local government within the human settlement area or it can be linked to Civic offices.
Sports facility/ Stadium	0	1	This facility will be developed through PPP within the human settlement area, upon meeting set standards and regulations.
Place of Worship	24	N/A	This facility will be developed by private entities within the human settlement area, upon meeting set standards and regulations.
PUBLIC SERVICE FACILITIES			
Post Office	1	0	The existing facility can be extended within the existing premises to service the population.
Police Station	1	0	The existing facility can be extended or alternative stations established based on demand, this is national government's role, best locations are within the human settlement area
Fire station	0	1	An emergency fire truck can be located with the police-station, however when the development of

			the town riches 50% of the proposed residential and commercial densities it would be crucial to evaluate the need for a fully fleshed fire station.
Public Transport Terminal- public toilets	0	2	Two Satellite public transport terminals can best service the town, are to be located within a feasible location which will not create sprawl of the human settlement area. The following amenities should be provided as a minimum at the facilities: • Loadings bays • Ablution facilities • A management office • Covered waiting and loading areas • Trading spaces • Lock up bicycle parking to support and encourage cycling • A central waste facility in addition to the refuse bins across the site • Soft landscaping and trees
Public markets	0	4	Four public markets can be developed according to the demand.
AMENITIES			
Sports Field-Higher order Open Space	3	3	This facility will be developed by local government within the human settlement area, upon reaching a 30% of the proposed residential dwelling units. The aim is to provide formal recreational facilities, sports fields, etc
Public Open Space-Lower order Active Open Space	0	46	The aim is to provide neighbourhood parks, picnic areas, children play areas, etc. neighbourhood parks and playgrounds should ideally be accommodated at nodes where neighborhoods centers are accommodated, thereby ensuring visitation and thus motivate the demand for maintenance and equipping of these parks.
COLLECTIVE SERVICE POINTS			
Public Water Stand Pipe			Base on proposal standards will be utilised
Communal Toilets			All public, facilities, amenities and buildings shall have communal toilets to meet public health standards.
Solid waste Collection point	9	1	The existing system consists of skip bins and a recycling station. The proposal is for a 2ha solid waste transfer station which may be located on remainder of portion A of farm 286.

Based on a population of 11 000 for the next ten years primary and high schools, sports fields, police station, post office, places of worship are sufficient and meet the population needs of 11 000 people. If development is actualised within the ten years and the population has increased further than the 11 000 to 38 647, table 3.4 has proposed growth in the relevant social services.

Table 3.5: Public Facility Space and Threshold Standards

FACILITY	*DU/FACILITY*	*POP/FACILITY*	*HA/FACILITY*

Educational Facilities			
Crèche	900	5 000	0,013
Primary School	600	3 300	0,500
Secondary/High School	1 200	6 600	1,00
Health Facilities			
Mobile Clinic	900	5 000	N/A
Clinic	900	5 000	0,200
Day-Hospital	1 800	10 000	0,500
Community Hospital	14 500	80 000	1,500
Social Facilities			
Mobile Library	350	2 000	N/A
Library	1 800	10 000	0,013
Community Centre	4 000	22 000	0,500
Sports facility/ Stadium	9 000	50 000	3,000
Place of Worship	N/A	N/A	0,150
Public Service Facilities			
Mobile Post Office	2 000	11 000	N/A
Post Office	2 000	11 000	N/A
Mobile police Station	4 500	25 000	N/A
Police Station	4 500	25 000	0,300
Fire station	11 000	60 000	1,200
Amenities			
Sports Field	1 400	7 700	0,600
Public Open Space	182	1 000	0,050
Collective Service points			
Public Water Stand Pipe	25	140	N/A
Communal Toilets	20	110	N/A
Solid waste Collection point	250	1 400	N/A
Public Telephones	3 000	16 500	N/A
Post Collection points	3 000	16 500	N/A

Source: National Development Code, 1999

Table 3.6: Public Facility Accessibility Standards

FACILITY	*DISTANCE (M)*	*WALKING TIME (MIN)*
Educational Facilities		
Creche	1 000	20
Primary School	1 500	30
Secondary/High School	5 000	N/A
Health Facilities		
Mobile Clinic	1 000	20
Clinic	1 000	20
Day-Hospital	2 000	40
Community Hospital	5 000	N/A
Social Facilities		
Mobile Library	1 000	20

Library	1 500	30
Community Centre	1 500	30
Place of Worship	1 500	30
Public Service Facilities		
Mobile Post Office	1 000	20
Post Office	2 000	40
Mobile police Station	1 500	30
Police Station	1 500	30
Collective Service points		
Public Water Stand Pipe	100	2
Communal Toilets	75	1,5
Solid waste Collection point	150	3
Public Telephones	500	10
Post Collection points	500	10

Source: National Development Code, 1999

3.5.3 Utility Infrastructure Services

These 'hard' infrastructure are important for the service of the town:

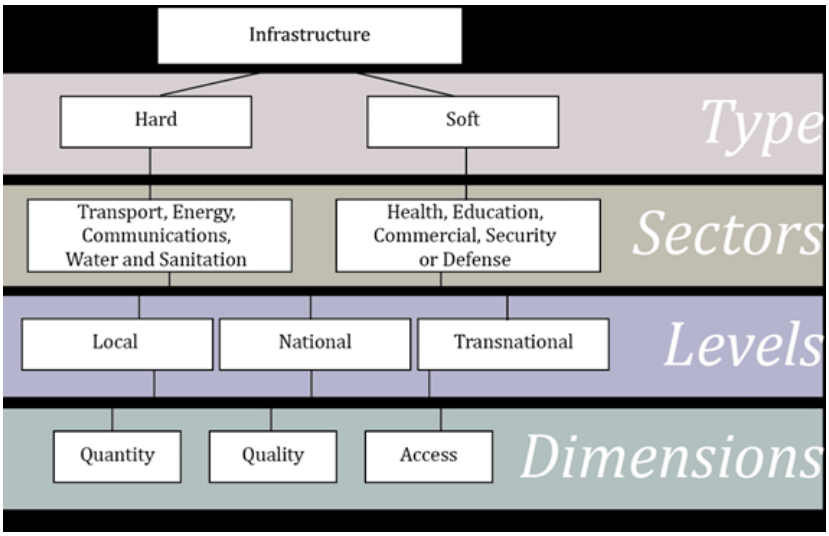


Figure 3.2: Type of infrastructure services

Table 3.7: Infrastructure Services Required to service the municipality.

TYPE OF INFRASTRUCTURE SERVICE	***TYPE OF PROVISION***
1. Road Network	Ministry of Public Works and Transportation is located in the town on farm LC29L (see map 3) its role is to maintain main roads. • Roads within the agricultural zone have to be formalised and declared as such to prevent the current status where roads are not located in gazetted servitudes and resolve restriction on public access.

	• Connectivity of roads once established has to be ensured by providing for various options for access and exit from farms whilst ensuring safety of crop and farm services. • Maintenance plans of roads to be developed once formalised. • Focus on maintenance of gravel roads given the agricultural setting. • District roads need to be tarred for ease of business. • Servitudes need to be transferred to the local authority for standardizing of road width and maintenance upgrade.
2. Energy	Eswatini Electricity Company located at Mabhelengwane (see map 3). Electricity supply is available to all the farms, however the current capacity cannot sustain the proposed growth, EEC needs to be engaged for purpose of strategic planning.
3. Water	Eswatini Water Services Company located adjacent RFG, an upgrade of the reservoir is required to ensure development possibility. There will be a need to accommodate a bigger water reservoir (Figure 3.3).  ***Figure 3.3: A typical 5Ml reservoir is ±35m in diameter and ±7m in height.***
4. Agricultural Research station	A research station is located in the municipality on Farm LC29L (see map 3)
5. Prison	A juvenile prison is located in the municipality on Farm LC29L (see mao
6. Cemetery and Columbarium	20 hectares on Remainder of Portion A of Farm 286- the size of the cemetery is proposed on the future population of 38 647people. It estimated that a hectare accommodates 1600 graves. The twenty hectares size will accommodate a columbarium, this size will ensure that burial sites are not located on developable land and productive land, policies to manage longevity will be established.
7. Sewer pipeline	It is proposed that the human settlement area be sewer reticulated in order to accommodate the proposed residential densities. Public health and environmental aspects are protected is development expands without affecting ground water.

3.5.4 Details on Road Network

Map 8 shows that Malkerns will have the following road classification as detailed in table 3.8.

Table 3.8: Roads Classification			
Colour	*Hierarchy of roads*	*Primary function*	*Malkerns Roads*
Blue	First order (Class 1)	National transport function and links with other towns. The road reserve is between 32-38m.	MR18, MR27
Yellow & Green	Second order (Class 2,3)	Strong internal transport function with capacity to handle public transport. The road reserve is between 16-20m.	(D52, D9; Future Tar) PR1, PR2, PR3, PR4, PR5, PR6, PR7, PR8; UR1,UR2, UR3
Red	Third order (Class 4)	Provide direct access to different land uses especially townships. The road reserve is between 8-12m.	Local service roads (right of ways)
Purple	First order (Class 1) Bypass	National transport function and links with other towns. Ease passage through town. The road reserve is between 32-38m.	Proposed bypass road

The Class 1 Roads shall have a road reserve between 32-38m, Class 2&3 between 16-20m and Class 4 between 8-12m. Examples of utilisation of the road reserves is outlined in (Figure 3.4 and 3.5). The proposed location of the roads besides class 1 shall be determined when development proposals are made to the Council. Emphasis shall be placed on ensuring the reservation of appropriate sized road reserves. Given the limited number of formally established human settlements it is difficult to propose the actual alignment of the road before development trends have been established. The revision of the plan in future will probably include the alignments. It will be essential that interconnectivity on existing roads is improved to identify area needing improved accessibility.

The class 1 – 3 roads provide for public transport services, pedestrian walkways and non-motorised means of transport.

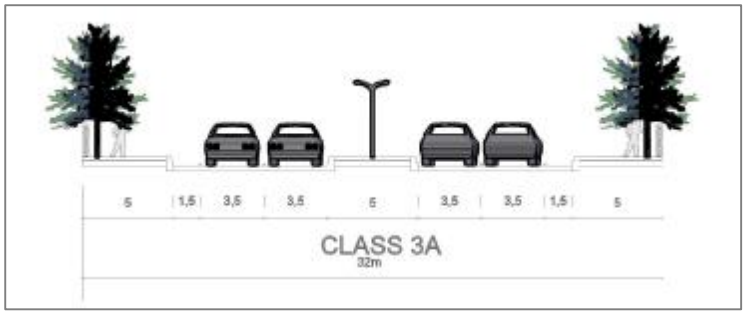


Figure 3.4: Class 3 road cross-section

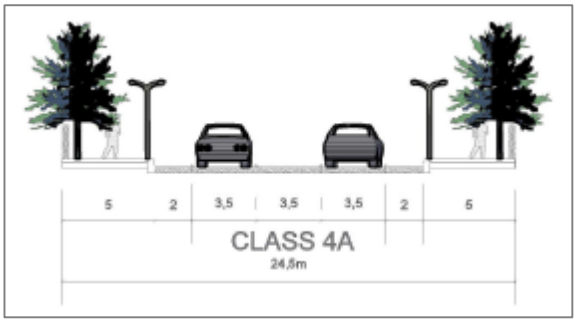


Figure 3.5: Class 4 road cross-section

3.5.4.1 Parking Proposals

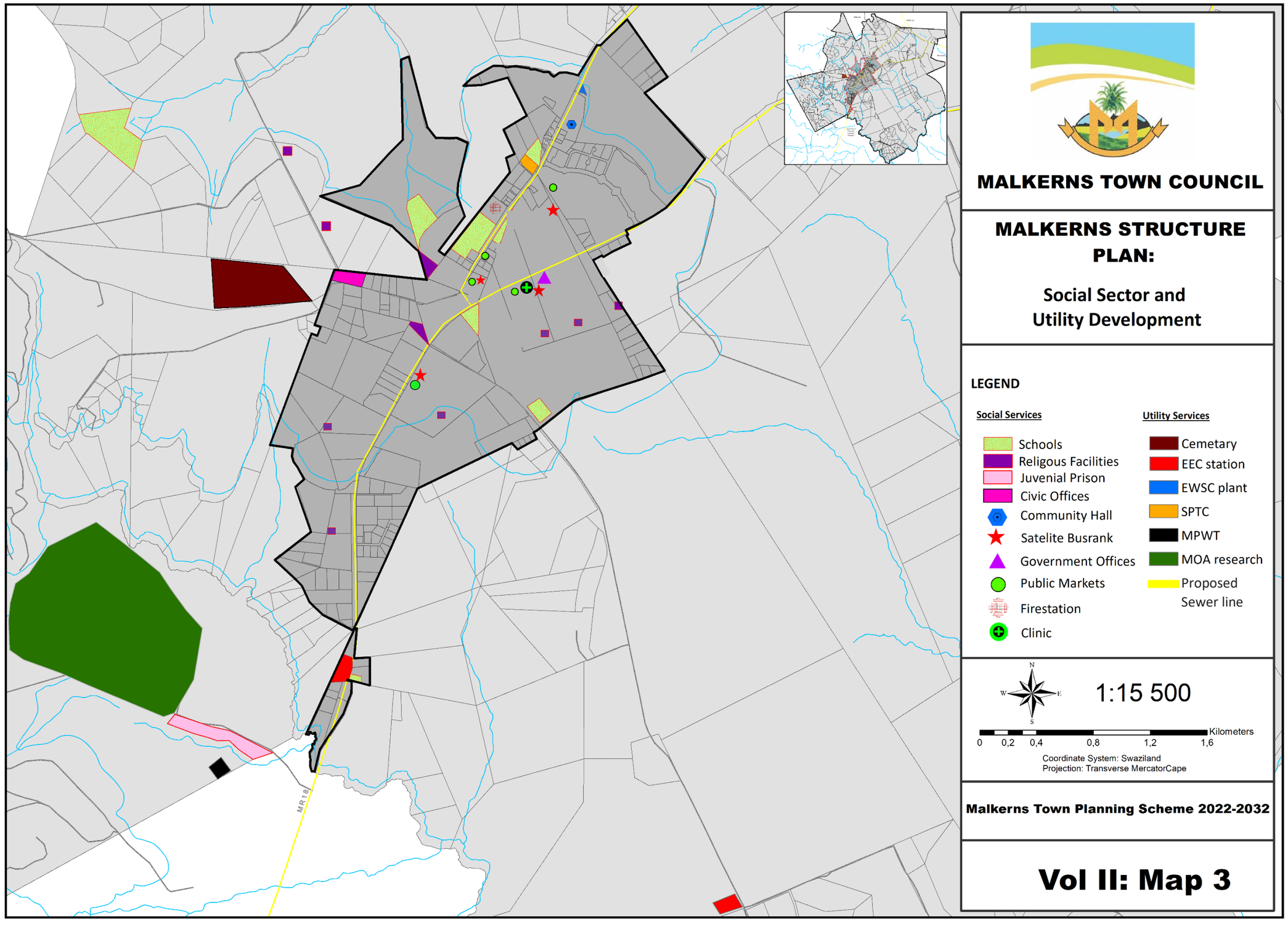
The Development Code shall make provisions for parking for each development proposal. Parking will be provided by the property developers. Currently there is not much demand for a public parkade in Malkerns. Where parking demand increase in future, provision will be made for public parking spaces development.

A conceptual Figure 3.6 shows road cross section with dedicated sidewalks, cycle lanes and a typical public transport stop with soft landscaping. Such approach will enhance the Malkerns physical environment.

Figure 3.6: Example of a Road Cross-section with dedicated NMT

Figure 3.7: An Example of a Public Transport Facility

Figure 3.8: Example of an urban settlement in an actively cultivated agricultural area



MALKERNS TOWN COUNCIL

MALKERNS STRUCTURE PLAN:

Social Sector and Utility Development

LEGEND

Social Services

- Schools
- Religous Facilities
- Juvenial Prison
- Civic Offices
- Community Hall
- Satelite Busrank
- Government Offices
- Public Markets
- Firestation
- Clinic

Utility Services

- Cemetary
- EEC station
- EWSC plant
- SPTC
- MPWT
- MOA research
- Proposed Sewer line

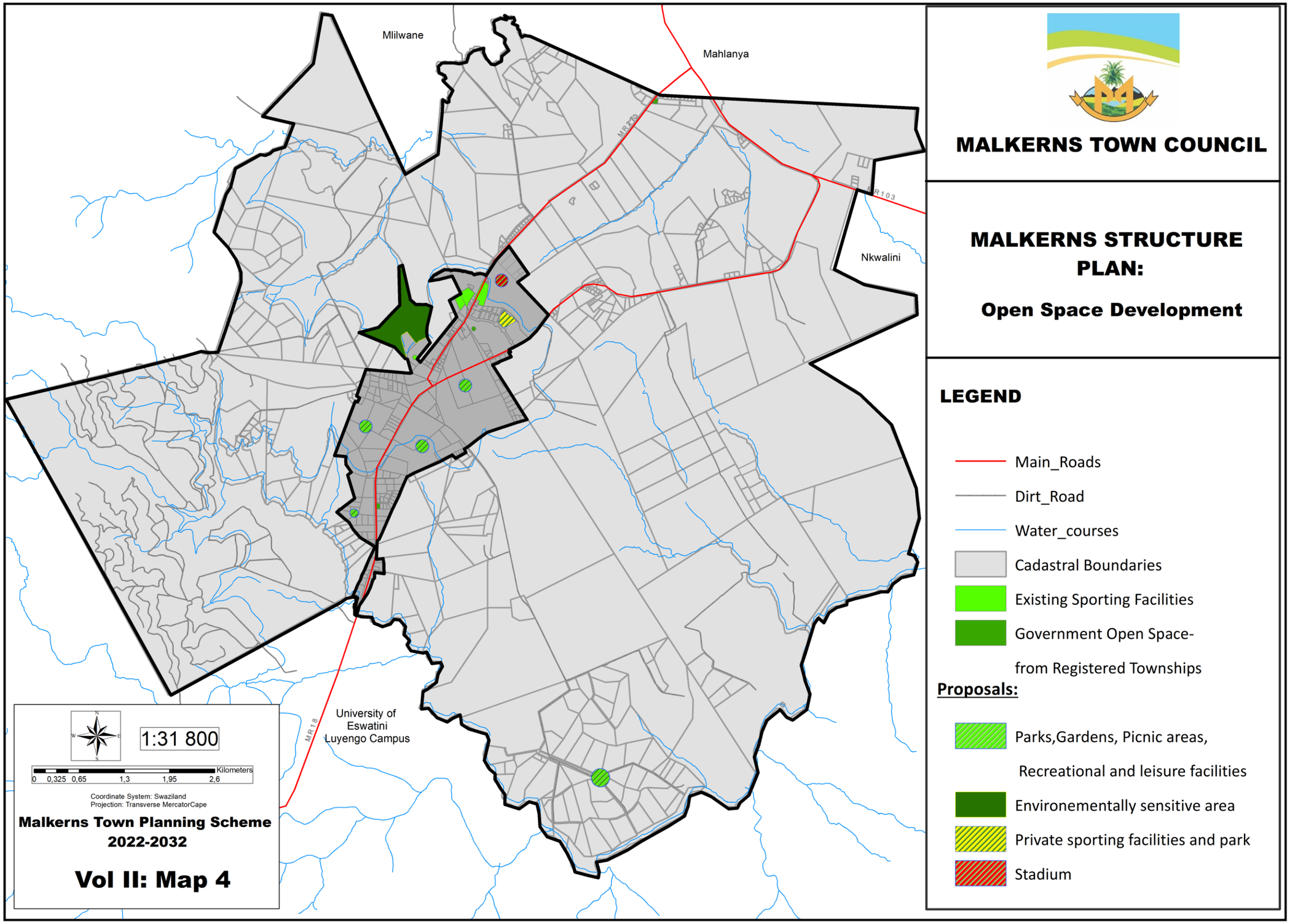
1:15 500

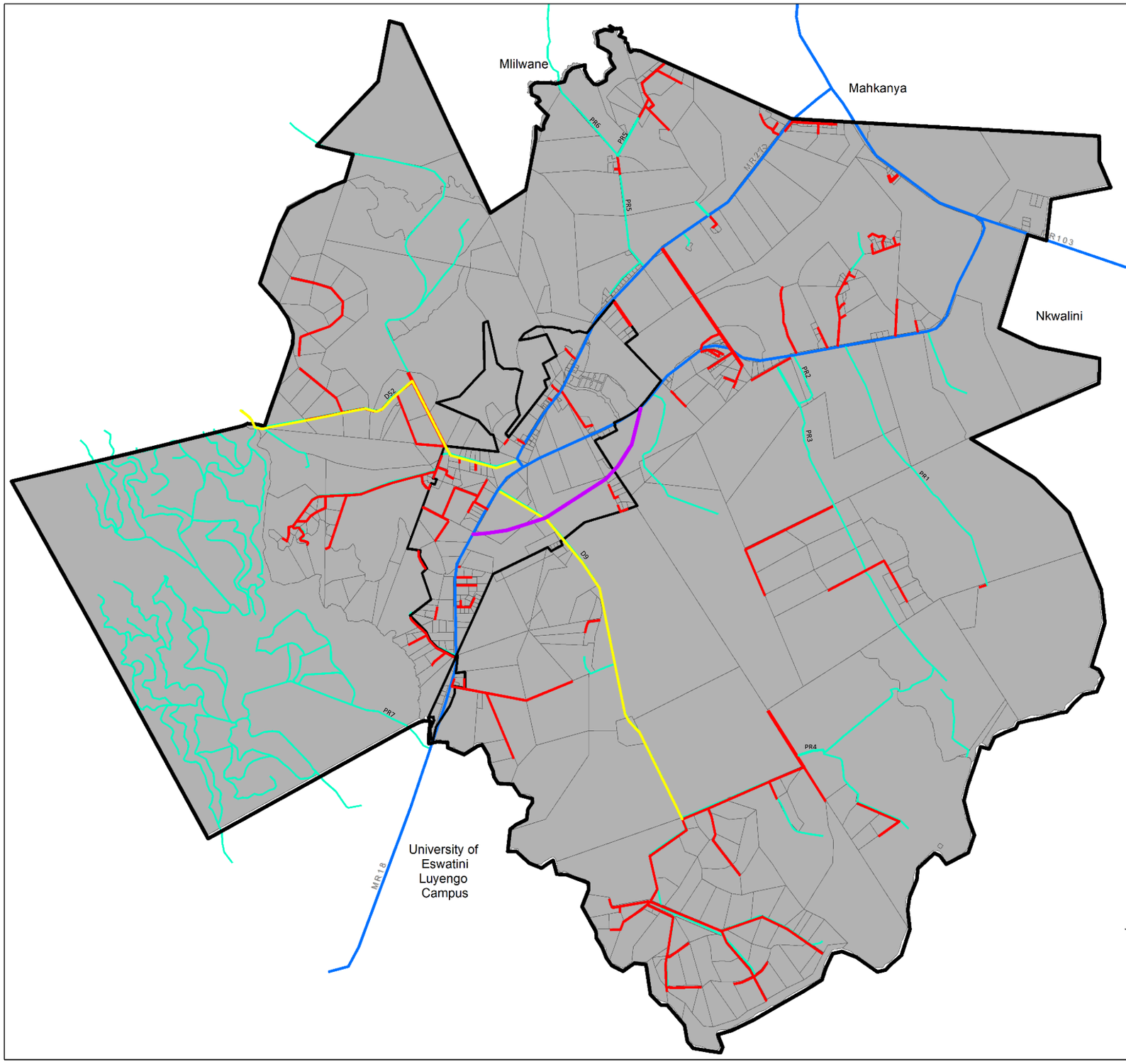
0 0,2 0,4 0,8 1,2 1,6 Kilometers

Coordinate System: Swaziland
Projection: Transverse MercatorCape

Malkerns Town Planning Scheme 2022-2032

Vol II: Map 3


Mlilwane
Mahlanya
Nkwalini
University of Eswatini Luyengo Campus
MR 103
MR 18
1:31 800
0 0,325 0,65 1,3 1,95 2,6 Kilometers
Coordinate System: Swaziland
Projection: Transverse MercatorCape
Malkerns Town Planning Scheme 2022-2032
Vol II: Map 4
MALKERNS TOWN COUNCIL
MALKERNS STRUCTURE PLAN:
Open Space Development
LEGEND
Main_Roads
Dirt_Road
Water_courses
Cadastral Boundaries
Existing Sporting Facilities
Government Open Space-
from Registered Townships
Proposals:
Parks,Gardens, Picnic areas,
Recreational and leisure facilities
Environementally sensitive area
Private sporting facilities and park
Stadium



MALKERNS TOWN COUNCIL

MALKERNS STRUCTURE PLAN:

Road Hirarchy

LEGEND

- Main Road
- District Road (Future Tar)
- Public Road & Undetermined Roads
- Right of Ways/Servitudes
- Proposed Bypass

MAIN ROADS
MR18 -10.66 km
MR27 -5.48 km
MR103 -2.79 km

DISTRICT ROADS
D52 -3.17 km
D9 -4.73 km

SERVITUDES
9.1 km

PROPOSED BYPASS
2.73 km

PUBLIC ROADS
PR1 - 3.382 km
PR2 - 0.764 km
PR3 - 2.749 km
PR4 - 1.165 km
PR5 - 1.643 km
PR6 - 1.165 km
PR7 - 2.765 km
PR8 - 2.44 km

UNDETERMINED ROADS
UR1 - 1.724 km
UR2 - 2.558 km
UR3 - 3.430 km

1:31 000

0 0,425 0,85 1,7 2,55 3,4 Kilometers

Coordinate System: Swaziland
Projection: Transverse MercatorCape

Malkerns Town Planning Scheme 2022-2032

Vol II: Map 8

3.6. CONSERVATION

3.6.1 Human Settlement Practice to conservation

The environmental implications of any development are now of paramount importance in any development. The establishment of agricultural areas and human settlements have severe impact on the environment. The Environment Management Act of 2002 which repealed the Eswatini Environment Act of 1992, provides for the environment's protection from any development. Projects and activities are categorised into 3 groups depending on environmental impact, with least significant with lower category, see Table 3.9 below.

The development of human settlements clears the land of natural vegetation and increases hard (roofs, concrete, roads, etc.) surfaces which increase runoff. It is therefore essential that appropriate urban development standards are put in place to ensure proper stormwater drainage, location of pit toilets, septic tanks, soakaways, etc. The objective of a town planning scheme is to achieve these standards. In the human settlements sector of the town the following issues were identified as of environmental concern:

- Informal settlement with poor sanitation: It will be essential to provide development guidelines for the upgrading of the informal settlements to ensure proper development of infrastructure services and reduce pollution from septic tanks, pit latrines, waste and waste water disposal. Runoff should be appropriately directed to storm water channels to reduce soil erosion. Soil erosion is common along the town gravel roads which mostly lack stormwater drainage. The community grazing land along the MR103 road also show some soil erosion due to overgrazing, cattle tracks and public harvesting soil in pasture for other uses.

- Development in environmentally sensitive areas, especially wetlands should be avoided. Protection of wetlands provide important ecosystems services and have the following benefits:
  - Flood protection
  - Water purification
  - Shoreline stabilization
  - Ground water recharge and
  - Streamflow maintenance.

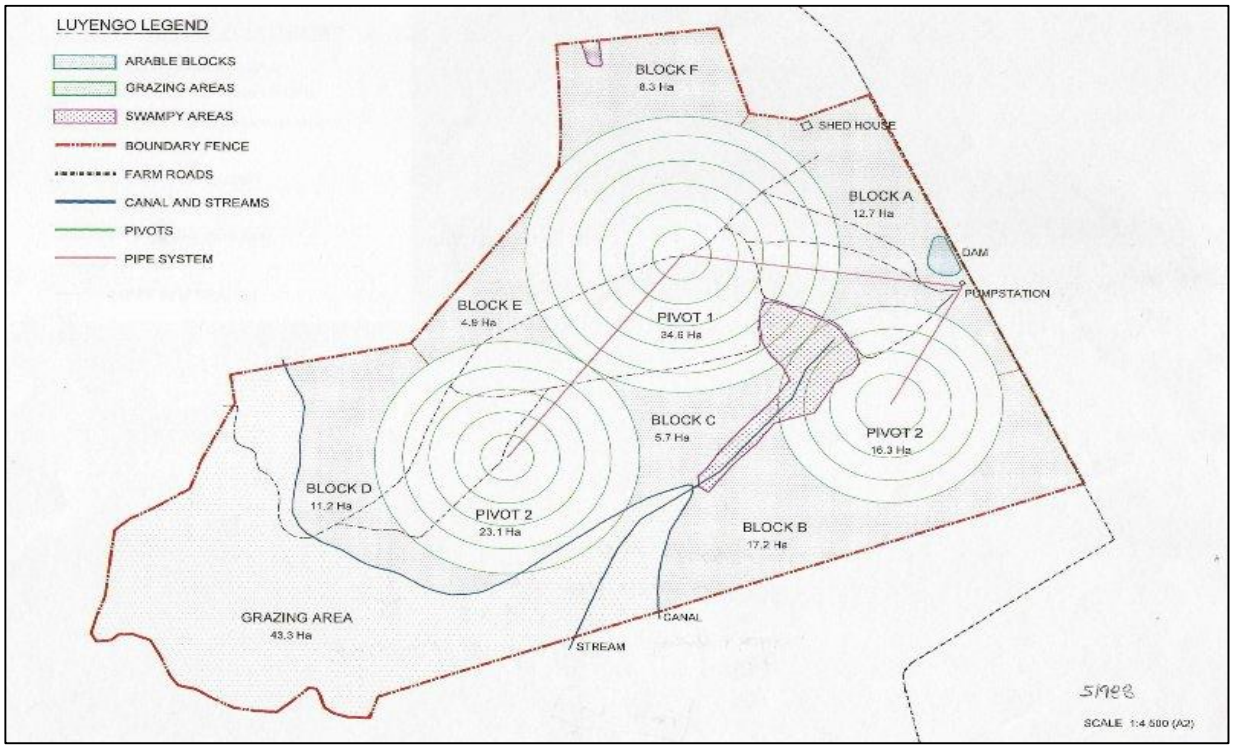
  They provide habitat for fish, wildlife and endangered species. In the town, most wetlands have been disturbed where there's a preponderance of human activities, especially human settlements. The farming community, to a large extent have protected wetlands and are not utilised for agricultural purposes within their farms. The plan will zone wetlands as conservation areas and ensure a buffer around them for their protection. River courses, floodplains and water channels will have a buffer zones for their protection from development (see map 5).

Table 3.9 The Environment Audit, Assessment and Review Regulations 2000

When assigning a category, it is essential to consider the ***scale of the proposed project*** *and* ***its location, particularly in relation to environmentally sensitive areas.*** *Projects are more likely to be classified as falling within a higher project category (i.e. category 3 instead of category 2, or category 2 instead of category 1) if the area likely to be influenced by the proposed project includes an environmentally sensitive area.*

CATEGORY 1 PROJECTS *Projects under this category are unlikely to cause any significant environmental impact*
Residential development not exceeding three (3) houses;
Renovations to existing structures not involving asbestos or other hazardous substances;
Small-scale commercial buildings and structures;
Research activities; prospecting for groundwater, minerals and hydrocarbons using vibriosis, and similar techniques;
Small-scale social infrastructure provision (rural health, educational, family planning);
Technical assistance and institutional strengthening activities;
Small scale tourism projects.
CATEGORY 2 PROJECTS *Projects under this category are likely to cause environmental impacts, some of which may be significant, unless mitigation actions are taken. Such projects cause impacts which are relatively well-known and easy to predict. Also, the mitigation actions to prevent or reduce the impacts are well-known.*
Electrical transmission lines and rural electrification (medium-scale)
Irrigation and drainage (medium-scale)
Renewable energy production
Residential development of more than three (3) and less than (10) houses
Hotels, camp-sites and lodges
Rural water supply and sanitation
Watershed management and rehabilitation
Urban area rehabilitation (medium-scale)
Small-scale infrastructure (roads, sewerage systems, water pipelines and treatment works)
Hospitals (medium-scale)
Non-food industries (medium-scale) without discharge of toxic substances or storage and use of hazardous substances
Projects located near environmentally sensitive area

CATEGORY 3 PROJECTS *Projects under this category are likely to have significant adverse impacts whose scale, extent and significance cannot be determined without in-depth study. Appropriate mitigation measures can only be identified after such study.*
Residential development exceeding ten (10) houses;
Dams and reservoirs
Afforestation schemes and wood processing facilities (large-scale);
Industries and industrial estates (large-scale)
Irrigation, drainage and flood control (large-scale);
Mineral development (including hydrocarbons)
Reclamation and opening of new areas for agriculture
Projects involving resettlement
River basin development
Thermal and hydropower
Manufacture, transport and use of pesticides or other hazardous substances
Agriculture (especially involving large-scale monoculture);
Roads;
Projects located in environmentally sensitive areas
Mining, soil excavation (large-scale)
Urban water supply and sanitation projects (large-scale).



This Farm will be zoned Agriculture Crop Farming (CF) but in its operations it also has the Agriculture Livestock (AL) – grazing area, and Conservation Area (CA) – the wetland. The respective development control standards will apply to each respective zone. The farmer shall be required to submit his farm operational zoning to the local authority to ensure his development applications are processed accordingly with respective zone.

The following guidelines were adhered to in the proposal (map 5):

- Protection of Historical heritage (Pondo royal residence).
- Protection of the natural environment (water courses-floodline areas).
- Protection of the Nature Reserve (Mlilwane)

3.6.2 Agricultural Practice to protect the environment

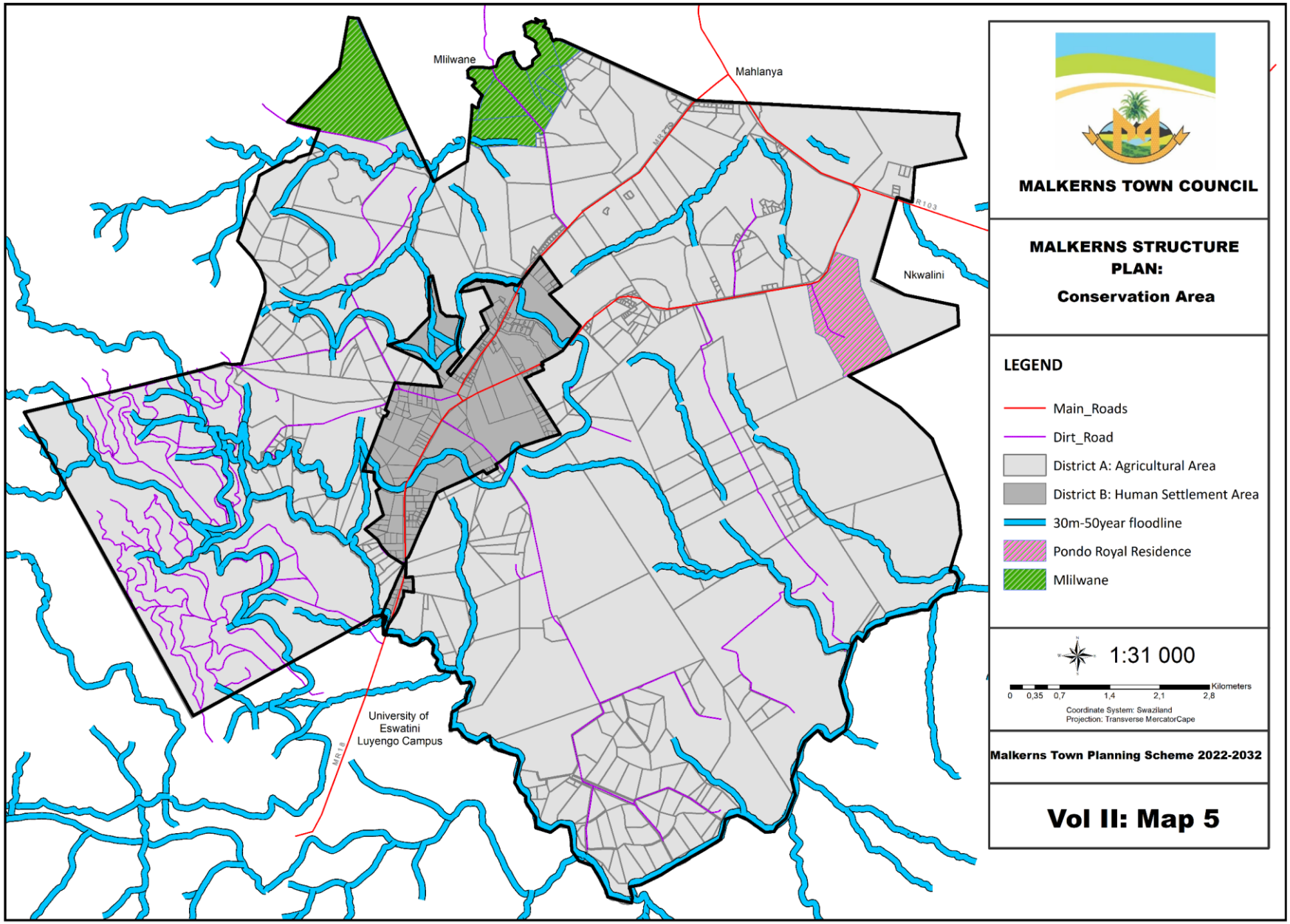
Sustainable farming or in a broader term, sustainable agriculture is using farming practices considering the ecological cycles. It is also sensitive towards the microorganisms and their equations with the environment at large. **In simpler terms, sustainable farming is farming ecologically by promoting methods and practices that are economically viable, environmentally sound and protect public health.** It does not only concentrate on the economic aspect of farming, but also on the use of non-renewable factors in the process thoughtfully and effectively. This contributes to the growth of nutritious and healthy food as well as bring up the standard of living of the farmer.

Our environment, and subsequently our ecology have become an area of concern for us over the last few decades. This has increasingly led us to contemplate, innovate and employ alternate methods or smaller initiatives to save our ecology. One such initiative is sustainable farming. It simply means production of food, plants and animal products using farming techniques that prove to be beneficial for public health and promote economic profitability. It draws and learns from organic farming.

Sustainable farming or Sustainable agriculture helps the farmers innovate and employ recycling methods, this apart from the conventional perks of farming. A very good example of recycling in sustainable farming would be the crop waste or animal manure. The same can be transformed into fertilizers that can help enrich the soil. Another method that can be employed is crop rotation. This helps the soil maintain its nutrients and keeps the soil rich and potent. Collection of rainwater via channeling and then its utilization for irrigation is also a good example of sustainable farming practices.

Benefits of Sustainable Farming

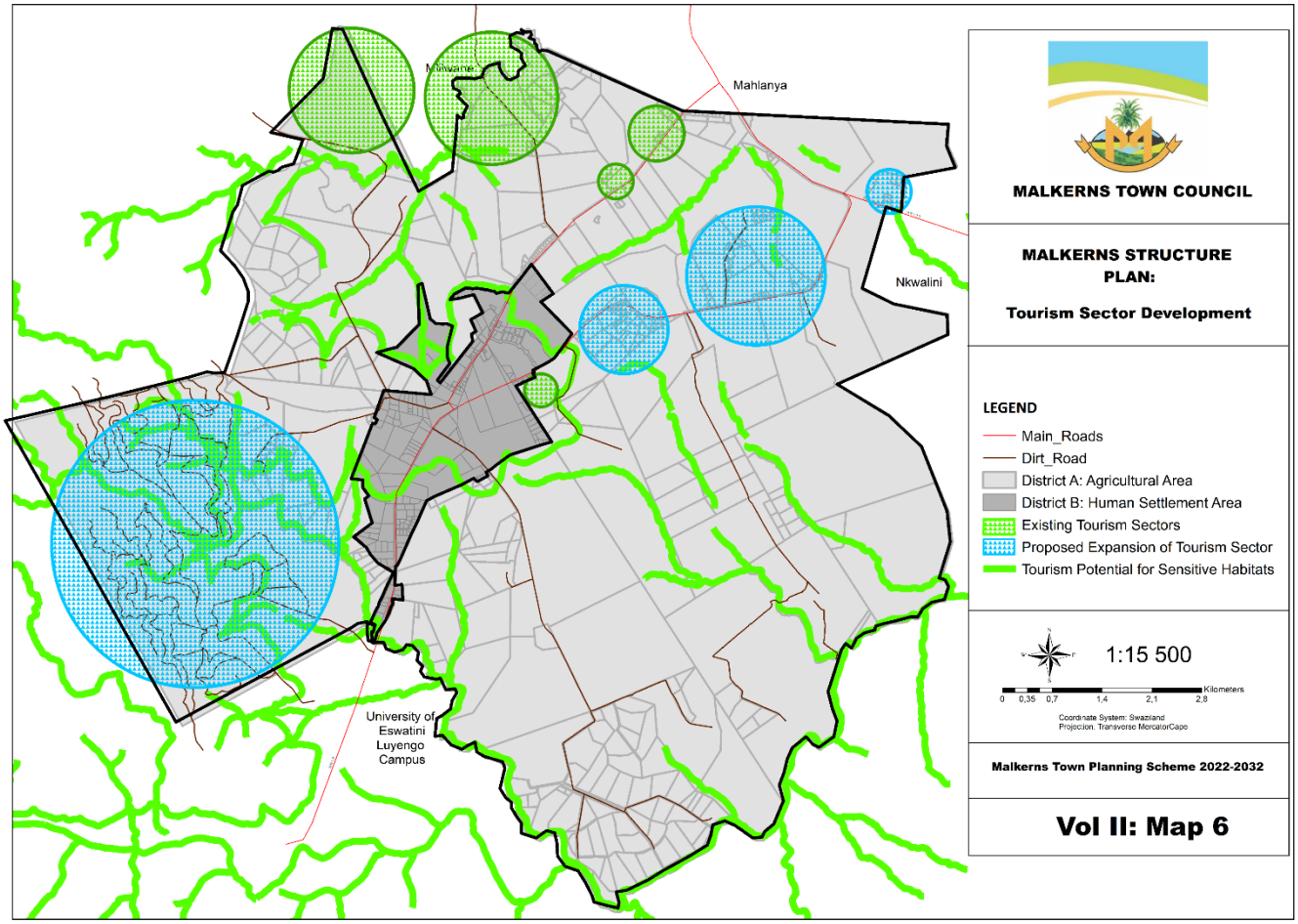
1. Environment Preservation
2. Economic Profitability
3. Most efficient use of non-renewable resources
4. Protection of Public Health
5. Social and Economic Equity


Mlilwane
Mahlanya
Nkwalini
University of Eswatini Luyengo Campus
MR103
R103
MALKERNS TOWN COUNCIL
MALKERNS STRUCTURE PLAN:
Conservation Area
LEGEND
Main_Roads
Dirt_Road
District A: Agricultural Area
District B: Human Settlement Area
30m-50year floodline
Pondo Royal Residence
Mlilwane
1:31 000
0 0,35 0,7 1,4 2,1 2,8 Kilometers
Coordinate System: Swaziland
Projection: Transverse MercatorCape
Malkerns Town Planning Scheme 2022-2032
Vol II: Map 5

3.7 TOURISM SECTOR

Along the existing water courses are flora and fauna, these are to contribute to the tourist sector. Any tourist proposal should not temper with the natural state of the environment. The spatial framework is to conserve the existing tourist attraction sites like House on Fire, Mlilwane, Willows, and Swazi candles. The proposed areas may expand in tourism are:

- Research station may have tourist tracks within the forests (as it has numerous movements paths)
- Sundowners precinct has the potential to allow existing homes to be guesthouses.
- Rainbow chalets precinct has the potential of utilising existing homes as guesthouses.
- Nyandza stables precinct has potential of utilising existing homes as guesthouses.
- Along the existing water courses are flora and fauna, these are to contribute to the tourist sector.



3.8 LAND SUBDIVISION

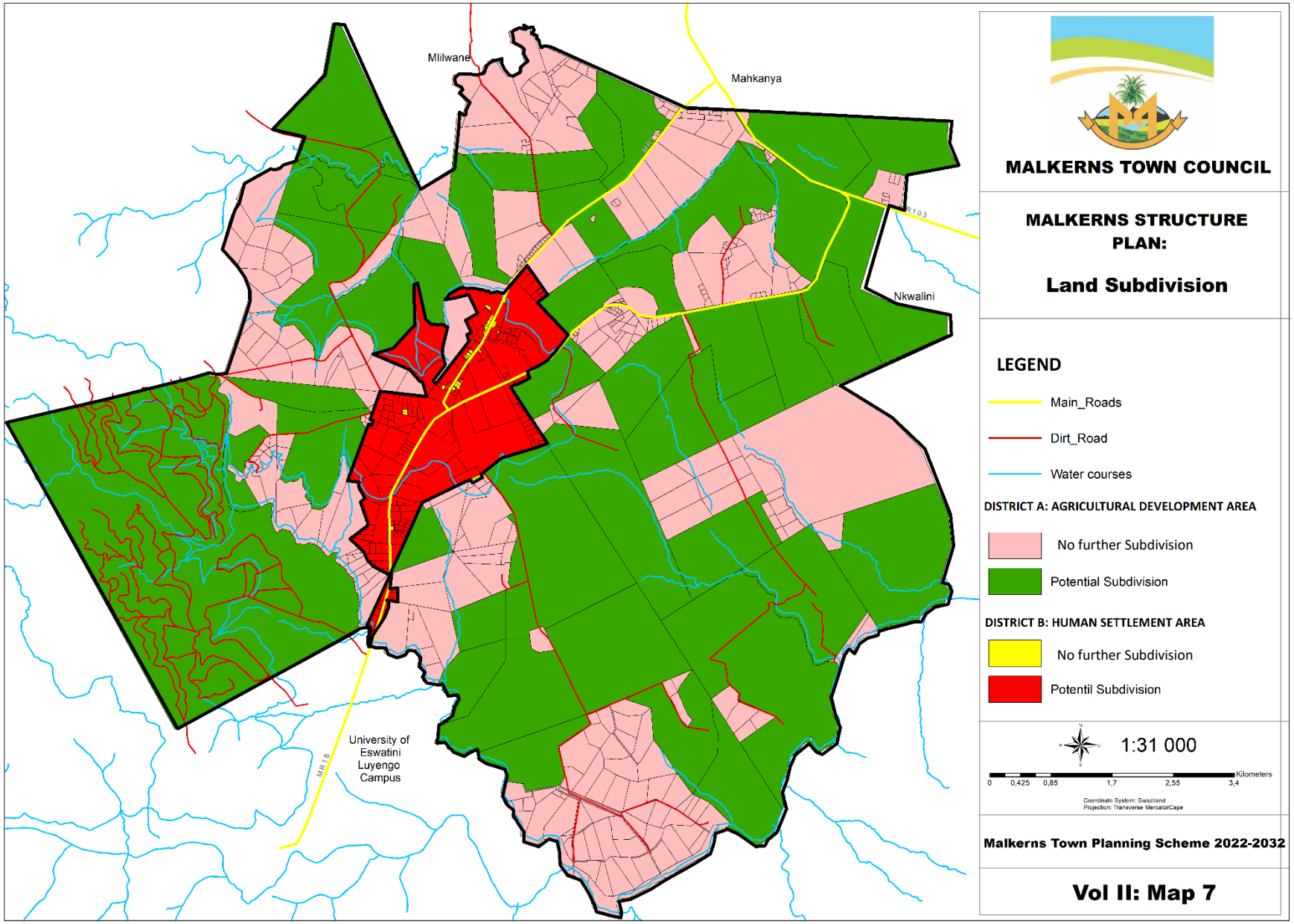
An overview map of Malkerns **(map 7)** shows a negative trend of small farms or plots of less than 40 hectares in the Agricultural Area. To control the subdivision of farms in the agricultural area, to limit indiscriminate farm subdivisions in the agricultural area, subdivision of land has been categorised into four permanent zones (I, II, III and IV) with the following provisions as outline in table 3.10, furthermore the agricultural policy recommends farm size for production gross margins. The priority by which land subdivision proposal shall be considered is for agricultural production that is at a large scale. Small scale husbandry shall not be considered as a ground for subdivision.

Table 3.10

CATEGORY	FARM SIZE (HA)	MINIMUM FARM SIZE (HA)
I	less than 40	No Further Subdivision
II	40 - 59	20
III	60 - 99	30
IV	100+	40

- The farm zones (I, II, III, IV) are permanent and on subdivision a farm cannot be categorised into a different category to obtain further subdivision benefits.
- Land subdivision must show agricultural intent for large scale production.

In the Human Settlement area, minimum areas will be specified by each zoning district in the Development Code. Analysis shows that the Human settlement area has a larger potential for subdivision see (map 7). The proposed minimum land size in the Development Code considers the availability of infrastructure or lack of especially sewer reticulation.


Mlilwane
Mahkanya
Nkwalini
University of Eswatini Luyengo Campus
MALKERNS TOWN COUNCIL
MALKERNS STRUCTURE PLAN:
Land Subdivision
LEGEND
Main_Roads
Dirt_Road
Water courses
DISTRICT A: AGRICULTURAL DEVELOPMENT AREA
No further Subdivision
Potential Subdivision
DISTRICT B: HUMAN SETTLEMENT AREA
No further Subdivision
Potentil Subdivision
1:31 000
0 0,425 0,85 1,7 2,55 3,4 Kilometers
Coordinate System: Swaziland
Projection: Transverse MercatorCape
Malkerns Town Planning Scheme 2022-2032
Vol II: Map 7