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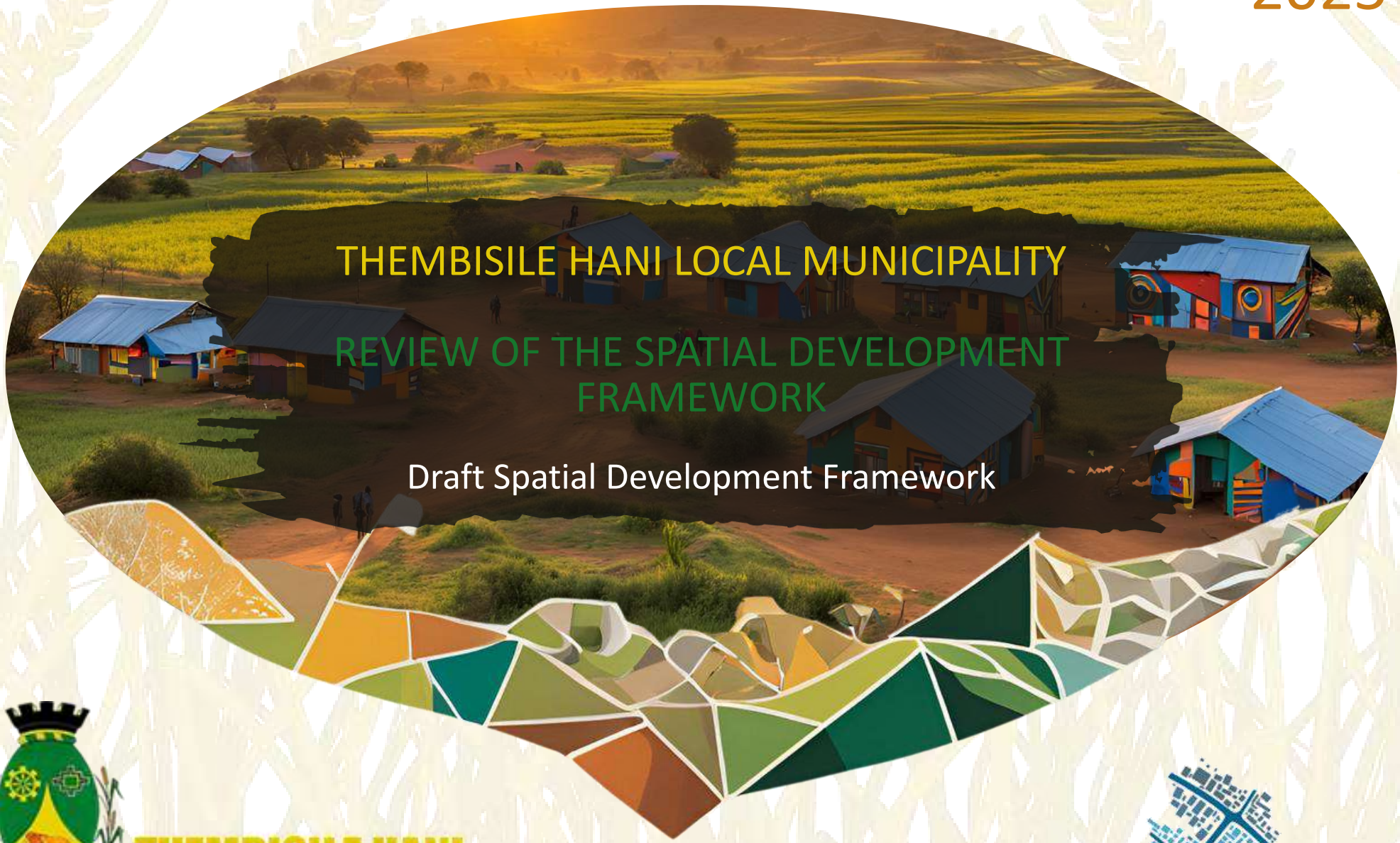

THEMBISILE HANI LOCAL MUNICIPALITY

REVIEW OF THE SPATIAL DEVELOPMENT FRAMEWORK

Draft Spatial Development Framework

THEMBISILE HANI
LOCAL MUNICIPALITY

SIBIYA LE ROUX
TOWN AND REGIONAL PLANNERS

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LIST OF ACRONYMS

AAMP	Agricultural Agro Processing Master Plan
APAP	Agricultural Policy Action Plan
BNG	Breaking New Ground
CBA	Critical Biodiversity Area
CBD	Central Business District
CoGTA	Co-Operative Governance and Traditional Affairs
CoT	City of Tshwane
CPA	Communal Property Association
CRDP	Comprehensive Rural Development Programme
DALRRD	Department Agricultural, Land Reform and Rural Development
DBSA	Development Bank of Southern Africa
DEA	Department of Environmental Affairs
DMR	Department of Mineral Resources
DWS	Department Water and Sanitation
EE	Energy Efficiency
EIA	Environmental Impact Assessment
ESA	Ecological Support Area
FLISP	Finance Linked Individual Subsidy Projects
FPSU	Farmer Production Support Unit
GIS	Geographical Information System
ICT	Information and Communication Technology
IDP	Integrated Development Plan
IPAP	Industrial Policy Action Plan
IPTN	Integrated Public Transport Network
ITP	Integrated Transport Plan
IUDF	Integrated Urban Development Framework
LED	Local Economic Development
LM	Local Municipality
LUS	Land Use Scheme
MSDF	Municipal Spatial Development Framework
MTREF	Medium Term Revenue Expenditure Framework
MTSF	Medium Term Strategic Framework
NDP	National Development Plan
NDPG	Neighbourhood Development Partnership Grant
NEMA	National Environmental Act
NIPF	National Industrial Policy Framework
NMT	Non-motorised Transport
NPC	National Planning Commission
NSSD	National Strategy for Sustainable Development
PHDA	Priority Housing Development Area
PSDF	Provincial Spatial Development Framework
RIA	Rural Intervention Area

RIAPP	Rural Intervention Areas Precinct Plan
RSDF	Regional Spatial Development Framework
SANRAL	South African National Roads Agency Limited
SDA	Strategic Development Area
SDF	Spatial Development Framework
SDP	Site Development Plan
SEZ	Special Economic Zone
SPLUMA	Spatial Planning and Land Use Management Act
STW	Sewer Treatment Works
TA	Traditional Authority
THLM	Thembisile Hani Local Municipality
WSDP	Water Services Development Plan
WWTP	Wastewater Treatment Plant

1. INTRODUCTION

1.1 BACKGROUND

Section 12 of SPLUMA requires all spheres of government (National, Provincial and Local) to develop Spatial Development Frameworks (SDFs). Section 20 of SPLUMA, 2013 read together with Section 26 of the Municipal Systems Act (32 of 2000) requires that the Municipal Council after consultation with relevant stakeholders must prepare and adopt the Spatial Development Frameworks (SDF) as a core component of their Integrated Development Plans (IDPs).

The Thembisile Hani Local Municipality's SDF was developed in 2014 with the 5-year cycle linked to the IDP ending in 2019. Section 20(2) of the Spatial Planning and Land Use Management Act, Act No. of 16 2013 (hereinafter referred to as SPLUMA) requires SDFs to be prepared every five years to reflect the development and policy changes, opportunities and challenges in alignment with the Municipal Integrated Development Plan (IDP) cycle. It is for this reason that the municipality requested the Development Bank of South Africa to assist in preparing their SDF in the 2024/2025 Financial Year.

The proposed new Spatial Development Framework (SDF) for the Thembisile Hani Local Municipality (THLM) will assist the municipality to carry out planning effectively and efficiently. This plan will eventually form part of the core components of the municipal IDP as prescribed in the legislation and would serve to guide overall spatial distribution of current and desirable land uses. This in order to give effect to the vision, goals and objectives of the Thembisile Hani Local Municipality.

As part of the Development Bank of Southern Africa's (DBSA) legislative mandate/strategic intent to assist municipalities to have spatially targeted budgets and create sustainable communities where people live, work, play and worship. The DBSA, together with the Thembisile Hani Local Municipality, have entered into a partnership to formulate a municipal-wide SDF with the intention to develop a Municipal SDF which will address the development needs and aspirations of the various communities and stakeholders in the Municipal area in an integrated and holistic manner, and in accordance with the applicable legislation, policies and protocols.

1.2 STUDY AREA

Figure 1 shows the area of jurisdiction of the Thembisile Hani Local Municipality which falls within the Nkangala District Municipality, Mpumalanga Province.

The study area, together with Dr JS Moroka LM, comprises the former Kwandebele homeland area. Most of the land in the Municipality belongs to the State and falls under Tribal Authority.

There are approximately 76 different towns and villages throughout the Municipality. The largest concentration of settlements is found in the northern and north-western extents of the municipal area and along the Moloto Road.

The settlements are mainly dormitory residential areas as local communities mostly rely on the City of Tshwane (CoT) for employment opportunities and higher order services.

1.3 PROJECT AIM AND OBJECTIVES

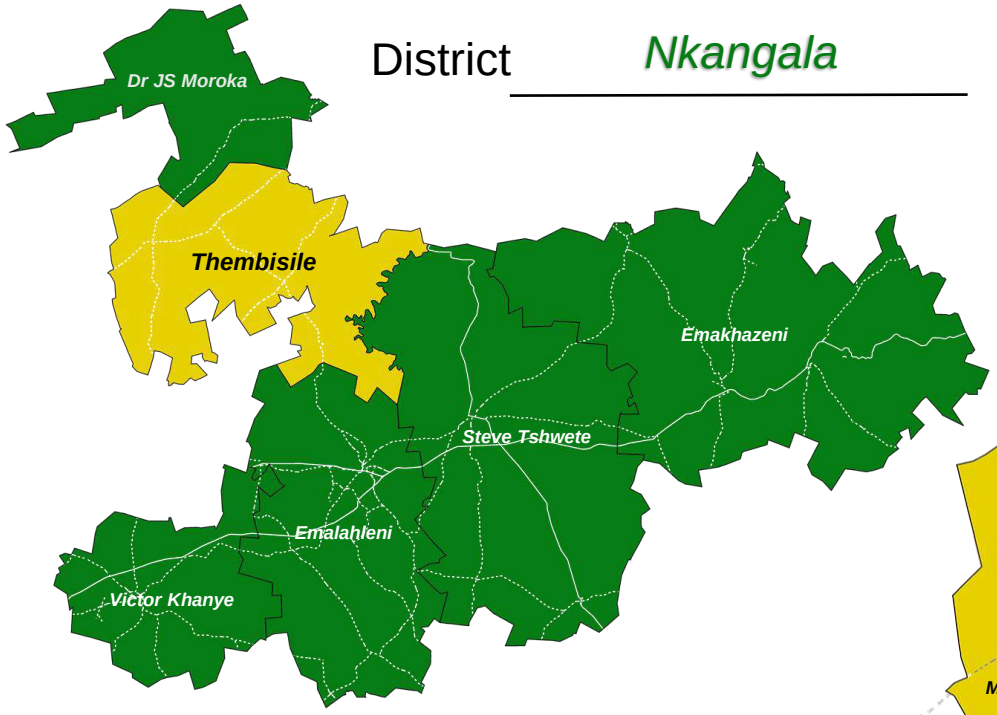
The goal of the Thembisile Hani SDF is to undertake a thorough analysis and needs assessment in the study area in order to identify development projects, infrastructure requirements, appropriate land use proposals and compile a detailed implementation and phasing programme with related budgets.

The main objective of the project is to develop a credible SDF that meets the required standards set by the legislation.

Other important objectives include compliance with the following provisions of the Municipal Systems Act, 2000 (Act 32 of 2000) and the Municipal Planning and Performance Management Regulations (2001):

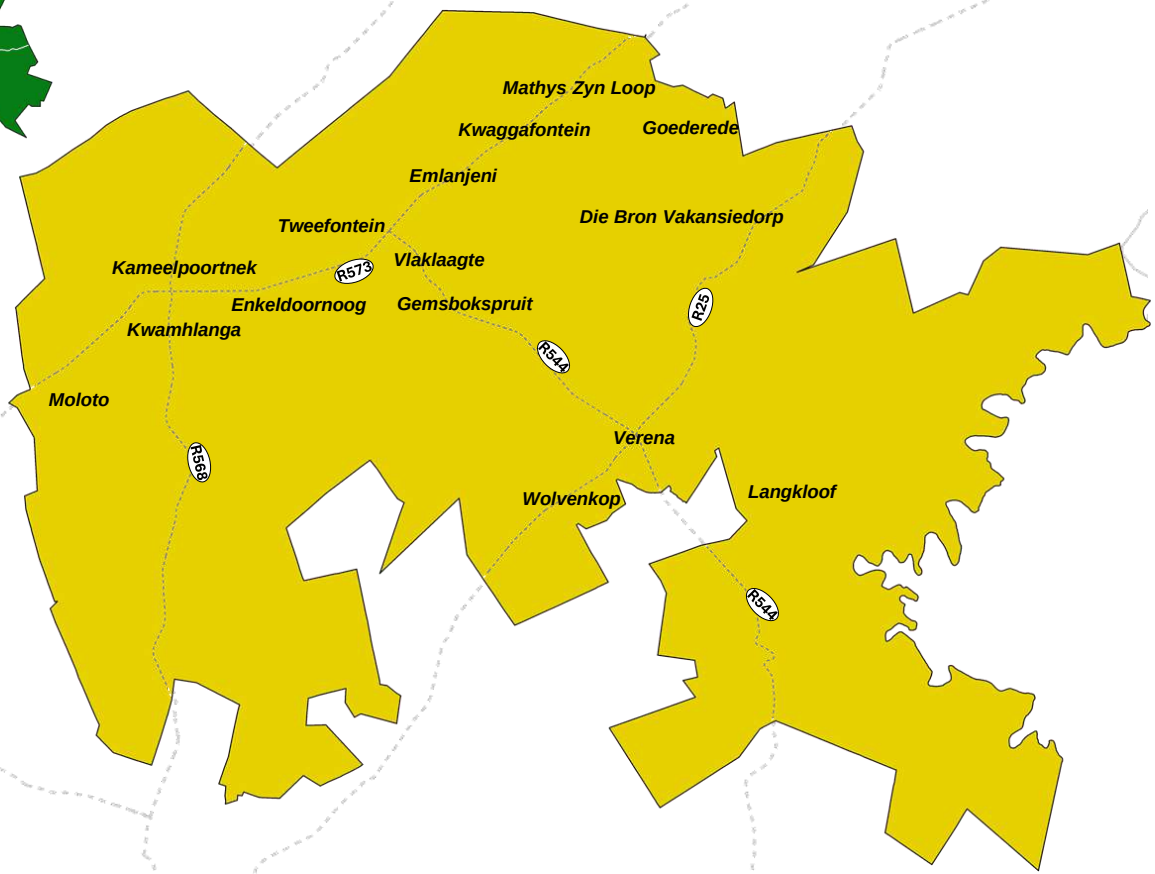
- Development of a Spatial Vision and objective of the IDP and the whole municipality;
- Development of conceptual scenario for envisaged spatial form;
- Setting out objectives that reflect the desired spatial form of the rural parts of the municipality;
- Contain strategies, policies and plans which must:
  - Analyse the opportunities and constraints.
  - Delineate the agricultural land that has high potential.
  - Indicate existing and future land use within the municipality.
  - Identify existing and future land reform projects.
  - Address the spatial reconstruction of the location and nature of development within the municipality, including desired settlements patterns.
- Provide strategic guidance in respect of the location and nature of development with the municipality;
- Set out a basic framework for the development of the land use management system in the municipality;
- Analysis and clarification of how sector departments will implement the SDF;
- Contain a strategic assessment of the environment impact of the SDF;
- Identify programmes, interventions and projects for the development of land within the municipality;
- Be aligned with the SDFs of neighbouring municipalities;
- Provide a visual representation of the desired spatial from the municipality which:
  - Must indicate where public and private land development and infrastructure investments should take place.
  - Must indicate all cross-border issues, challenges and alignment of programmes shared with neighbouring municipalities, provinces and countries.
  - Must indicate desired or undesired utilisation of space.
  - Must delineate the urban edge (in terms of NEMA).
  - Must identify areas where strategic intervention is required.
  - Must identify areas where priority spending is required.
  - Identify existing and proposed nodal areas for the development of infrastructure and social service.

THEMBISILE HANI LOCAL MUNICIPALITY: LOCALITY



District *Nkangala*

Local *Thembisile Hani*



Thembisile Hani SDF 2024

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1.4 PROJECT METHODOLOGY

The formulation of the Thembisile Hani SDF will take place in six Phases as shown in **Diagram 1**.

Phase 1: Inception has been completed.

Phase 2A comprised the Data Collection and Research Phase including the Legislative and Policy Context, the Spatial Analysis, the Engineering Services, and the Socio-Economic Overview.

The findings of Phase 2A culminated into **Phase 2B**, which comprised the Draft Spatial Vision for the Thembisile Hani LM.

Phase 3A comprised the Confirmation of the Spatial Vision, as the formulation of the Objectives for the project. A number of Spatial Strategies were then compiled for the various objectives which dealt with the Natural Environment, Movement Network, Economic Activity, Community Facilities, Residential and Infrastructure. These various strategies culminate into the **Draft Composite SDF**, which is **Phase 3B** and is submitted hereto (January 2025).

Phase 4 will comprise the Consultation and Advertisement of the SDF, where the Draft SDF will be open to the public for comments for a period of 60 days. After the 60-day commenting period, the relevant amendments will be incorporated unto the Draft SDF in order to compile the Final SDF for approval by Council (**Phase 5**). Phase 5 will also include the compilation of an Implementation Framework and Budget for the projects identified in Phase 4.

Phase 6 will comprise the Project Close-Out, which will include the handover of all shapefiles and relevant info to the Thembisile Hani LM.

Thembisile Hani Local Municipality SDF Methodology & Report Structure

Diagram 1

PHASE 1: PROJECT INCEPTION

PHASE 2(A): DATA COLLECTION AND RESEARCH ANALYSIS

Legislative & Policy Context	Spatial Analysis	Human Settlement Trends	Engineering Services	Socio-Economic Overview
❑ National Policy Guidelines ❑ Provincial (SDF, PGDS, etc.) ❑ Regional (District SDF) ❑ Local (Municipal SDF) ❑ Precincts/ Local Plans	❑ Regional Context ❑ Institutional: Cadastral, Wards, Ownership, TA's, Land Claims ❑ Natural Environment: Topography and Hydrology, Geology and Soil Potential, Biodiversity, Protected Areas ❑ Municipal Spatial Structure: Spatial Hierarchy and Movement Network ❑ Municipal Wide Economic Activities ❑ Local Land Use and Community Facilities ❑ Current Population and Community Facilities Need	❑ Current Housing Demand ❑ Current Housing Supply ❑ Housing Projects	❑ Water & Sanitation Infrastructure ❑ Electricity Infrastructure ❑ Level of Services Stats	❑ Level of Education ❑ Labour Force ❑ Income

PHASE 2(B): SITUATIONAL ANALYSIS SYNTHESIS

Key Development Opportunities & Constraints & Draft Spatial Vision

PHASE 3(A): DRAFT SDF AND SPATIAL STRATEGIES

Confirm Spatial Vision & Objectives | **Land Use Projections – Identify the Need for Land**

Spatial Development Strategies

Natural Environment	Spatial Structure	Residential	Community Facilities	Movement Network	Economic Activity	Infrastructure
❑ Climate Change Response ❑ Flooding Response ❑ Green/Eco-Belts	❑ Primary/Regional Nodes ❑ Second Order Nodes ❑ Third Order Nodes	❑ Priority Housing Development Areas	❑ Education ❑ Health & Welfare ❑ Safety and Security ❑ Sports and Recreation	❑ Movement Network ❑ Public Transport Network ❑ Modal Transfer	❑ Business ❑ Industrial ❑ Tourism ❑ Agriculture ❑ Mining	❑ Water ❑ Sanitation ❑ Electricity ❑ Roads ❑ Stormwater

PHASE 3B: DRAFT COMPOSITE SDF

PHASE 4: CONSULTATION & ADVERTISEMENT (60 DAYS)

PHASE 5: FINAL SDF

PHASE 6: PROJECT CLOSE-OUT

STAKEHOLDER ENGAGEMENT

2. LEGISLATIVE AND POLICY CONTEXT

This section comprises an in-depth analysis of the Legislative and Policy Context from a National, Provincial and Local perspective. The main findings of the Legislative and Policy Framework will directly inform the proposals of the SDF.

2.1 NATIONAL LEGISLATION AND POLICY FRAMEWORK

2.1.1 Constitution of the Republic of South Africa 108 of 1996

The Constitution of South Africa in Act 108 of 1996 is the supreme law of South Africa. Amongst other things, it ascribes different functions to different tiers of government to ensure the equitable and functional distribution of roles, responsibilities and duties.

In terms of Section 156 of the Constitution, municipalities have executive authority in respect of the right to administer the functional area of "municipal planning" and more specifically to:

a. structure and manage its administration, budgeting and planning processes to give priority to the basic needs of the community;
b. promote the social and economic development of the community, and
c. participate in national and provincial development programmes.

The Thembisile Hani Integrated Development Plan (IDP) and associated Annual Budget, as well as the Thembisile Hani Spatial Development Framework (SDF) are three of the most important tools at the disposal of the municipality to fulfil these legal obligations.

2.1.2 Municipal Systems Act 32 of 2000

The Municipal Systems Act requires all municipalities to compile an Integrated Development Plan (IDP) designed to ensure the progressive realization of the fundamental rights of its citizens. Under Section 26(e) the Act requires that an IDP must include a Spatial Development Framework (SDF) for the municipal area, and it stipulates that the IDP and SDF must inform the annual budgeting process of a municipality.

2.1.3 Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA)

The Spatial Planning and Land Use Management Act, Act 16 of 2013 (SPLUMA) provides the legislative foundation for all spatial planning and land use management activities in South Africa (including the Municipal Spatial Development Framework noted above).

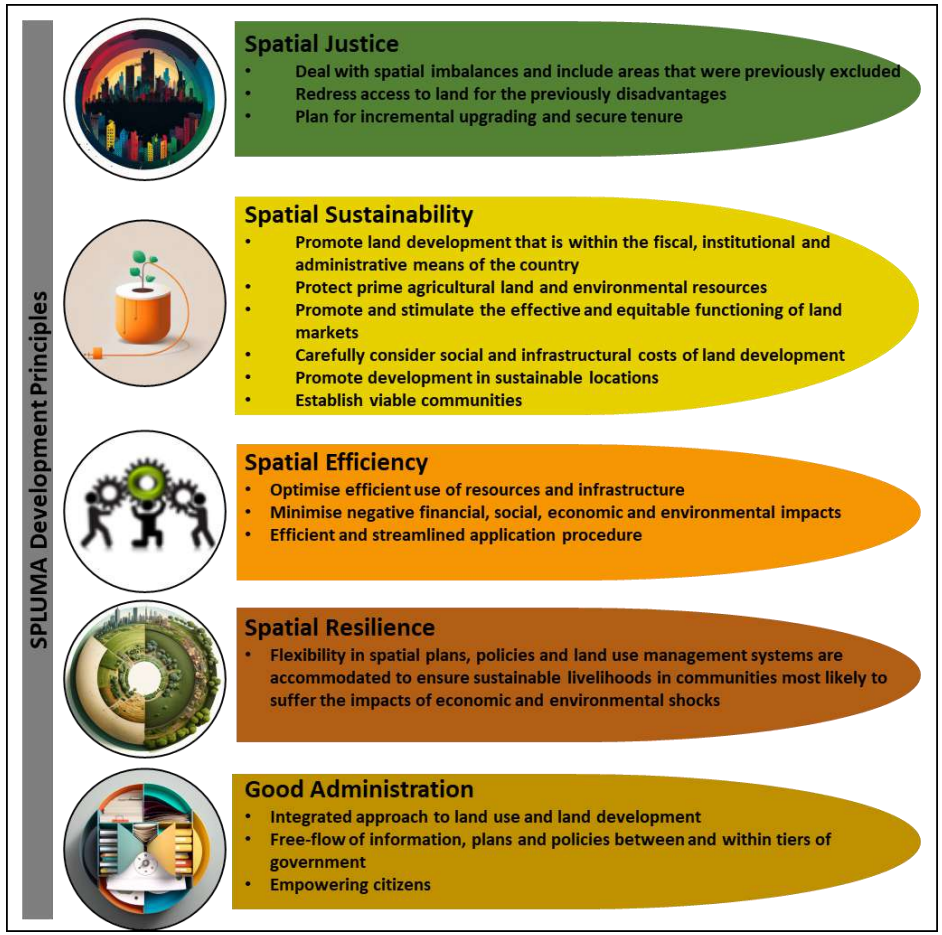
The Act seeks to promote consistency and uniformity in procedures and decision-making relating to land use and development across all three spheres of government.

It also requires that a Municipal SDF should be in line with the sectoral policies of national and provincial government and should be aligned with the plans, policies and development strategies of adjoining municipalities.

SPLUMA Development Principles:

As point of departure, SPLUMA define the following five development principles which should inform all spatial planning, land development and land use management processes. (Refer to **Diagram 2**).

Diagram 2: SPLUMA Principles



SPLUMA: Functionality of Spatial Development Frameworks:

Section 12 of SPLUMA stipulates that the national and provincial spheres of government and each municipality must prepare spatial development frameworks that complies with the following functional requirements:

- interpret and represent the spatial development vision of the responsible sphere of government and competent authority;
- are informed by a long-term spatial development vision statement and plan;
- represent the integration and trade-off of all relevant sector policies and plans;
- guide planning and development decisions across all sectors of government;
- guide a provincial department or municipality in taking any decision or exercising any discretion in terms of this Act or any other law relating to spatial planning and land use management systems;
- contribute to a coherent, planned approach to spatial development in the national, provincial and municipal spheres;
- provide clear and accessible information to the public and private sector and provide direction for investment purposes;
- include previously disadvantaged areas, areas under traditional leadership, rural areas, informal settlements, slums and land holdings of state-owned enterprises and government agencies and address their inclusion and integration into the spatial, economic, social and environmental objectives of the relevant sphere;
- address historical spatial imbalances in development;

- identify the long-term risks of particular spatial patterns of growth and development and the policies and strategies necessary to mitigate those risks;
- provide direction for strategic developments, infrastructure investment, promote efficient, sustainable and planned investments by all sectors and indicate priority areas for investment in land development;
- promote a rational and predictable land development environment to create trust and stimulate investment;
- take cognisance of any environmental management instrument adopted by the relevant environmental management authority;
- give effect to national legislation and policies on mineral resources and sustainable utilisation and protection of agricultural resources, and
- consider and, where necessary, incorporate the outcomes of substantial public engagement, including direct participation in the process through public meetings, public exhibitions, public debates and discourses in the media and any other forum or mechanisms that promote such direct involvement.

Furthermore, SPLUMA Section 12(2) and (5) require that:

- The national government, a provincial government and a municipality must participate in the spatial planning and land use management processes that impact on each other to ensure that the plans and programmes are coordinated, consistent and in harmony with each other;
- A spatial development framework adopted in terms of this Act must guide and inform the exercise of any discretion or of any decision taken in terms of this Act or any other law relating to land use and development of land by that sphere of government; and
- A municipal spatial development framework must assist in integrating, coordinating, aligning and expressing development policies and plans emanating from the various sectors of the spheres of government as they apply within the municipal area.

SPLUMA: Contents of a Municipal Spatial Development Framework:

Section 21 of SPLUMA stipulates that a Municipal SDF must at least comprise/ address the following:

- give effect to the development principles and applicable norms and standards set out in Chapter 2;
- include a written and spatial representation of a five-year spatial development plan for the spatial form of the municipality;
- include a longer-term spatial development vision statement for the municipal area which indicates a desired spatial growth and development pattern for the next 10 to 20 years;
- identify current and future significant structuring and restructuring elements of the spatial form of the municipality, including development corridors, activity spines and economic nodes where public and private investment will be prioritised and facilitated;
- include population growth estimates for the next five years;
- include estimates of the demand for housing units across different socio-economic categories and the planned location and density of future housing developments;

- include estimates of economic activity and employment trends and locations in the municipal area for the next five years;
- identify, quantify and provide location requirements of engineering infrastructure and services provision for existing and future development needs for the next five years;
- identify the designated areas where a national or provincial inclusionary housing policy may be applicable;
- include a strategic assessment of the environmental pressures and opportunities within the municipal area, including the spatial location of environmental sensitivities, high potential agricultural land and coastal access strips, where applicable;
- identify the designation of areas in the municipality where incremental upgrading approaches to development and regulation will be applicable;
- identify the designation of areas in which—
  - more detailed local plans must be developed; and
  - shortened land use development procedures may be applicable and land use schemes may be so amended;
- provide the spatial expression of the coordination, alignment and integration of sectoral policies of all municipal departments;
- determine a capital expenditure framework for the municipality's development programmes, depicted spatially;
- determine the purpose, desired impact and structure of the land use management scheme to apply in that municipal area, and
- include an implementation plan comprising of—
  i. sectoral requirements, including budgets and resources for implementation;
  ii. necessary amendments to a land use scheme;
  iii. specification of institutional arrangements necessary for implementation;
  iv. specification of implementation targets, including dates and monitoring indicators; and
  v. specification, where necessary, of any arrangements for partnerships in the implementation process.

Conclusion:

The Thembisile Hani Local Municipality must fulfil its obligations as set out in the Constitution, Municipal Systems Act and SPLUMA through the formulation of an IDP and SDF. The formulation of the SDF should adhere to the requirements of SPLUMA in as far as the principles, functionality and content are concerned.

2.1.4 National Development Plan, 2030

The National Development Plan (NDP), 2030 is a plan for the country intended to:

- eliminate poverty and reduce inequality through uniting South Africans;
- unleashing the energies of its citizens;
- growing an inclusive economy;
- building capabilities, and
- enhancing the capacity of the state and leaders working together to solve complex problems.

The NDP reports that increases pressure on services and transport, complicated by apartheid-fragmented geography in all municipal areas. Economic growth has been slower than the demand for employment in these areas, and as a result unemployment and poverty are common features in towns and cities. Combined with this, affordable housing (full ownership and rental) is in huge demand, but delivery of such has been slow.

In **Urban Areas**, key NDP recommendations include:

- Upgrading all informal settlements on suitable, well-located land by 2030;
- Increased urban densities to reduce sprawl and costs;
- Investments to shift jobs and investment to the urban townships on the peripheries;
- Substantial investments in safe, reliable and affordable public transport and better co-ordination among the various modes;
- A comprehensive review of the grant and subsidy regime for housing to ensure diversity in product and finance options and spatial mix;
- A focused strategy on the housing gap market, involving banks, subsidies and employer housing schemes;
- The development of spatial compacts.

In the rural areas, the National Development Plan reports that general productivity has been declining and outmigration to cities and towns has been accelerating. The rural landscape is characterised by rural densification without associated infrastructure and governance arrangements, ill located land-reform initiatives from the perspective of viable farming, or access to markets, and many of these initiatives are in conflict with other imperatives such as mining or preserving biodiversity. This situation is unsustainable and requires timeous intervention.

The NDP suggests that **Rural Interventions** will differentiate less dense marginal areas primarily needing appropriate service provision from more viable and denser areas with transport and market access, including:

- Innovative, targeted and better co-ordinated provision of infrastructure (including ICTs) and services provision supported by the spatial consolidation of rural settlements to enhance densities and associated service delivery;
- Prioritising agricultural and rural development along mobility corridors, to build local economies and contribute to national food security;
- Identification of non-agricultural opportunities such as tourism and mining, especially with a “green” focus’;
- Promoting small-town development as nodes/core areas of rural development;

- Implementing mechanisms to make land markets work more effectively for the poor, especially women.

The National Development Plan provides for the following spatial development proposals as part of the national spatial development interventions:

- **Primary Transnational Development Corridors** and cross border infrastructure connections. These include:
  - The Maputo Development Corridor (MDC) which runs through the Thembisile Hani LM;
  - The Ermelo-Richards Bay Freight Corridor;
  - A link between Ermelo and Swaziland;
- Gauteng as a national **Node of Competitiveness** which strongly associates with the nearby economic activity nodes of Emalahleni, Middelburg, Secunda and Nelspruit as part of the Maputo Development Corridor.
- The **National Competitiveness Corridor** building on the Durban-Gauteng Freight Corridor, providing for logistics hubs, road, rail and fuel transportation.
- **Rural Restructuring Zones**: These zones include the more densely parts of the previous homelands where there is sufficient numbers of people to provide the basis for viable markets through the Comprehensive Rural Development Programme (CRDP). The rural restructuring zones within Mpumalanga include the municipalities of Thembisile Hani, Dr JS Moroka, and Bushbuckridge as a whole, as well as large parts of Mbombela, Nkomazi, Chief Albert Luthuli and Mkhondo.
- **Resource critical zones**: These have valued mineral resources, and are areas of great importance to biodiversity and critical water production. The sustainability of these areas is crucial and needs specific policies to protect them.

2.1.5 Medium Term Strategic Framework 2019-2024

The Medium Term Strategic Framework (2019-2024) represents the translation of government priorities outlined by the President in the 2019 State of the Nation Address (SONA).

The MTSF 2019-2024 aims to address the challenges of unemployment, inequality and poverty through three pillars of the NDP:

- Achieving a more capable State;
- Building and strengthening the capabilities of South Africans; and
- Driving a strong and inclusive economy.

The original 12 Outcomes (2014 – 2019) have now been converted into 7 priorities (2019–2024) which will be achieved through more focused implementation, coordination and integration by the various levels of government, including state owned enterprises, the private sector and civil society. The priorities for the MTSF 2019-2024 are as follows:

- Priority 1: A capable, ethical and developmental state
- Priority 2: Economic transformation and job creation
- Priority 3: Education, skills and health
- Priority 4: Consolidating the social wage through reliable and quality basic services

- Priority 5: Spatial integration, human settlements and local government
- Priority 6: Social cohesion and safe communities
- Priority 7: A better Africa and world

Following from the above, the following three intended **Impacts** and associated **Outcomes** (**Table 1**), as noted under Priority 5 in the MTSF 2019-2024, are pertinent to the Thembisile Hani LM.

Table 1: National MTSF 2019-2024: Priority 5: Impacts and Outcomes

NATIONAL MTSF 2019-2024: PRIORITY 5: IMPACTS AND OUTCOMES
Impact 1: Institutionalize spatial integration to fast-track transformation and resilience of regions
❖ Integrated Service Delivery, Settlement Transformation and Inclusive Growth in Urban and Rural Places: ○ Support intergovernmental action in support of national development objectives and local needs through piloting, refinement and implementation of the District Development Model. ○ Profile and support enterprise development in townships/ rural villages through financial incentives and other non-financial forms of support, and remove inhibiting regulations, to ensure the integration of township/ rural village economies into the mainstream local economic development landscape.
Impact 2: Rapid land and agrarian reform to reduce asset inequality, enhance equitable distribution of land and food security
❖ Sustainable land reform: ○ Land acquired for redistribution, restitution and tenure reform. ○ Land reform projects provided with post settlement support. ○ Water rights allocated to land reform projects (water use licenses). ○ Communal Land/ Farming Agreements (Security). ❖ Agrarian transformation: ○ Reduction in degraded land: Rehabilitated to production. ○ Small holders supported for food production and commercial activities. ○ Increase Ha of land under cultivation in traditional areas. ○ Smallholder farmers supported with skills and infrastructure and financial support measures to increase productivity (71 FPSUs to be established). ○ Agri-hubs and agro-processing facilities established (5 to be established).
Impact 3: Achieving spatial transformation through improved integrated settlement development and linking job opportunities and housing opportunities
❖ Adequate housing and improved quality living environments. ❖ Security of tenure / Eradicate backlog and issuing of title deeds. ❖ Improved capacity to deliver basic services, quality infrastructure and integrated public transport to increase household access to basic services. ❖ Affordable, safe and reliable public transport in urban and rural areas.

2.1.6 Integrated Urban Development Framework and Implementation Plan

The Integrated Urban Development Framework (IUDF) sets out the policy framework for transforming and restructuring South Africa's urban spaces. The IUDF is guided by the vision of creating 'livable, safe, resource-efficient cities and towns that are socially integrated, economically inclusive and globally competitive, where residents actively participate in urban life'.

The IUDF's overall outcome is to steer urban growth towards a sustainable growth model of compact, connected and coordinated cities and towns.

Of specific importance is the IUDF's premise that jobs, housing and transport should be used to promote urban restructuring by:

- Reducing travel costs and distances;
- Preventing further development of housing in marginal places;
- Increasing urban densities to reduce sprawl;
- Improving public transport and the coordination between transport modes, and
- Shifting jobs and investment towards dense peripheral townships.

The IUDF comprises a Vision (Intended Outcome), three Strategic Goals and nine Policy Levers which can be used to achieve the Strategic Goals and Vision as per **Diagram 3**.

Diagram 3: Core elements of the IUDF

INTEGRATED URBAN DEVELOPMENT FRAMEWORK	
Outcome – Spatial Transformation	✓ Outcome Led Planning: Jobs, Housing and Transport
Strategic Goals:	✓ Spatial Integration ✓ Inclusion and Access ✓ Growth Governance
Policy Levers – Objectives:	✓ Integrated Urban Planning and Management ✓ Integrated Transport and Mobility ✓ Integrated Sustainable Human Settlements ✓ Integrated Urban Infrastructure ✓ Efficient Land Management and Governance ✓ Inclusive Economic Development ✓ Empowered Active Communities ✓ Effective Urban Governance ✓ Sustainable Finances

2.1.7 National Spatial Development Framework, 2022

The National Spatial Development Framework is based on the NDP 2030 Priorities and the National Spatial Development Vision and Logic, as defined in the NDP. The directives from the National Spatial Development Framework which are relevant to the Thembisile Hani Local Municipality are discussed below.

Figure 2 depicts the various Transformation Regions of the NSDF from which it is evident that the Thembisile Hani LM functionally forms part of the Central Innovation Belt (CIB) which is spatially positioned to be an economically strong, diverse production area that forms an integral part of the core economic driver of the country and the sub-continent.

The following **Proposals** are made for the **Central Innovation Belt**:

- Support large-scale regional economic and employment change in the region through innovation, diversification, adaptation and the repurposing of existing industrial land and associated infrastructure;
- Expedite urban and rural land reform, consolidate existing small-and-medium-scale agriculture support programmes, protect and optimise high-value agricultural land, and strengthen the focus on job-intensive agro-processing in the area;
- Introduce a special collaborative programme in government (including DMRE, DTI, CoGTA, DALRRD, DPME, NT, provincial sector department and municipalities) with a specific focus on ensuring (1) innovation and economic diversification and (2) quality human settlement development in the region, and involve universities, research councils, the private sector, communities and organised labour in this urgent initiative; and
- Establish a joint public-private action group to manage the threat to nationally and regionally important (1) water resources and (2) productive land, with the priority being on the impact of formal and informal urban sprawl, acid mine drainage, the maintenance of productive agriculture – especially for small scale farmers close to urban centres – and the rehabilitation and management of the Vaal River system.

The Thembisile Hani LM falls within the **Olifants River Catchment National Resource Risk Area**, which are areas that are of crucial importance to the economy of the country and the lives of all its people.

The following **Proposals** are made for the **Olifants River Catchment Area**:

- Attend, as a matter of urgency, to areas where land-use and water competition and pollution are (1) causing severe risks to stressed catchments in fulfilling their ecosystem sustenance and service roles, and (2) placing downstream dependent regions at risk;
- Rehabilitate degraded and/or contaminated areas to play their crucial roles in national (1) food production and (2) surface and ground water production and supply;
- Plan and prepare for climate change, not only in the areas themselves, but also for the knock-on effects of climate change in other parts of the country and in neighbouring countries;
- Attend to capacity and resource-constraints at provincial, regional and local levels, with national sector departments responsible for environmental affairs and spatial planning playing a key role in this regard;

- Avoid approving applications and proposals for land-uses that reduce stream flow or affect water quality (e.g. mining operations and huge plantations) in SWSAs;
- Keep wetlands in good condition, rehabilitate ones in need, and remove invasive alien plants;
- Restore, manage and wisely use CBAs and SWSAs to support eco-enterprise activities and related livelihood opportunities;
- Prepare integrated development and resource management plans with an explicitly (1) spatial approach and (2) a strategic national perspective for each of the NRRAs – possibly a Regional SDF; and
- Ensure coordinated State intervention in these regions, with the DALRRD, DPME, DFFE and affected Premiers' Offices, in collaboration with the municipalities involved, spearheading such action.

2.1.8 National Biodiversity Strategy and Action Plan 2005, Biodiversity Assessment 2011

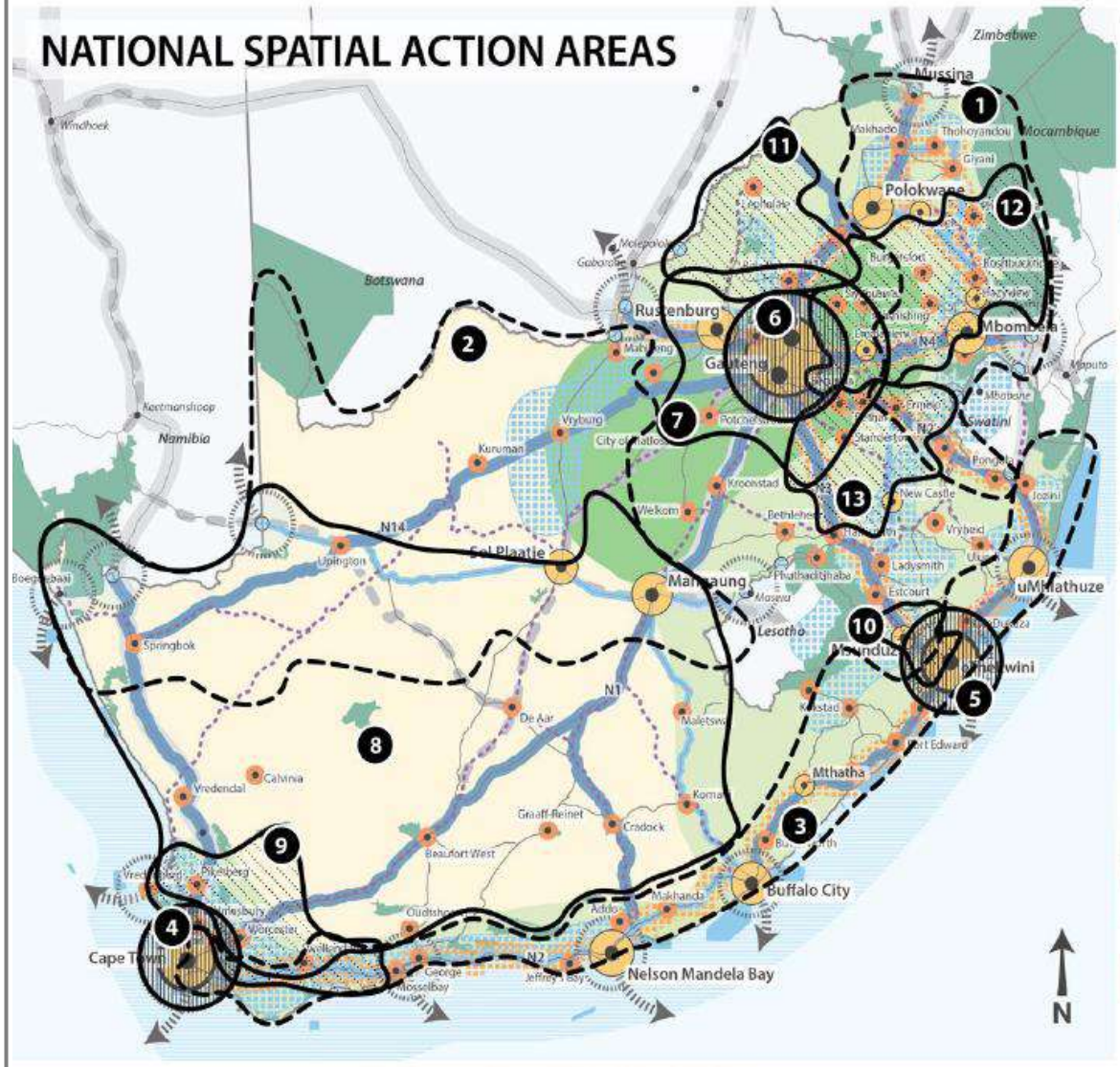
This report provides a spatial picture of the location of South Africa's threatened and under-protected ecosystems across terrestrial, freshwater, estuarine and marine environments, and focuses attention on geographic priority areas for biodiversity conservation.

The Biodiversity Action Plan puts forward the following Key Priorities:

- Enhancing systems for integrated planning and implementation.
- Sustaining our ecosystems and using natural resources efficiently.
- Promoting a green economy.
- Building sustainable communities.
- Responding effectively to climate change.

These Key Priorities are to be filtered down and addressed in more detail in the Provincial and Municipal Bioregional Plans.

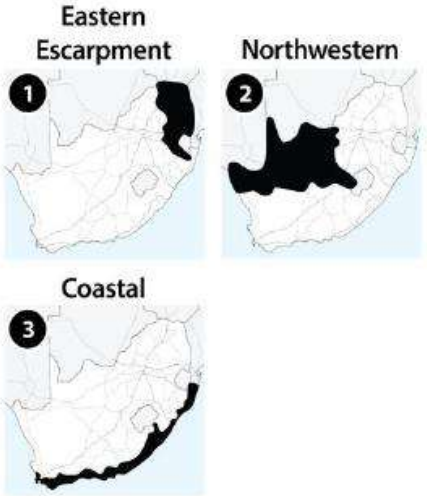
NATIONAL SPATIAL DEVELOPMENT FRAMEWORK – TRANSFORMATION REGIONS



NATIONAL SPATIAL DEVELOF

- National Urban Regions
- National Urban Nodes
- Regional Development Anchors
- National Development Corridors
- Import/Export Nodes
- Key National Roads
- Key Regional Roads
- Key Rail Routes
- Inter-regional Road Corridors
- Inter-regional Rail Corridors
- Border Posts
- Agri-Enterprise and Small-scale Farming Resource Region
- National Resource Production Heartland
- Arid-Agri Region
- Ocean & Aqua Culture Production Region
- Eco-Resource Production Region
- National Protected Parks and World Heritage Sites
- Marine Protection Area

TRANSFORMATION AND ECONOMIC TRANSITION REGIONS



THE NATIONAL URBAN SPATIAL TRANSFORMATION AND ECONOMIC TRANSITION REGIONS

NATIONAL RESOURCE RISK AREAS

Source: National Spatial Development Framework 2022

2.1.9 National Climate Change Adaptation Strategy, 2019

The National Climate Change Adaptation Strategy (NCCAS) provides a common vision of climate change adaptation and climate resilience for the country, and outlines priority areas for achieving this vision. The NCCAS's vision draws on South Africa's National Climate Change Response Policy (NCCRP) (DEA 2011), the National Development Plan (NDP) (NPC 2011), the National Strategy for Sustainable Development (NSSD) (DEA 2011b), the adaptation commitments included in its Nationally Determined Contributions (NDCs), sector adaptation plans, provincial adaptation plans and municipality adaptation plans.

The Vision of the National Climate Change Adaptation Strategy is:

"To transition to a climate resilient South Africa, which will follow a sustainable development path, guided by **anticipation, adaptation** and **recovery** from a changing climate and environment to achieve our development aspirations."

The **Strategic Objectives** of the NCCAS are as follows:

- **Objective 1:** Build climate resilience and adaptive capacity to respond to climate change risk and vulnerability.
- **Objective 2:** Promote the integration of climate change adaptation response into development objectives, policy, planning and implementation.
- **Objective 3:** Improve understanding of climate change impacts and capacity to respond to these impacts.
- **Objective 4:** Ensure resources and systems are in place to enable implementation of climate change responses.

The nine **Strategic Interventions** and **Outcomes** of the NCCAS are as follows:

- **Intervention 1**: Reduce human, economic, environmental, physical and ecological infrastructure vulnerability and build adaptive capacity.
  - Outcome 1.1: Increased resilience and adaptive capacity achieved in human, economic, environmental, physical and ecological infrastructure.
- **Intervention 2:** Develop a coordinated Climate Services System that provides climate products and services for key climate vulnerable sectors and geographic areas.
  - Outcome 2.1: Climate products and services for key climate vulnerable sectors and geographic areas developed and implemented.
- **Intervention 3:** Develop a vulnerability and resilience methodology framework that integrates biophysical and socio-economic aspects of vulnerability and resilience.
  - Outcome 3.1: A Climate Risk and Vulnerability Assessment Framework developed and implemented across 100% of key adaptation sectors.
- **Intervention 4:** Facilitate mainstreaming of adaptation responses into sectoral planning and implementation.
  - Outcome 4.1: Effective adaptation planning that covers at least 100% of the South African sectors identified in the NCCAS.
  - Outcome 4.2: Achieve a 100% coverage of climate change considerations in sectoral operational plans.
- **Intervention 5:** Promote research application, technology development, transfer and adoption to support planning and implementation.
  - Outcome 5.1: Increased research output and technology uptake to support planning and implementation.

- **Intervention 6:** Build the necessary capacity and awareness for climate change responses.
  - Outcome 6.1: Capacity building and awareness for climate change response enhanced.
- **Intervention 7:** Establish effective governance and legislative processes to integrate climate change in development planning.
  - Outcome 7.1: Adaptation governance defined and legislated through the Climate Change Act once approved by parliament.
  - Outcome 7.2: Institutional structures for climate change adaptation strengthened.
  - Outcome 7.3: Enhanced public-private-civil society collaboration and stewardship.
- **Intervention 8:** Enable substantial flows of climate change adaptation finance from various sources.
  - Outcome 8.1: Adequate financial resources for national adaptation priorities from national fiscus and international sources.
- **Intervention 9:** Develop and implement a Monitoring and Evaluation System that tracks implementation of adaptation actions and their effectiveness.
  - Outcome 9.1: A national Monitoring and Evaluation system developed and implemented.

2.1.10 National Comprehensive Rural Development Programme, 2009

The National Comprehensive Rural Development Programme (CRDP) aims to mobilise and empower rural communities to take initiatives aimed at controlling their own destiny - with the support of government. The goal of the CRDP is to achieve social cohesion and development by ensuring improved access to basic services, enterprise development and village industrialisation. The CRDP implements broad based-agrarian transformation focussing on community organisation and mobilisation as well as strategic investment in economic and social infrastructure.

The vision of the CRDP is to be achieved through a three-pronged strategy based on:

- Co-ordinated and integrated broad-based Agrarian Transformation;
- Strategically increased rural development through infrastructure investment, and
- An improved land reform programme.

The objectives of each of the three strategic thrusts thought applicable to the formulation of the Thembisile Hani LM SDF are summarised on **Diagram 4** and briefly discussed.

Agrarian Transformation:

- Facilitate the establishment of rural and agro-industries, co-operatives, cultural initiatives and vibrant local markets;
- Increase production and sustainable use of natural resources by promoting farming and related value chain development (exploring all possible species of food and economic activity).

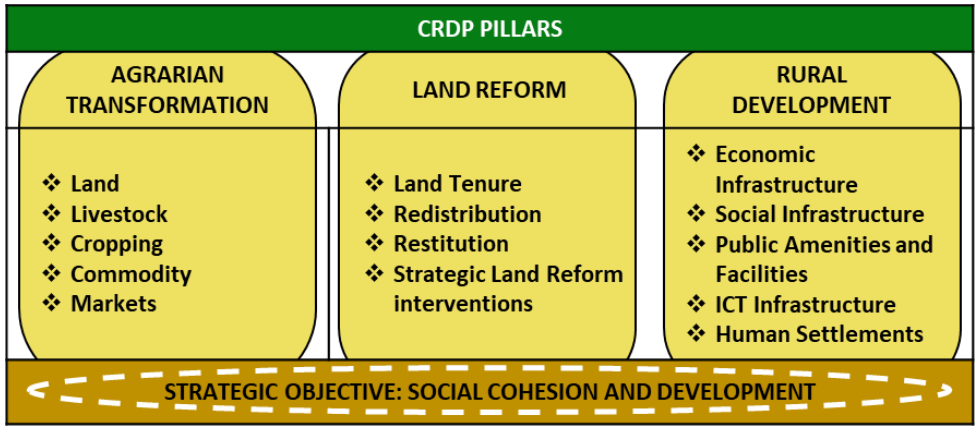
Land Reform:

- Promote restitution, tenure reform and redistribution in a sustainable manner.
- Increase access to land by previously disadvantaged people.
- Establish agri-villages for local economic development on farms.
- Up-to-date information pertaining to land claims.
- Provide reliable and efficient property (deeds) registration system.
- Contribute to economic growth and housing development by providing government and private agents with essential land information in order to engage in planning as well as economic transactions.
- Provide spatial planning information and services to local municipalities and other public and private institutions that may require these services for development purposes.

Rural Development:

- Access to community and social infrastructure, especially well-resourced clinics.
- Focus on the development of new and the rehabilitation of existing infrastructure.
- Improve and develop infrastructure conducive to economic development, for example distribution and transportation infrastructure, agricultural infrastructure, water and electricity infrastructure, market and storage infrastructure, retail infrastructure and telecommunications infrastructure.
- Improve and develop infrastructure conducive to social development, for instance sanitation infrastructure, health infrastructure, sports and recreation infrastructure and education infrastructure (especially ABET centres).

Diagram 4: Comprehensive Rural Development Plan Concept



2.1.11 Agricultural Policy Action Plan, 2015

The Agricultural Policy Action Plan (APAP, 2015-19) stems from a concern that South Africa increasingly relies on imports of crops (wheat) and livestock products (poultry) while the agricultural sector increasingly relies on imports of inputs (e.g. fertiliser, feed, mechanisation). It argues that we need to:

- establish a more sustainable and productive agricultural sector;
- strengthen our competitiveness by supporting localization where potential exists; and
- promote agricultural development in a manner that translates into rural development and poverty alleviation.

Key Policy Levers to achieve the above are illustrated in **Table 2** below.

Table 2: Agricultural Action Plan Key Policy Levers

Equity and Transformation	Equitable Growth and Competitiveness	Environmental Sustainability
❖ Ensuring a more producer-friendly (and consumer-friendly) market structure ❖ Accelerating implementation of the Charters and the Small-scale fisheries policy ❖ Promoting local food economies ❖ Investment in agro-logistics ❖ Support Services and Skills Development	❖ Promoting import substitution and export expansion through concerted value chain/commodity strategies (commodity corridors) ❖ Reducing dependence on industrial and imported inputs ❖ Increasing productive use of fallow land (GIS Support/ Database) ❖ Knowledge and information management (integrated spatial economic planning) ❖ Strengthening Research and Development outcomes ❖ Market Access, Information and Regulation	❖ Promoting Climate Smart Agriculture

2.1.12 Industrial Policy Action Plan 2014-2015

The Industrial Policy Action Plan 2012/13 to 2014/15 or the 'Revised IPAP2' as it has become known builds on the National Industrial Policy Framework (NIPF) which has the following core objectives:

- To facilitate diversification beyond the economy's current reliance on traditional commodities, focusing on tradable goods and services that compete in export markets and against imports;
- To promote labour-absorbing industrialisation with the emphasis on goods and services and economic linkages that create employment;
- To promote the increased participation of historically disadvantaged people and marginalised regions in the industrial economy;
- To ensure long-term intensification of South Africa's industrialisation process and movement towards a knowledge economy; and
- To contribute towards industrial development in Africa with a strong emphasis on building the continent's productive capacity and secure regional economic integration.

Special emphasis is placed on **three sectors** that are particularly well placed for scaling up through leveraging market growth and associated upgrading of supply capacity and capabilities. These are:

- **"Green" Industries:** In particular, the manufacture of components for the 17.8 GW renewable energy generation programme and the production of solar heaters and components, and a range of other goods and services that arise from the requirements of higher energy efficiency in the economy.
- **Agro-processing:** In particular, the expediting of regulatory and support mechanisms to create a large-scale bio-fuels industry, the identification and promotion of export market opportunities to major net food-importing countries; and investment, production development and standards support.
- **Metal fabrication, capital and transport equipment:** Significant opportunities arise from the leveraging of large public procurement in rail and electricity, the provision of associated investment and upgrading support, and exploitation of opportunities arising from mining capital equipment investment in South Africa and on the rest of the continent.

2.1.13 National Infrastructure Development Plan, 2012

The following Strategic Infrastructure Projects (see **Table 3**) are included in the National Infrastructure Development Plan – some of which are relevant to the Thembisile Hani LM.

Table 3: Strategic Infrastructure Projects

TYPE OF INFRASTRUCTURE	FOCUS AREAS OF SIPS
Geographic	1. Unlocking the northern mineral belt, with Waterberg as the catalyst 2. Durban–Free State–Gauteng logistics and industrial corridor 3. South-eastern node and corridor development

TYPE OF INFRASTRUCTURE	FOCUS AREAS OF SIPS
	4. Unlocking economic opportunities in the North-West Province 5. Saldanha–Northern Cape development corridor
Spatial	6. Integrated municipal infrastructure project 7. Integrated urban space and public transport programme
Energy	8. Green energy in support of SA economy 9. Electricity generation to support socio-economic development 10. Electricity transmission and distribution for all
Rural	11. Agri-logistics and rural infrastructure
Education/ Health	12. Social infrastructure revitalisation of public hospitals and other public health facilities 13. National school-build programme 14. Higher education infrastructure
Knowledge	15. Expanding access to communication technology 16. Square Kilometre Array and Meerkat projects
Regional Integration	17. Regional integration for African cooperation and development
Water and Sanitation	18. Water and sanitation infrastructure

2.1.14 Sustainable Human Settlements: Breaking New Ground, 2004

The National Strategy for Sustainable Development, alternatively referred to as Breaking New Ground (2004), is a comprehensive plan for the development of sustainable human settlements. The plan seeks to promote the creation of a non-racial, integrated society through the development of sustainable human settlements and quality housing in line with the following specific objectives:

- Accelerate housing delivery;
- Improve the quality of housing products and environments;
- Ensure asset creation through tenure upgrading;
- Ensure a single, efficient formal housing market, and
- Restructure and integrate human settlements.

It moves away from the current singular focus of housing delivery (numbers) towards more responsive mechanisms which address the multi-dimensional needs towards achieving sustainable human settlements.

2.1.15 Neighbourhood Development Partnership Grant 2006

The Neighbourhood Development Partnership Grant (NDPG) aims to "stimulate and accelerate investment in poor and underserved neighbourhoods." The NDPG seeks to address the lack of development (primarily economic) in townships, informal areas and low-income settlements and supports the following types of interventions in township hub areas:

- Turning dormitory townships into fully functional neighbourhoods;

- Strategic economic development projects;
- Land use restructuring;
- Stimulating property markets;
- Purchasing power retention;
- Public sector investment as catalyst;
- Leveraging non-governmental investment;
- Ensuring municipal support, and
- Kick-starting township regeneration.

2.1.16 Sustainable Development Goals

This transformative plan of action is based on 17 Sustainable Development Goals to address urgent global challenges towards the year 2030, summarised as follows in **Table 4**:

Table 4: Sustainable Development Goals: 2030

SUSTAINABLE DEVELOPMENT GOALS: 2030
Environment
❖ **Goal 1** – Conserve and sustainably use the oceans, seas and marine resources for sustainable development.
❖ **Goal 2** – Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.
❖ **Goal 3** – Take urgent action to combat climate change and its impacts by regulating emissions and promoting developments in renewable energy.
❖ **Goal 4** – Ensure sustainable consumption and production patterns.
Human Settlements
❖ **Goal 5** – Make cities and human settlements inclusive, safe, resilient and sustainable.
Social Welfare
❖ **Goal 6** – End poverty in all its forms everywhere.
❖ **Goal 7** – End hunger, achieve food security and improved nutrition and promote sustainable agriculture.
❖ **Goal 8** – Ensure healthy lives and promote well-being for all at all ages.
❖ **Goal 9** – Ensure inclusive and equitable quality education and promote lifelong learning.
❖ **Goal 10** – Achieve gender equality and empower all women and girls.
❖ **Goal 11** – Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels.
Economic Development
❖ **Goal 12** – Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.
❖ **Goal 13** – Reduce income inequality within and among countries.
Infrastructure
❖ **Goal 14** – Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
❖ **Goal 15** – Ensure availability and sustainable management of water and sanitation for all.
❖ **Goal 16** – Ensure access to affordable, reliable, sustainable and modern energy for all.

- **Goal 17** – Strengthen the means of implementation and revitalize the global partnership for sustainable development.

2.1.17 National Nine-Point Plan

The Nine- Point Plan was announced in 2015 as a response to surmountable challenges affecting South Africa, which included:

i. Electricity challenges;
ii. Inadequate economic infrastructure in general;
iii. Unwieldy regulatory processes which delay investment; and
iv. Insufficient government coordination, which contributes to investor uncertainty.

The Nine-Point Plan is intended to grow the South African Economy and create Much-Needed Jobs and the components of the plan are summarise in **Table 5.**

Table 5: Components of the National Nine-Point Plan

INITIATIVE	LEAD DEPARTMENT
1. Revitalising agriculture and the agro-processing value chain	❖ Agriculture, Forestry and Fisheries
2. Adding value to our mineral wealth (advancing beneficiation and support to the engineering and metals value chain)	❖ Trade and Industry
3. More effective implementation of a higher impact Industrial Policy Action Plan	❖ Trade and Industry
4. Unlocking the potential of small, medium and micro enterprises, cooperatives and township enterprises	❖ Small Business Development
5. Operation Phakisa (Oceans Economy, Mining, Health, Tourism, Basic Education, etc.)	❖ Environmental Affairs ❖ Mineral Resources ❖ Health ❖ Tourism ❖ Basic Education
6. Encouraging private sector investment	❖ Trade and Industry
7. Resolving the energy challenge	❖ Energy
8. Moderating workplace conflict	❖ Labour
9. State reform and boosting the role of state-owned companies, information and communications technology infrastructure or broadband roll-out, water, sanitation and transport infrastructure	❖ Telecommunications and Postal Services ❖ Water and Sanitation ❖ Transport

2.2 PROVINCIAL POLICY FRAMEWORK

2.2.1 Mpumalanga Spatial Development Framework, 2019

The Mpumalanga Spatial Development Framework (2019) is based on the following Spatial Vision:

"A Mpumalanga that has a sustainable, vibrant and inclusive economy developing all resources and promoting a healthy environment through innovation."

Furthermore, it comprises five Strategic Objectives as summarised below, which should be read in conjunction with the Spatial Plan for the province as depicted on **Figure 3** and **Figure 4**.

Strategic Objective 1: Connectivity and Corridor Functionality:

- Ensure connectivity between nodes and connectivity from surrounding areas, for example, lower nodes, major industrial concentrations with areas of concentration, which implies a hierarchy of movement routes – linking to the functionality of the road network.
- Accommodate connectivity through provincial roads to connect marginalised areas with main corridors.
- Incorporate connectivity to a green open space system – ideally linked to tourism corridors.
- Recognise secondary towns as part of the overall settlement and economic network of the province, with functional linkages between the urban conurbation and the hinterland.
- Enhance the effectiveness of the N4 Maputo Corridor – linked to the approach of identifying and stimulating smaller "intermediate" nodes – corridor/node concept.

Strategic Objective 2: Sustainable Concentration and Agglomeration (Spatial Targeting):

This objective refers to the creation of an agglomeration economy that will encourage people and economic activities to locate near one another in urban centres and industrial clusters. It assumes that for sustainable development it is vital to concentrate development at strategic places and preserve land for agriculture and essential services (Spatial Targeting). The salient features of this objective are provided below:

- Focus on the creation of agglomeration economies and clustering linked to the settlement typology (nodal hierarchy comprising a total of 79 priority towns and villages for the province) as listed in **Table 6.**
  - KwaMhlanga and Kwaggafontein are identified as Regional Service Centres and Verena is identified as a Small Town
- Allow the concentration of opportunities in key nodes and along key corridors and of public investment in and around these nodes or connectors.
- Allow for broadening the economic base in the concentration areas through infrastructure investment, land release and skills development.
- Optimise the utilisation of existing infrastructure and social amenities, particularly in areas where spare capacity exists – also linked to areas of potential opportunity in proximity to corridors and possible smaller nodes on the corridors.

- Bring more people closer to a greater number of opportunities in the areas of concentration through increased densities, implying a need for affordable and lower income housing as directed through social housing zones.
- Ensure that densification takes place according to the nature and scale of the node or corridor and in relation to the location of these places in the broader urban environment. This would then guide the types of densities (medium or higher densities) that would be suitable in different locations – CSIR nodes.

Table 6: Settlement Typology for 79 Mpumalanga Towns and Settlements

CITIES AND LARGE REGIONAL CENTRES (2)	City of Mbombela Emalahleni	
REGIONAL SERVICE CENTRES (13)	**KwaMhlanga** Hazyview Siyabuswa Bushbuckridge Ermelo Middelburg Secunda	Bethal Standerton Phumula Arthur Stone **Kwaggafontein** Vaalbank
SERVICE TOWNS (17)	Acornhoek Barberton Delmas Kamaqhekeza Lydenburg Matsulu Sabie Volksrust Balfour	Carolina Leandra Ogies Mkhondo Kriel Leslie Goedehoop Sibayeni
SMALL SERVICE TOWNS AND RURAL SERVICE SETTLEMENTS (12)	Amersfoort Amsterdam Dullstroom Glisamyn Hendrina Heuningklip	Komatipoort Lilydale Lothair Middelplaas Morgenzon Red Acres
SMALL TOWNS (34)	Glenmore Graskop Hectorspruit Breyton Hluvikani Kaapmuiden Kamhlushwa Badplaas Davel Belfast Charl Cilliers Chrissiesmeer Kranskop eMangweni eMpuluzi Machadodorp Malalane	Marapyane Maqsibekela Dundonald Fourieskraal Alanglade Hope Impala Koppie Alleen Maviristad Mgobode Rietvlei Skukuza Van Dyks Vandyksdrif **Verena** Wakkerstroom Waterval Boven

Strategic Objective 3: Conservation and Resource Utilisation

- Allow for the maintenance of healthy natural environments, ecosystems and biophysical processes which support life, and which must be allowed to continue without significant change.

- Ensure that stresses that affect environmental integrity are avoided, or at the very least limited and mitigated through appropriate mitigations and offsets -
- Focus on maximising the use of scarce natural resources through recycling, the transformation of existing consumption patterns, the use of zero-emission transportation systems and the reduction of waste.
- Create a functional and aesthetically pleasing integrated open space system across the province that will not only add essential cultural services but also contribute to the enhancement of the other types of ecosystems as well.
- Protect high-potential agricultural land to ensure future food security. Development proposals for should therefore not impact on this valuable and irreplaceable resource – linked to the land capability assessment to protect category 8 – 15.
- Mining, especially coal mining remains one of the provinces key economic sectors, realising the contestation of resources through mining the negative impacts require management and positive mitigation interventions – environment, water, air pollution and agricultural land.

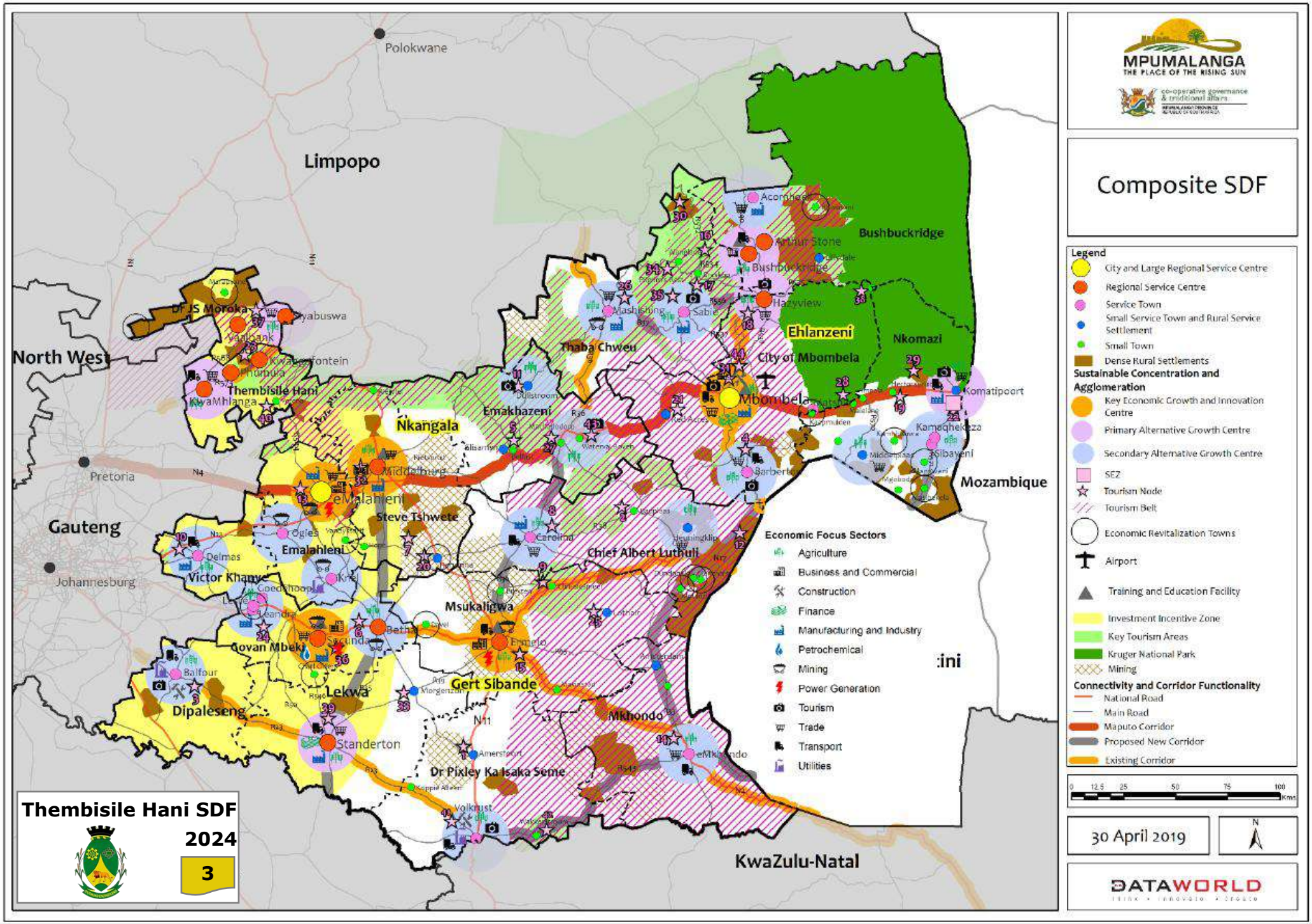
Strategic Objective 4: Liveability and Sense of Place

- It should lead to the creation of settlements in which people live in a way that is worthy of human beings and healthy social interaction.
- Include those spatial, social and environmental characteristics and qualities that uniquely contribute to people's sense of personal and collective wellbeing and to their sense of satisfaction in being the residents of a settlement.
- Confirm functional integration between human settlement planning, economic opportunity and public transport is the key driving factor for spatial transformation – elements of smart growth.
- Allowing people to reclaim public spaces through improved safety and security.
- Address the spatial marginalisation of townships and the overwhelming tendency to locate government-funded housing projects on the periphery through spatial integration and development of housing on well-located land parcels.

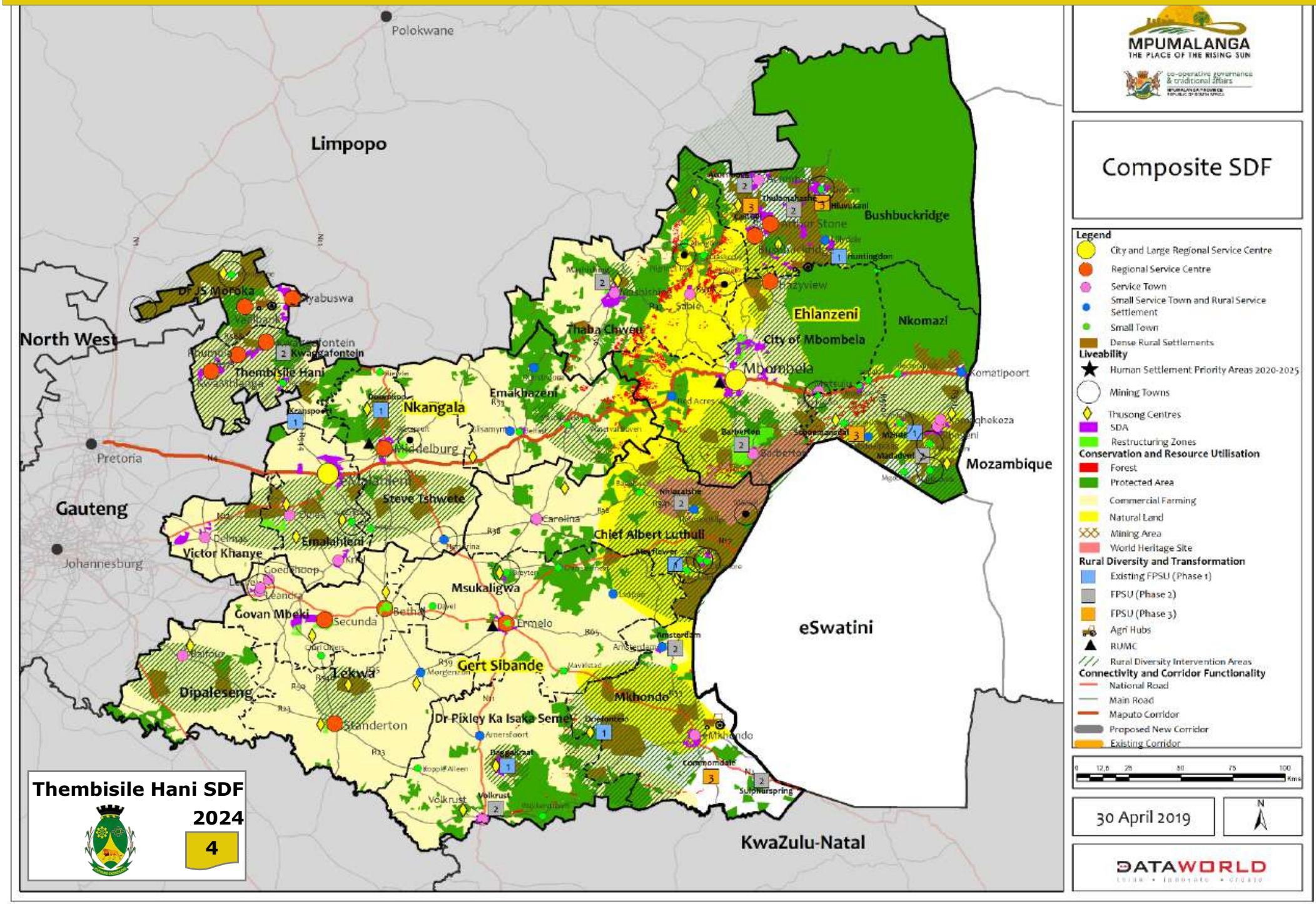
Strategic Objective 5: Rural Diversity and Transformation

- Introduce the development of various types of environments that are linked to the spatial characteristics of that geographic location – recognition of the rural concept and developmental initiatives through the RDPs.
- Create choices for residents within the rural economy linked to access to markets, food security and security of land tenure.
- The creation of Urban-Rural anchors which will assist in the facilitation of well-established nodes in rural areas.
- Development of Rural Economic Nodes through rural restructuring and transformation.

Mpumalanga Spatial Development Framework



Mpumalanga Spatial Development Framework (2)



MPUMALANGA
THE PLACE OF THE RISING SUN
co-operative governance & traditional affairs

Composite SDF

Legend

- City and Large Regional Service Centre
- Regional Service Centre
- Service Town
- Small Service Town and Rural Service Settlement
- Small Town
- Dense Rural Settlements

Liveability

- Human Settlement Priority Areas 2020-2025
- Mining Towns
- Thusong Centres
- SDA
- Restructuring Zones

Conservation and Resource Utilisation

- Forest
- Protected Area
- Commercial Farming
- Natural Land
- Mining Area
- World Heritage Site

Rural Diversity and Transformation

- Existing FPSU (Phase 1)
- FPSU (Phase 2)
- FPSU (Phase 3)
- Agri Hubs
- RUMC
- Rural Diversity Intervention Areas

Connectivity and Corridor Functionality

- National Road
- Main Road
- Maputo Corridor
- Proposed New Corridor
- Existing Corridor

0 12.5 25 50 75 100 Kms

30 April 2019

N

DATAWORLD

2.2.2 Mpumalanga Vision 2030

In line with the Mpumalanga Spatial Development Framework, the Mpumalanga Vision 2030 document formulated a spatial rationale for the province which is based on the following nine Key Drivers:

- Key Driver 1: Nodal Development
- Key Driver 2: Business, Commercial and Industrial Development
- Key Driver 3: Tourism Development
- Key Driver 4: Forestry Development
- Key Driver 5: Agricultural Development
- Key Driver 6: Mining and Energy Related Development
- Key Driver 7: Urban Development
- Key Driver 8: Rural Development
- Key Driver 9: Environmental Management and Conservation

Key Drivers 1 to 6 are focused towards promoting economic development and job creation according to the space economy of Mpumalanga province from which priority nodes/ areas for economic development have been identified.

Key Drivers 7 and 8 are focused on human settlement in and around these priority nodes/ areas identified. Following below is a brief summary of the spatial guidelines for urban and rural areas as described under Key Drivers 7 and 8 of Mpumalanga Vision 2030:

Key Driver 7: Urban Development

In terms of the National Development Plan: Vision 2030, human settlement patterns within cities and towns should meet the needs and preferences of the citizens, taking into account broader social, environmental and economic interests. Travel distances need to be shorter which implies ensuring that a larger proportion of workers live closer to their places of work, and that public transport is safe, reliable, affordable and energy efficient.

The above requires two main interventions in the urban areas of Mpumalanga Province: Urban Restructuring and Urban Renewal.

Intervention 1: Urban Restructuring

Urban Restructuring is aimed at transforming cities, towns and villages into more sustainable human settlements. The appropriate utilisation of well-located public owned land and public funded housing initiatives can act as powerful tools towards achieving urban restructuring objectives in Mpumalanga.

In the medium to longer term the objective should be to consolidate and densify the fragmented urban and rural settlement structure in three priority areas in the province with a view to transforming these into metropolitan areas. This will require strong interventionist approaches in terms of planning and development across municipal boundaries in these areas. The areas to be considered include:

- Mbombela and its rural surrounds including parts of Bushbuckridge and Nkomazi;

- **The Witbank-Middelburg-Ogies complex extending up to Verena and settlements along the Moloto Corridor in Thembisile Hani (in Nkangala); and**
- The Trichardt-Evander-Kinross-Secunda (TEKS) complex in the Gert Sibande District.

Intervention 2: Urban Renewal and Revitalisation

Urban Renewal and Revitalisation is relevant to all business/ commercial areas and residential neighbourhoods in cities and towns in Mpumalanga Province, but even more so in the small towns in the Province, many of which are currently in a state of neglect and urban decay. The private sector should become active partners with government towards addressing the revitalisation of the small towns. The mining industry in particular can play a significant role in this regard as confirmed in the agreements reached in the recent Mpumalanga Mining Indaba.

Apart from enhancing the public space and facilities and promoting business and industrial uses in small towns, the provision/ upgrading of existing housing stock (full ownership or rental) can also make a significant contribution towards creating "critical sustainable mass" in small towns and thereby enhance the economic viability thereof.

Key Driver 8: Rural Development

Vision 2030 places particular emphasis on building the economy in rural areas, and more specifically through the following approach which is embedded into the Comprehensive Rural Development Programme (CRDP):

- Creating more jobs through agricultural development, based on effective land reform and the growth of irrigated agriculture and land production.
- Providing basic services and infrastructure in rural areas in such a way that it enables people to develop in a sustainable manner and to take advantage of opportunities in the rural parts of the Province.
- Developing industries such as agro-processing, tourism, fisheries and small enterprises where potential exists.

In pursuance of the above, the proposed approach towards rural development in Mpumalanga Province centres around the following three Interventions:

Intervention 1: Establishment of Thusong Centres

This principle requires that strategically located and accessible nodal points should be identified in all rural parts of Mpumalanga Province. These should then become focal points for public investment around which to establish a comprehensive range of community facilities serving the social needs of surrounding rural communities. Apart from clustering community facilities and services at these points, government should also consolidate large scale rural housing projects in and around these nodes rather than numerous small scale rural housing projects scattered across the rural landscape.

Intervention 2: Rural Settlement Consolidation

Existing settlements around service delivery nodes should be functionally consolidated and integrated over time. This can be achieved by way of the establishment of rural development boundaries which will firstly limit/ curb the uncontrolled expansion of low density rural settlements. The resulting higher densities will lead to more sustainable rural human settlements. The

consolidation of these settlements into rural clusters around rural service delivery points will transform rural settlement areas into functionally viable and sustainable clusters of human settlement throughout the province.

Intervention 3: Agrarian Transformation

As far as the rural hinterland between these rural clusters is concerned, the important principle as contained in Mpumalanga Vision 2030 is to promote agrarian transformation in order to transform these areas from subsistence farming to commercial farming areas. This will contribute significantly towards improved food security and economic empowerment of rural communities.

2.2.3 Mpumalanga Economic Growth and Development Path, 2011

The Mpumalanga Economic Growth and Development Path (MEGDP) is informed by the National Economic Growth Path. The Mpumalanga Province is committed to increasing local economic development and job creation in the agricultural, industrial, manufacturing, green economy, tourism and mining sectors. The MEGDP provides a detailed framework for the realisation of these objectives. The focal point of the Economic Growth and Development Path is the creation of appropriate labour absorbing jobs which will have positive direct, indirect and induced effects on the Provincial economy and the living standards of its people.

The primary objective of the MEGDP is to grow the economy of the province; balance growth and development in order to create jobs; reduce poverty and inequality and improve the socio-economic conditions of the province. The growth plan is anchored on a few factors including sector development, inclusive and shared growth, spatial distribution, regional integration, sustainable human development and environmental sustainability with clearly defined strategic targets over the medium- to long-term period.

The following job drivers will be utilised to realise the objectives of the MEGDP and to secure strong and sustainable growth for the next decade:

- Infrastructure for Employment and Development
- Job Creation in Economic Sectors such as:
  - Agriculture and forestry
  - Mining and energy
  - Manufacturing and beneficiation
  - Tourism and cultural industries
- Seizing the Potential for New Economies in:
  - Green Industries
  - Information and Communication Technology
- Investing in Social Capital and the Public Service
- Spatial Development
  - Rural Development
  - Regional and International Co-operation

2.2.4 Mpumalanga Biodiversity Plan, 2022

The Mpumalanga Biodiversity Sector Plan comprises two types of critical biodiversity areas (CBAs). Terrestrial CBAs (see **Figure 5**) and Freshwater CBAs (see **Figure 6**). These are supplemented by a set of land- use guidelines that are important for maintaining and supporting the inherent biodiversity values of these critical biodiversity areas. The following broad categories are defined:

Terrestrial Critical Biodiversity Areas (CBAs):

Terrestrial Critical Biodiversity Areas as reflected are those areas (outside of Protected Areas) that are required to meet biodiversity targets for biodiversity pattern (species and ecosystems) and ecological processes. They should remain in a natural state that is maintained in good ecological condition:

- CBA Irreplaceable; and
- CBA Optimal.

Terrestrial Ecological Support Areas (ESAs):

Terrestrial Ecological Support Areas are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of critical biodiversity areas or for generating or delivering important ecosystem services. They support landscape connectivity and resilience to climate change adaptation. ESAs need to be maintained in at least an ecologically functional state.

Four sub-categories of ESA are recognized in the Mpumalanga Biodiversity Sector Plan (MBSP), which are described below:

- ESA: Landscape-scale Corridors
- ESA: Local-scale Corridors
- ESA: Species Specific
- ESA: Protected Area Buffers

Freshwater Ecosystem Priority Areas (FEPAs):

Freshwater Ecosystem Priority Areas (FEPAs) are strategic spatial priorities for meeting biodiversity targets for freshwater ecosystems and supporting sustainable use of water resources.

Freshwater Critical Biodiversity Areas (CBAs):

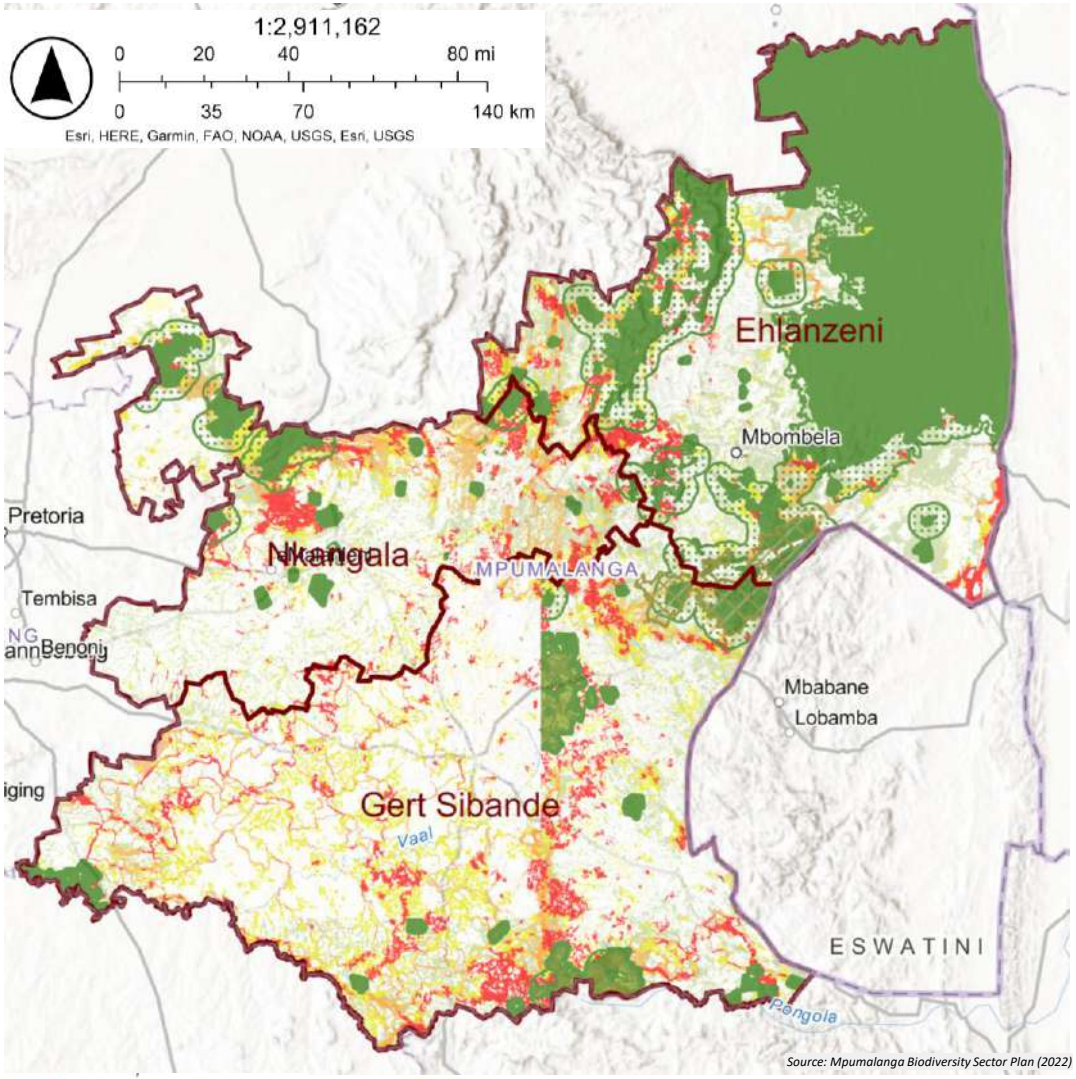
Freshwater Critical Biodiversity Areas are all freshwater ecosystems that are required to meet biodiversity targets for freshwater ecosystems and some species. They should be kept in a natural or near-natural state and maintained in a good ecological condition. Freshwater CBAs are divided into three sub-categories as follows:

- CBA: Aquatic Species
- CBA: Rivers
- CBA: Wetlands

Freshwater Ecological Support Areas (ESAs):

Freshwater Ecological Support Areas as depicted are not essential for meeting freshwater biodiversity targets but play an important role in supporting the ecological functioning of freshwater CBAs. Freshwater ESAs need to be maintained in at least a functional state, supporting the purpose of the ESA.

MPUMALANGA PROVINCIAL BIODIVERSITY – TERRESTRIAL CRITICAL BIODIVERSITY AREAS



Source: Mpumalanga Biodiversity Sector Plan (2022)

- District Municipality
- MBSP Terrestrial CBA Map
- ESA Protected Area buffer
- PA World Heritage Site
- PA National Parks & Nature Reserves
- PA Protected Environment: Natural
- PA Protected Environment: Modified
- CBA Irreplaceable
- CBA Optimal
- ESA Landscape corridor
- ESA Local corridor
- ESA Species Specific
- Other Natural Areas
- Moderately modified- Old lands
- Heavily modified

Thembisile Hani SDF 2024

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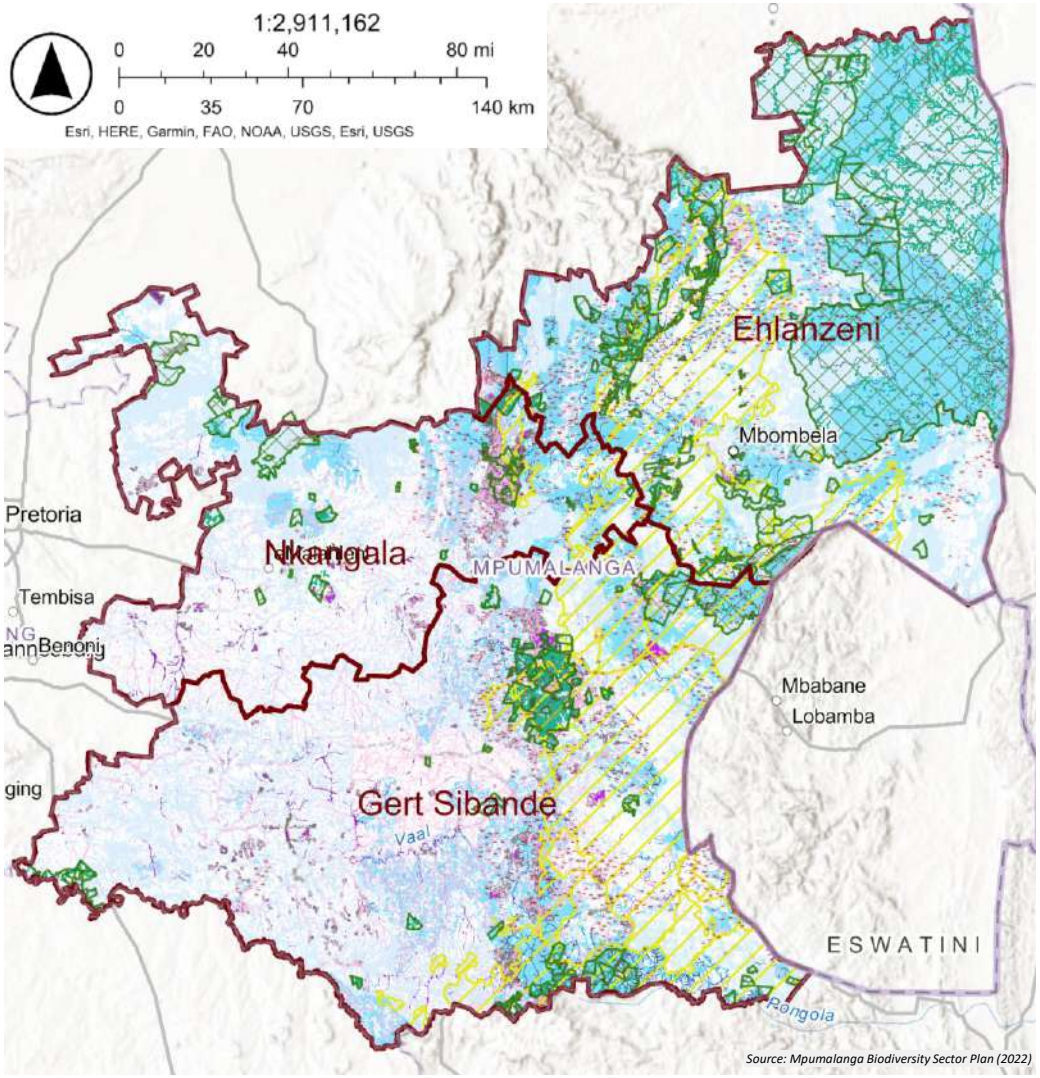
MPUMALANGA PROVINCIAL BIODIVERSITY – FRESHWATER CRITICAL BIODIVERSITY AREAS



Source: Mpumalanga Biodiversity Sector Plan (2022)

- District Municipality
- Ecological Support Areas for Fish
- Protected areas
- MBSP Freshwater CBA Map
- PA: Wetlands
- CBA: Aquatic rivers
- CBA: Aquatic species
- CBA: Wetlands
- ESA: Strategic Water Source Area
- ESA: Wetland clusters
- ESA: Wetlands
- ESA: Important subcatchments
- Other Natural Areas
- Heavily modified
- Dams

Thembisile Hani SDF 2024

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2.2.5 Mpumalanga Green Economy Sector Plan, 2016

The Mpumalanga Green Economy Sector Plan, 2016 aims to provide an integrated approach towards developing the green economy in Mpumalanga by 2030 in line with the Vision 2030.

More specifically, it seeks to change the province's economy from relying on coal-based energy to one boasting bio-mass based energy, sustainable agriculture, tourism and eco-conscious towns by 2030.

In line with the above, the Mpumalanga Green Cluster Agency aims to support small business to identify economic values in the repurposing, re-using, and remanufacturing of waste streams, with a focus on the agriculture, energy and water sectors (new investment opportunities).

Some of the most relevant actions identified in this regard are summarized in **Table 7.**

Table 7: Mpumalanga Green Economy Sector Plan

MPUMALANGA GREEN ECONOMY SECTOR PLAN
Agriculture:
❖ Conduct a high-level bio-mass feedstock resource map through the corridor to inform sector potential and optimise location; ❖ Assessment of hydro-plant potential in strategic locations, e.g., proximity to local communities through engagements; ❖ Feasibility assessment of including solar PV, biogas digesters, energy efficiency equipment, etc. in processing centres of Agri-Hubs and Agri Parks; ❖ Support farmers to access information and advice on sustainable agriculture best practices; ❖ Raise awareness on energy efficiency, water efficiency technologies and precision agricultural techniques – sensor technologies that maximises the efficiency of inputs; ❖ Identify and quantify suitable idle land for sustainable agriculture, e.g., organic farming (private, public, donor and DFI), and structures required to access finance.
Waste
❖ Assessment of the market for recycled material (e.g. packaging, plastics) and financial viability of recovering materials; ❖ Assess feasibility of treatment of waste using alternative technologies; ❖ Conduct feasibility study for a waste to energy project in larger municipalities – both landfill and wastewater treatment plants.
Energy
❖ Incorporate deployment of solar PV as part of current energy efficiency drive in government buildings; ❖ Consolidate information on available national incentives for energy efficiency and solar PV.

2.2.6 Mpumalanga Provincial Flood Management Strategy, 2024

Figure 7 depicts the Flood Risk Assessment of the Nkangala District Municipality. In the context of the Thembisile Hani LM, it is evident that the flood risk for the areas along the Moloto Corridor is relatively low (low and moderate risk), with the exception of the areas around Kwaggafontein (high risk).

The southern parts of the LM, south of Verena, are considered high-risk areas, with parts ranked as very-high risk.

Mitigation activities are intended to significantly reduce or even eliminate the risk of flooding before it occurs. The following list includes some common mitigation activities:

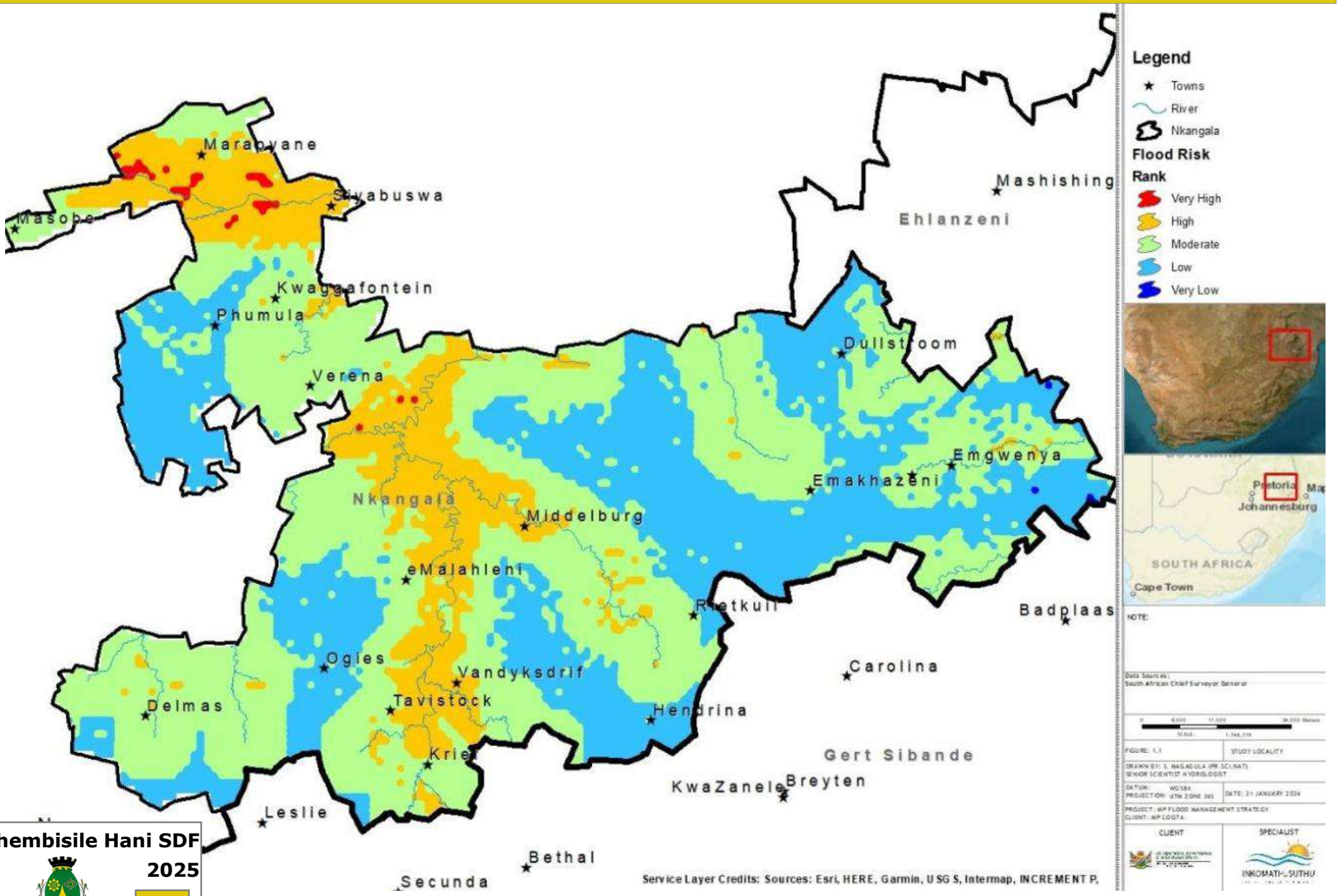
- Review and update building codes and zoning: Responsible community planning can be one of the most powerful tools to minimise flood risk
- Conduct a vulnerability analysis. Hydrologic and hydraulic modelling programs can help estimate current flood risk and potential future risk with climate-induced changes while presenting the data in an easy-to-understand graphical format
- Implement spatial mapping: By using GIS capabilities to develop infrastructure and natural resources databases, you can document historic and existing conditions of stormwater management systems and natural streams alike. This information can serve as the foundation for hydrologic and hydraulic modelling, and even provide an inventory of the community's assets and infrastructure most vulnerable to flooding. The modelling produces maps that indicate where flood-prone areas are located, which can then be confirmed with past observations and used to evaluate alternatives to minimise flooding.
- Implement mitigation projects: Projects that focus on improving stormwater management or reducing flood risk from a major river can be effective ways to mitigate flooding. These projects include traditional and innovative practices and floodwalls, improved conveyances, wetland restoration, acquisition of flood-prone properties, and even stormwater harvest and reuse.
- Provide public outreach and education: On a national and local level, much work needs to be done to raise awareness about the flood risk and mitigation options to reduce risks.

Table 8 below outlines the recommendations made by the strategy per risk area, which will be an important consideration when proposals are made (*Section 4*).

Table 8: Flood Management Recommendations for Priority

Very High Risk	High Risk	Moderate Risk
❖ Relocation of affected communities.	❖ Control discharge at dams.	❖ Dredging of silt along river banks before a major rain event to increase the river carrying capacity.
❖ Prevent encroachment of the river ways through the declaration and enforcement of the protection of the biodiversity zones. Thus flood plain zoning.	❖ Limiting sewerage contamination.	❖ Building Levees that along the banks of a river and streams: NB: Levees are barriers made from earth, wood, rock or concrete aimed at the protection of communities from flooding.
❖ Construction of a flood protection and defence structures to protect major flood prone areas.	❖ Afforestation	❖ Installing Solid fences
❖ Building flood control dams	❖ Wetland restoration	❖ Sealing doors with solid boards
❖ Improve storm water drainage systems	❖ Installing Storm water pumps aimed at getting water off the streets.	❖ Upgrade roads and bridges
❖ Upgrade roads and bridges	❖ Regrading property by adjusting the building foundation to allow water to flow pass the building.	❖ Desilt gutters and drains
❖ Building Levees that along the banks of a river and streams: NB: Levees are barriers made from earth, wood, rock or concrete aimed at the protection of communities from flooding	❖ Upgrade roads and bridges	❖ Install flooding foundation vents in houses to allow water to flow through the house than to pool around it.

Mpumalanga Provincial Flood Management Strategy – Nkangala Risk Assessment



2.2.7 Mpumalanga Human Settlement Master Plan, 2021

The **Vison** of the Mpumalanga Department of Human Settlements is as follow:

"By 2030 Mpumalanga Province would have shown significant progress towards the spatial transformation of Apartheid settlement patterns, the formalization of well-located urban and rural settlements, and offering citizens access to livable neighbourhoods with adequate housing and infrastructure, within a more suitable and functional residential property market."

The Vision as noted above could be achieved through the following four **Strategic Objectives** for the Department:

- Developing liveable neighbourhoods by investing in public spaces; smart infrastructure; smart socio-economic amenities, etc.;
- Facilitating access to adequate housing through a range of programmes targeting various household needs;
- Facilitating the development of a functional residential property market that enables low and low-middle income households to realise asset value;
- Ensuring access to well-located land for human settlements development.

Table 9 depicts the context of the **Vision and the four Strategic Objectives** of the Department. It also reflects the Strategy comprising a number of Key Actions to be implemented to achieve each of the Strategic Objectives.

At a more detailed level, the Mpumalanga Human Settlement Master Plan intends to achieve the following:

- The prioritization of informal settlements upgrading, through provision of 2,934 serviced stands using the upgrading of informal settlements programme (UISP);
- The utilization of the Integrated Residential Development Programme (IRDP) to invest in the nine Priority Human Settlements and Housing Development Areas in the province;
- Ensuring the provision of bulk water and sanitation infrastructure services and other amenities;
- Ensuring security of tenure through the issuing of 3,078 Title Deeds;
- Delivering a total of 2,453 housing units through the various programmes;
- As part of Revitalization of Mining Towns in the province, the following Housing Targets will be achieved:
  - Emalahleni: 217 housing opportunities;
  - Steve Tshwete: 208 housing opportunities; and
  - Thaba Chweu: 40 housing opportunities.

Table 9: Mpumalanga Human Settlements Strategic Objectives and Strategies Key Actions

STRATEGIC OBJECTIVE	STRATEGIES KEY ACTIONS
1. Develop liveable neighbourhoods through various programmes	1.1 Invest in Priority Housing Development Areas/Nodes 1.2 Invest in public spaces 1.3 Invest in vital infrastructure and services
2. Provide access to adequate housing through a range of programmes targeting households	2.1 Implement programmes that support affordable rental 2.2 Implement various programmes that support homeownership for both the subsidy and the gap market
3. Develop a functional residential property market to support the realisation of asset value	3.1 Strengthen homeownership education 3.2 Provide homeowners with title deeds or a form or ownership registration 3.3 Provide transactional support through Local Housing Transactional Support Centres
4. Ensure access to well-located land for human settlements development	4.1 Implement accelerated Provincial Housing Land Acquisition and Assembly Programme informed by Provincial Spatial Development Framework and Municipal Spatial Development Frameworks 4.2 Identify and upgrade informal settlements on well-located land

2.2.8 Mpumalanga Infrastructure Master Plan, 2013

The Mpumalanga Infrastructure Master Plan, 2013 (MIMP) is based on a multi-disciplinary study dealing with the full spectrum of infrastructure including amongst others, basic infrastructure, social infrastructure and economic infrastructure intended to unlock economic development potential within the province. It cuts across a wide range of development sectors and represents a key element towards the future sustainable development of Mpumalanga Province. The MIMP proposes that the following development principles be paramount in terms of guiding and directing decisions regarding infrastructure investment in the Province:

Principle 1: Balance economic growth and social upliftment

Following a balanced investment approach which focuses on infrastructure investment to promote economic growth, and investment to enhance social upliftment.

Principle 2: Respond to regional differences in development potential

Infrastructure investment has to respond to the locational factors and economic drivers of the province and take into consideration regional differences in terms of development potential.

Principle 3: Recognise roles and responsibilities of stakeholders

Recognising the roles and responsibilities of all stakeholders and facilitating the functional integration and alignment of infrastructure investment between these.

Principle 4: Build on existing initiatives

Building on existing initiatives as a priority in order to support the successful implementation thereof.

Principle 5: Preserve existing assets

Sufficiently allocating funding towards maintenance and preservation of existing assets (infrastructure) as part of a broader infrastructure life-cycle approach.

Principle 6: Align investment with available resources

Aligning infrastructure investment in Mpumalanga Province with the availability of resources in the province.

Principle 7: Build a heritage

Promoting investment in image building assets for the province.

2.2.9 Mpumalanga Water Sector Plan, 2006

The Mpumalanga Water Sector Plan, 2006 is currently being reviewed, but it is important to note the following Strategic Goals from this document:

- **Strategic Goal 1:** Apply integrated planning to address the Provincial Growth and Development Strategy and provincial socio-economic needs and poverty alleviation.
- **Strategic Goal 2:** Develop the sector-wide approach by ensuring greater participation and effective collaboration of all sector partners.
- **Strategic Goal 3:** Ensure the long-term operational sustainability of water provision, develop institutions and skills.
- **Strategic Goal 4:** Ensure Water Resource Allocation, Management and Development to meet the needs of the province.
- **Strategic Goal 5:** Project delivery to overcome the water services backlogs and higher levels of services needs in Mpumalanga.

Furthermore, the following **Challenges** pertaining water and sanitation in Mpumalanga Province have been identified in the *Mpumalanga Overview Report on Water and Sanitation Services, March 2022:*

- Water Service Authority function being with local municipalities, some of which are failing in disposing the function;
- Lack of water and sanitation master plans;
- Aged infrastructure resulting in collapsing infrastructure system;
- Lack of safe and reliable water supply (in line with Blue and Green Drop repots and scores of Municipalities);
- Lack of technical capacity in municipalities as evidenced by poor infrastructure planning and implementation of infrastructure projects;
- Inadequate budget allocation to implement projects and delays on project implementation.

2.3 DISTRICT POLICY CONTEXT

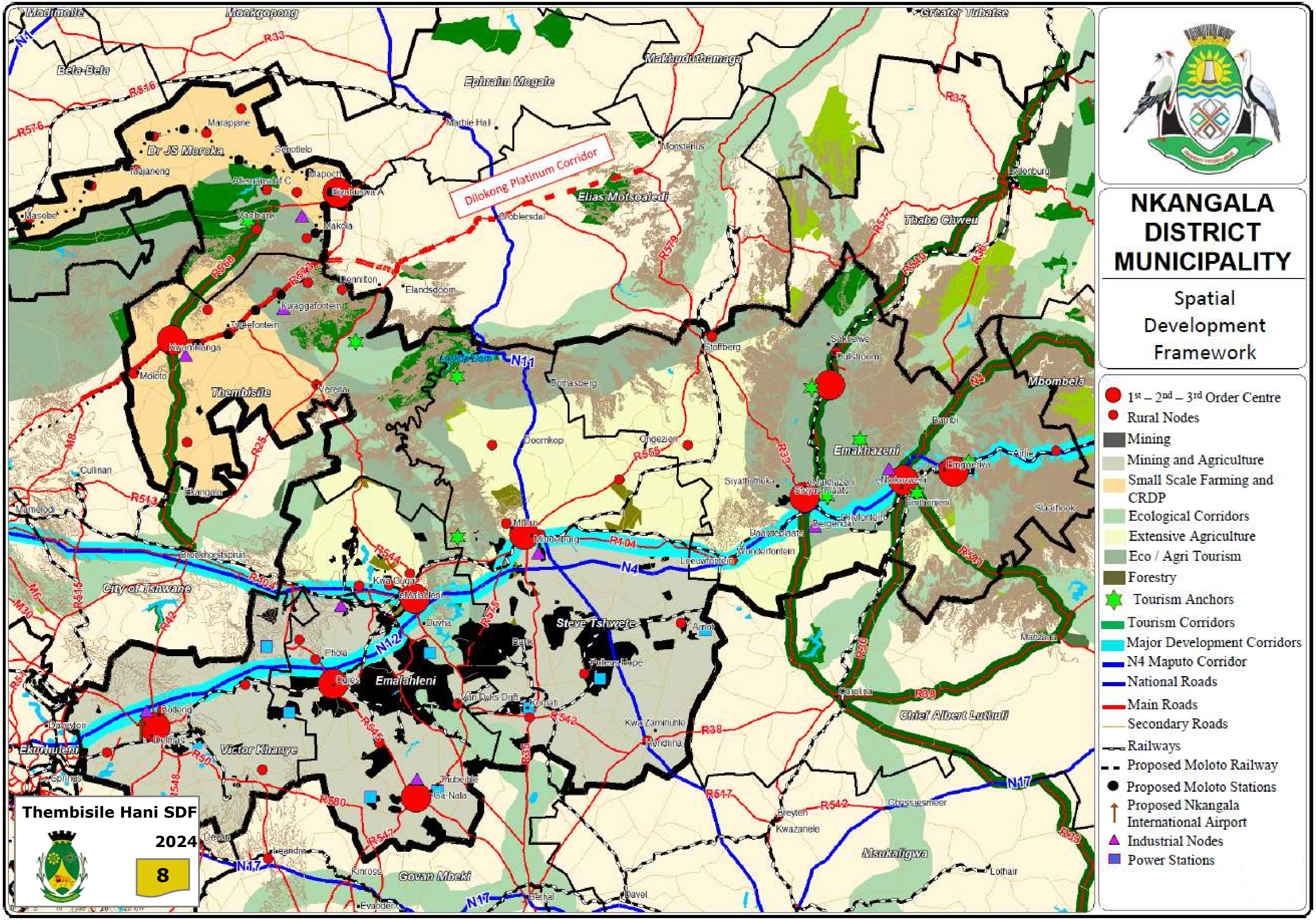
2.3.1 Nkangala District Spatial Development Framework, 2014

The Nkangala SDF Plan is essentially based on ten development principles as follows:

- **Principle 1:** To achieve a sustainable equilibrium between urbanisation, biodiversity conservation, mining, industry, agriculture, forestry, and tourism related activities within the District, by way of effective environmental and land use management.
- **Principle 2**: To establish a functional hierarchy of urban and rural nodes (service centres/agri-villages) in the Nkangala District area; and to ensure equitable and equal access of all communities to social infrastructure and the promotion of local economic development by way of strategically located Thusong Centres (Multi Purpose Community Centres) (MPCCs) in these nodes.
- **Principle 3**: To functionally link all nodal points (towns and settlements) in the District to one another, and to the surrounding regions, through the establishment and maintenance of a strategic transport network comprising internal and external linkages, and focusing on the establishment of Development Corridors.
- **Principle 4**: To incorporate the existing natural environmental, cultural-historic and man-made resources within the Municipality in the development of Tourism Precincts, with specific focus on the Tourism Gateway in the north-eastern parts of the District ; as well as the northern and north-western mountainous parts of the District.
- **Principle 5**: To promote a wide spectrum of extensive commercial farming activities throughout the District, and to establish local fresh produce markets at the main nodal points identified.
- **Principle 6**: To optimally utilise the mining potential in the District without compromising the long term sustainability of the natural environment.
- **Principle 7**: To concentrate industrial and agro-processing activities at the higher order nodes in the District where industrial infrastructure is available.
- **Principle 8**: To enhance business activities (formal and informal) at each of the identified nodal points in the Nkangala District by incorporating these activities with the Thusong Centres and modal transfer facilities.
- **Principle 9**: To consolidate the urban structure of the District around the nodal points by way of infill development and densification in identified Strategic Development Areas (SDAs) and Upgrading Priority Areas.
- **Principle 10**: To ensure that all communities (urban and rural) have access to at least the minimum levels of service as enshrined in the Constitution.

The Nkangala SDF is shown on **Figure 8** from which it is evident that KwaMhlanga is identified as a First Order Node, while the smaller settlements along the Moloto Road Corridor, as well as Verena to the south, are considered Rural Nodes.

Nkangala District Spatial Development Framework, 2014



2.3.2 Nkangala District Rural Development Sector Plan

Some of the objectives of the Rural Development Sector Plan (RDSP) include but are not limited to:

- To coordinate and facilitate rural economic diversification through the development of value chains within the mining, energy, tourism agriculture, and logistics sectors.
- Enabling the improvement of rural development programmes through a participatory approach to ensure integration and coordination between different branches and external role players. In this regard, a value chain proposition is proposed which would be addressed in this report.
- Facilitating the short-, medium-, and long-term plans for the different branches and other role players.
- To identify rural development champions within the District that would advocate and coordinate the intended outcomes of the sector plan.
- To facilitate the prioritisation of projects within the rural environment.
- Social mobilisation enables rural communities to take initiatives, thereby improving rural-urban relationships.
- Access to improved and adequate social amenities.
- The target non-farm activities for strengthening rural livelihoods such as tourism development.
- Leadership training, social facilitation, and conscientisation for socio-economic independence.
- Democratization of rural development, participation and ownership of all processes, projects, and programmes.
- Co-ordination, alignment, and cooperative governance (Local Municipalities, KAPROS Management, Communal Properties, Traditional Areas as well as Provincial and National Government).
- Participation in Non-Governmental Organisations including faith-based organisations, Community Based Organisations, and other organs of civil society.
- Social cohesion and access to human and social capital.
- Improving and addressing major shortcomings in the delivery of rural infrastructure services.

The following is noted from the Nkangala District RDSP, as depicted on **Figure 9.**

The Thembisile Hani LM falls within the North-Western Region: Rural Intervention Area (RIA) 1.2 which includes the gateway towards the Moloto Development Corridor at Moloto village and stretches towards an easterly direction along the corridor towards KwaMhlanga. The area further includes the western boundary of the Thembisile Hani Local Municipality southwards along the R568 towards the Gauteng border.

This area further represents the functional tourism link between Rust der Winter in Limpopo, Dinokeng in Gauteng, and the Loskop Dam tourism precinct in Mpumalanga. It consists of four nature reserves located in Dr JS Moroka and Thembisile Hani municipalities. These reserves have extensive tourism potential which is totally underutilised at present. This is an area with high potential agricultural land (crop and livestock) which is ideal for the establishment of emerging commercial farmers in the north-western rural parts of the District. The area is bisected into a western and eastern region via

the R544 to the Moloto Route via Verena which forms the southern boundary of the region.

2.3.2.1 Proposals for RIA 1.2

The proposals made for RIA 1.2, as per the Nkangala RDSP are summarised below.

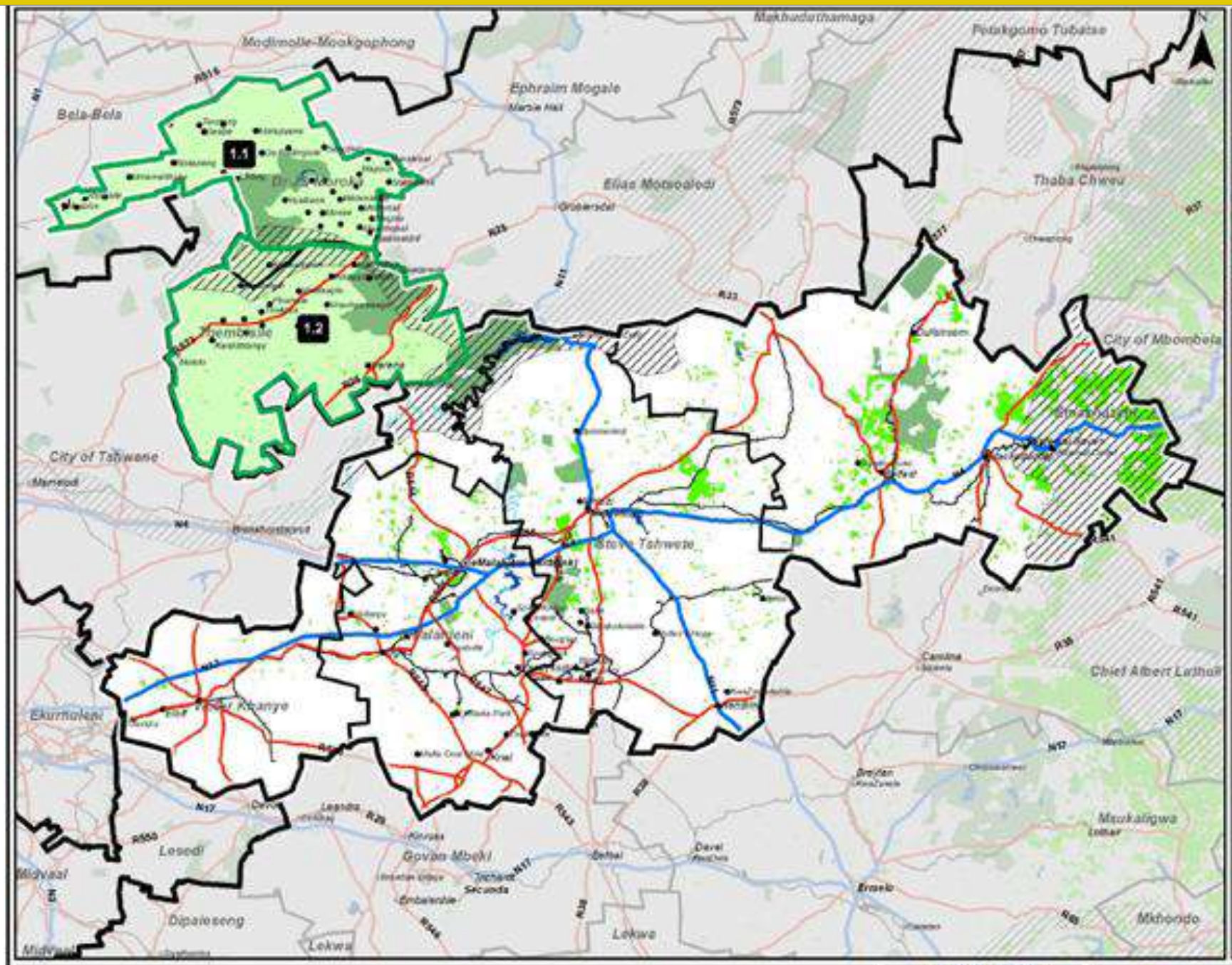
Agriculture Development:

- Distinguish between the three functional agricultural areas and establish emerging commercial crop farmers in the precinct south of Moloto Road.
- The central (livestock) and northern (subsistence) farming areas will comprise various forms of communal farming as these areas are under Traditional Leadership
- Optimally utilise downstream agro-processing opportunities associated with the dominant value chains in the area, and which could include the following: maize, vegetable, cotton, beef, feedlot, port, poultry, tourism
- Formulate a regional water harvesting strategy and associated capacity-building programme. Provide associated infrastructure required for implementation.
- Refurbish the existing maize mill at Sybrandskraal close to Moloto and bakery facilities in Verena (Lekuntu), and Kwaggafontein (Lukuniti)
- Investigate the possibility of establishing an auction facility in both local municipalities (Thembisile Hani LM and Dr JS Moroka LM), and the potential for associated feedlots in the central intervention area (RIA 2)
- Refurbish the abattoir facilities in KwaMhlanga and Leeuwfontein Establish functional linkages with Pienaarsrivier, Settlers, Marble Hall, and Groblersdal farming communities in Limpopo Province.
- Development of Kameelrivier Agri-hub to support the Mpumalanga International Fresh Produce Market and associated Agri-Parks (MEGA)
- Investigate the possibility of re-opening the Marapyane Agricultural College

Tourism Development:

- Establish and brand a continuous tourism route between the Dinokeng Nature Reserve and the Loskop Dam Nature Reserves
- Investment in infrastructure: Zithabiseni Game Lodge and Conference Centre should be prioritised for renovations as an instrument for unlocking business tourism and leisure tourism.
- Diversification of wildlife: Currently the belt consists of three of the big five animals. The Belt should diversify its product offering by providing an alternative to up-market as well as budget travellers.
- Overcoming land claims: A Co-Management Agreement model should be pursued in the light of multiple land claims on the belt.
- Destination Marketing: The branding and marketing of the destination are essential to the success of the Tourism Belt
- A beading and sewing workshop are to be established for the community of KwaMhlanga. The workshop could be linked to tourism areas or alternatively, informal trading structures could be erected at strategic points.

Nkangala District Rural Development Sector Plan 2023: North-Western Region (RIA 1)



NORTH WESTERN REGION INTERVENTION AREAS

NKANGALA DISTRICT RURAL DEVELOPMENT SECTOR PLAN

agriculture, land reform & rural development

2.4 LOCAL POLICY CONTEXT

2.4.1 Thembisile Hani Municipality SDF (2015)

The Thembisile Hani SDF of 2015 is depicted on **Figure 10** and briefly discussed below.

The spatial structure of the Municipality is characterised by corridor development with all the major towns located along the R573 (Moloto Corridor). The SDF proposes that the existing spatial pattern and trends be consolidated as far as possible, and that infill development be done on the vacant portions of land between different settlements in order to create one consolidated urban structure around the Moloto Corridor. KwaMhlanga and Kwaggafontein are the primary nodes in the municipality, supported by 2nd and 3rd order nodes.

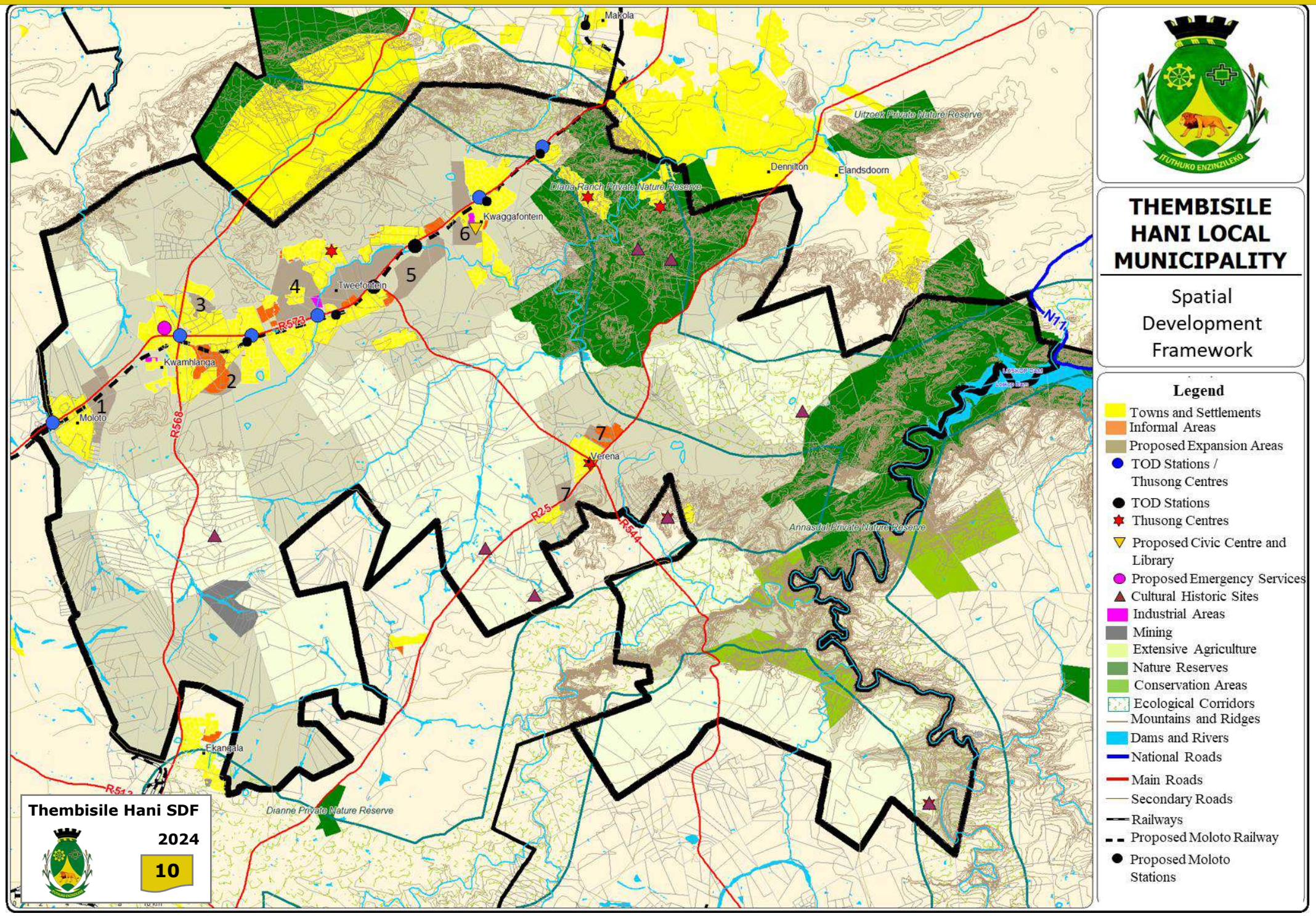
The main principles contained in the SDF are outlined below:

- Consolidate infill development along the R573 for all towns situated along R573.
- Consolidate infill development between Verena and Wolwenkop.
- Prioritise the development of the Strategic Development Areas.
- Prioritise the formalisation and incorporation of informal/ traditional settlements.
- Develop the existing industrial townships at Phola Park, Kwaggafontein IA and Tweefontein IA.
- Develop MPCCs/ Thusong Centres at Moloto, KwaMhlanga, Enkeldoornoog, Vlaklaagte, Tweefontein, Kwaggafontein, Mathys Zyn Loop, Goedere, Verana and Schoongezicht .

The SDF (2015) further identified seven Strategic Development Areas (SDA's) for the various urban areas in the Municipality (as shown in the light brown areas on Figure 10). These SDA's are briefly discussed below:

- **SDA 1**: The area around the Moloto route between Moloto and KwaMhlanga (The Moloto settlement should thus expand in an easterly direction along the Moloto road and the proposed Moloto rail alignment).
- **SDA 2**: The area between KwaMhlanga and Enkeldoornoog which will represent infill development close to the KwaMhlanga Business Node and proposed railway station. This section has already experienced an influx of informal settlements.
- **SDA 3**: The eastern expansion areas around Kameelpoortnek towards the north of the KwaMhlanga intersection.
- **SDA 4**: The vacant area between route R573 (Moloto Road) and the northern extensions of Tweefontein (A, B, C, D, K, N and M). The Nkangala Municipality and Department of Human Settlements have already commenced with the establishment of two townships within SDA 4.
- **SDA 5**: The vacant area between Vlaklaagte 2 and Vlaklaagte 1 to the south of the Moloto road and rail.
- **SDA 6**: The area adjacent to route R573 (north and south) towards the west of Kwaggafontein, and surrounding the Kwaggafontein industrial area.
- **SDA 7**: The area to the south of Verena (towards Wolvenkop) and towards the north (Wellas) where informal settlement is already taking place.

Thembisile Hani LM: Spatial Development Framework 2015



THEMBISILE HANI LOCAL MUNICIPALITY

Spatial Development Framework

Legend

- Towns and Settlements
- Informal Areas
- Proposed Expansion Areas
- TOD Stations / Thusong Centres
- TOD Stations
- Thusong Centres
- Proposed Civic Centre and Library
- Proposed Emergency Services
- Cultural Historic Sites
- Industrial Areas
- Mining
- Extensive Agriculture
- Nature Reserves
- Conservation Areas
- Ecological Corridors
- Mountains and Ridges
- Dams and Rivers
- National Roads
- Main Roads
- Secondary Roads
- Railways
- Proposed Moloto Railway
- Proposed Moloto Stations

Thembisile Hani SDF

2024

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2.4.2 Thembisile Hani Informal Settlement Upgrading Plan

The section below provides a brief summary of the most salient features of the Thembisile Hani Informal Strategy:

- During 2015 the municipality had 28,762 informal units broken into 45 informal settlements which are clustered within 8 functional areas (see **Figure 11** and **Table 10**).
- The largest concentration of informal units is within Function areas 2 and 3 which constitute approximately 64%.
- The informal units increased from 20,965 in 2012 to 28,762 in 2015 which translated into a 37.2% growth.
- **Table 11** outlines the informal settlements identified during the 2015 study with the estimated number of structures, as well as the planning status as determined during the Informal Settlement Upgrading Strategy.

Table 10: Thembisile Hani LM Functional Areas

FUNCTIONAL AREAS							
No	**Functional Areas**	**No of Units 2012**	**No of Units 2015**	**Settlement Growth**	**Growth Rate p.a.**	**Increment 2012-2015**	**Increment p.a.**
1	Moloto	2,146	3,306	54.1%	15.5%	1160	387
2	Kameelpoortnek / Sun City	7,670	8,720	13.7%	4.4%	1,050	350
3	KwaMhlanga / Phola	6,621	9,625	45.4%	13.3%	3,004	1,001
4	Tweefontein / Enkeldoornoog	1,214	2,365	94.8%	24.9%	1,151	384
5	Vlaklaagte / Gemsbokspruit	352	610	73.3%	20.1%	258	86
6	Vlaklaagte / Kwaggafontein	741	1,413	90.7%	24.0%	672	224
7	Mathys Zyn Loop, Goekenhouthoek, Goederede	697	713	2.3%	0.8%	16	5
8	Verena / Wolvenkop	1,524	2,010	31.9%	9.7%	486	162
	Total:	**20,965**	**28,762**	**37.2%**	**11.1%**	**7,797**	**2,599**

Table 11: Proposed Informal Settlements Response Plans

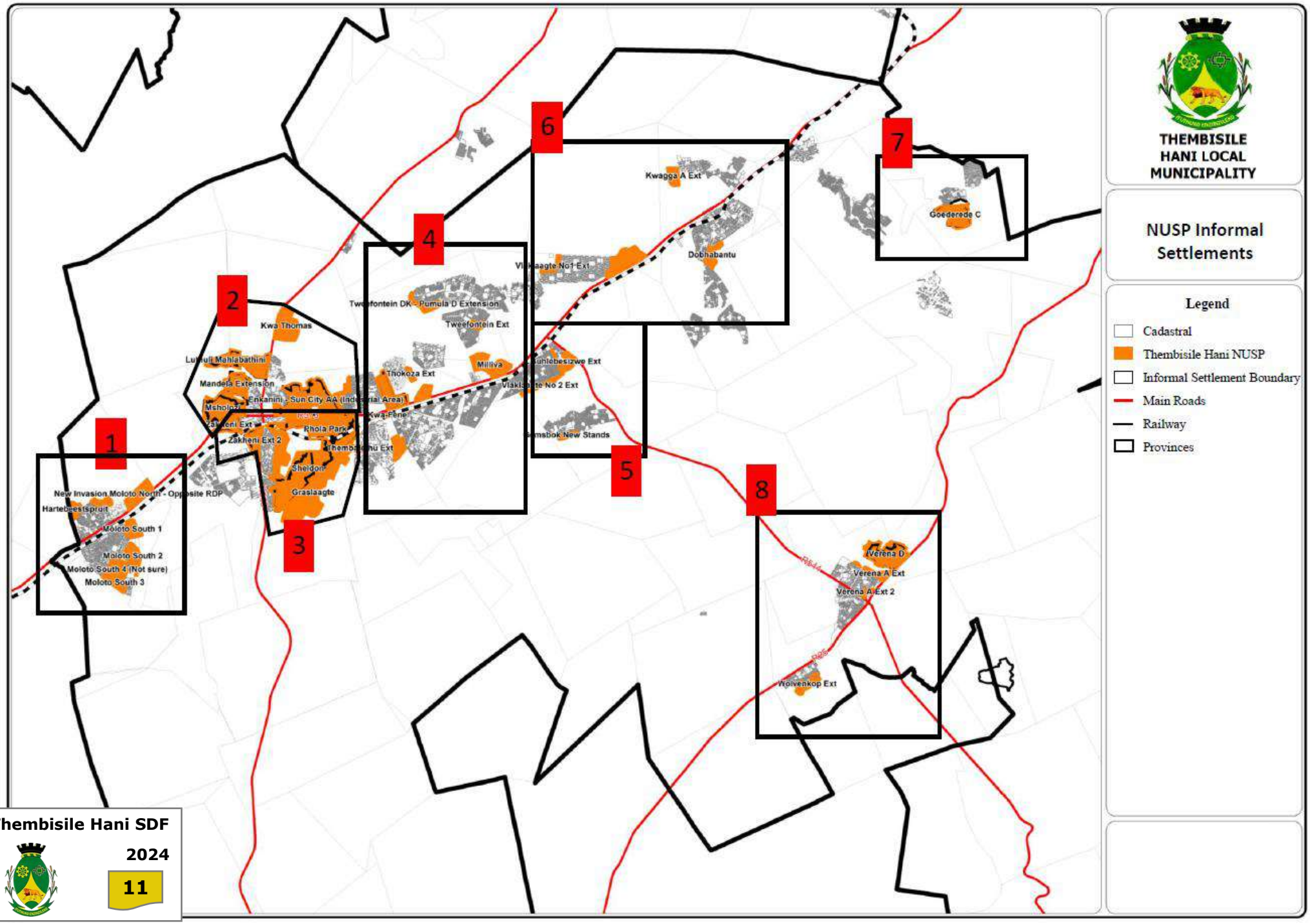
NO	AREA	NO. OF UNITS (2015)	NUSP CATEGORY
Moloto			
1.1	Hartebeestspruit	417	B1
1.2	Mafushane	292	B1
1.3	New Invasion Moloto North – Opposite RDP	200	B1
1.4	Moloto South 1	426	B1
1.5	Moloto South 2	655	B1
1.6	Moloto South 3	231	B1
1.7	Moloto South 4	885	B1
1.8	Moloto 5	200	B1
Sub-Total:		**3,306**	
Kameelpoortnek / Sun City			
2.1	Kwa Thomas	790	B1
2.2	Luthuli	968	B1
2.3	Luthuli Mahlabathini	1,020	A
2.4	Mandela Extension	1,073	B1
2.5	Msholozi	1,618	B1
2.6	Sun City AA Ext	1,752	B1
2.7	Enkanini – Sun City AA (Industrial Area)	1,198	B1
2.8	Ezubuhle New Stands	301	B1
Sub-Total:		**8,720**	
KwaMhlanga / Phola			
3.1	Zakheni Ext	838	B1
3.2	Zakheni Ext 2	715	B1
3.3	Mountain View Ext	1,586	B1
3.4	Phola Park	3,248	B1
3.5	Thembalethu Ext	183	B1
3.6	Sheldon	1,822	B1
3.7	Graslaagte	1,233	B1
Sub-Total:		**9,625**	
Tweefontein / Enkeldoornoog			
4.1	Chris Hani	710	B1
4.2	Sakhile	197	B1
4.3	Kwa-Fene	43	B1
4.4	Buhlebuzile	339	B1
4.5	Thokoza Ext	104	B1
4.6	Tweefontein Police Station	240	B1
4.7	Millivá	412	B1
4.8	Tweefontein DK – Pumula D Extension	189	B1
4.9	Tweefontein Ext	131	B1
Sub-Total:		**2,365**	
Vlaklaagte / Gemsbokspruit			
5.1	Buhlebesizwe Ext	425	B1
5.2	Vlaklaagte No 2 Ext	79	B1
5.3	Gemsbok New Stands	106	B1
Sub-Total:		**610**	
Vlaklaagte / Kwaggafontein			
6.1	Vlaklaagte No 1 Ext	181	B1
6.2	Mabhoko Village	867	B1

NO	AREA	NO. OF UNITS (2015)	NUSP CATEGORY
6.3	Kwagga A Ext	20	B1
6.4	Dobhabantu	345	B1
Sub-Total:		**1,413**	
Mathys Zyn Loop, Boekenhouthoek, Goederede			
7.1	Goederede C	713	
Sub-Total:		**713**	
Verena /. Wolvenkop			
8.1	Verena D	1,122	B1
8.2	Verena B Ext	19	B1
8.3	Verena A Ext	308	B1
8.4	Verena A Ext 2	143	B1
8.5	Wolvenkop Ext	418	B1
Sub-Total:		**2010**	
Grand Total:		**28,762**	

The Informal Settlement Strategy identified 10 priority settlements, for which Upgrading Plans were compiled, as follows:

- Moloto South: 885 units
- Mandela Ext: 1,073 units
- Sun City AA Ext: 1,752 units
- Phola Park: 3,248 units
- Chris Hani: 710 units
- Sakhile: 17 units
- Miliva: 412 units
- Dobhabantu: 345 units
- Goederede C: 713 units
- Verena D: 1,122 units

Thembisile Hani LM: Informal Settlement Upgrading Plans



2.4.3 Priority Human Settlement Housing Development Area (PHSHDA)

The Priority Human Settlements and Housing Development Areas Programme is a national spatial transformation approach to build new, integrated, functional, and inclusive settlements. It draws on cooperative and collaborative public sector investments intending to leverage private investment against defined objectives within a designated geographical area.

The PHSHDAs have been declared in terms of Section 3 of the Housing Act (No. 107 of 1997) read in conjunction with Sector 7(3) of the Housing Development Agency Act, 2008 (No. 23 of 2008), the Spatial Planning and Land Use Management Act (SPLUMA) (No. 16 of 2013), and the Infrastructure Development Act (No. 23 of 2014). PHSHDAs, since their declaration, are referred to as Priority Development Areas (PDAs).

Two PHDAs have been gazetted in Thembisile Hani LM, namely KwaMhlanga and Verena. The KwaMhlanga PHDA covers almost all the settlements situated along the R573 and the second PDA covers Wolvenkop and Verena. Mpumalanga Department of Human Settlements appointed consultants in December 2022 to compile Development Plans for each of the PHDA's. The Strategies contained in the Development Plans are discussed below.

Info Box 1 provides a brief summary of the prescribed contents/scope of work for a PHDA Development Plan as defined in the Housing Development Agency Regulations, No. R610: August 2014.

Info Box 1: Housing Development Agency Regulations No. R610: August 2014

SUMMARY OF PRESCRIBED CONTENT OF PHDA DEVELOPMENT PLAN
❖ The objectives and the prioritization criteria of the PHDA;
❖ A motivation with regard to declaring the land as a PHDA;
❖ The name, delineated location, municipal and provincial domicile of the PHDA;
❖ The nature of the land use and the land ownership;
❖ Evidence of alignment with the relevant spatial planning and development frameworks, national development priorities, and integrated development plans and land use schemes;
❖ The type of development to be implemented within the PHDA;
❖ Roles and responsibilities of the required participants;
❖ Details of the community to be affected by the declaration of the PHDA;
❖ All technical and feasibility studies that have been carried out on the land, or results to be obtained relevant to the implementation process and procedures of the PHDA;
❖ A description of how existing projects in the area will be integrated into the development plan for the area;
❖ Budget allocations from all spheres of government and other relevant participants over the Medium-Term Indicative Expenditure Framework;
❖ An indication of the intended implementing agent; governance and oversight structures; and risk mitigation provisions;
❖ The approvals and related arrangements regarding the implementation and finalisation of the priority housing development area;

2.4.3.1 Verena PHDA Development Plan

Figure 12 depicts the Development Plan for the Verena PHDA.

Overall Strategy:

- The R25 and R544 are a strong structuring element, and the existing business and community facilities should be strengthened and further developed.
- The business activities at the R25 and R544 intersection should be formalised, and the various service upgrades need to be implemented.
- The two existing SDA's should be formalised in-situ and the necessary community facilities need to be provided.
- An access management plan needs to be compiled for the economic core area to create the most conducive environment for business and community facilities without compromising the mobility function of the R25 and R544.
- The Verena Smart City should be phased.
  - The first phase of the Verena Smart City is supported to gain access from the R544 which will also allow for eastern integration with Verena B and C.
  - The second phase (medium-term) should be located south of phase 1 to create a continuous development and link into the services that would have been provided for phase 1.
  - Phase 3 (long-term) constitutes the last piece of the land creating a continuous development from the R544 to the R25. The required social facilities need to be provided in tandem with the residential development to ensure adequate level of service to the future communities and to limit over-crowding in the existing facilities in Verena a, B, C and Wolvenkop. Phase 4 (long-term) should only be considered once Phases 1 to 3 have been serviced and developed to an advanced stage.
  - The phasing approach is to allow for the incremental development of the area and for the phased installation of engineering services.
- Note: The Verena Business Node (R25/R544 intersection) provides the optimum opportunity for business development and the clustering of community facilities. Additional business development should be encouraged at this node to create a full spectrum of uses.
- It is proposed that a **Multi-Purpose Service Delivery/Rural Service Centre** be established ay the Verena Business Node.

Business Development:

- The access and the internal movement network to the existing business node needs to be improved. The gravel roads need to be formalised and the necessary traffic mechanisms need to be implemented to ensure the mobility of the R25 and R544.
- The informal trading structures need to be upgraded to improve the image of the area and to assist with potential job opportunities.

Housing Strategy:

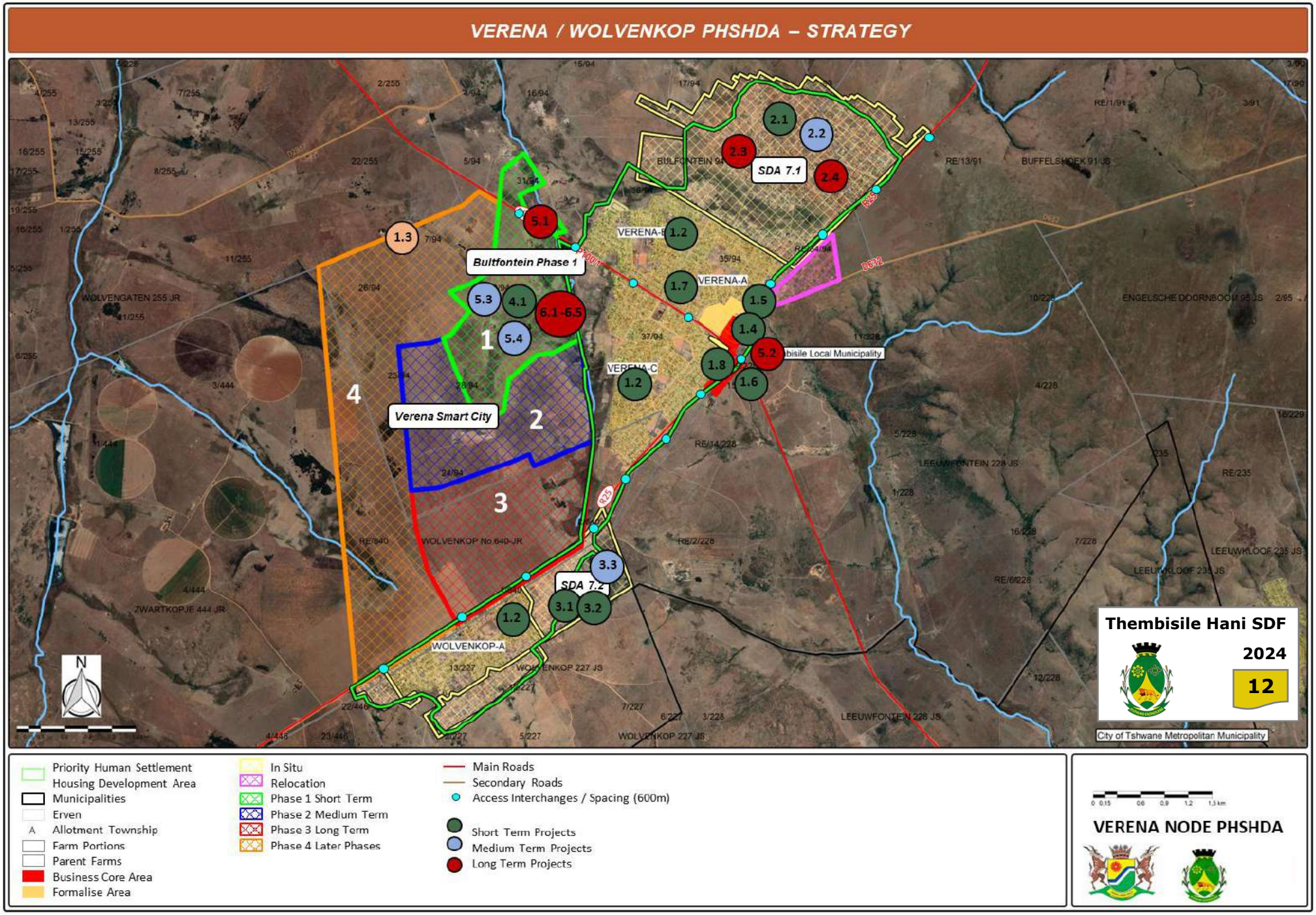
- The economic core at the R25 and R544 should be strengthened, and development should be focussed on the north-eastern and north-western quadrants. There are 146 formal units situated on park erven which should be accommodated in-situ.

- There are 626 informal units situated on non-residential erven which should be accommodated in-situ.
- There are 2,623 formal houses and 281 informal units situated in the expanded area of SDA 7 to the north on farm portions which should be accommodated in-situ.
- There are 423 formal units and 3 informal units situated on the expanded areas of SDA 7 to the south which should be accommodated in-situ.
- The 382 formal units which are situated in the Wolvenkop expansion area, with a formal layout but no General Plan, should be accommodated in-situ.
- The 16 informal units situated on park erven as well as the 57 formal units situated on farm portions with no layouts should be accommodated on the vacant land in Verena C
- It should be noted that the existing backlog could be fully accommodated in-situ and within the vacant residential land parcels owned by the Thembisile Hani LM.
- The remaining short-term demand of Verena (2022-2030) could be fully accommodated at Bultfontein Phase 1 (1,978 units) and Bultfontein Phase 2 (1,116 units).
- Should all the phases of the new Bultfontein township be developed, there would be a surplus of 28,100 units.

Public Spaces and Gateways

- The public open spaces within Verena and Wolvenkop should be functionally developed and should be inviting to the surrounding communities. Some of the undeveloped open land adjacent to schools can be functionally developed or the open space (stream) between Verena B and D can be functionally developed.
- The development of the stream or river areas into open spaces may prevent the invasion of houses into the 1:100-year flood line and prevent illegal dumping.
- The Verena Node serves as gateway into Thembisile, both from Gauteng (Bronkhorstspruit), Mpumalanga (Groblersdal) and Limpopo (Elias Motsoaledi) and it is proposed the imageability and legibility of the area be improved.
- The signage of the gateway needs to be improved and the required street names portrayed. The Thembisile Hani area has a rich cultural history, and the history of the area should be illustrated in the street names and gateway signage.

Verena PHDA Development Plan



2.4.3.2 KwaMhlanga PHDA Development Plan Strategies

The KwaMhlanga PHDA Development Plan is shown in **Figure 13,** which seeks to achieve the following:

- Create functional human settlements in the form of hubs for purposes of establishing places with unique characters/roles, providing different levels of activities and density.
- Offer a range of housing typologies to increase choice for residential accommodation.
- Design safe and environmentally friendly areas, with high levels of mobility catering for different modes of transport such as cyclists, pedestrians, and vehicles.
- Develop accessible places designated for recreational and purposes, which will result with social cohesion and allow people to actively participate in public activities.
- Enhance convenience by ensuring accessibility to economic activities and social amenities.
- Promote a high quality of life through establishing aesthetically pleasing buildings to attract public and private sector investments.
- Facilitate upgrading of physical infrastructure and create additional capacity to accommodate future development.

The following strategies were proposed in the Development Plan:

Mixed Land Use Development Corridor:

The R573 is the primary corridor providing access to the entire KwaMhlanga PDA. It links the KwaMhlanga PDA to surrounding areas such as the City of Tshwane, Marble Hall, and Verena. It serves as one of the major movement and trade corridor within KwaMhlanga, connecting the municipality to neighbouring provinces such as Limpopo and Gauteng. The role of the R573 changes when entering the KwaMhlanga PDA from limited access arterial to a mixed land use activity corridor with potential for higher intensity of development and land use density.

The R568 is the main connector between Bronkhorstspruit and the KwaMhlanga Cross-Roads Complex. The role of the R568 changes when entering the KwaMhlanga PDA from limited access arterial to a mixed land use activity corridor with potential for higher intensity of development and land use density.

The R544 is the main connector between Verena and the KwaMhlanga PDA. It traverses mainly on agricultural land and has the potential play a pivotal tole such as the R568. The MSDF proposed a node at the intersection of the R573 and the R544 presenting an opportunity for mixed land use activities with the potential for higher intensity of development and land use density.

Mixed Land Use Development Nodes:

In addition, mixed land use development should concentrate in the existing development nodes within the built-up area. The KwaMhlanga Crossroads Complex, as the primary node, faces a several challenges such as decay, decline, limited land uses and expansion space.

These have negatively impacted on the growth and functionality of the primary node, other nodes exist along the Moloto Corridor. These include, the Big Tree Mall, Phola Mall, Kwagga Mall. All these serves as nodes along the corridor and can be used as mixed land use development nodes with the focus of higher densities. A similar mixed land use development node should be developed at the intersection of the R573 and the R544.

Densification and Infill Development:

Densification is defined as the increased use of space, both horizontally and vertically, within existing areas/properties and new developments, accompanied by an increased number of units and/or population threshold. It is a means of improving the sustainability of and urban area as well as the vitality of its precincts. It is a relative indicator of the intensity of development and the population thresholds that could support economic and social activities and public transport services. Densification should be facilitated through zoning and land use regulations and is it envisaged that it should occur as follows:

- Construction of attached or detached second dwellings, including the changing of non-residential buildings, or parts of buildings, to residential buildings (e.g., garages),
- The increase of existing bulk rights through the extension of the building or adding-on of floors to accommodate an increased number of units,
- Block consolidation of erven with redevelopment at higher densities,
- Subdivision of land, and redevelopment at higher densities,
- Consolidation with redevelopment at higher densities, including the demolition and integration of existing structures,
- Higher-density infill on vacant and underutilised land throughout the built area of the town, and
- Consolidation of sites within a street block to create a single, larger parcel for redevelopment into multi-storey units.

With KwaMhlanga being predominantly rural and dwelling units occupying large plots of land, emphasis should be paid on the number of dwelling units per hectare and ratio of total building floor area to the corresponding site area as a measure of densification.

Upgrading of Informal Settlements:

The municipality together with other spheres of government should assess all the informal settlements that should be prioritized for upgrading, through the criteria of the National Upgrading Support Programme.

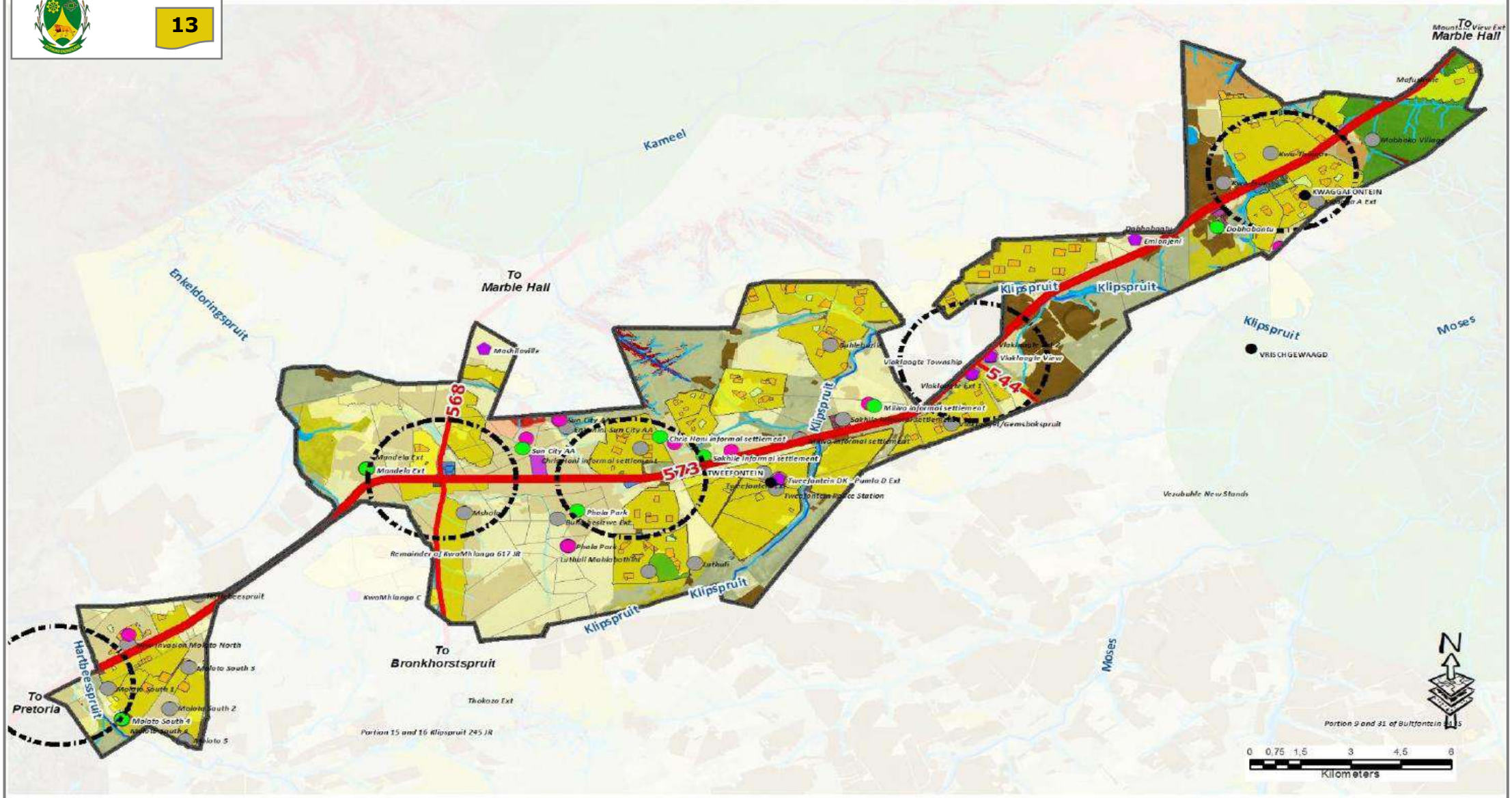
Upon the completion of informal settlement upgrading or relocation, the municipality should develop an anti-invasion plan, to minimize potential land invasion/re-invasions. As part of this plan, the municipality should take reasonable steps to develop the invaded land subject to compliance with zoning requirements, environmental characteristics and based on community needs.

KwaMhlanga PHDA Development Plan

Thembisile Hani SDF

2024

13



Kwamhlanga PDA : Development Framework

- Kwamhlanga Development Area
- All Towns
- Nodes 2km Buffers
- Corridors
- NUSP Projects
- DHS Housing Projects
- Municipal Housing Projects
- HousingProjects (Nov 2022)
- Informal Settlements
- Commercial/Economic
- Community Facilities
- Conservation
- Industrial
- Open Space
- Farm Cadastral
- General Plan Areas
- Areas needing Formalization
- NFEPA Rivers
- Rivers
- NFEPA Wetlands
- Slopes - 1:3 and Steeper
- CBA Irreplaceable
- CBA Optimal
- ESA Landscape corridor
- ESA Local corridor
- ESA Protected Area buffer
- Heavily modified
- Moderately modified- Old lands
- Other Natural Areas
- PA National Parks & Nature Reserves

2.4.4 Climate Change Vulnerability

The CSIR developed a Municipal Risk Profile Tool which provides dynamic risk profiles, including information on vulnerabilities, population projections, exposure to climate hazards, and the impacts of climate change on some key municipal resources for each municipality and its settlements.

The vulnerability factors of the Thembisile Hani LM, as per the CSIR Greenbook Tool, are summarised in **Table 12.**

Overall, the Municipality is less vulnerable than most of the other LM's in the Province with fairly low vulnerability factors. However, cognisance is taken of the Socio-Economic vulnerability of the LM which may stem from the poor access to economic opportunities and quality community facilities within the LM.

Table 12: Climate Change Risk Profile for the Thembisile Hani LM

RISK FACTOR:	RISK RANKING IN PROVINCE	DESCRIPTION
Socio Economic	Ranked 11th out of 17 LM's in the Province with a risk rating that decreased slightly from 5.9 in 1996 to 5.4 in 2011.	The vulnerability of households living in the Municipality. A high vulnerability score (closer to 10) indicates a high number of vulnerable households with regards to household composition, education and health, access to basic services and safety and security.
Economic	Ranked 1st th out of 17 LM's in the Province – meaning the LM is the least vulnerable to Economic Factors, with a risk rating that decreased from 6.2 in 1996 to 5.0 in 2011.	The higher the economic vulnerability of the municipality (closer to 10) the more susceptible the municipality is to external shocks based on economic diversity, size of the economy, labour force, GDP growth rate and the inequality present in the municipality.
Physical	Ranked 1st th out of 17 LM's in the Province – meaning the LM is the least vulnerable to Physical Factors, with a risk rating of 4.6.	Physical vulnerability addresses the physical fabric and connectedness of the settlements in the local municipality. A high physical vulnerability (closer to 10) highlights areas of remoteness and/or areas with structural vulnerabilities.
Environment	Ranked 3rd out of 17 LM's with risk rating of 2.7.	The conflict between preserving the natural environment and accommodating the growth pressures associates with population growth, urbanisation and urban development. A high score (closer to 10) reflects high conflict between preserving the environment and allowing land use change to occur.

2.4.5 Kranspoort and Kwaggafontein Rural Intervention Area Precinct Plan

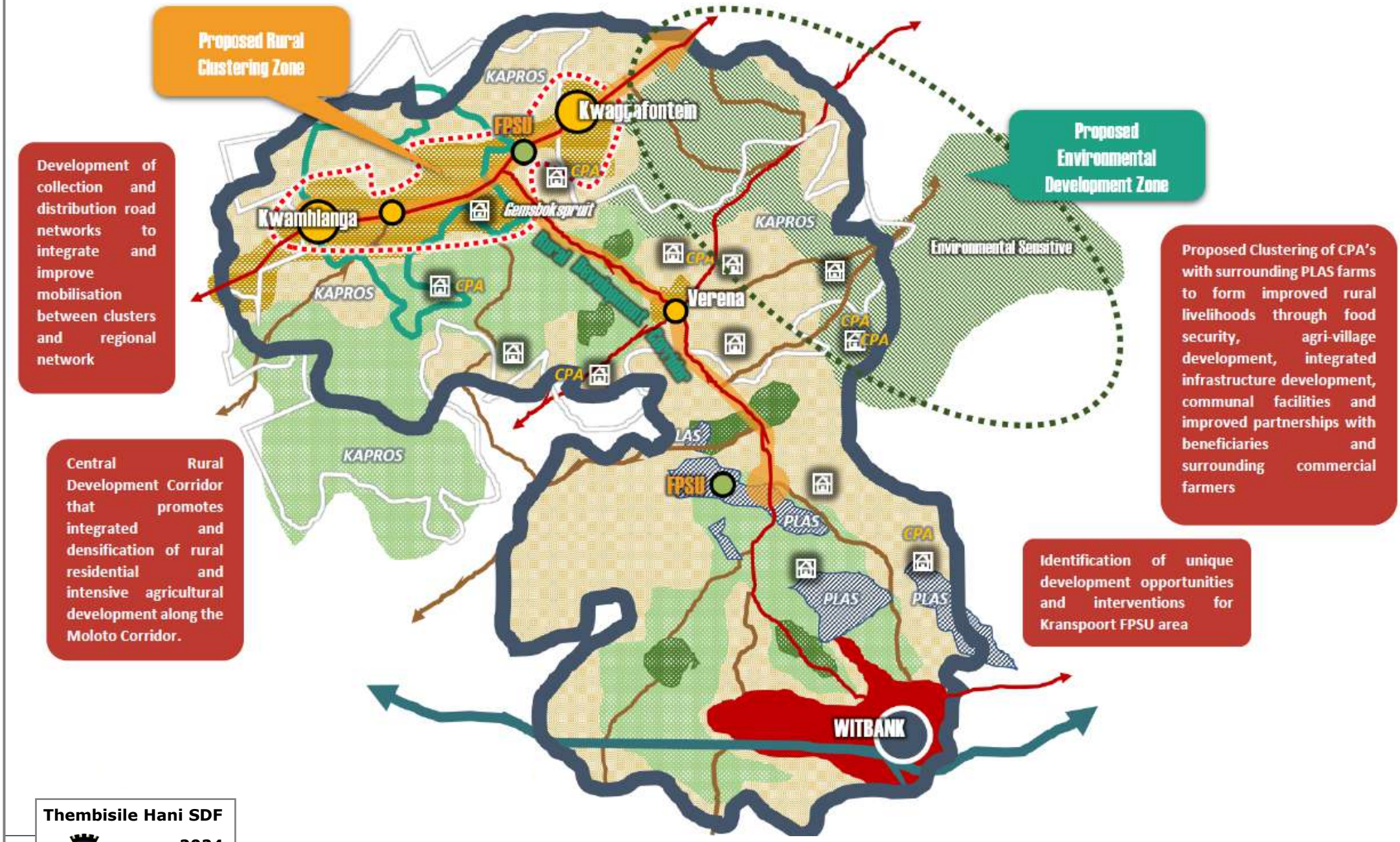
The Department of Agriculture, Land Reform and Rural Development commissioned a plan which focusses on proposals and initiatives to be implemented in the Kranspoort and Kwaggafontein areas, within a 20-30 km radius of the proposed Farmer Production Support Unit (FPSU) at Kwaggafontein.

Some of the objectives of the Rural Intervention Areas Precinct Plan include but are not limited to:

- Social mobilisation to enable rural communities to take initiatives;
- Establish savings clubs and cooperatives for economic activities, wealth creation and productive use of assets;
- Access to resourced clinics;
- Non-farm activities for strengthening of rural livelihoods;
- Leadership training, social facilitation and conscientisation for CRDP and socio-economic independence;
- Democratization of rural development, participation and ownership of all processes, projects and programmes;
- Co-ordination, alignment and cooperative governance (Local Municipalities, Traditional Councils, Provincial Government);
- Participation of Non-Governmental Organisations including faith-based organizations, Community Based Organisations and other organs of civil society;
- Social cohesion and access to human and social capital;
- It is acknowledged that there have been major shortcomings in the delivery of rural infrastructure services; and
- Backlogs in infrastructure delivery are still very high. They are particularly severe in rural areas that still receive less attention despite efforts made to self-finance their infrastructure in the past.

The vision of the plan is shown in **Figure 14**, from which it is noted that there are two proposed FPSU's in the area.

Thembisile Hani LM: Kranspoort & Kwaggafontein RIAPP Vision



2.5 SYNTHESIS: LEGAL AND POLICY DIRECTIVES

2.5.1 SPLUMA Content/Structure Requirements

Diagram 5 graphically summarises the content requirements for a Municipal Spatial Development Framework as defined in Section 21 of SPLUMA (refer to Section 2.1.3 in this document). It is briefly summarized as follow:

- A Spatial Development Vision for the area which gives effect to the SPLUMA Principles.
- A Spatial Concept which indicates a desired spatial growth and development pattern for the next 10 to 20 years.
- Projections/growth estimates for future population and economic activity in the area – translated into a Land Use Budget.
- Multi-Sectoral inputs pertaining to the following:
  - **Natural Environment:** Including environmental pressures, sensitivities, opportunities, etc.;
  - **Spatial Form and Structuring Elements:** In both the urban and rural parts of the municipality (activity corridors, activity spines, priority housing areas, densities, etc.);
  - **Sustainable Human Settlement:** Profile of housing demand per income category and associated provision of community facilities and public transport services required to be sustainable;
  - **Economic Activity and Job Creation:** Analysing the local space economy and identifying existing and latent/ potential future development potential for all economic sectors relevant to the municipality;
  - **Infrastructure:** Identify, quantify and provide location requirements of engineering infrastructure to serve existing and future development needs;
- Spatial Expression pertaining coordination, alignment and integration of multi-sectoral policies/strategies which would collectively culminate into the Composite Municipal SDF. (5 Year Plan and 10-20 Year Perspective).
- Implementation Plan comprising:
  - Guidance in terms of **Land Use Management** instruments available to ensure that land use development can take place in accordance with the MSDF proposals;
  - **Local Plans:** Focus areas earmarked for more detailed spatial planning;
  - **Summary of Sectoral Requirements:** Projects, Budgets, Resources, Timeframes, etc.;
  - **Project Pipeline** consolidated into a **Capital Expenditure Framework** and spatially plotted on MSDF to assess alignment (Spatial Targeting);
  - **Institutional Arrangements:** Inter-Governmental and Public-Private Partnerships.

SPLUMA CONTENT DIRECTIVES FOR MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK

Diagram 5

SPATIAL DEVELOPMENT VISION

SPLUMA Principles:	• Spatial Justice	• Spatial Sustainability	• Spatial Efficiency	• Spatial Resilience	• Good Administration

SPATIAL CONCEPT: 10-20 YEAR DEVELOPMENT PATTERN

Population Projections and Land Use Budget

Natural Environment	Spatial Form/Targeting	Sustainable Human Settlement	Economic Activity	Infrastructure
• Environmental Pressures • Opportunities • Sensitivities • Agricultural Potential	**Urban:** • Development Corridors • Activity Spines • Housing Location • Housing Density • Inclusionary Housing Location • Incremental Upgrading Areas **Rural:** • Conservation • Economic Activity	• Housing Demand Per Income Category • Community Services Required: -Education -Health -Welfare -Safety and Security -Sports and Recreation • Public Transport	• Economic Nodes • Economic Projections • Employment Trends • Economic Locations: -Business/Office -Industrial/Commercial -Mining -Agriculture -Tourism	• Location Requirements • Quantity Requirements: -Water -Sanitation -Electricity -Roads and Stormwater -Waste Management

Spatial Expression: Coordination, Alignment and Integration of Sectoral Strategies and Policies

COMPOSITE MUNICIPAL SDF: 5 YEAR AND 10-20 YEAR

IMPLEMENTATION PLAN

Land Use Management	Multi Sectoral Project Pipeline and Budgeting
• Land Use Management Scheme Implications, Purpose, etc. • Amendments to existing LUS. • Priority Areas: Shortened Land Use Procedures. • Priority Areas: More Detailed Local Plans.	• Sectoral Requirements: Budgets and Resources. • Implementation Targets and Monitoring Indicators. • Capital Expenditure Framework: Spatially Depicted (Spatial Targeting). • Institutional Arrangements Required for Implementation (Three Spheres of Govt). • Partnership Arrangements (Public: Private).

2.5.2 Multi Sectoral Policy Directives

Municipalities throughout South Africa are finding it increasingly difficult to provide its inhabitants not only with cost-effective and equitable infrastructure, but also with sufficient social infrastructure and economic opportunities. For this reason, development in South Africa is guided and directed by a range of national, provincial and local development policies, as discussed.

The most **prominent development directives** emerging from the various developments policy documents, which should inform the development of an SDF for Thembisile Hani Local Municipality are summarised in **Table 13**.

Table 13: National and Provincial Policy Directives to be affected in the MSDF

NATIONAL AND PROVINCIAL POLICY DIRECTIVES FOR THE THEMBISILE HANI LM SDF	
Environmental Sustainability and Resilience	❖ Protect Critical Biodiversity Areas and Ecological Support Areas. ❖ Protect High Potential Agricultural Areas. ❖ Implement Climate Change Mitigation Measures. ❖ Promote Green Economy and Pollution Control. ❖ Monitor Rehabilitation of Mining Areas.
Spatial Form/ Structure	❖ Consolidating the urban and rural structure of the District around urban and rural nodal points. ❖ Optimally utilise all resources associated with the space economy of the District in a sustainable manner. ❖ Focus service delivery and infrastructure investment around the nodal structure which represent the highest population concentrations. ❖ Target intervention programmes around areas in need of service upgrading and areas requiring urban renewal. ❖ Key elements of Spatial Transformation include housing, jobs and public transport (Urban Network) and arranged to promote compact, dense urban environment.

NATIONAL AND PROVINCIAL POLICY DIRECTIVES FOR THE THEMBISILE HANI LM SDF	
	❖ Promote Land Reform, Agrarian Transformation and targeted Rural Infrastructure provision (Spatial Targeting). ❖ Rural Areas to be approached/planned as functional Rural Support Zone to urban nodes, focusing on Conservation, Agriculture, Tourism and Mining). ❖ Urban Areas Focus: o Upgrading of informal settlements; o Urban densification within existing urban fabric and along development corridors; o Extensive provision and prioritisation of public transport; o Job creation and urban renewal in former township areas; o Diverse range of subsidised housing typologies and densities, and focusing on filling the housing "gap market" in terms of bonded housing. ❖ Rural Areas Focus o Spatial consolidation of rural settlements to increase densities and enhance sustainability; o Innovative (green), targeted and coordinated infrastructure delivery; o Prioritise rural development along mobility corridors and at strategic intersections; o Rural nodal development and revitalisation of small towns; o Diversification of rural economy towards mining, tourism and local business.
Transport/ Movement Network	❖ Promote Integrated Transport and Mobility: Road, Rail, Air. ❖ Strengthen Key National Development Corridors / National Roads. ❖ Greater emphasis on developing rail as a transportation medium, rather than road-based modes in South Africa. ❖ Greater integration between land use development and transportation planning should be achieved via ensuring that land development is concentrated in and around transport corridors, and that corridors are orientated towards providing sustainable rail transport rather than road-based transport modes.
Sustainable Human Settlements	❖ Focus on initiating all new urban and rural housing projects in Strategic Development Areas identified and demarcated in municipal Spatial Development Frameworks.

NATIONAL AND PROVINCIAL POLICY DIRECTIVES FOR THE THEMBISILE HANI LM SDF	
	❖ Promote mixed use, mixed density housing projects which offer a variety of tenure alternatives. ❖ Establish Sustainable Human Settlements. ❖ Social Compact: Promote Community Ownership of Neighbourhood Areas/ Infrastructure. ❖ Provide Housing Diversity: Income, Typology and Tenure. ❖ Focus on Education, Health, Welfare and Safety of communities.
Economy and Employment	❖ Developing a diverse range of alternative tourism products to meet the requirements of different market segments. ❖ Developing products that complement and do not compromise or threaten the natural resources on which the tourism developments rely. ❖ Spatial Rationale for future development of Mpumalanga centres around eight key drivers: nodal development, business, commercial and industrial development, tourism, forestry, agriculture and mining; ❖ Agro processing linked to food security and food pricing imperatives. ❖ Creative and cultural industries linked to tourism in the Province. ❖ Facilitate Resource Based Skills Development.
Infrastructure	❖ Promote Integrated urban and rural space linked via public transport. ❖ Optimise the use of rail for public transport and freight use. ❖ Address water, sanitation and electricity backlogs and maintain existing networks. ❖ Promote Green Transitions and Smart Technology Infrastructure.

2.5.3 Thembisile Hani Municipal Vision and Strategic Agenda

The Thembisile Hani Integrated Development Plan (IDP) 2024/25 defines the Vision, Mission, Strategic Goals, Core Values and Development Principles for the LM as follows:

Vision:

"To build a truly African city that is citizen centred and driven"

Mission:

"Developing a 2050 strategic plan which will be anchored on a thriving economy, improved standard and quality service provision and habitable and healthy social environment"

Thembisile Hani local municipality aims to work towards achieving its vision by:

- Participatory integrated development planning
- Sustainable, accountable, and accelerated service delivery
- Promoting socio-economic development
- intensifying community participation
- Shared economic growth
- Allocating resources within budgetary constraints
- Ensuring effective and efficient financial governance
- Applying good and transparent corporate governance and Batho Pele principles in order to create a high performing municipality

Municipal Values and Principles:

The municipality will continue to be driven by and observe the following service delivery principles:

- Showing compassion and care to all municipal customers 11
- Treating all residents equally and with integrity and respect
- Attending to and responding to all queries efficiently
- Conducting the municipal business processes in an ethical and professional manner

The Thembisile Hani IDP identifies seven Strategic Objectives aimed at achieving the Municipal Vision. Objectives 1, 2, 3, and 5 of the have a spatial component and should be considered for the SDF proposals and are summarised in **Table 14.**

Table 14: Thembisile Hani Strategic Objectives

NO.	DESCRIPTION
Strategic Objective 1: To provide households with basic services including water, adequate sanitation, adequate public lighting and accessible roads	
1.1	Increase the current bulk water supply by sourcing 39 ML of water from new potential sources and supply 109 282 households with potable water.
1.2	Provide water reticulation networks in villages to connect 10 000 new households to piped water inside yard.
1.3	Upgrade and maintain existing bulk water infrastructure assets and eliminate all water losses.
1.4	Improve the green drop rating by ensuring compliance with green drop requirements.
1.5	Provide 20 000 households with access to adequate sanitation.
1.6	Provide public lighting to the community by installing high mast lights and streetlights
1.7	Provide accessible roads by re-gravelling 40 km of gravel roads, grading 50 km's and maintaining 20 km's of surfaced roads.
1.8	Provide 20kms of new surfaced roads and complete all incomplete road projects.
Strategic Objective 2: To create integrated and sustainable human settlements through the proactive planning and development of land	
2.1	Establish and formalize priority settlements in line with national norms and standards.
2.2	Prevent the illegal occupation of land and enlighten traditional authorities and communities on land development and land use management issues.
2.3	Create a uniform approach to land development by adopting a uniform land use management scheme.
Strategic Objective 3: To create a safe, clean and healthy environment conducive for social development and recreation	
3.1	Establish a fully functional regional land fill site.
3.2	Extend the refuse removal service to 109 282 households within the municipality.
3.3	Upgrade and install infrastructure in municipal cemeteries.
3.4	Refurbish and maintain existing community amenities, including stadiums and community halls.
3.5	Construct 6 community halls in key areas for optimal public access.

Strategic Objective 5: To create a conducive environment for economic development, investment attraction and job creation.	
5.1	Reduce unemployment.
5.2	Provide investors with sound investment incentives and opportunities.
5.3	Facilitate the resuscitation of nature reserves and key tourist destination sites.
5.4	Enhance the agricultural output of the municipality through local economic development initiatives.
5.5	Enhance the participation of the youth in the economy through targeted programmes initiated by public, civic and private sector organizations and institutions.

3 SPATIAL ANALYSIS AND CHALLENGES

This Section unpacks the Spatial Elements of the Thembisile Hani LM, including the Regional Context, Institutional Context, the Natural Environment, the Municipal Spatial Structure, Community Facilities, Engineering Services as well as the Socio-Economic Profile.

3.1 REGIONAL CONTEXT

Figure 15 depicts the Thembisile Hani LM in its Local Context.

The Thembisile Hani Local Municipality, located in the Nkangala District of Mpumalanga, South Africa, and is primarily a rural area characterized by a mix of agricultural activities and residential settlements.

The municipality spans over 2,400 square kilometres and is home to numerous villages and townships, with Kwaggafontein serving as the administrative center. .

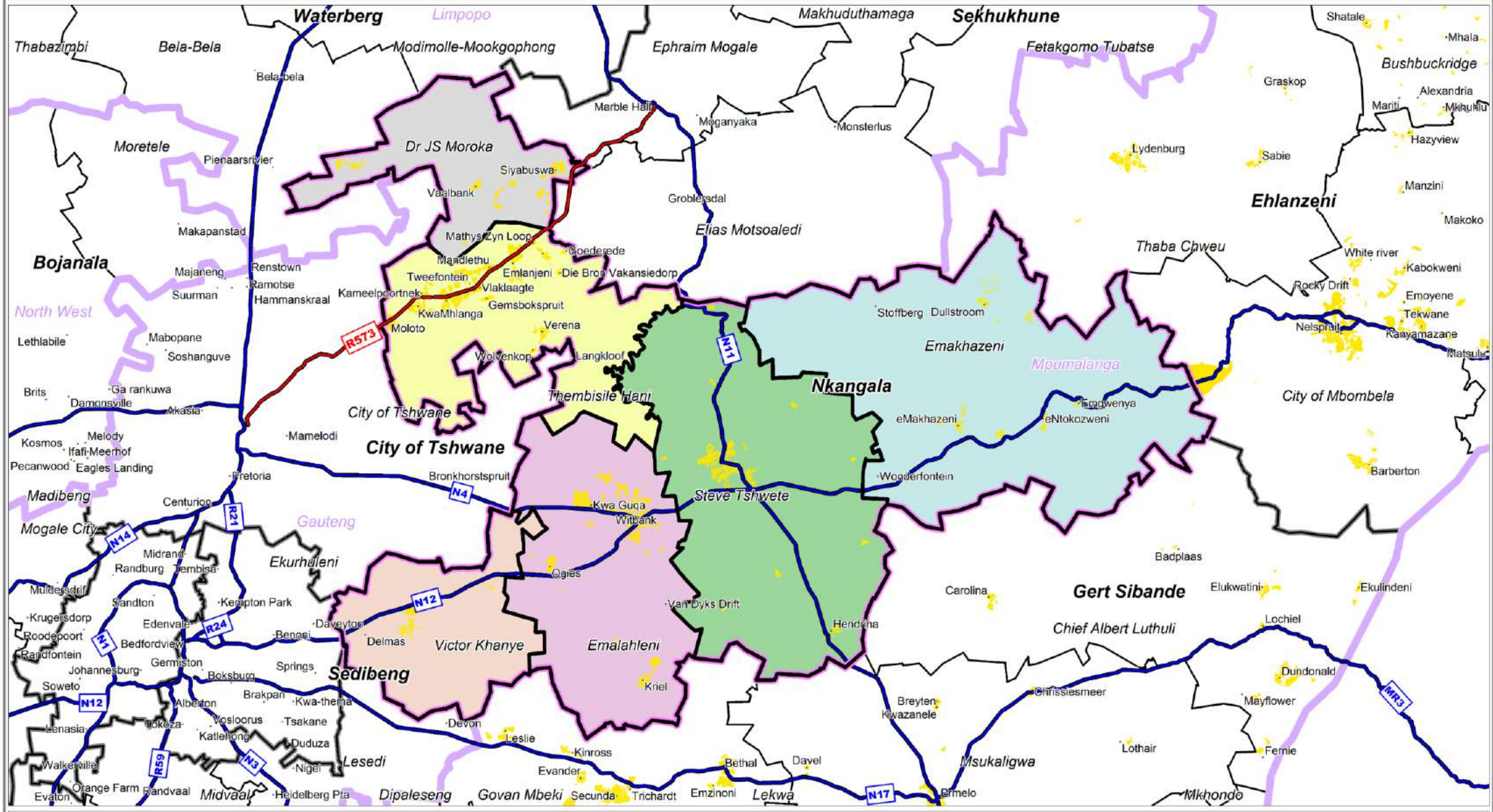
It is situated about 80 kilometres to the northeast of the Tshwane Metropolitan area and about 80 kilometres north of Emalahleni town in the Emalahleni Local Municipality.

The R573 provincial road, also known as the Moloto Road, serves as a major communication and transportation route for the Municipality, linking it with Marble Hall and Groblersdal to the east and Gauteng to the south-west.

Situated along the border with Gauteng Province, it benefits from proximity to urban centers like Pretoria and Johannesburg, which influence economic activity through commuter labour and trade.

The Thembisile Hani Local Municipality plays a vital role in Mpumalanga's regional economy, particularly in agriculture and informal trade.

REGIONAL CONTEXT



Provincial Boundary

Nkangala District Municipality

Towns and Settlements

Nkangala Local Municipalities

- Dr J.S. Moroka
- Emalahleni
- Emakhazeni
- Steve Tshwete
- Thembisile Hani
- Victor Khanye

0 5 10 20 30 40 50 km

N

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3.2 INSTITUTIONAL

This section will discuss the Institutional characteristics of the Thembisile Hani Local Municipality, including the Cadastral Structure, the Ward Boundaries, the Land Ownership, the Land Claims as well as the Traditional Authority Areas.

The study area, together with Dr JS Moroka LM, comprises the former Kwandebele homeland area and there are approximately 76 different towns and villages throughout the Municipality.

Most of the land in the Municipality belongs to the State and falls under Tribal Authority.

3.2.1 Cadastral Structure

Figure 16 shows the cadastral structure of the Thembisile Hani LM, from which it is evident that majority of the towns and settlements are situated in the northern and north-western extents of the municipal area and along the Moloto Road, with the exception of Verena/Wolvenkop, as well as Langkloof, to the south. The main settlements along the Moloto road corridor, from west to east, include Moloto, KwaMhlanga, Tweefontein/Vlaklaagte, Kwaggafontein; and Mathys Zyn Loop.

There are approximately 87,612 erven in the LM situated on approximately 8,199 ha of land.

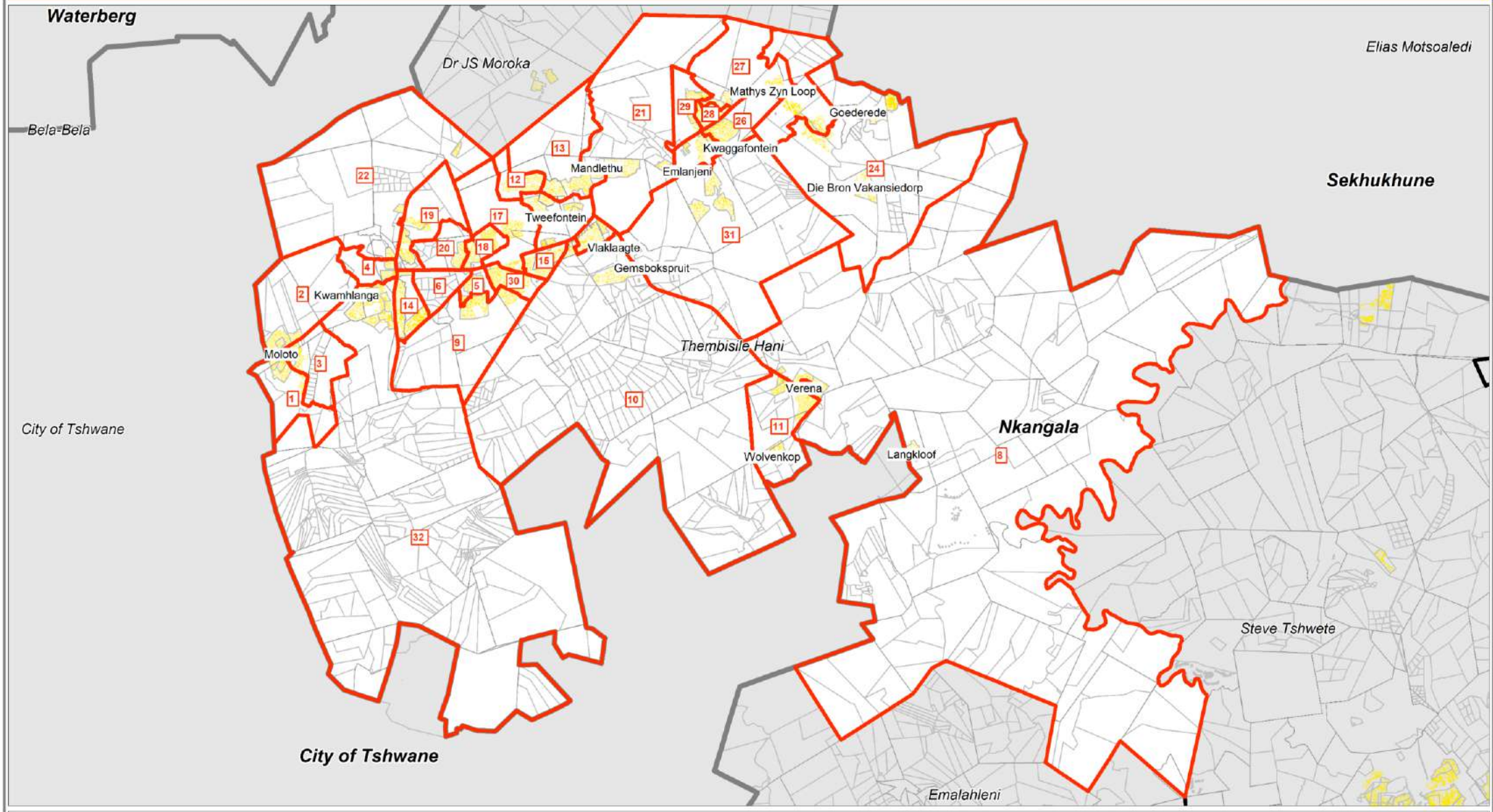
The remainder of the Thembisile Hani LM is rural in nature, with the farm portions covering approximately 238,440 ha of land.

3.2.2 Ward Boundaries

Figure 16 further depicts the Ward Boundaries of the Thembisile Hani LM from which it is evident that the Municipality comprises 32 wards.

The main settlements do not have their own designated ward, but rather spread over 2 or more wards. For example, Moloto lies within wards 1, 2 and 3.

CADASTRAL STRUCTURE & WARD BOUNDARIES



- Thembisile Hani LM Boundary
- Erven (Towns and Settlements)
- Farm Portions
- Parent Farms
- Local Municipality
- District Municipality
- Ward Boundaries

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF

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3.2.3 Land Ownership

Figure 17 depicts the Land Ownership of the Thembisile Hani LM from which it is evident that majority of the land is owned by National Government and Communal Property Associations (CPA's).

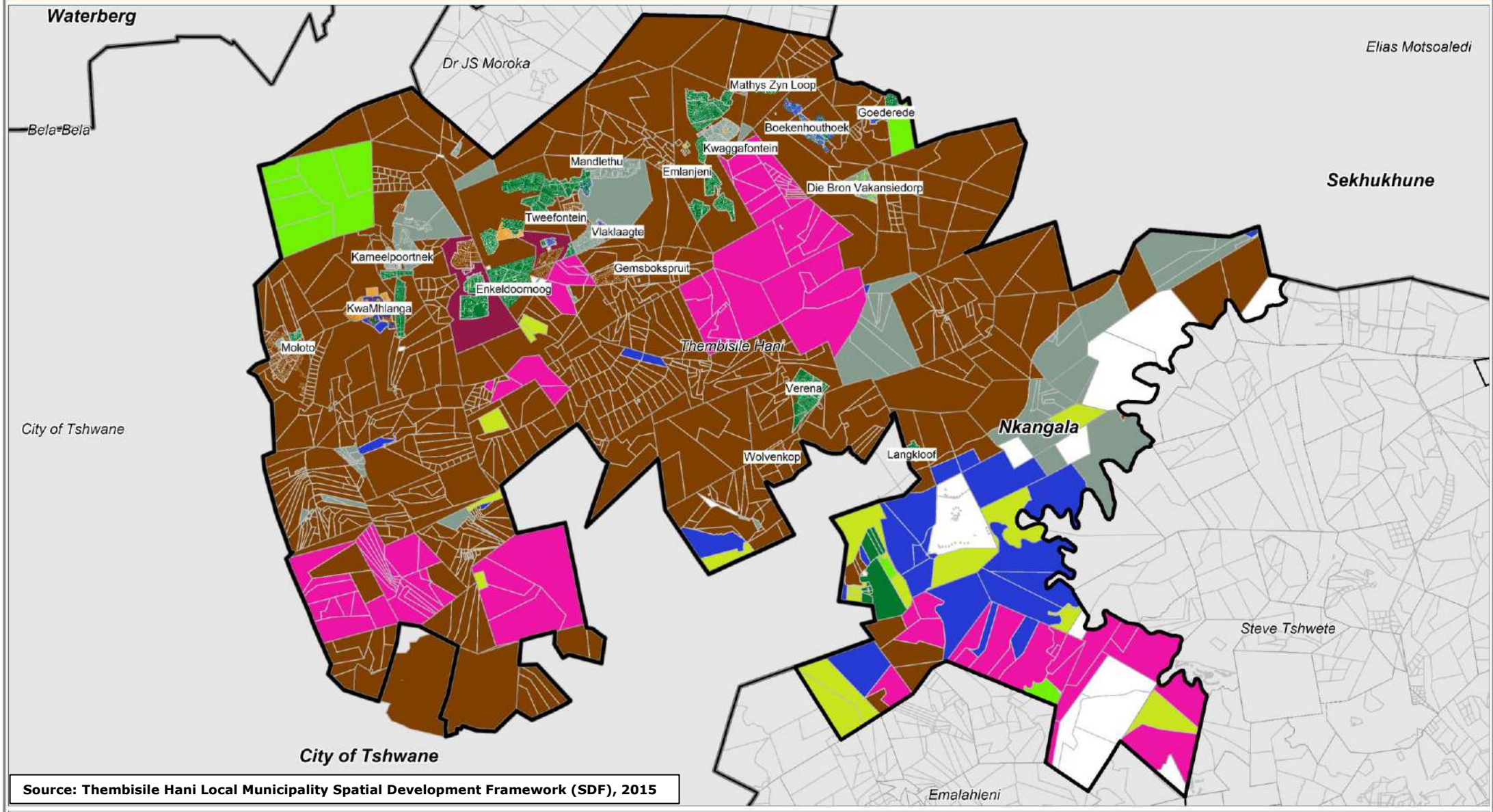
Table 15 illustrates the land ownership distribution in Thembisile Hani Local Municipality with 89,4% of all the properties owned by the three spheres of Government. The section below highlights the most salient features of land ownership:

- The municipal area consists of 84,345 land parcels (erven, farm portions).
- 60,9% of the area of the LM is vested with the National Government of South Africa.
- The Mpumalanga Province owns 13,224 properties which make up 7,2% of the land area. The majority of the land parcels are township erven which have not been transferred to the intended beneficiaries. This may be due to the township registers not being opened for the various townships.
- The Thembisile Hani LM owns 52% of the properties, however, this only makes up 2,4% of all the land area. The properties are primarily all the erven in townships which have been transferred to the local municipality. A high number of these erven still need to be transferred to the intended beneficiaries.
- Almost 15% of the land area is vested with Communal Property Associations (CPAs) which constitute successful land claims. The land parcels are situated in the southern and western extents and includes the nature reserves.
- Private land ownership (individual and legal entities) only makes up 7,4% of the number of properties.

Table 15: Ownership of Land Parcels in the Thembisile Hani LM

OWNERSHIP CATEGORY	NO. OF PROPERTIES	%	AREA HA	%
National Government of South Africa	18,298	21,7	145,285	60,9
Provincial Government	13,224	15,7	17,115	7,2
Thembisile Hani Local Municipality	43,871	52,0	5,608	2,4
Sub-Total:	**75,393**	**89,4%**	**168,008**	**70,5%**
Communal Property Association	97	0,1	34,128	14,3
Mpumalanga Economic Growth Agency	122	0,1	7	0,0
Pty Ltd	54	0,1	7,176	3,0
Private	5,059	6,0	13,081	5,5
Trust	1,060	1,3	6,015	2,5
Sub-Total:	**6,392**	**7,6%**	**60,407**	**25,3%**
Registered Owner Unknown	3	0,0	2,136	0,9
Registered / No Owner	2,391	2,8	490	0,2
Sub-Total:	**2,394**	**2,8**	**2,626**	**1,1**
No info	166	0,2	7,435	3,1
Total Properties	**84,345**	**100,0%**	**238,476**	**100,0%**

LAND OWNERSHIP



Source: Thembisile Hani Local Municipality Spatial Development Framework (SDF), 2015

- Thembisile Hani LM Boundary
- Farm Portions
- Parent Farms
- Local Municipality
- District Municipality

Ownership:

- National Government (145 285 ha)
- Provincial Government (17 115,9 ha)
- Thembisile Hani LM (5 608,88 ha)
- Mpumalanga EGA (7,25 ha)
- Communal Prop Assoc (34 128,2 ha)
- Pty Ltd (7 176,89 ha)
- Private (13 081,7 ha)
- Trust (6 015,17 ha)
- Registered Owner Unknown (2 136,09 ha)
- Registered / No Owner (490,76 ha)

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF 2024

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3.2.4 Traditional Authority Areas

Figure 18 illustrates the extent of the Traditional Authorities within the Thembisile Hani LM. The boundaries of the Traditional Authority areas were obtained from Government Gazette Notices and may be extended/amended should more information come to light.

The Traditional Authorities cover most of the northern extent of the Local Municipality with limited coverage in the southern extents over the farming areas. The four main Traditional Authorities who are active in Thembisile Hani Local Municipality include the following:

- Amandebele-Akwa-Ndzundza-Fene TA (6 426 ha);
- Amandebele-Akwa-Nzundza-Somphalali TA (5 499 ha);
- Manala (Mbongo) TA (5 499 ha); and
- Ndzundza TA (5 499 ha).

The implications of the Traditional Authority areas for the Municipality are as follows:

- Traditional Leaders allocate land to individual without following the appropriate land transfer procedures. This could lead to land being allocated in road and power line servitudes which poses a challenge when the areas need to be formalised.
- Land is allocated for business or residential purposes without consultation with the Local Municipality which puts a strain on the existing engineering infrastructure, often in areas that do not have planned projects for upgrading or expanding the engineering infrastructure.
- The Traditional Authorities furthermore do not reserve land for community facilities (schools, clinics) and therefore the residents have to travel to adjacent areas to access the services.
- The impact on the environment by the growing informal settlements are also taken into consideration.
- There is a lack of integration and cooperation between the Traditional Authority Leaders and the Thembisile Hani LM.

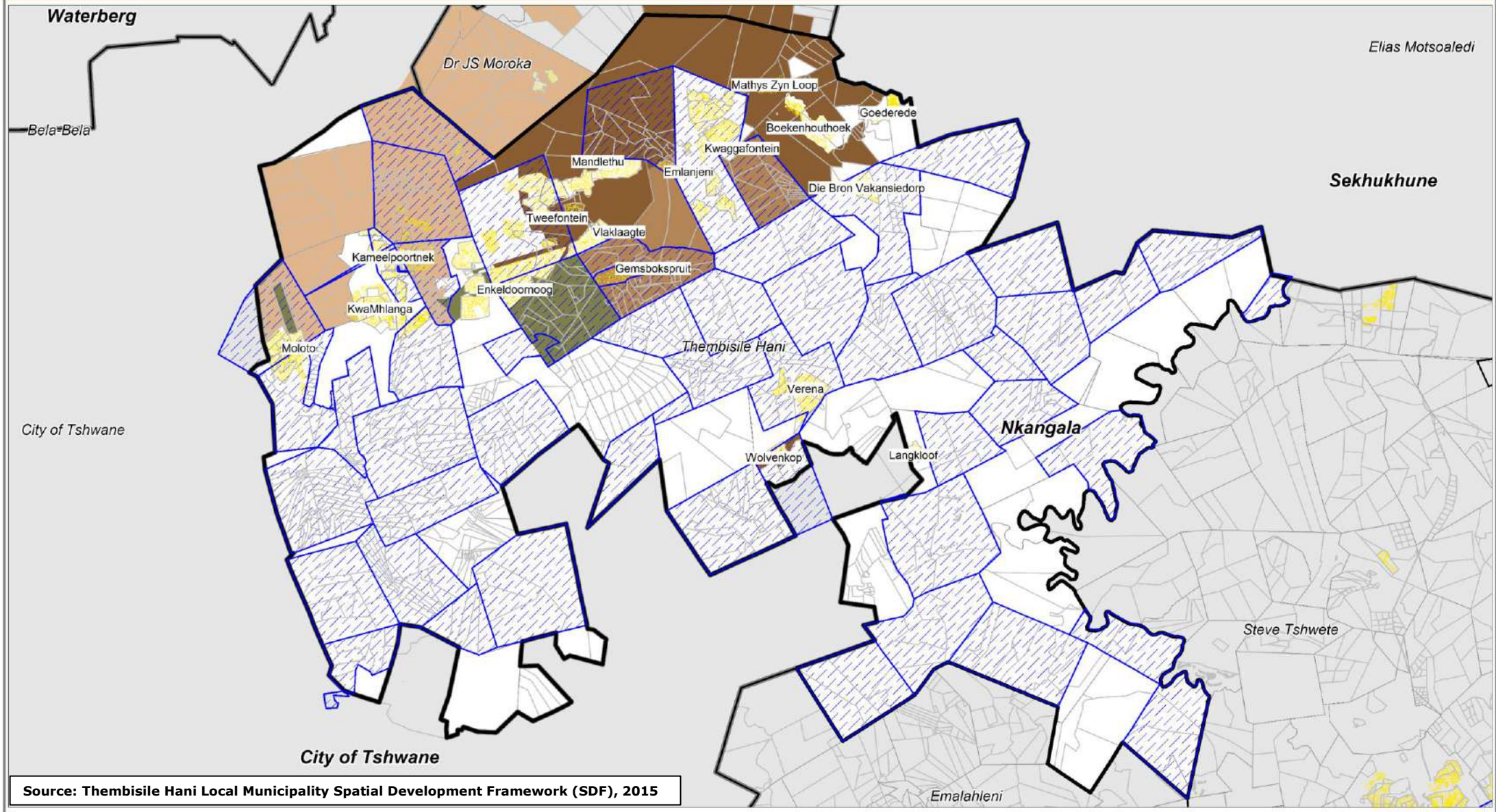
3.2.5 Land Claims

Virtually the entire Thembisile Hani municipal area is subject to land claims as illustrated in **Figure 18**, and most of this land is also Government owned (see *Figure 17*).

The number of claims in the Thembisile Hani Municipal Area totals approximately 133, and they are located on 60 individual properties. Most of these claims are located in the KwaMhlanga area, which has a total of 82 claimants on 29 properties. A full list and of the land claims and their status is attached as ***Annexure A***.

The challenge which is faced by the Department of Rural Development and Land Reform is that a mechanism has not yet been created to settle land claims that fall under Traditional Authorities and the Land Claims Commissioner has accordingly not been able to settle these land claims.

LAND CLAIMS AND TRADITIONAL AUTHORITY AREAS



Source: Thembisile Hani Local Municipality Spatial Development Framework (SDF), 2015

- Thembisile Hani LM Boundary
- Erven (Towns and Settlements)
- Farm Portions
- Parent Farms
- Local Municipality
- District Municipality
- Land Claims

Tribal Authority Area:

- Amandebele-Akwa-Ndzundza-Fene TA (6 426 ha)
- Amandebele-Akwa-Nzundza-Somphalali TA (5 499 ha)
- Manala (Mbongo) TA (5 499 ha)
- Ndzundza TA (5 499 ha)

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF 2024

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3.3 NATURAL ENVIRONMENT

3.3.1 Topography and Hydrology

Figure 19 depicts the Topography and Hydrology of the Thembisile Hani LM, which is discussed below.

The northern part of the Thembisile Hani Local Municipality is characterised by a mountainous area. Further, to the south-east of the LM, the Dikwale/Dithaba mountain range extends in a north-south direction, separating the Thembisile Hani and Steve Tshwete Local Municipalities, and is the most significant topographical landform in the area.

Apart from the undulating topography, several rivers and streams run through the municipal area. The majority of these form part of the Olifants River system. In total 80% of Thembisile Hani falls within the Middle Olifants sub-Water Management Area (WMA), while the remaining southern portion (20%) falls within the Upper Olifants sub-WMA. The northern area of the district is drained by the Elands River, which flows in an easterly direction to join the Olifants River. The general direction of drainage is towards the northeast.

In terms of prominent Dams, the Loskop dam, known for its scenic beauty and recreational opportunities, falls on the boundary between the Thembisile Hani LM and the Steve Tshwete LM.

3.3.2 Geology and Soil Potential

Figure 20 depicts the Geology of the Thembisile Hani LM from which it is noted that the occurrence of minerals in Thembisile Hani is very high in comparison to the other local municipalities within the Nkangala District, with very large deposits of refractory (flint) present in the south-western regions.

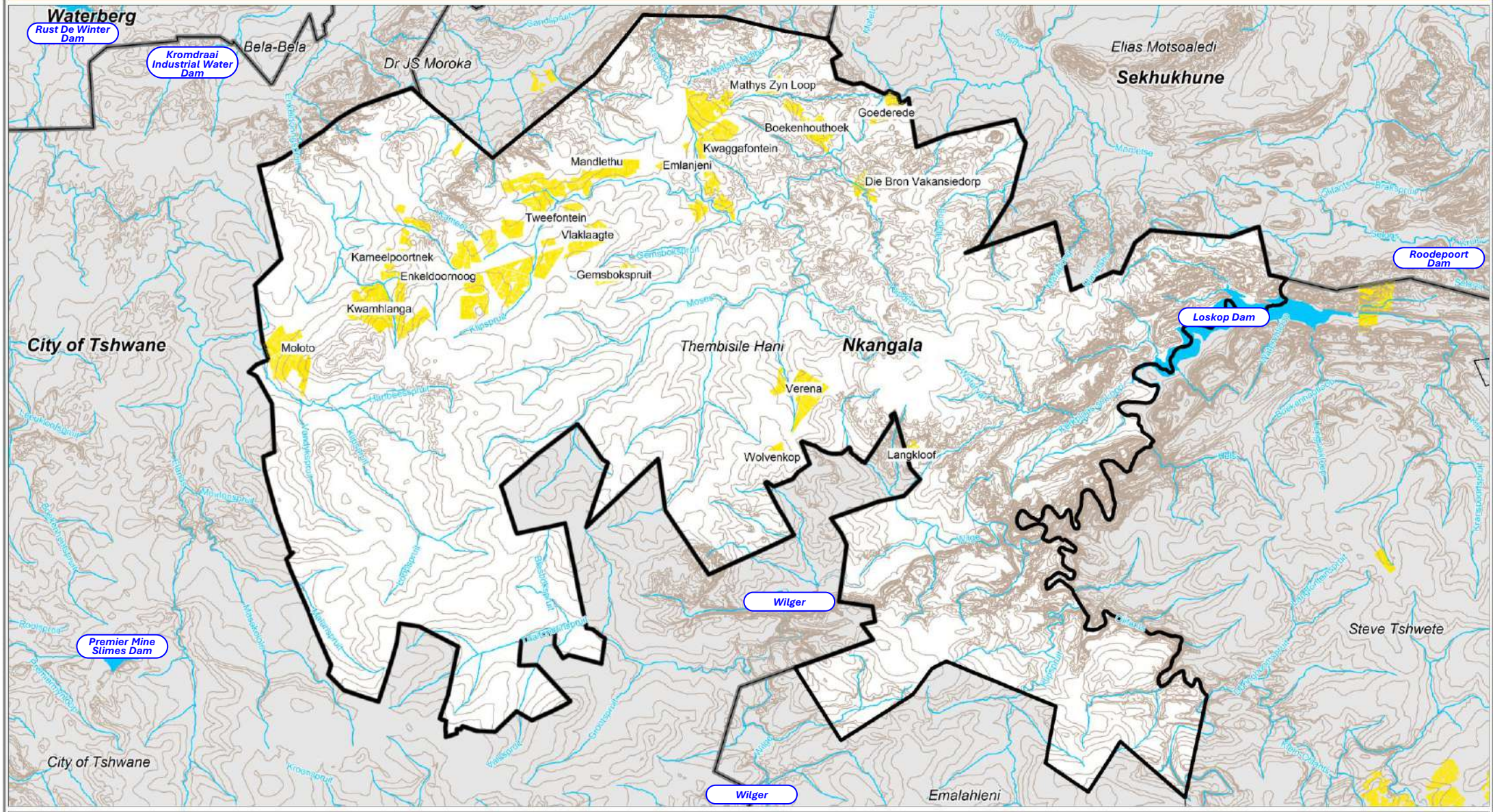
Various smaller deposits of Gold, Tin, Copper, Lead, Manganese, Uranium, Nickel, Cobalt and Silver occur throughout the municipal area.

The dominant vegetation type in the region, covering most of the south-western parts of the Municipality, is Sourish Mixed Bushveld, with the eastern mountainous areas covered with Mixed Bushveld Veld Types.

Figure 21 shows the Soil Potential of the Thembisile Hani LM from which it is evident that the mountainous areas comprise of rock areas with intermittent occurrences of Glenrosa and/or Mispah forms, while the central and western parts are predominantly covered with Plinthic Cantena and Margalitic soils

Generally, the soil and geological formations present in the study area are fairly stable and do not pose significant development constraints to the region.

TOPOGRAPHY AND HYDROLOGY



- Thembisile Hani LM Boundary
- Erven (Towns and Settlements)
- Local Municipality
- District Municipality
- Dams and Rivers
- 20m Contours

0 1,5 3 6 9 12 15 km

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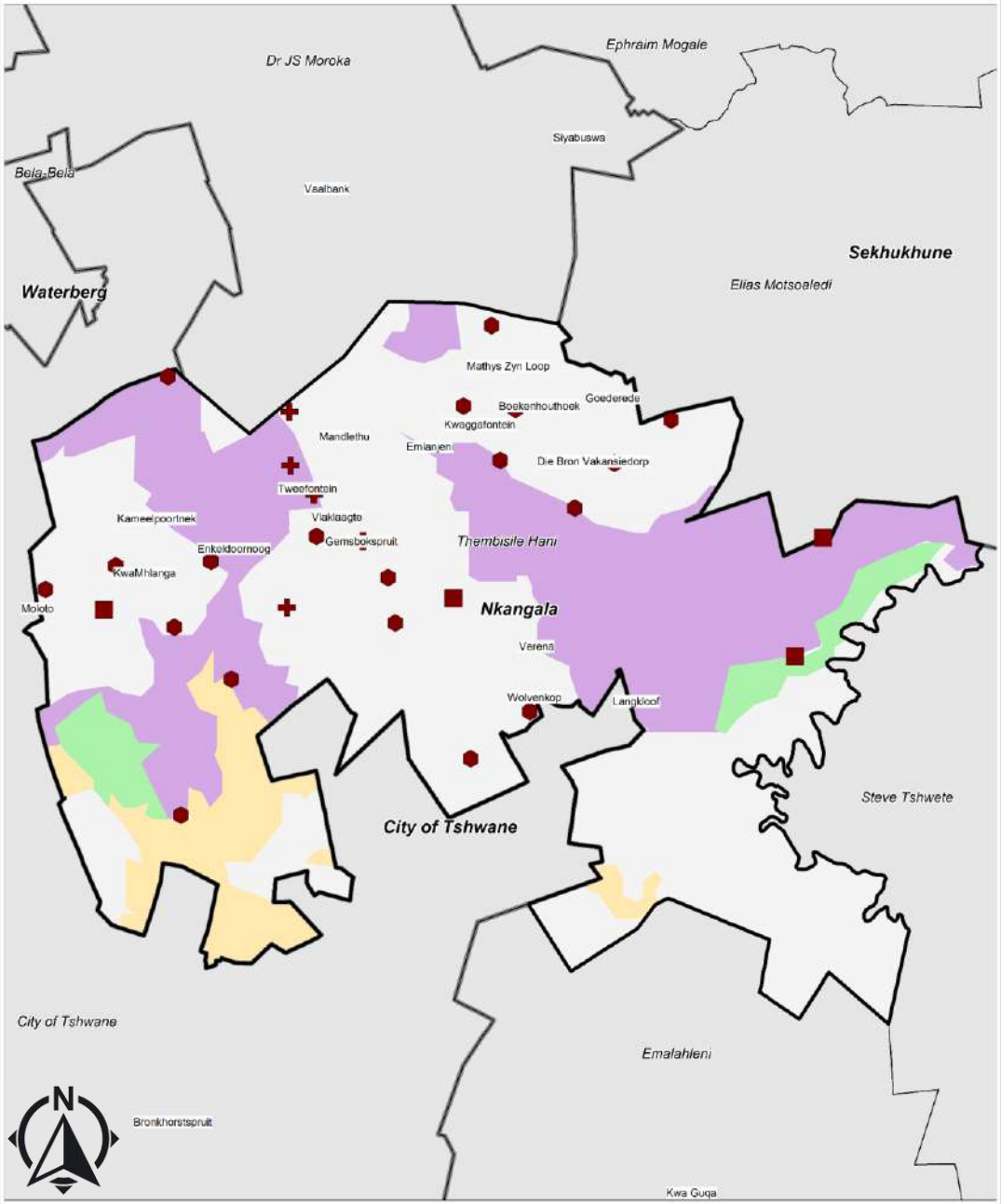
GEOLOGY



Geology
- Rooiberg + Pretoria Group
- Waterberg Group
- Karoo Sequence
- Loskop Formation

Mineral Potential
- Flint CL
- Gold Au
- Various Minerals
- Lead,Zinc,Vanadium Pb,Zn,V

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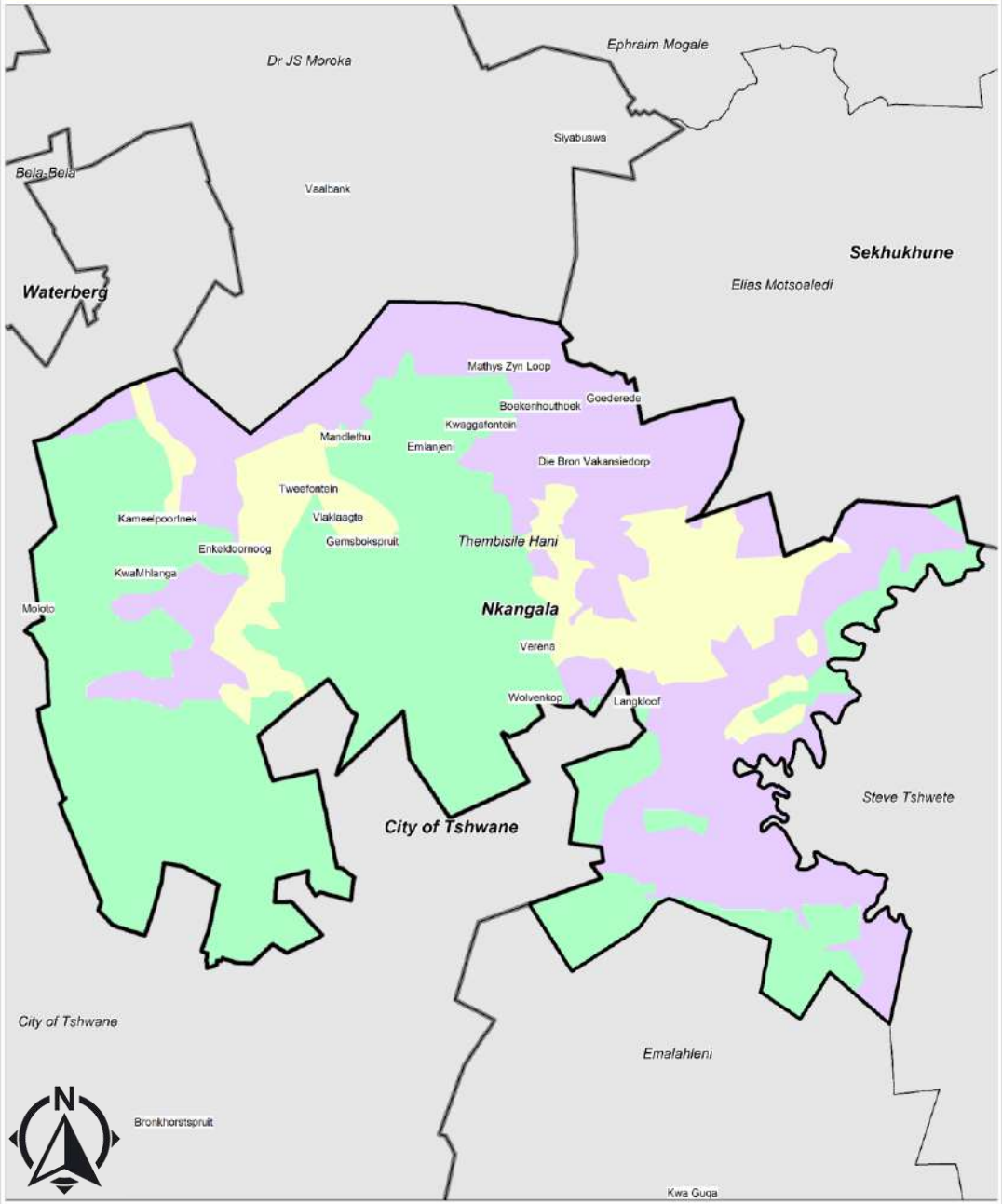
SOIL POTENTIAL



- Glenrosa and - or Mispah forms
- Plinthic Cantena - Upland duplex and Margalitic soils rare
- Rock areas with miscellaneous land classes

Thembisile Hani SDF 2024

3.3.3 Biodiversity/ Bioregional Plan

Figure 22 depicts the Terrestrial Biodiversity of the Thembisile Hani LM from which it is noted that the eastern parts of the LM contain large areas of environmental sensitivity.

In terms of conservation, Thembisile Hani LM is a very important area in the District for threatened species, second only to Emakhazeni LM, as it supports 70 threatened species, and four Red Data species of urgent threat status.

All four Red Data species occur within the confines of the Loskop Dam Nature Reserve, which is managed by the Mpumalanga Parks Board. The only Red Data frog species occurring within the Nkangala DM is the Giant Bullfrog *(Pyxicephalus Adspersus)* which is near-threatened and has been recorded in Thembisile Hani.

The most critical areas in respect of biodiversity and environmental sensitivity are:

- The Loskop Dam Nature Reserve (mammals, birds, reptiles); and
- The ecological corridors connecting the numerous nature reserves and conservancies in the south-eastern and north-eastern extents of the municipal area.

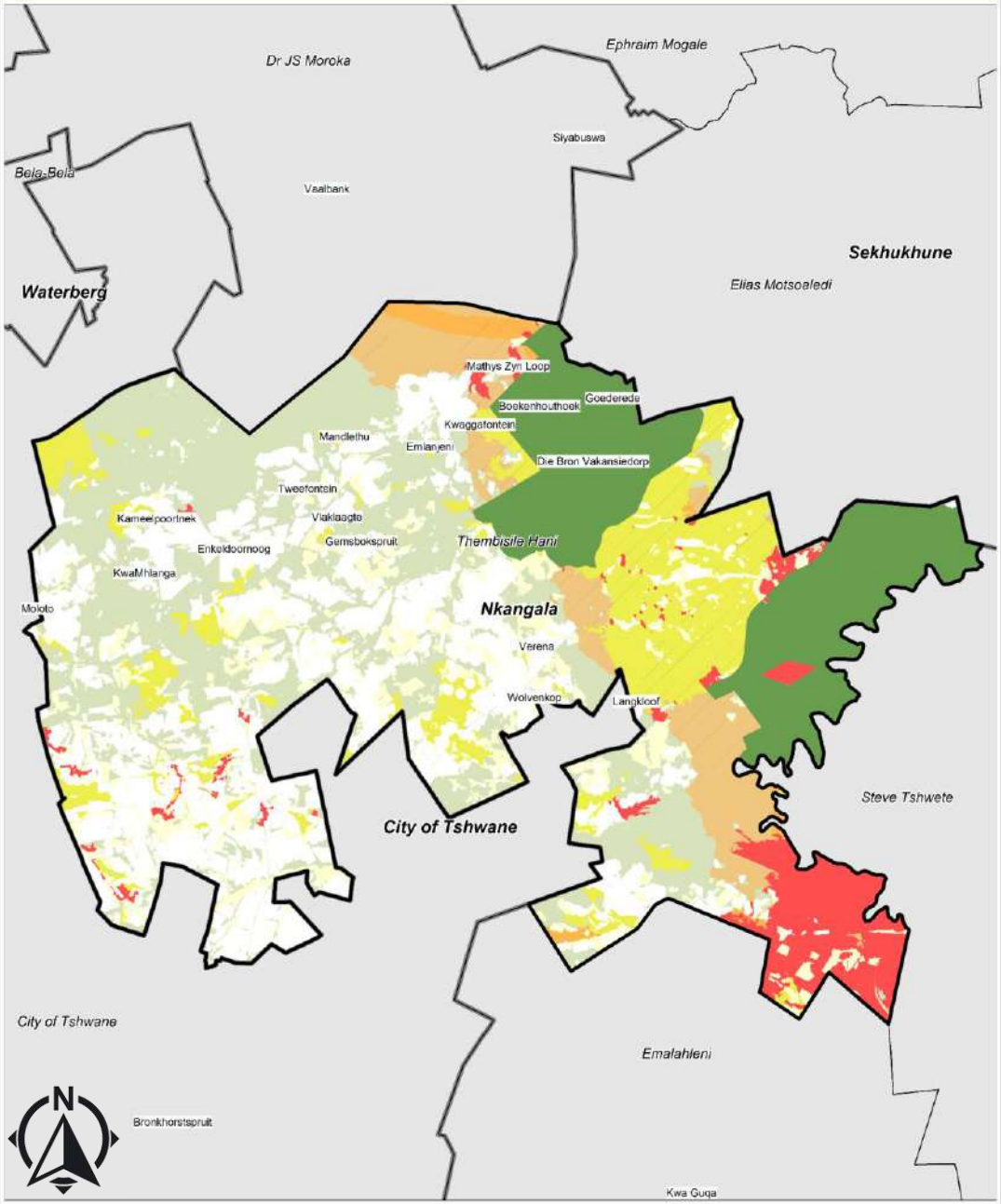
The level of formal protection for the centres of endemism, i.e. valuable biodiversity regions, in Thembisile Hani is very low – 75% of the high biodiversity areas are not formally protected. Appropriate management action that addresses habitat loss, environmental degradation and fragmentation of landscapes and their root causes are necessary to mitigate the threat of species' extinction.

Figure 23 depicts the Freshwater Biodiversity of the Thembisile Hani LM from which it is evident that there are a number of Wetland Clusters and Important Subcatchments which need to be protected from threats such as:

- **Water Pollution:** Pollution from agricultural runoff, mining activities, and sewage discharge threatens water quality and aquatic life.
- **Habitat Destruction:** Overgrazing, farming, and urban expansion often degrade riparian zones and wetlands.
- **Invasive Species:** Aquatic ecosystems are under threat from invasive plant species such as water hyacinth and alien fish, which compete with indigenous flora and fauna.
- **Water Extraction:** High demand for water for irrigation, industrial use, and domestic consumption often leaves freshwater systems depleted, affecting biodiversity.

The freshwater systems attract numerous bird species, including herons, kingfishers, and African Fish Eagles and migratory birds often depend on these habitats for feeding and breeding.

TERRESTRIAL BIODIVERSITY



- ESA Protected Area Buffer
- PA National Parks and Nature Reserves
- PA Protected Environment: Natural
- PA Protected Environment: Modified
- CBA Irreplaceable
- CBA Optimal
- ESA Landscape Corridor
- ESA Local Corridor
- ESA Species Specific
- Other Natural Areas
- Moderately Modified
- Heavily Modified

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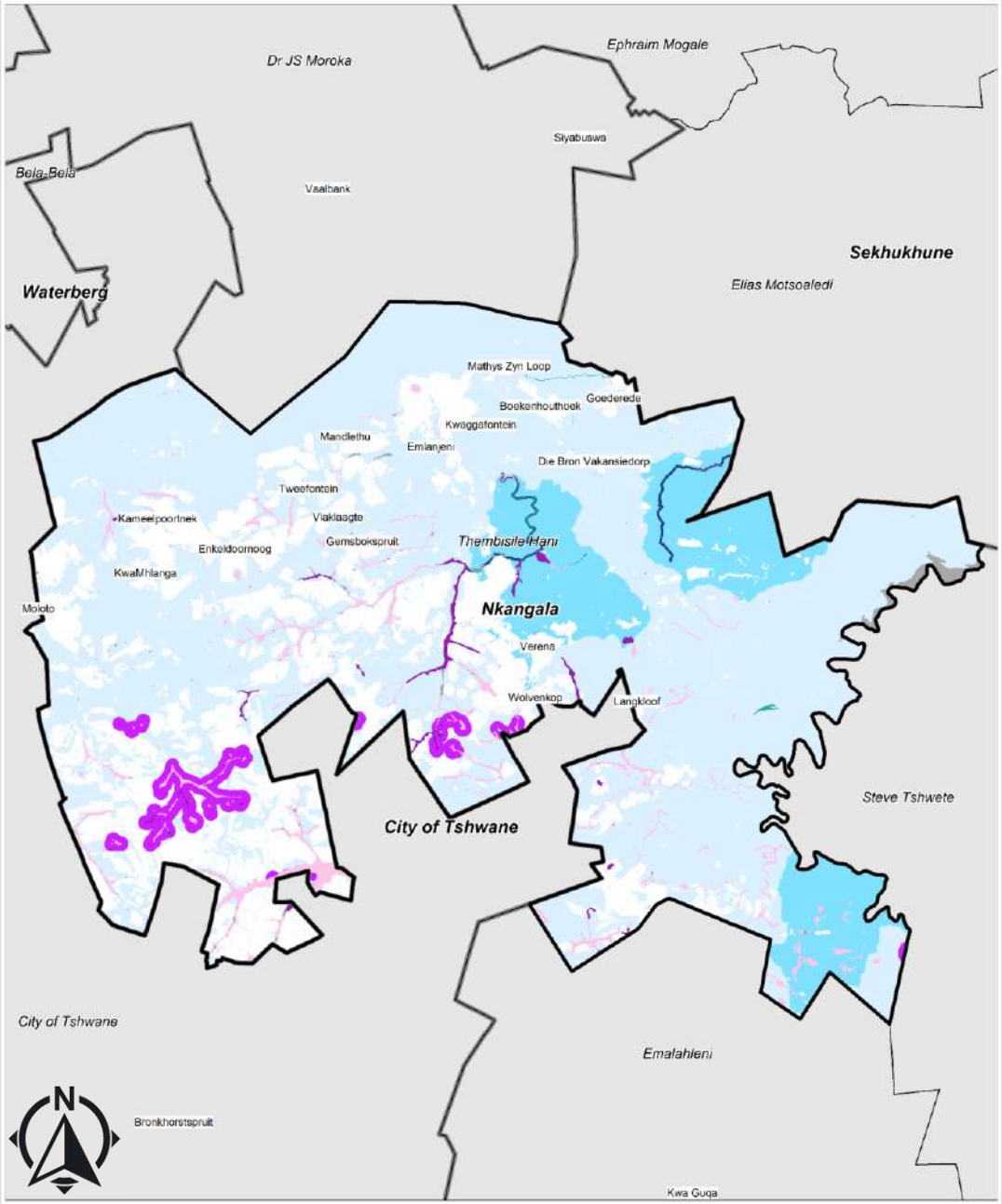
FRESHWATER BIODIVERSITY



- Protected Areas
- PA: Wetlands
- CBA: Aquatic Rivers
- CBA: Aquatic Species
- CBA: Wetlands
- ESA: Wetland Clusters
- ESA: Wetlands
- ESA: Important Subcatchments
- Other Natural Areas
- Heavily Modified
- Dams

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3.3.4 Proclaimed Nature Reserves

Figure 24 represents the Proclaimed Nature Reserves within the Thembisile Hani LM, including the Private Nature Reserves.

Thembisile Hani LM boasts two rather large nature reserves, namely the Mabusa Nature Reserve between the R573 and R25 and the Loskop Dam Nature Reserve; together with the smaller SS Skosana Nature Reserve in the north between Goederede and Mathys Zyn Loop. At regional level there is potential to link all these nature reserves to one another, as well as to the Mukhombo Nature Reserve in the Dr JS Moroka LM, to form one continuous macro nature reserve.

3.3.5 Guidelines for Protected Areas

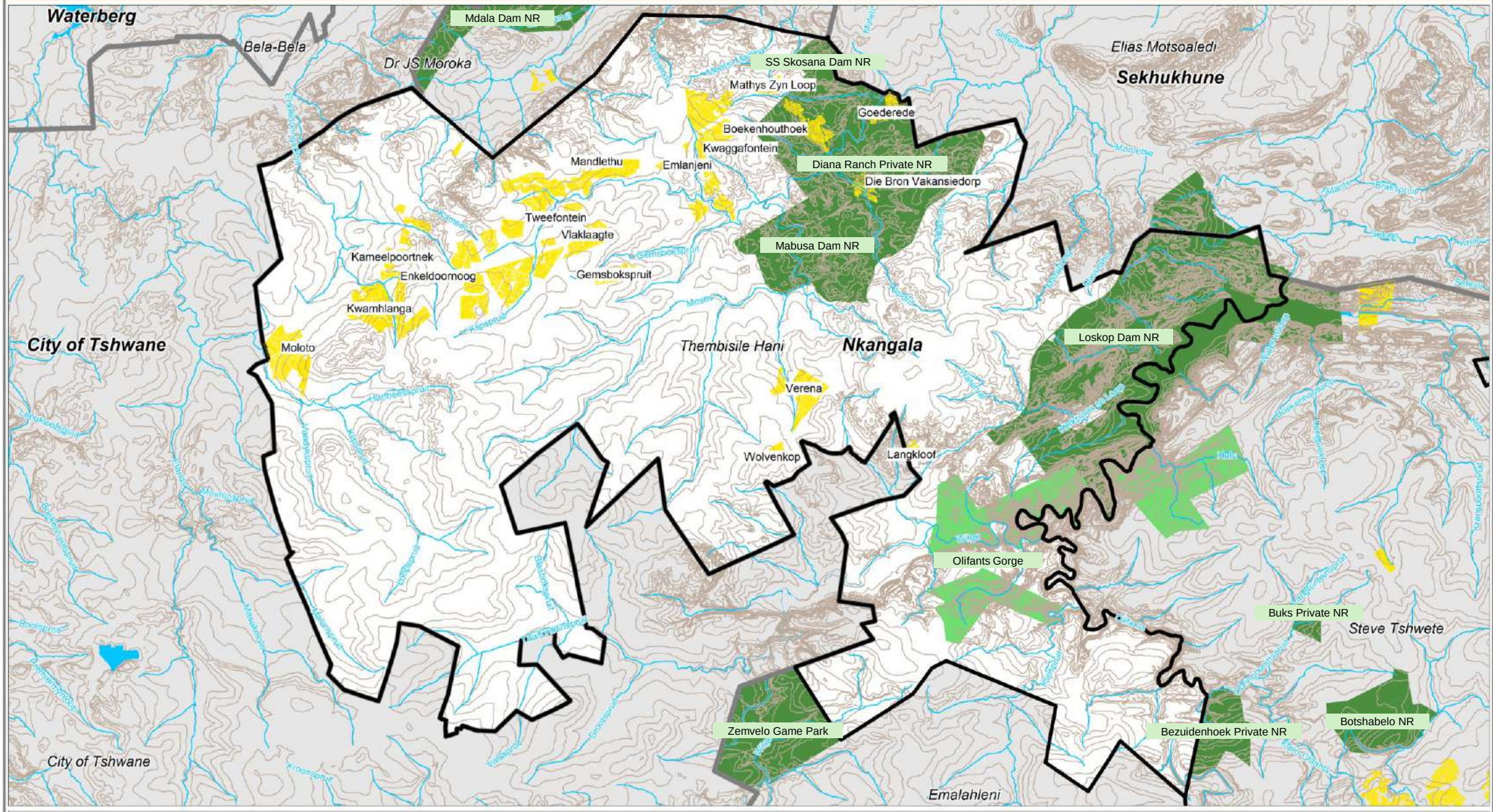
The Mpumalanga Biodiversity Conservation Plan provides the following guidelines for the different Land Uses that could be allowed (and not allowed) in areas of different Biodiversity Categories. These guidelines are summarised in **Table 16**.

Table 16: Land Use Suitability per Biodiversity Category

	LAND USE SUITABILITY PER BIODIVERSITY CATEGORY	PROTECTED	IRREPLACEABLE	HIGHLY SIGNIFICANT	IMPORTANT AND NECESSARY	ECOLOGICAL CORRIDORS	LEAST CONCERN
BIODIVERSITY FRIENDLY LAND USES							
1.	Conservation Management	Y	Y	Y	Y	Y	Y
2.	Game Farming	Y	Y	Y	Y	Y	Y
3.	Extensive Livestock Production	R	Y	Y	Y	Y	Y
4.	Rural Recreational Development	N	N	R	R	R	Y
HIGH IMPACT RURAL LAND USES							
5.	Rural (Communal) Settlement	N	N	R	R	R	R
6.	Dryland Crop Cultivation	N	N	N	N	R	Y
7.	Intensive Animal Farming (including dairy)	N	N	N	N	R	Y
8.	Irrigated Crop Cultivation	N	N	N	N	R	Y
9.	Timber Production	N	N	N	N	N	R
URBAN INDUSTRIAL LAND USES							
10.	Urban and Business Development	N	N	N	N	N	Y
11.	Major Development Projects	N	N	N	R	R	R
12.	Linear Engineering Structures	N	R	R	R	R	R
13.	Water Projects and Transfers	N	N	R	R	R	R
14.	Underground Mining	N	N	R	R	R	Y
15.	Surface Mining, Dumping and Dredging	N	N	N	N	R	R

Y = YES – permitted/encouraged activity
N = NO – not permitted/actively discouraged activity
R = RESTRICTED – by compulsory site-specific conditions and controls when unavoidable. Not usually permitted

PROCLAIMED NATURE RESERVES, CONSERVANCIES ETC.



- Thembisile Hani LM Boundary
- Erven
- Local Municipality
- District Municipality
- Dams and Rivers
- Contours

Protected Areas (PA):

- Nature Reserves (NR): Private, Municipal, National)
- Conservation Areas

0 1,5 3 6 9 12 15 km

N

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3.4 MUNICIPAL SPATIAL STRUCTURE

3.4.1 Overview

Figure 25 shows the Spatial Structure and Movement Network of the Thembisile Hani LM and it is evident that the towns and settlements are all clustered around the R573/ Moloto Road**,** with the exception of Verena/Wolvenkop which is situated along the R25 and R544.

Large parts of the Municipality, particularly in the eastern extents, constitute Nature Reserves and Conservation Areas and the remainder of the LM is largely rural in nature, and consists of subsistence agriculture activities.

The five primary settlement clusters within the municipal boundaries are namely Moloto, KwaMhlanga, Kwaggafontein, Tweefontein and Verena. Other settlements include: Boekenhouthoek, Bundu, Ekangala, Ekandustria, Enkeldoornoog, Goederede, Phola Park, Seringkop, Sybrandskraal, Vlakfontein, and Witnek.

3.4.2 Transport Network

3.4.2.1 Road

The Thembisile Hani Local Municipality is linked to the surrounding regions via several major road linkages including:

- **Route R568** to the north, which links KwaMhlanga to Dr JS Moroka LM and specifically to Siyabuswa town and Marble Hall;
- **Route R573** (Moloto road) which runs from the City of Tshwane to the west through Thembisile Hani towards Siyabuswa;
- **Route R25** which runs from Bronkhorstspruit past Verena northwards towards Groblersdal.
- **Route R544** which links Thembisile Hani southwards past Verena to Emalahleni Local Municipality, and
- **Route R568** which links KwaMhlanga southwards to Ekangala and Bronkhorstspruit.

The most prominent linkage between the Thembisile Hani LM and the surrounding environment is route R573 (the Moloto Road), which is estimated to carry 60,000 commuters daily, most of them heading to and from work in Pretoria. The main mode of transport in this regard is by bus. This route also carries the highest number of vehicles in the municipality, and as a result, has developed into an “activity spine” around which the majority of residential, industrial and business development of the LM has established.

There are, however, also many negative aspects associated with this commuter system. First and foremost is the high number of serious vehicle accidents on this road. Secondly, commuters spend a large amount of time and money daily to reach their place of work, which makes the system highly inefficient. The feeder system consists of buses, which travel through the residential areas and finally to the City of Tshwane. The road network in the settlements consists of blacktop and gravel and the latter is time consuming on the busses. The local feeder system is further complimented by mini-bus taxis, which transport people to the closest bus station.

SANRAL recently started a major upgrading project in order to upgrade Moloto Road, through three provinces that it traverses: Gauteng, Mpumalanga and Limpopo in order to improve road safety and convenience for commuters.

SANRAL's planned interventions to promote road safety include widening the current single-lane carriageway into a dual-lane carriageway in each direction, adding a shoulder, and closing off illegal access points. They have further introduced four traffic circles/roundabouts – three in Mpumalanga and one in Limpopo – as speed-calming measures.

The introduction of light masts will also ensure visibility for road users at night, and the cattle-creeps which were constructed will ensure safe passage for livestock, removing them from the actual road.

Illegal occupation of land remains a major challenge on the project, with local traders often operating close to the road reserve. Not only is this dangerous for community members, but it also imposes serious delays on progress of the project. One of the ways in which SANRAL seeks to mitigate the situation is through constant engagement with stakeholders, to educate them on the dangers and disadvantages of encroachment.

The regional road network seems to be sufficient in serving current needs, and to link the area to the entire surrounding region. However, it is important to note that the quality, maintenance and standard of the road network is not always satisfactory.

3.4.2.2 Moloto Rail Development Corridor

The Moloto Rail Corridor Development Initiative was launched at national and provincial government level and enjoys the full support of the Nkangala District Municipality and local municipalities in the District. The main focus of the Initiative is to replace the bus commuter system along the Moloto road with a rail commuter system. The objective is to provide safer, faster and more efficient rail transport, while buses and taxis will be used as part of a feeder system to the railway stations along the Moloto Rail Corridor.

The railway line and stations will form the basis for the nodal system, which will be used as a tool to promote the development of retail and community facilities at stations. Stations will be developed in accordance with the concept of Transit Orientated Development, which promotes high density, mixed land use within walking distance from stations. These TODs will create the critical mass required to stimulate viable economic activity. Through careful planning, a range of community services can be provided along the railway line, ensuring that the community has access to a full range of community services via use of the railway system (in line with the Multi-Purpose Community Centre (MPCC) concept.

The construction of the Moloto Rail Development Corridor has been stalled to date due to a lack of funding.

3.4.2.3 Public Transport

In the Thembisile Hani Local Municipality, **bus services** are the dominate mode of transport.

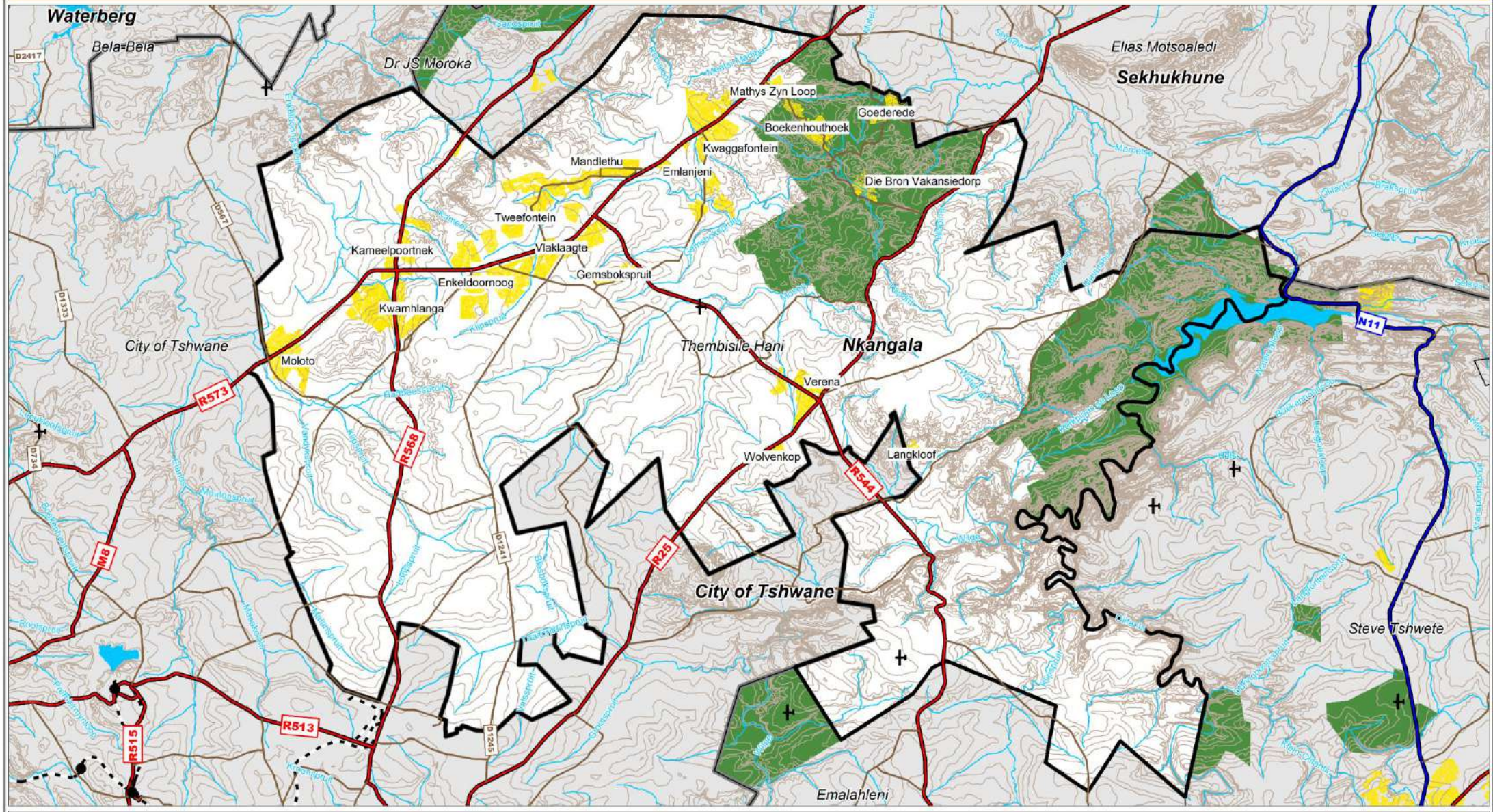
Apart from the bus service which serves the community along R573 as well as a secondary public transport road network which runs through the different urban settlements, there is also an extensive **taxi service** in the Thembisile Hani Municipal area.

The taxi service is especially concentrated around six different taxi ranks, namely KwaMhlanga (Phola Park), Vlaklaagte 2, Enkeldoornoog B, Kwaggafontein, Mathys Zyn Loop and Verena. The mini-bus taxis fulfil a large role in the public transport realm providing more flexibility and frequency as opposed to the busses. The taxis are however more expensive than the busses but the commuters who wish to arrive in a shorter period of time in the City of Tshwane opt to use taxis.

In terms of **rail services**, there are currently no rail commuter services in Thembisile Hani Local Municipality. However, the existing freight lines can be investigated for further lines, particularly with the Moloto Corridor. Plans are underway to construct a railway line and implement rail commuter services along the Moloto Road between Tshwane and two municipalities: Thembisile Hani and Dr JS Moroka.

In terms of **air transport**, there is no air transport available to the public in the Thembisile Hani LM. There are however two private airfields in the southern parts of the LM.

SPATIAL STRUCTURE AND MOVEMENT NETWORK



- Thembisile Hani LM Boundary
- Local Municipality
- District Municipality
- National Roads
- Provincial Roads
- District Roads
- Railway
- Railway Stations
- Airfield
- Dams and Rivers

Spatial Structure

- Towns and Settlements
- Protected Areas
- 20m Contours

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF

2024

25

3.5 MUNICIPAL-WIDE ECONOMIC ACTIVITIES

This section discusses the Municipal-wide Economic Activities, including Business and Industrial; Mining; Agriculture and Forestry, as well as Mining.

Following from that; the Land Uses per settlement cluster will be discussed in more detail.

3.5.1 Business, Industrial and Mining

Figure 26 shows the Business, Industrial and Mining activities taking place in the Thembisile Hani LM.

The economic activity around the intersection of routes R568 and R573 in the vicinity of KwaMhlanga represents the highest order activity node in the Thembisile Hani area. This is probably the most strategic intersection in the entire municipal area, and it is surrounded by a fairly large number of households (formal and informal). The result is a fairly high concentration of economic activity with a variety of shopping facilities (formal and informal), a taxi rank, and community facilities which include, amongst others, the KwaMhlanga Hospital, the Solomon Mahlangu Stadium and the former KwaNdebele government offices.

Service industry uses are also developing along the R573 towards Kwaggafontein and Moloto. The development resembles a corridor type development with the strategic intersections being the beads on a string and the smaller uses developing towards each bead. The business uses are furthermore only or two stands deep on either side if the R573 underlining the dependency of the uses on the regional and local traffic. The developments are however, gaining direct access to the R573, which negatively impacts the mobility of the road.

The second most significant activity node in the Thembisile Hani area is found in Kwaggafontein B, at the intersection between route R573 and Kalushi Street, where the large Kwagga Mall exists. The Thembisile Hani Local Municipal offices are also located in this precinct.

There are about five other emerging/secondary activity nodes can be distinguished in the Thembisile Hani area: the first is in the vicinity of Moloto, the second at Enkeldoornoog B, the third one at Vlaklaagte 2, the fourth at Mathys Zyn Loop to the north, and the fifth at Verena around the intersection between routes R25 and R544 in the southern parts of the Thembisile Municipality.

In terms of Industrial Activity, there are four industrial areas in the Thembisile Hani Local Municipality including at KwaMhlanga (west of the R568 and south of the R573); along the R573 between Kameelpoortnek and Enkeldoornoog; around Tweefontein/Vlaklaagte and at Kwaggafontein.

The KwaMhlanga industrial area is under developed and the municipality has allocated a number of the sites for the development of churches. The KwaMhlanga Industrial area could not develop due to the limited economy in the area and it's inaccessibility.

The industrial area at Tweefontein is characterised by a small number of buildings, which are owned by MEGA (Mpumalanga Economic Growth Agency) and leased to various artisans (mechanics and panel beaters). The fire

department and a Total petrol station are also located in this node with a few undeveloped erven. A dilapidated gas distribution centre is located opposite the fire department and some interest has been shown by developers to re-commission the site. A brick manufacturing facility has recently been established at Tweefontein IA, which is contributing to the revitalisation of the area.

The Kwaggafontein industrial area currently holds a few small and medium enterprises. The land uses the Kwaggafontein IA township consists of a few artisans (mechanic and panel beaters) and a bakery. Some of the units that were designed for small and medium enterprises have been converted to a primary school.

None of these industrial areas can, however, be classified as a major source of job opportunity or income at the moment in the region. Mechanics and panel beaters and other manufacturing business are opting to cluster around the existing economic core areas.

Figure 26 further shows the Mining taking place in the Thembisile Hani LM and it is evident that there is very limited mining activity in the southern portions of the municipality along the R568.

3.5.2 Agriculture and Forestry

Figure 27 shows the Agriculture and Forestry activities taking place in the Thembisile Hani LM.

The rural parts of the Thembisile Hani Local Municipality is predominantly utilised for agricultural purposes. Subsistence farming seems to be fairly popular with intensive crop farming taking place in the south of the municipality in close proximity to Ekangala. The subsistence farming consists of cattle and crop farming and a number of people are farming with broiler chickens. Limited irrigated crop farming is taking place west of Kwaggafontein.

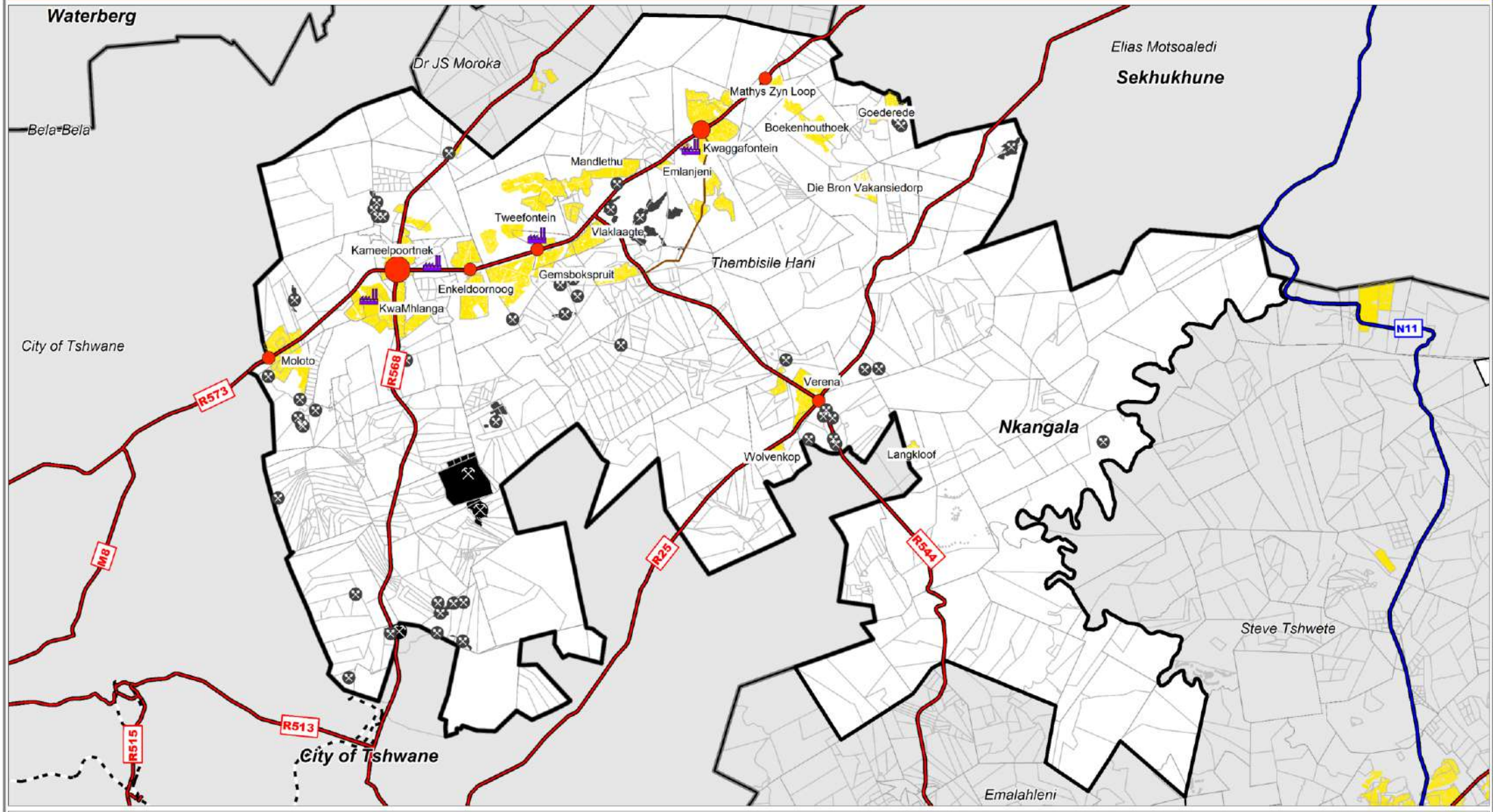
There is a tree mill situated at Mandlethu, west of Kwaggafontein.

3.5.3 Tourism

There are limited tourism activities and attractions in the Thembisile Hani LM (as seen on **Figure 28**), some of which include:

- The Zithabiseni Holiday Resort in the Mabusa Nature Reserve;
- The Ngodwana Ndebele Village – which is situated along the KwaMhlanga-Ekangala road and consists of a reconstruction of Ndebele dwellings, an exhibition of arts and crafts, demonstrations of beadwork, and weaving.
- The Loopspruit winery at Schoongezicht – the most northern wine estate in South Africa, established in the 1960s. It is located just east of the R568 between KwaMhlanga and Ekangala in the south.
- The R568 Tourism Corridor which is a developing route in the Thembisile Hani Local Municipality and surrounding areas, aimed at boosting local tourism by connecting key attractions and promoting cultural, natural, and recreational experiences. This corridor leverages the strategic position of the R568 road, which links towns and villages, enhancing accessibility to various sites.

ECONOMIC ACTIVITY: Business, Industrial and Mining



- Thembisile Hani LM Boundary
- Cadastral (Farms / Parent Farms)
- Local Municipality
- District Municipality
- National Roads
- Provincial Roads
- Railway
- Towns and Settlements

Economic Activity:

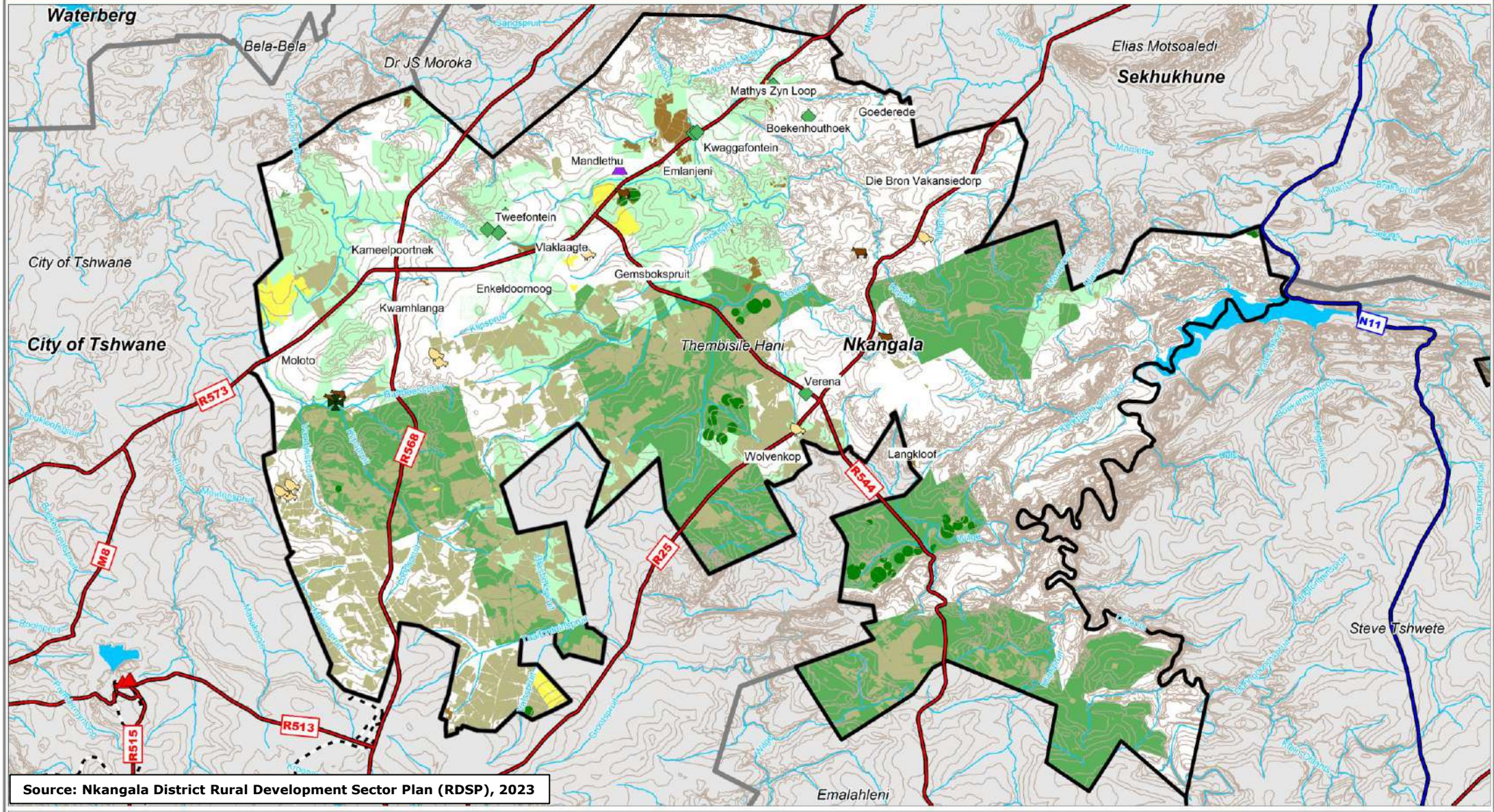
- Business Nodes
- Industrial
- Mining Area
- Mining Activities
- Sand Mining Area
- Sand Mining Activities

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF 2024

ECONOMIC ACTIVITY: Agriculture and Forestry



Source: Nkangala District Rural Development Sector Plan (RDSP), 2023

- Thembisile Hani LM Boundary
- Local Municipality
- District Municipality
- National Roads
- Provincial Roads
- Railway
- Dams and Rivers
- Contours

Agriculture:

- Extensive Agriculture
- Active Agricultural Land
- Cultivated land
- Old Fields
- Pivot Irrigation
- Subsistence Farming
- Small Scale Farming
- DAFF: Millers
- Red Meat Abattoirs
- FPSU
- Cattle Feedlot
- Poultry Farm
- Community Garden

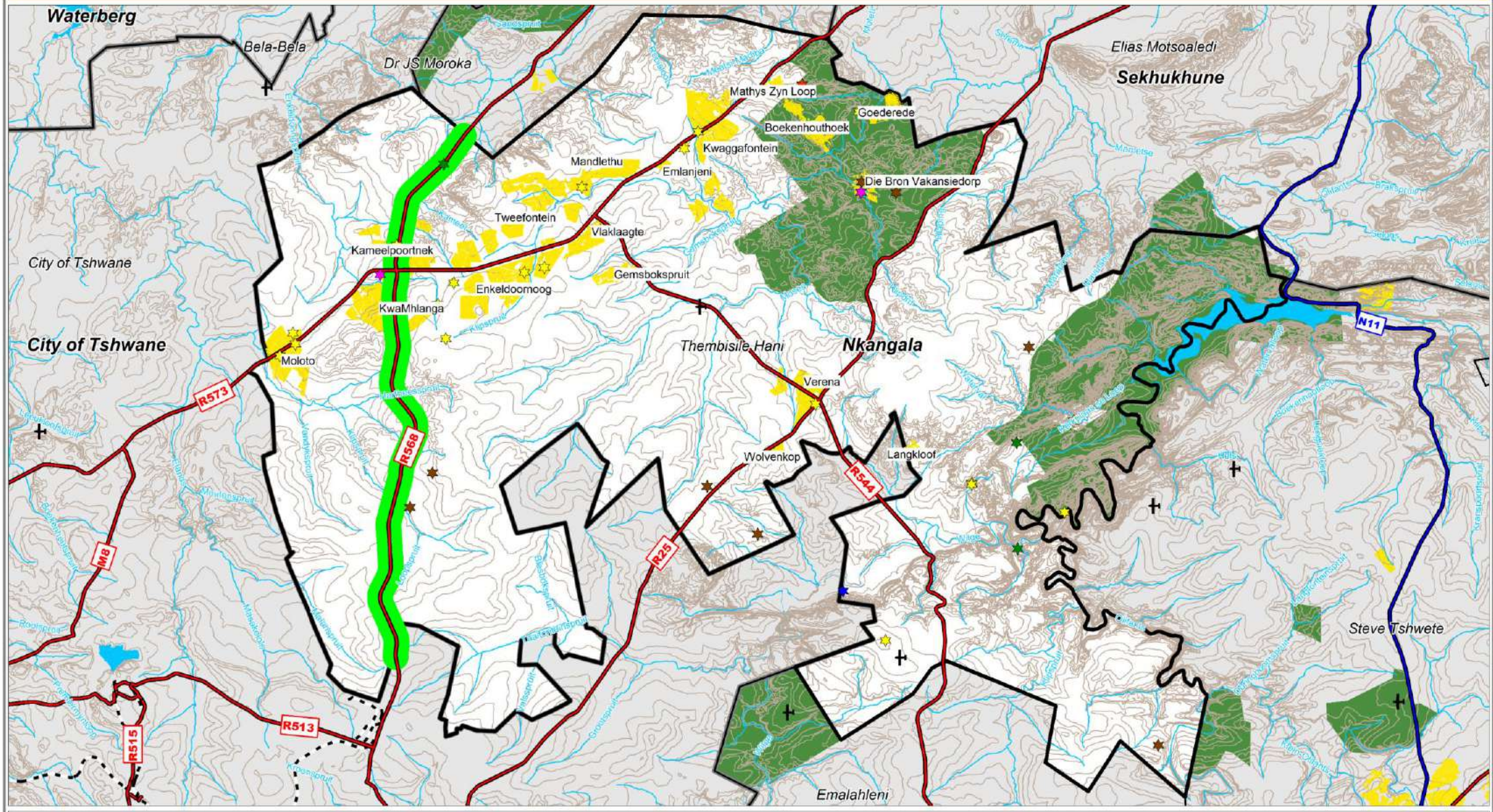
0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF 2024

27

ECONOMIC ACTIVITY: Tourism



- Emakhazeni LM Boundary
- A Local Municipality
- A District Municipality
- National Roads
- Provincial Roads
- Railway
- Airfield
- Towns and Settlements
- Contours
- Dams and Rivers

Tourism:

- Protected Areas
- Tourism Corridor
- Accommodation
- Historical Sites
- Accommodation / Sport and Outdoor Activities
- Accommodation / Services and Facilities
- Accommodation / Activity Based Tourism
- Sport and Outdoor Activities

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF 2024

28

3.5.4 Community Facilities and Cemetries

The Community Facilities in the Thembisile Hani LM are shown on **Figure 29.**

It is evident that all of the Community Facilities are found around the main settlements, with no community facilities in the rural areas and there may be a need for a more equitable distribution of community facilities throughout the Municipality, to ensure better access for especially non-urban communities.

It is further important to note that the number of facilities does not speak to how well an area is served as some of these facilities are not operational and do not provide services at an acceptable level e.g. service hours of clinics and police stations, or the range of medical stock available and capacity and expertise of personnel at clinics. Community facilities should thus be considered not only in terms of the physical infrastructure, but also the operational aspects pertaining thereto.

Table 17 reflects the number of community facilities found in the LM and shows their specific map icon on Figure 29.

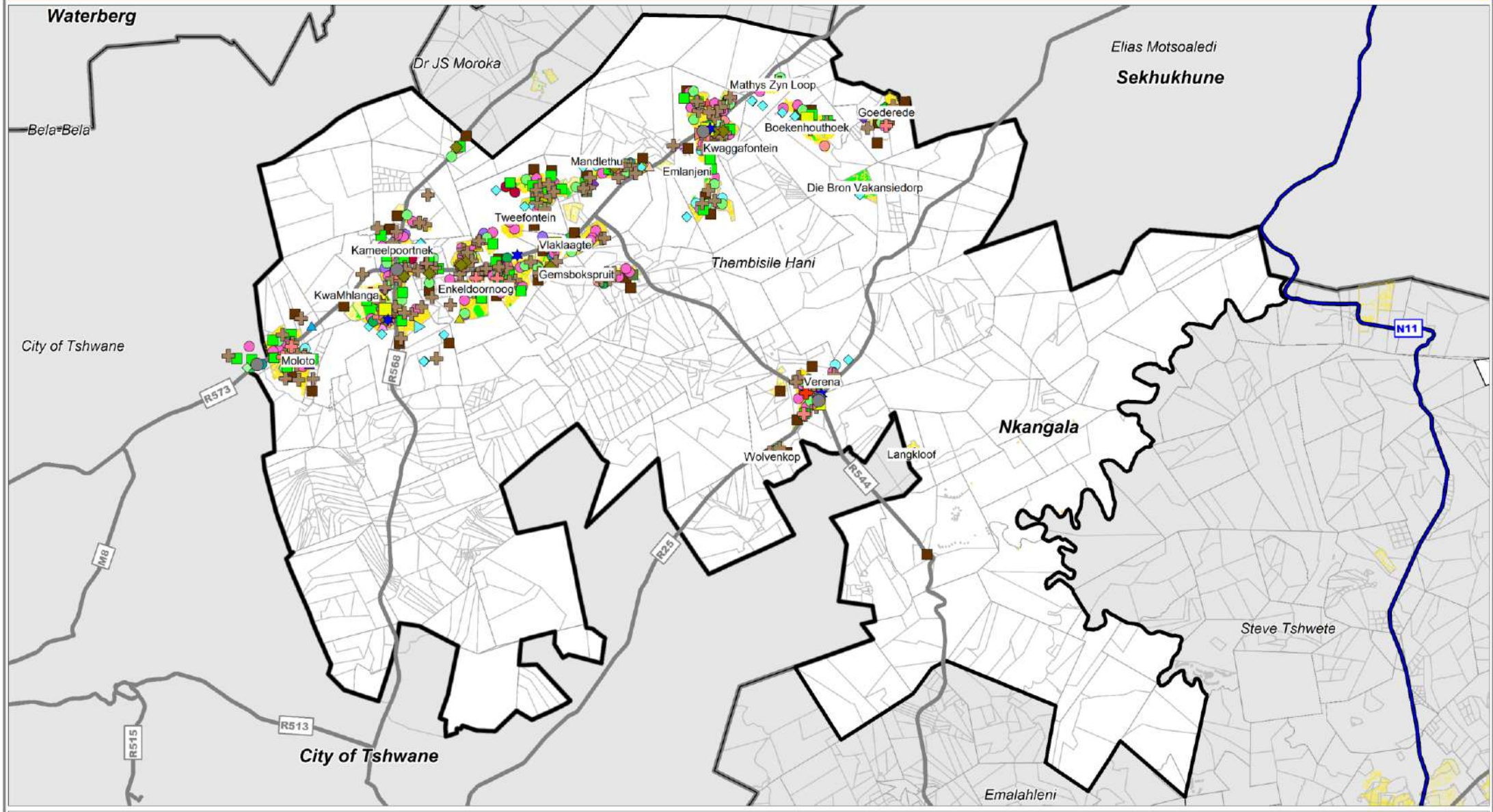
Kindly note that the community facilities per settlement are reflected on the Local Land Use Figures in *Section 3.5*.

A study was conducted to confirm the number of Cemetries in the Municipal area which are shown on **Figure 30.** These cemeteries are often unregistered and unregulated.

Table 17: Community Facilities in the Thembisile Hani LM

Subcategories	Education										Health				Sport and Recreation								Safety and Security					Offices															Religious	Engineering Services			Other Facilities
Emakhazeni LM: Comm Fac	Creche	Early Childhood Development	Preschool	Primary School	Secondary School	Combined School	Special Needs School	College	Tertiary Education	Schools (Unknown)	Clinic	Hospital	Old Age Centre	Veterinary Clinic	Cemetery	Library	Community Centre & Halls	Sports Fields	Community Pools	Parks	Showgrounds	Sport Stadium	Magistrates Court	Correctional Services	Police Station	Fire Station	Sheriff	Government	Government Office Building	Regional Office	Local Government Office	LM Offices	Traffic Department	Civic Centred Office	Conference Centre	District Office	Information Centre	Traditional Council	Traditional Council Office	Tribal Office	Office (Unknown)	Place of Worship	Substations	WTW	Reserviors	Bus Depot
Total (Per Comm Fac)	11	1	8	92	46	5	3	4	4	6	6	2	1	2	42	5	5	50	1	3	1	1	2	1	4	1	1	1	1	2	1	1	1	1	1	1	1	1	1	7	2	101	2	3	33	3
Map Delineation																																														
Total (Per Subcategory)	180										11				108								9					22															101	38			3

MUNICIPAL-WIDE COMMUNITY FACILITIES



- Thembisile Hani LM Boundary
- Cadastral (Farms / Parent Farms)
- Towns and Settlements
- Local Municipality
- District Municipality
- National Roads
- Provincial Roads
- Railway

Community Facilities

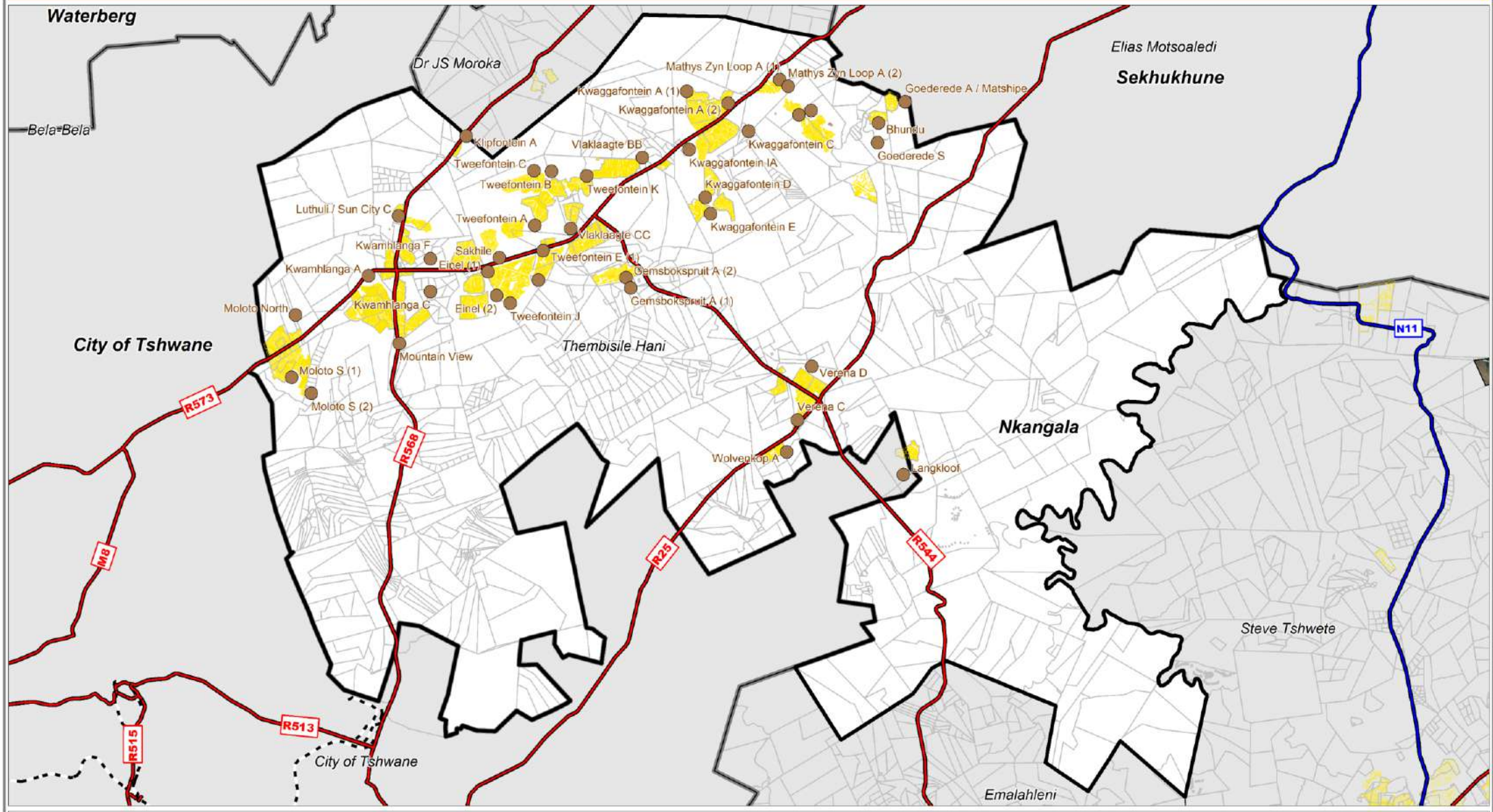
- Education
- Health
- Sport and Recreation
- Safety and Security
- Offices
- Religious
- Engineering Services
- Other Facilities

0 1,5 3 6 9 12 15 km

Thembisile Hani SDF 2024

29

CEMETERIES



Thembisile Hani LM Boundary
Cadastral (Farms / Parent Farms)
Towns and Settlements
Local Municipality
District Municipality
National Roads
Provincial Roads
Railway
Cemeteries

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF
2024

3.6 LOCAL LAND USE & COMMUNITY FACILITIES

The Municipal-Wide Land Use and Community Facilities is shown on **Figure 31**. The main settlements have been clustered together into 6 separate frames for analysis purposes as follows:

- 1: Moloto;
- 2: KwaMhlanga/ Kameelpoortnek;
- 3: Enkeldoornoog/ Gemsbokspruit/ Vlaklaagte/ Tweefontein/ Emlanjeni;
- 4: Kwaggafontein/ Mathys Zyn Loop/ Goederede/ Die Bron Vakansiedorp;
- 5: Verena/ Wolvenkop; and
- 6: Langloof.

3.6.1 Local Land Use: Moloto

Figure 32 depicts the Local Land Use for the Moloto Area.

Moloto is located in the most western part of the Municipality and is the gateway into Thembisile Hani Municipality from Gauteng. The town serves as a residential area with easy linkage to Gauteng Province. The town is divided into Moloto North and South with the R573 traversing the settlement. The settlement mostly consists of residential uses with a few scattered business uses and schools.

3.6.2 Local Land Use: KwaMhlanga/Kameelpoortnek

Figure 33 shows the Land Use of the KwaMhlanga area.

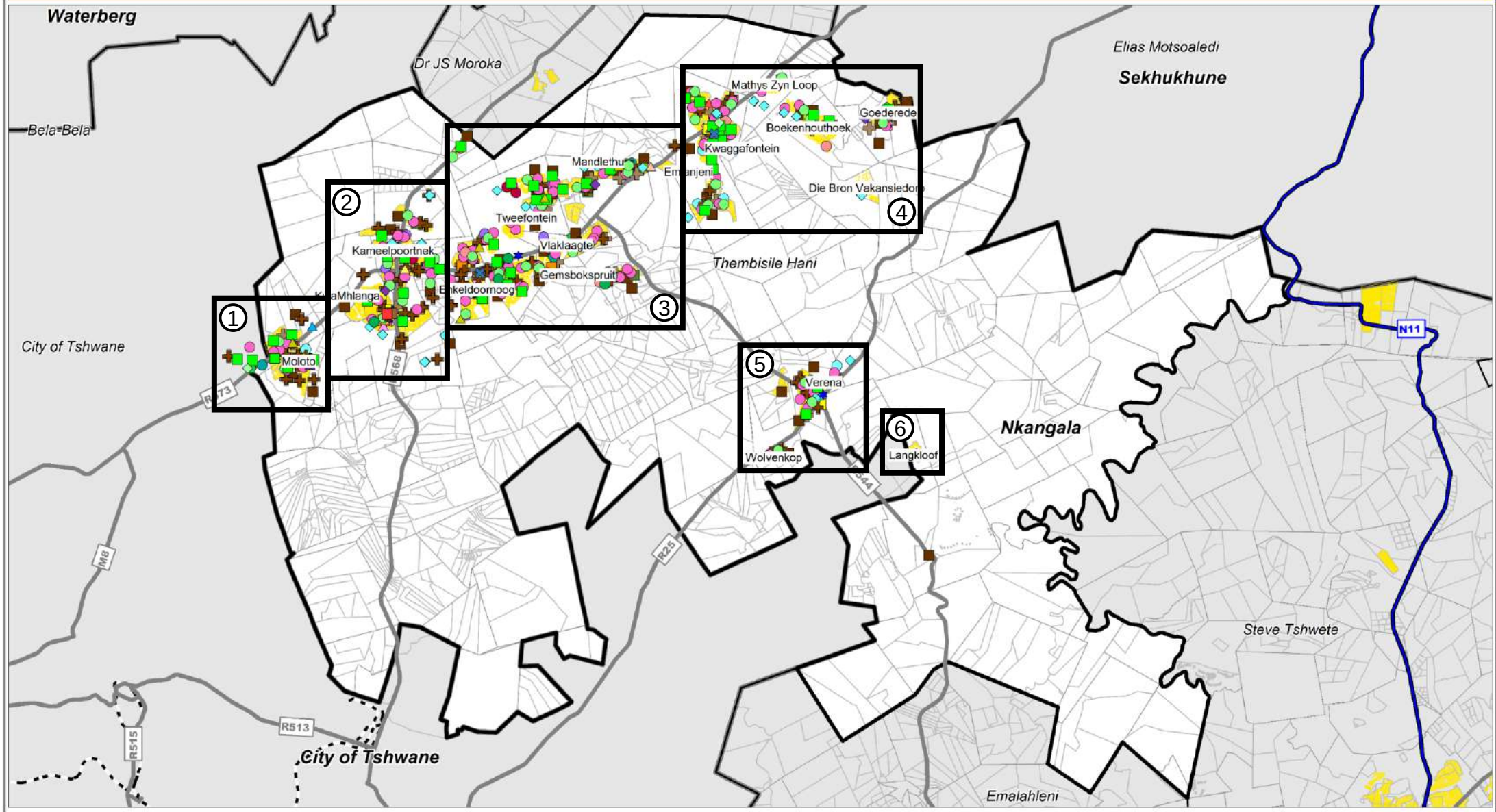
The KwaMhlanga nodal point is the highest order node in the Thembisile Hani municipal area that lies to the north-east of the City of Tshwane, along the Moloto Road. The spatial structure is characterised with a business core branching out along the main roads surrounded by a strong residential component. The node also enjoys very good access and visibility from two provincial roads: R 573 and R568.

The majority of the energy of the node is centred on the intersection of the R573 and R568 including Crossroads Plaza with linear development taking place along the two roads. The land uses range from retail, business and service industry. The area north of the R 573 is predominantly retail services with the area to the south being a mixture of retail and service industry. A large number of informal traders are located adjacent to the roads and the main pedestrian movement network.

The R573 provides the main feed for economic activity with a number of commercial type uses (whole sale, small scale manufacturing, tyre and exhaust centres) being located adjacent to the R 573

The Kwandebele Government Complex is further located south of the intersection of the R 573 and R568 in KwaMhlanga B which is surrounded by a well-established residential community. The Government Complex is being utilised by various provincial departments. The Solomon Mahlangu Sports Stadium is also located in close proximity to the Government Complex.

COMMUNITY FACILITIES AND LAND USE: MAP AREAS



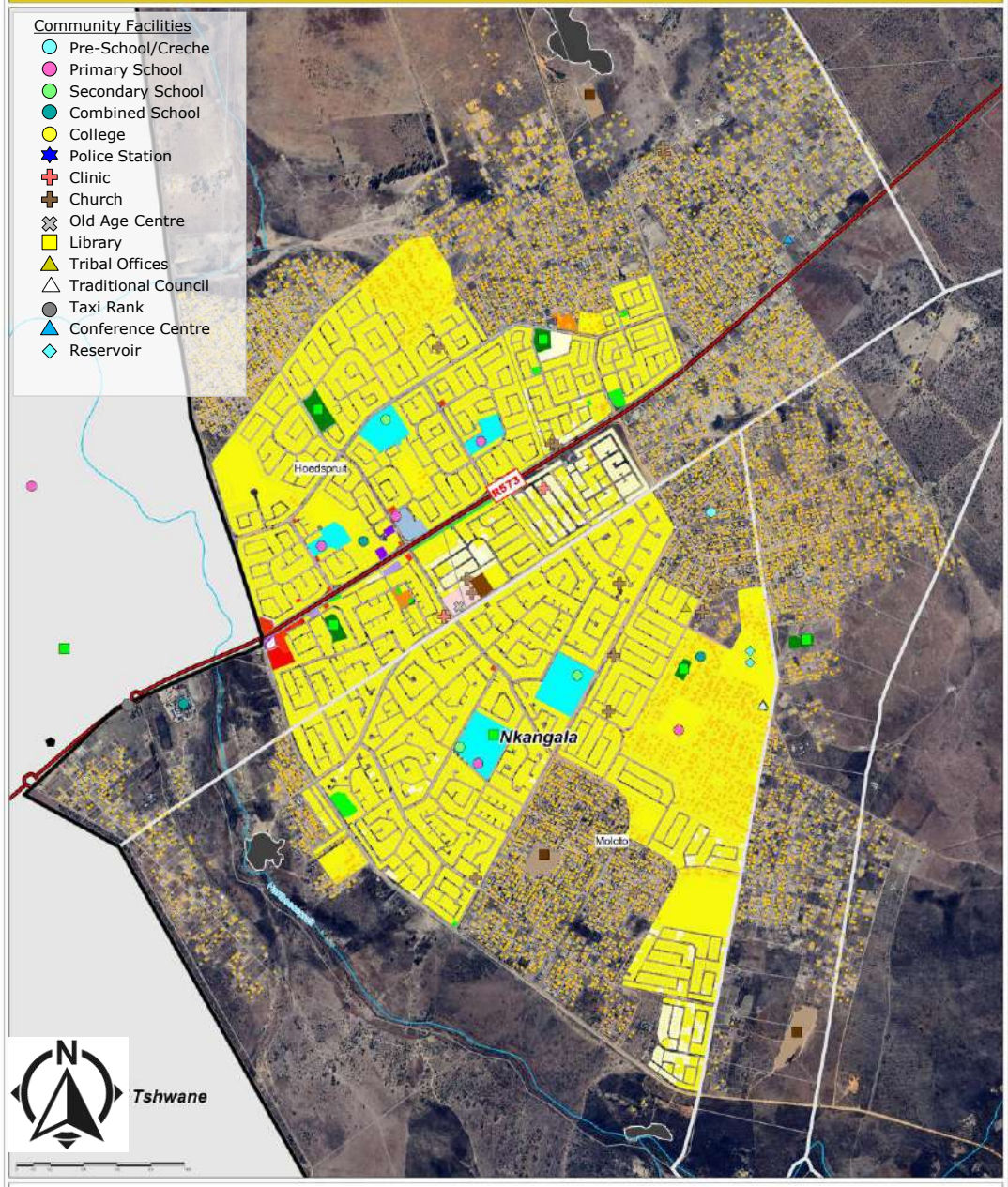
Thembisile Hani LM Boundary
Cadastral (Farms / Parent Farms)
Towns and Settlements
Local Municipality
District Municipality
National Roads
Provincial Roads
Railway

Community Facilities
Education
Health
Sport and Recreation
Safety and Security
Offices
Religious
Engineering Services
Other Facilities

0 1,5 3 6 9 12 15 km

Thembisile Hani SDF 2024

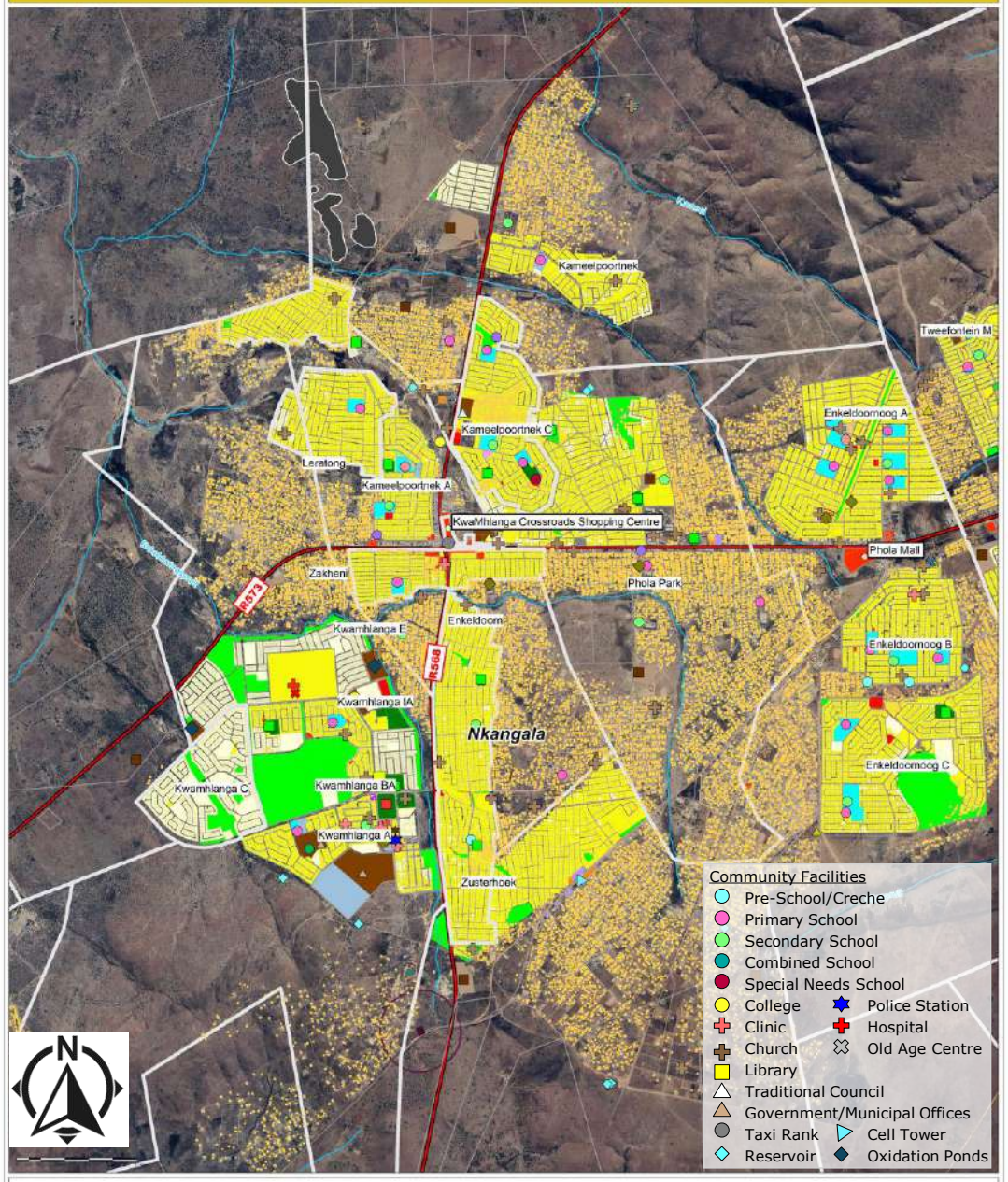
COMMUNITY FACILITIES AND LAND USE: Moloto



Cadastral (Farms/Parent Farms)
Towns and Settlements (Erven)
National Roads
Provincial Roads
Railway
Land Use
Education
Institutional
Community Facility
Business
Commercial
Industrial
Filling Station
Government / Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Accommodation
Informal Dwellings
Sand Mining
Dams / Rivers

Thembisile Hani SDF 2024

COMMUNITY FACILITIES AND LAND USE: Kwamhlanga / Kameelpoortnek



Cadastral (Farms/Parent Farms)
Towns and Settlements (Erven)
National Roads
Provincial Roads
Railway
Land Use
Education
Institutional
Community Facility
Business
Commercial
Industrial
Filling Station
Government / Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Accommodation
Informal Dwellings
Sand Mining
Dams / Rivers

Thembisile Hani SDF 2024

3.6.3 Local Land Use: Enkeldoornoog/ Gemsbokspruit/ Vlaklaagte/ Tweefontein/ Emlanjeni

Figure 34 shows the Land Use and Community Facilities of the Tweefontein/ Enkeldoornoog general area.

The area consists of a strong residential base and an industrial township at Tweefontein IA. The area does not have any significant shopping centres as opposed to Kwaggafontein and KwaMhlanga.

It can be noted that the majority of land invasion have taken place in close proximity to the R 573 emphasising the important role of the road in the area.

3.6.4 Local Land Use: Kwaggafontein/ Mathys Zyn Loop/ Goederede/ Die Bron Vakansiedorp

Figure 35 shows the Land Use and Community Facilities of the Kwaggafontein area.

Kwaggafontein is the second largest nodal point with KwaMhlanga the biggest and is situated in the western area of the municipality and is developed around the R573 with well-developed residential structure and a limited number of informal settlements. The main attractions in Kwaggafontein are: Kwagga Plaza, which was developed in 1994, Thembisile Hani Municipal Offices, library Magistrates Court and Police Station.

The smaller settlements to the east of Kwaggafontein include Mathys Zyn Loop, Boekenhouthoek, Bundu and Matshipe which form part of the functional area of Kwaggafontein. The focal point of the area is Kwagga Plaza and the government facilities.

3.6.5 Local Land Use: Verena

Figure 36 depicts the Local Land Use of the Verena/Wolvenkop area.

Verena and is the most southern node in the Municipality and is classified as a tertiary node. The node is located at the intersection of the R25 which is an east-west route connecting Bronkhorstspruit and Groblersdal and the R544 which connects Verena to Emalahleni . Verena is one of the focal CRDP sites with crop farming initiates taking place in the area. The node has a limited amount of economic activities at the intersection of the R 25 and R544 and a MPCC is also located at this intersection.

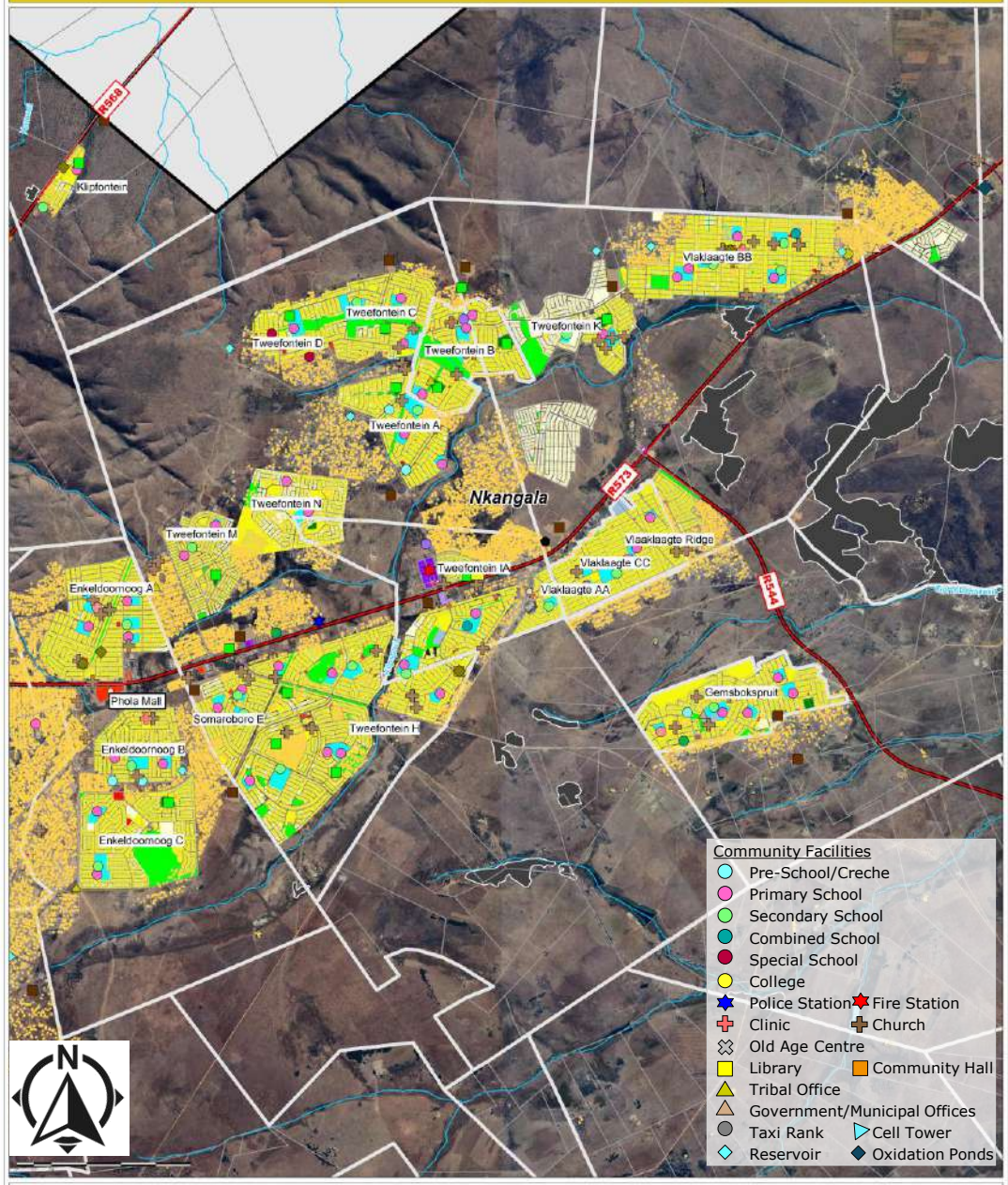
Wolvenkop is located west of Verena along the R25 and consist of a small residential component and two school sites.

3.6.6 Local Land Use: Langkloof

Figure 37 shows the Local Land Use of the Langkloof area, situated to the south-east of Verena.

Langkloof is a small residential settlement with no economic activity and one school. The economy is largely based on subsistence farming, small-scale agriculture, and informal trade.

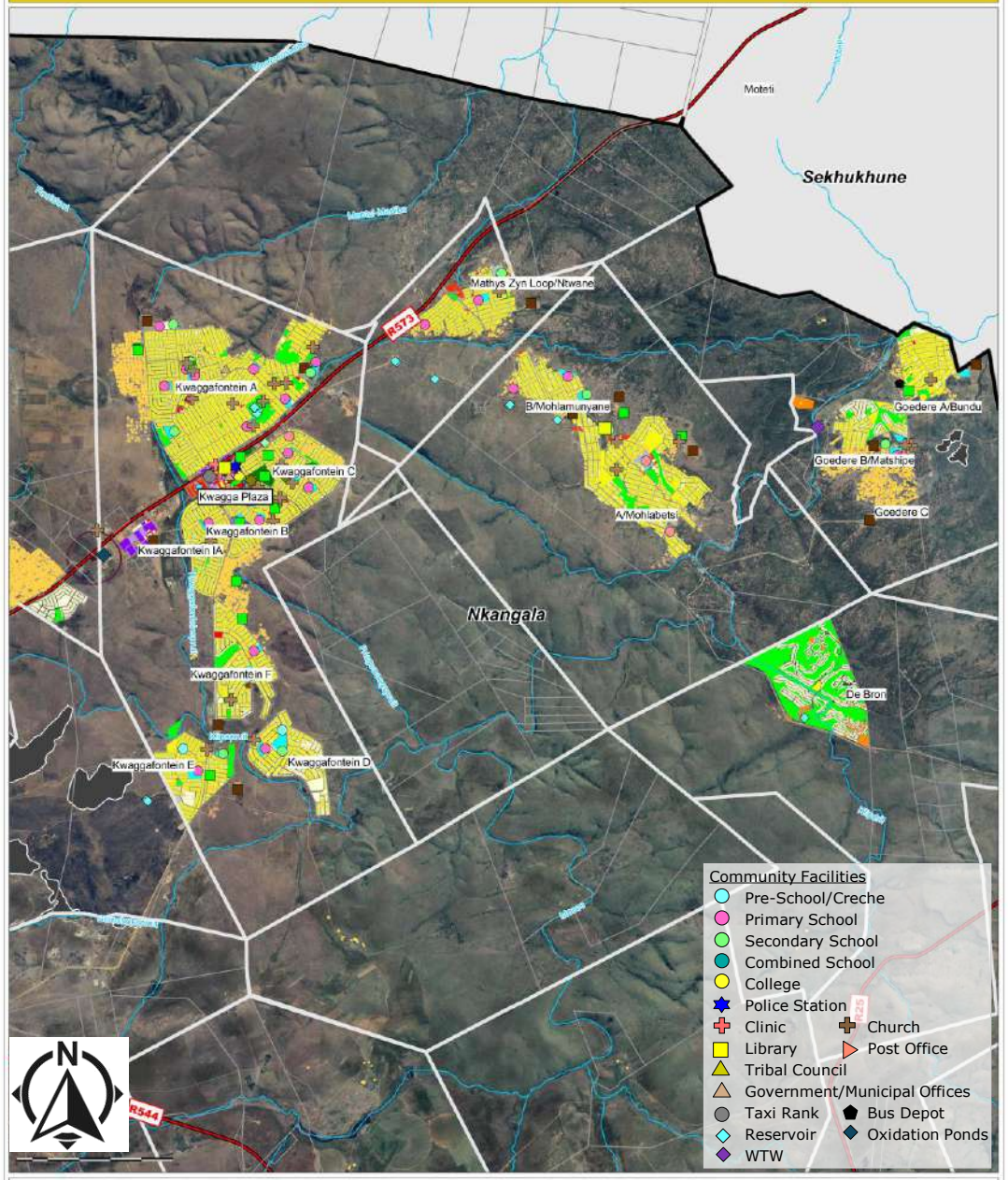
COMMUNITY FACILITIES AND LAND USE: Enkeldoornoog / Gemsbokspruit / Vlaklaagte / Tweefontein / Emlanjeni



Cadastral (Farms/Parent Farms)
Towns and Settlements (Erven)
National Roads
Provincial Roads
Railway
Land Use
Education
Institutional
Community Facility
Business
Commercial
Industrial
Filling Station
Government / Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Accommodation
Informal Dwellings
Sand Mining
Dams / Rivers

Thembisile Hani SDF 2024

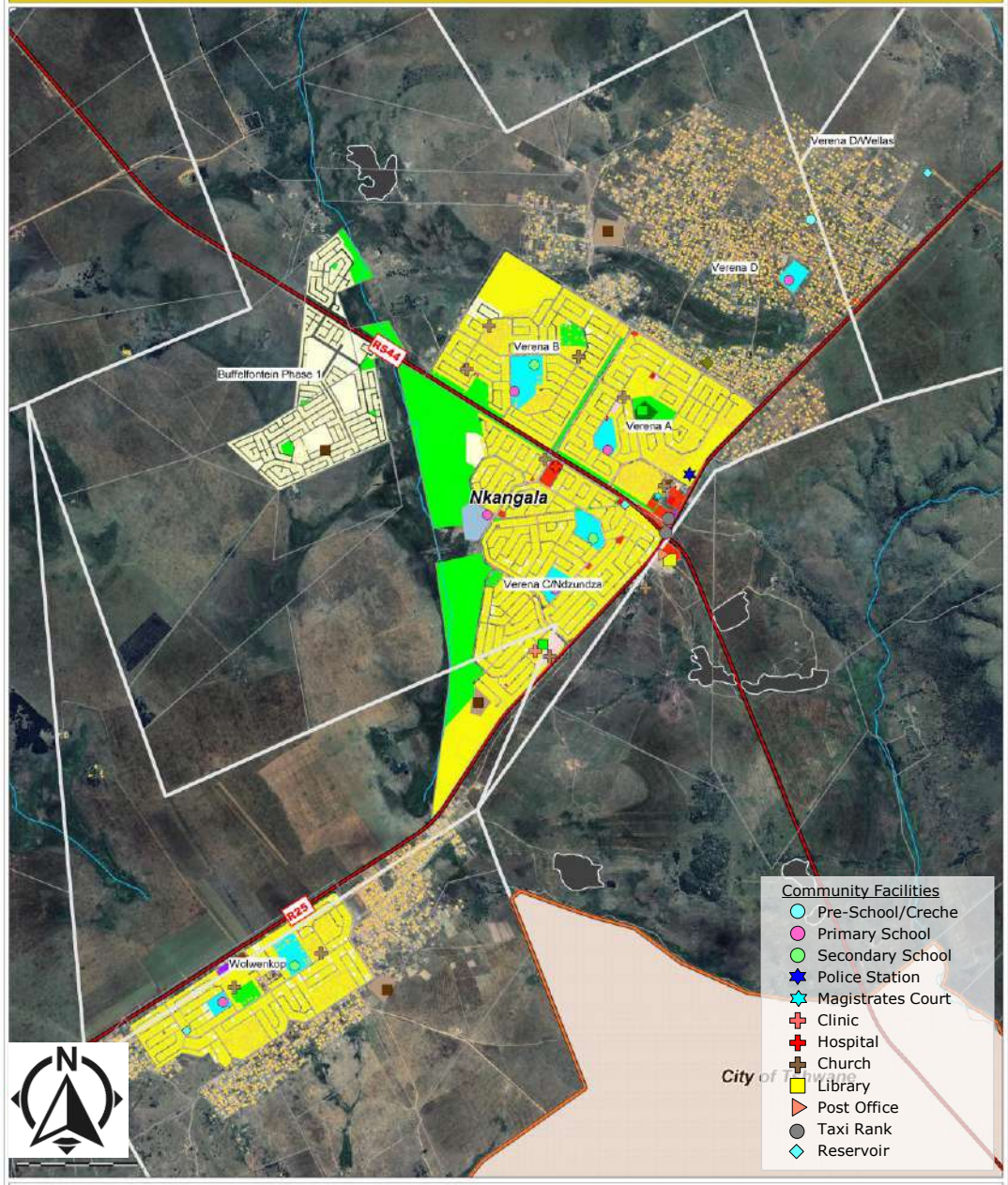
COMMUNITY FACILITIES AND LAND USE: Kwaggafontein / Mathys Zyn Loop / Goederede / Die Bron Vakansiedorp



Cadastral (Farms/Parent Farms)
Towns and Settlements (Erven)
National Roads
Provincial Roads
Railway
Land Use
Education
Institutional
Community Facility
Business
Commercial
Industrial
Filling Station
Government / Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Accommodation
Informal Dwellings
Sand Mining
Dams / Rivers

Thembisile Hani SDF 2024

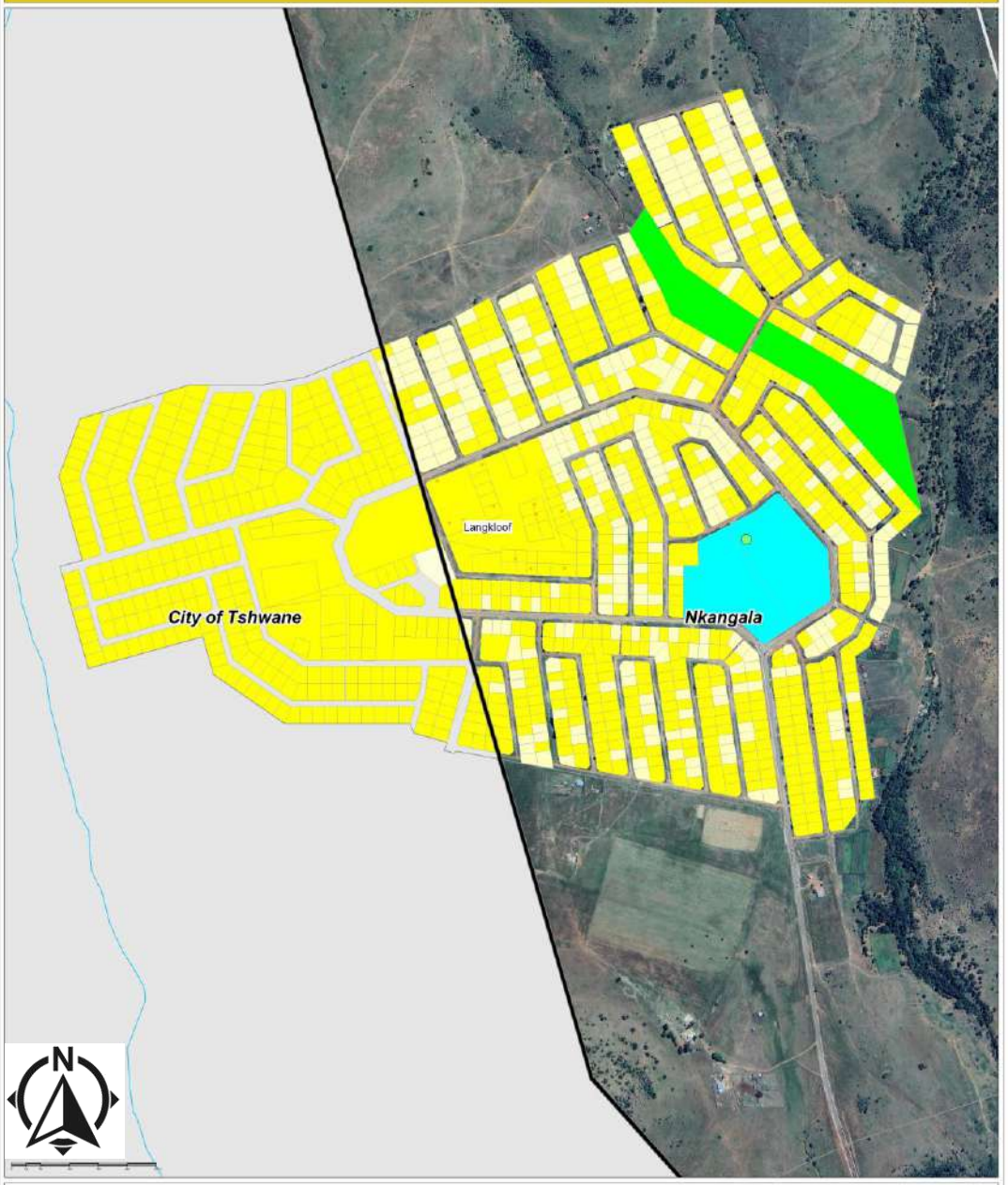
COMMUNITY FACILITIES AND LAND USE: Verena / Wolvenkop



Cadastral (Farms/Parent Farms)
Towns and Settlements (Erven)
National Roads
Provincial Roads
Railway
Land Use
Education
Institutional
Community Facility
Business
Commercial
Industrial
Filling Station
Government / Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Accommodation
Informal Dwellings
Sand Mining
Dams / Rivers

Thembisile Hani SDF 2024

COMMUNITY FACILITIES AND LAND USE: Langkloof



Cadastral (Farms/Parent Farms)
Towns and Settlements (Erven)

Land Use
Education / Secondary School
Vacant Erven
Open Space

Thembisile Hani SDF 2024

3.7 CURRENT POPULATION AND COMMUNITY FACILITIES NEED

3.7.1 Current Population and Dwelling Units

Diagram 6 confirms the Current Population figures for each DM in the Mpumalanga Province from which it is noted that in 2022, Nkangala DM had a total population of 1,588 970 people, with the Ehlanzeni DM having the highest population of 2,270 897 people.

In the context of the province, Mpumalanga's population contribution to South Africa increased from 7,5% in 2001 to 8,3% in 2022, showing major growth trends in the province.

Diagram 7 shows the population per LM, from which it is noted that the total population for the Thembisile Hani LM was 431 248 people in 2022, which grew from 256 583 people in 2001.

In 2001 Emalahleni LM recorded the highest population contribution in the province (27%), followed by Thembisile Hani (25%). In 2022 the highest contribution was shared by both Emalahleni (27%) and Thembisile Hani (27%).

While the largest population growth for the period 2001-2011 took place in Emalahleni, the highest growth for the period 2011-2022 was recorder for the Thembisile Hani LM, with a growth of 120,790 people for that period.

Diagram 8 depicts the dwelling units and population for the functional areas within the Thembisile Hani LM for the periods 2011, 2022, and 2024. In 2011, the highest population was found in KwaMhlanga (53,493 people), followed by Kwaggafontein (46,957 people) and Kameelpoortnek (46,814 people). In 2024 KwaMhlanga still had the highest population, with a population that grew to 80,023 people, followed by Tweefontein (69,484 people) and Kameelpoortnek (67,001 people).

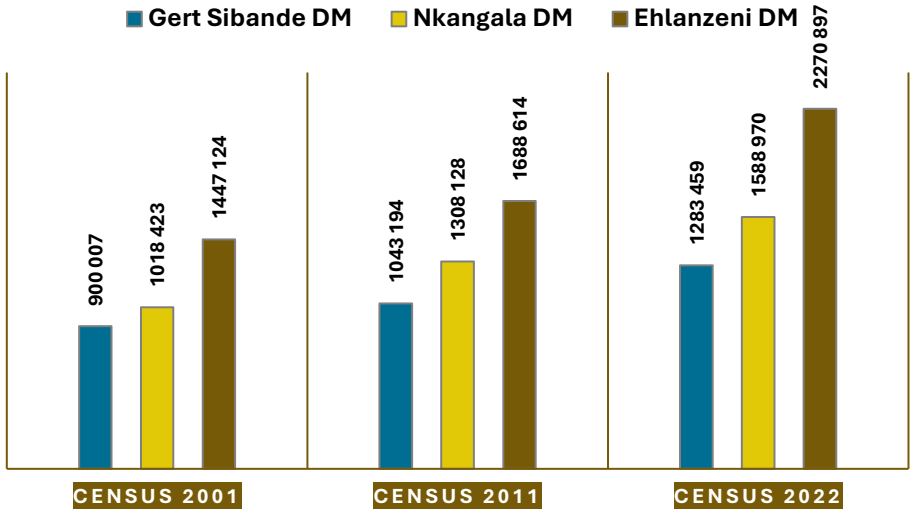
In terms of the dwelling unit increment, the largest growth of dwelling units took place in KwaMhlanga , which accounted or 21% of the growth in the LM.

The household size in the LM decreased from 4,1 in 2011 to 3,9 people per household in 2024.

DISTRICT MUNICIPALITY : CURRENT POPULATION, 2022

Diagram 6

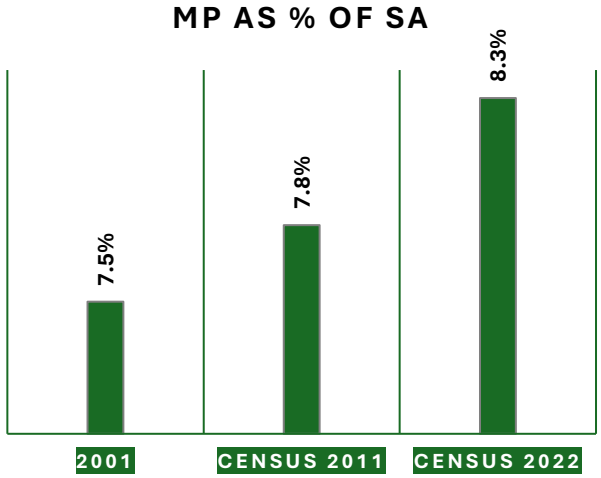
POPULATION BY DM



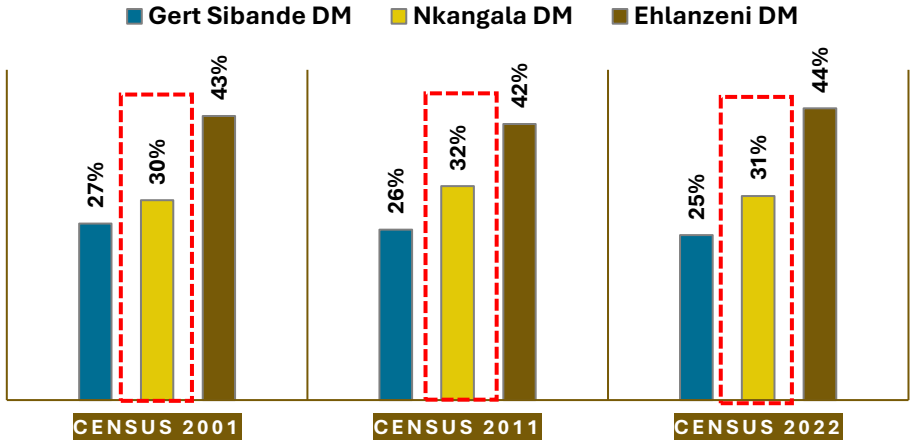
SA Population 2022: 62,03 million

MP Population 2022: 5,14 million

MP AS % OF SA



% POPULATION CONTRIBUTION TO MP POPULATION



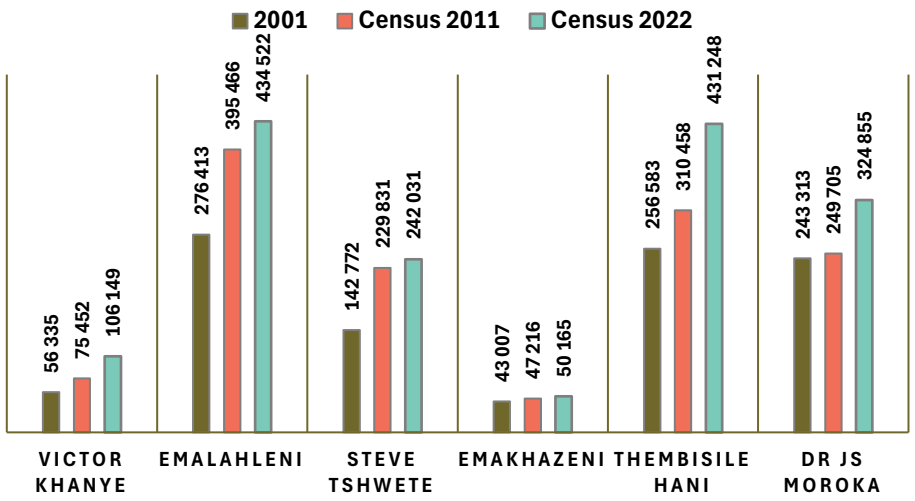
- MP population's % contribution to SA increased from 7,5% in 2001 to 7,8% in 2011 and a further 0,5% to 8,3% in the period 2011 to 2022.
- Ehlanzeni DM represents the highest number of people in MP (44%), followed by Nkangala DM (31%) and then Gert Sibande DM (25%) (2022). Nkangala DM's contribution remained in the order of 31% since 2001.

Source : Stats SA, Municipal Profile

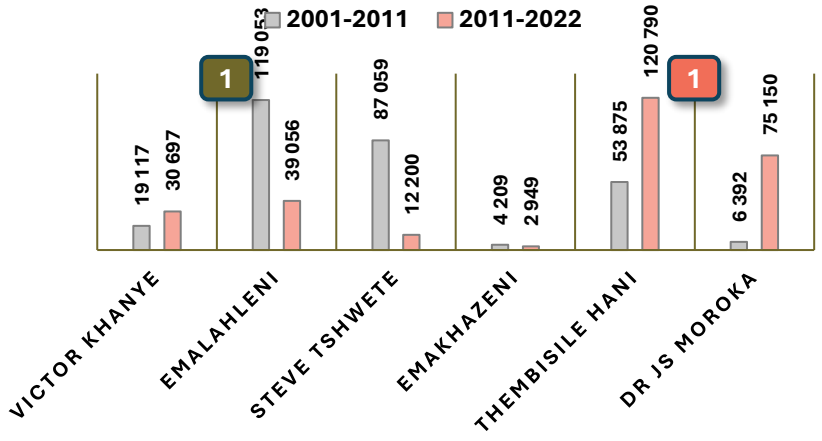
LOCAL MUNICIPALITY : CURRENT POPULATION, 2022

Diagram 7

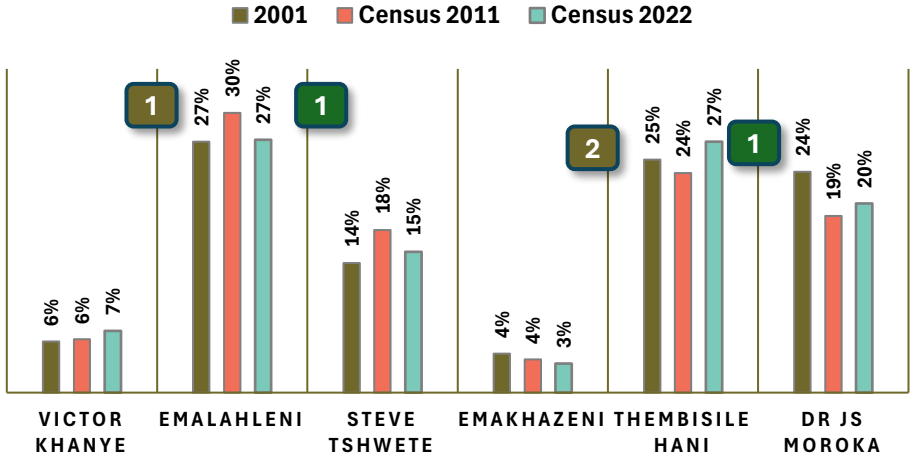
POPULATION PER LM



INCREMENTAL POPULATION



% CONTRIBUTION PER LM TO DM



- In 2001 Emalahleni LM recorded the highest population (27%) per LM, closely followed by Thembisile Hani LM (25%). In the third place was Dr JS Moroka (24%). In 2022 the highest contribution was shared by both Emalahleni (27%) and Thembisile (27%).

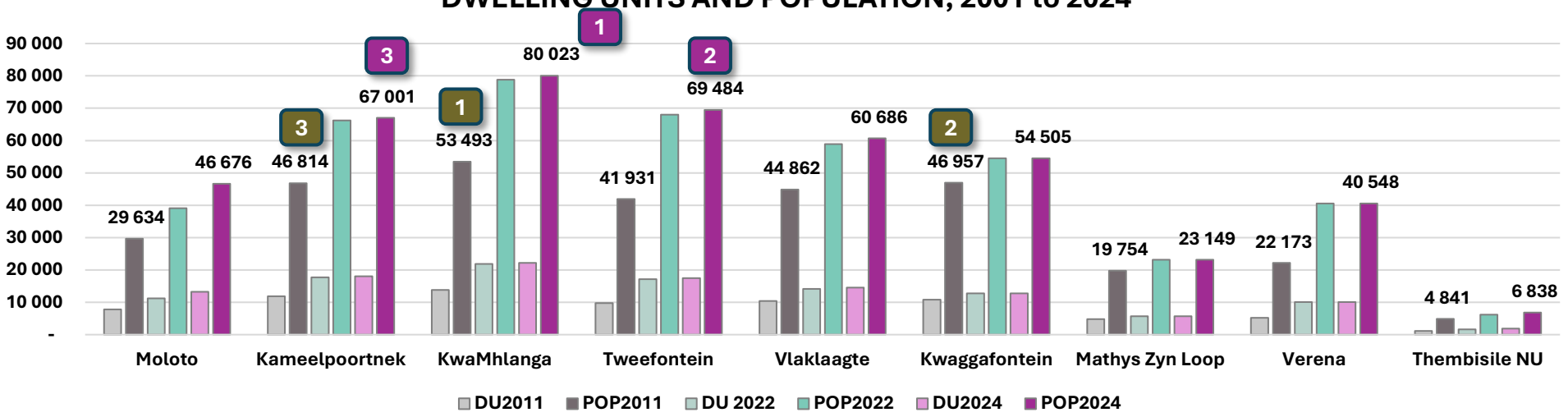
- During the period 2001-2011 the largest increment took place in Emalahleni LM (119 053 people). For the period 2011-2022 the largest increment was however recorded in Thembisile Hani LM (120 790).

Source : Census 2001, 2011, 2022, Stats SA.

FUNCTIONAL AREA (FA): POPULATION AND DWELLING UNITS: 2011-2024

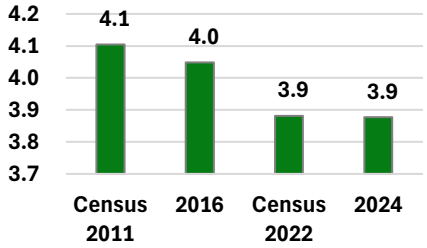
Diagram 8

DWELLING UNITS AND POPULATION, 2001 to 2024



- In 2011 the highest population was found in KwaMhlanga FA, followed by Kwaggafontein and Kameelpoortnek.
- In 2024 the highest population is still found in KwaMhlanga FA, followed by Tweefontein and Kameelpoortnek.

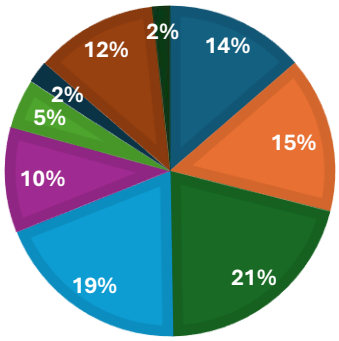
Household size



- The household size declined from 4,1 (2011 Census) to 3,9 (2022 Census)

DWELLING UNITS INCREMENT: 2011-2024

The largest DU increment (2011-2024) took place in KwaMhlanga FA (21%), followed by Tweefontein (19%) and Kameelpoortnek (15%).



Source : Census 2001, 2011, 2022, Stats SA, Plan Associates Dwelling Unit Counts, 2025

3.7.2 Current Community Facilities Need

Based on the current 2024 population, the Community Facilities required to serve the population is shown on **Table 18**, as per the CSIR Guidelines for Small-Medium Towns/Regional Service Centres.

It is evident that there is currently a major shortfall of almost all of the community facilities in the LM, with the exception of Primary and Secondary Schools, as well as Municipal/Tirbal Offices.

Table 18: Thembisile Hani LM Community Facilities Land Use Budget, 2024

Facilities	2024 Population				
	Requirement			CF Provided	Shortfall
	number	ha	%	number	number
Number of Units	**115,787**	**5,789**	**65%**		
Single Residential (500m² erven)	115,787	5,789	*100%*		
Population	**448,910**				
Nett residential Density	20				
Education		**356**	**4%**		
Small Crèche	187	4		19	(168)
Primary (including Grade R)	64	180		93	29
Secondary	36	172		51	15
Health Services		**15**	**0%**		
Primary Health Clinic	19	4		6	(13)
Community Health Centre/Hospital	7	11		2	(5)
Safety and Security		**10**	**0%**		
Police	7	7		4	(3)
Fire Station	7	2.2		1	(6)
Social /Cultural/Civic		**210**	**2%**		
Local Library	22	1		5	(17)
Thusong Centre/SASSA Paypoint*	7	1			(7)
Solid Waste Disposal Site	8	200			(8)
Municipal Office/Tribal Office	1	1		8	7
Magistrate's Court	2	1		2	-
Post Office/ICT Access Point	45	2			(45)
Communty Hall (large)	7	4		5	(2)

3.8 HUMAN SETTLEMENT TRENDS

3.8.1 Human Settlement Current Demand

Table 19 shows the distribution of the types of dwelling units in the Thembisile Hani LM. It is noted that there are 13,410 formal units which are on a formal cadastral; 41,518 informal units which are situated in an area with no general plan and 859 backyard dwellings, which are considered informal and included in the **total informal count of 42,377 units in 2024.** This translates to the current demand for housing in the Thembisile Hani LM.

These informal dwellings make up 37% of all the dwellings in the Thembisile Hani LM.

Table 19: Thembisile Hani LM Dwelling Units by Type, 2024

Table : Thembisile Hani LM: Dwelling Units by Type, 2024

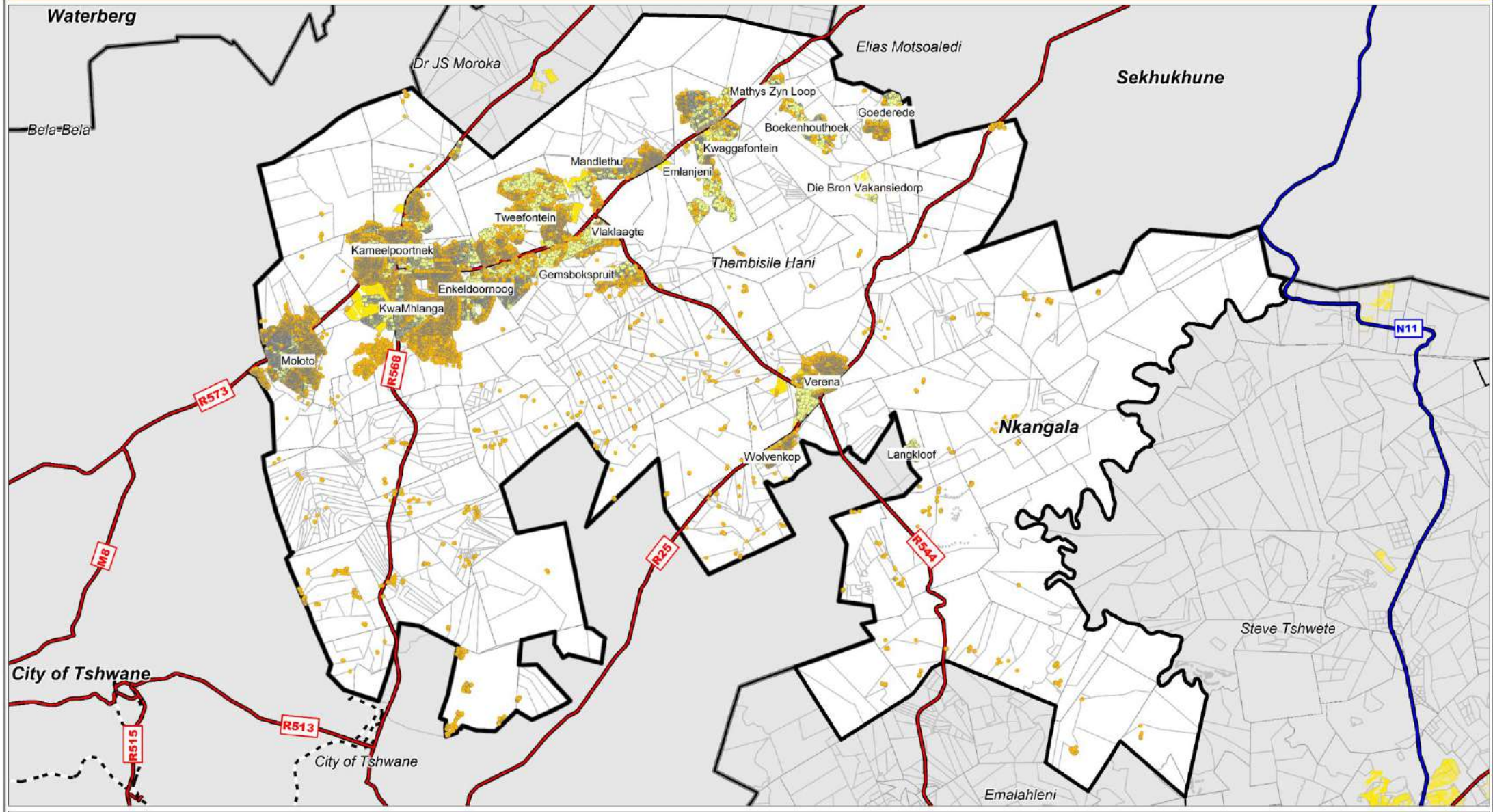
Name	Type				
Functional Area	Formal (GP Cadastral)	Informal	Backyard / Rooms	Subtotal Informal/Backyard	Total
Moloto	7 187	6 055	-	6 055	13 242
Kameelpoortnek	9 971	7 489	549	8 038	18 009
KwaMhlanga	10 184	11 982	-	11 982	22 166
Tweefontein	12 205	5 279	-	5 279	17 484
Vlaklaagte	12 082	2 185	310	2 495	14 577
Kwaggafontein	11 421	1 295	-	1 295	12 716
Mathys Zyn Loop-A	4 866	836	-	836	5 702
Verena	5 494	4 557	-	4 557	10 051
Thembisile NU	-	1 840	-	1 840	1 840
Total Thembisile Hani LM	**73 410**	**41 518**	**859**	**42 377**	**115 787**
Type %	**63%**	**36%**	**1%**	**37%**	**100%**

Figure 38 shows the spatial distribution of the formal and informal units, from which it is evident that informal settlement is intensifying along the Moloto Corridor.

The main concern with these densifications is the fact that economic activity in the area is extremely limited and is by no means growing at the same rate as the residential settlements, resulting in virtually the entire working population having to commute daily. Further challenges include:

- Settlements are not formally planned in accordance with a layout plan in order to be able to design and install engineering services in future.
- It is extremely costly to the Municipality top provide the required infrastructure and community facilities in these areas.
- The settlements typically developed on historical cultivated fields, further diminishing the agricultural potential in the rural areas.

HUMAN SETTLEMENT GROWTH PATTERNS



- Thembisile Hani LM Boundary
- Cadastral (Farms / Parent Farms)
- Local Municipality
- District Municipality
- National Roads
- Provincial Roads
- Railway
- Towns and Settlements

Dwelling Unit Type:

- Informal Towns and Settlements (42 377)
- GP cadastral (73 410)

0 1,5 3 6 9 12 15 km

Thembisile Hani SDF 2024

38

3.8.2 Human Settlement Current Supply

3.8.2.1 Vacant Erven in Existing Townships

Table 20 depicts the vacant erven found within existing townships in the Thembisile Hani LM, from which it is evident that there are **6,892 erven** available.

Table 20: Vacant Erven per Existing Township

Funtional Area (FA)	Town Name	Number of Erven
1	MOLOTO EXT 10	4
1	MOLOTO EXT 11	29
1	MOLOTO EXT 3	2
1	MOLOTO EXT 5	154
1	MOLOTO EXT 8	105
1	MOLOTO EXT 9	13
1	Moloto SP	261
Subtotal FA 1		**568**
2	ENKELDOORNOOG-A	54
2	KAMEELPOORTNEK-A	2
2	KAMEELPOORTNEK-B	90
2	KAMEELPOORTNEK-C	17
2	KLIPFONTEIN-A (eNgwengameni)	57
2	MANDELA EXT 1 (part of Leratong)	164
2	SUNCITY AA (part of Kameelpoortnek C)	305
Subtotal FA 2		**689**
3	ENKELDOORNOOG-B	9
3	ENKELDOORNOOG-C	141
3	KWAMHLANGA C EXTENTION (MOUNTAIN VIEW)	56
3	KWAMHLANGA CROSSROADS	5
3	KWAMHLANGA-B	126
3	KWAMHLANGA-BA	66
3	SHELDON (south of Enkeldoornoog C)	14
Subtotal FA 3		**417**
4	TWEEFONTEIN-A	52
4	TWEEFONTEIN-B	35
4	TWEEFONTEIN-C	122
4	TWEEFONTEIN-D	54
4	TWEEFONTEIN-E	141
4	TWEEFONTEIN-F	66
4	TWEEFONTEIN-G	194
4	TWEEFONTEIN-H	88
4	TWEEFONTEIN-J	169
4	TWEEFONTEIN-M	351
4	TWEEFONTEIN-N	767
4	VLAKLAAGTE-BB	68
Subtotal FA 4		**2,107**
5	GEMSBOKSPRUIT-A	49
5	VLAKLAAGTE RIDGE	11
Subtotal FA 5		**60**
6	KWAGGAFONTEIN-A EXT 1	40
6	KWAGGAFONTEIN-A EXT 2	2
6	KWAGGAFONTEIN-A EXTENSION 3	34
6	KWAGGAFONTEIN-B	37
6	KWAGGAFONTEIN-C	51
6	KWAGGAFONTEIN-D	179
6	KWAGGAFONTEIN-D EXT 1	301
6	KWAGGAFONTEIN-E	34
Subtotal FA 6		**678**
7	BOEKENHOUTHOEK-A	207
7	BOEKENHOUTHOEK-B	100
7	GOEDEREDE-A (Dipasana)	52
7	GOEDEREDE-B (Dipasana)	360
7	MATHYS ZYN LOOP-A	4
Subtotal FA 7		**723**
8	VERENA-A	9
8	VERENA-B	71
8	VERENA-C	79
8	WOLVENKOP-A (including expansion)	719
8	Park Erven 911, 1001 Verena - A	146
8	Various Non-Residential Erven	626
Subtotal FA 8		**1,650**
Total		**6,892**

3.8.2.2 Vacant Erven in Proposed Townships

Table 21 depicts the number of erven available in proposed townships, which translates to a total of **8,956 erven** available as part of the land supply.

Table 21: Vacant Erven per Proposed Townships

Funtional Area (FA)	Town Name	Number of Erven
2	MASHILOVILLE (west of Luthuli Village)	517
Subtotal FA 2		**517**
3	KWAMHLANGA - E	2,701
3	KWAMHLANGA-C	699
Subtotal FA 3		**3,400**
4	TWEEFONTEIN-K	1,094
Subtotal FA 4		**1,094**
5	EMLANJENI	487
5	VLAKLAAGTE	489
5	VLAKLAAGTE VIEW	1,001
Subtotal FA 5		**1,977**
8	VERENA SETTLEMENT (Bultfontein Phase 1)	1,968
Subtotal FA 8		**1,968**
Total		**8,956**

3.8.2.3 Strategic Development Areas

Seven Strategic Development Areas, or SDA's, were identified as part of the previous SDF as follows:

- **SDA 1**: The area around the Moloto route between Moloto and KwaMhlanga (The Moloto settlement should thus expand in an easterly direction along the Moloto road and the proposed Moloto rail alignment).
- **SDA 2**: The area between KwaMhlanga and Enkeldoornoog which will represent infill development close to the KwaMhlanga Business Node and proposed railway station. This section has already experienced an influx of informal settlements.
- **SDA 3**: The eastern expansion areas around Kameelpoortnek towards the north of the KwaMhlanga intersection.
- **SDA 4**: The vacant area between route R573 (Moloto Road) and the northern extensions of Tweefontein (A, B, C, D, K, N and M).
- **SDA 5**: The vacant area between Vlaklaagte 2 and Vlaklaagte 1 to the south of the Moloto road and rail.
- **SDA 6**: The area adjacent to route R573 (north and south) towards the west of Kwaggafontein, and surrounding the Kwaggafontein industrial area.
- **SDA 7**: The area to the south of Verena (towards Wolvenkop) and towards the north (Wellas) where informal settlement is already taking place.

The total developable area of each SDA was calculated and is shown in **Table 22** below.

Table 22: SDA Developable Area

SDA	Agricultural	Cemetery	Developable
1	15	-	351
2	-	5	75
3	-	-	68
4	-	18	751
5	187	-	573
6	-	-	361
7			589
Subtotal 1	**202**	**23**	**2,767**

3.8.3 Human Settlement Projects

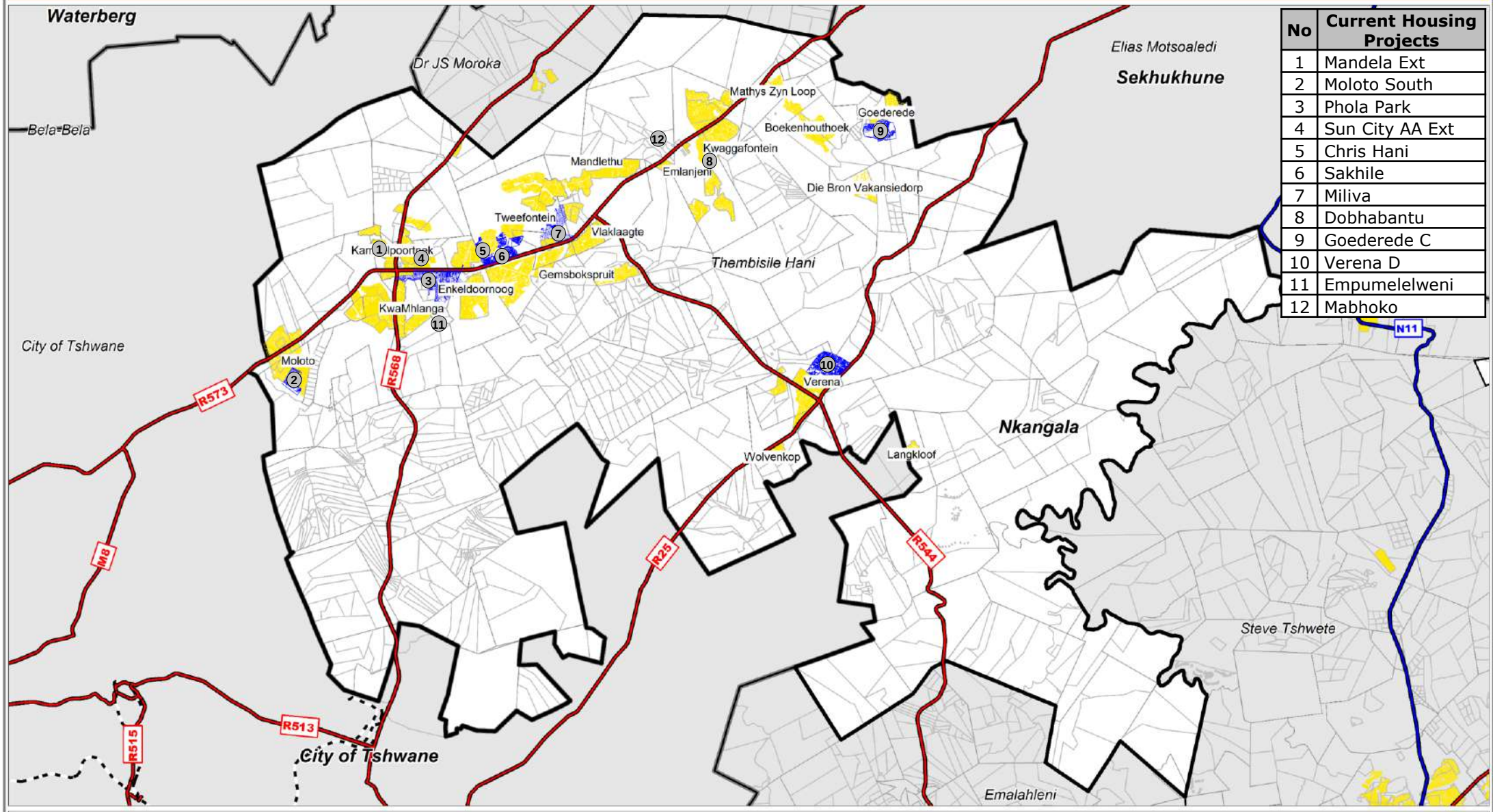
Figure 39 depicts the current Human Settlement Projects taking place in the Thembisile Hani LM, as well as the other human settlement areas.

The status of each project is confirmed in **Table 23**.

Table 23: Status of Housing Projects in Thembisile Hani LM

INFORMAL SETTLEMENT	PROPERTY DESCRIPTION	REMARKS/ COMMENTS
Mandela Ext	RE of Portion 7 & the RE of the Farm Enkeldoorn 217 JR and on the RE of the Farm KwaMhlanga 617 JR (Mandela Ext)	General Plan has been approved. State land release is currently underway.
Moloto South 4	Portion 17 of the farm Sybrandskraal 244 – JR (Moloto South)	Land surveyor to submit to Surveyor General's Office.
Phola Park	Portions 2, 22, 25, 27-29, 43, 44 of the farm Enkeldoornoog 219 JR; A Portion of the farm Enkeldoorinoog 651 JR (Phola Park)	Pegging of sites has been completed, the town planner and the land surveyor is currently busy with the paperwork for submission to the SG.
Sun City AA Ext	Portions 11 - 13, 15, 16, 18 – 21 of the farm Enkeldoornoog 219 JR (Sun City AA)	Pegging of sites started in February 2022. The general Plan has been approved. State land release is currently underway.
Chris Hani	The farm Tweefontein 675 JR.	Awaiting approval of SPLUMA application.
Sakhile	The farm Tweefontein 675 JR.	Approval has been obtained. Land surveyor to be appointed
Miliva	The farm Tweefontein 675 JR and Portion 54 of the Farm Tweefontein 220 JR.	Approval has been obtained. Land surveyor to be appointed
Dobhabantu	RE of the Farm Kwaggafontein 216 JR	Pegging of sites has been completed, the town planner and the land surveyor is currently busy with the paperwork for submission to the SG.
Geoderede C	Portions 169 and 182 of the farm Goederede, 60 – JR	Pegging of sites has been completed, the town planner and the land surveyor is currently busy with the paperwork for submission to the SG.
Verena D	Remainder of Portion 34 and Portion 18 of the Farm Bulfontein 94-JS, Remainder of Portion 13 of the Farm Buffeshoek 91-JS and the Farm Hartbeesfontein 93-JS	Awaiting the signed Special Power of Attorney from the CPA.
Empumelelweni	Formalization On Remainder Of The Farm Enkeldooringoog 651 JR, Portion 22, 23, 24 And 45 Of Enkeldoornoog 219 JR And Portion 3, 4, 5, 6 And 8 Of Zusterhoek 246 JR.	Ntamu Engineers appointed on the 31st of January 2023 to conduct Geotech Investigations.
Mabhoko	The Remainder of Portion 1 Gemsbokfontein 199 – JR., Remainder of Portion 7 Gemsbokfontein 199 – JR., Remainder of Portion 8 Gemsbokfontein 199 – JR., Portion 13 Gemsbokfontein 199 – JR.,Portion 17 Gemsbokfontein 199 – JR., Portion 19 Gemsbokfontein 199 – JR.	Phase 1 of 800 sites has been completed – The Layout has been submitted to the office of Surveyor-General Plan. The Municipality is current implementing Phase 2 of 1000 sites

HUMAN SETTLEMENTS: CURRENT PROJECTS



No	Current Housing Projects
1	Mandela Ext
2	Moloto South
3	Phola Park
4	Sun City AA Ext
5	Chris Hani
6	Sakhile
7	Miliva
8	Dobhabantu
9	Goederede C
10	Verena D
11	Empumelelweni
12	Mabhoko

- Thembisile Hani LM Boundary
- Cadastral (Farms / Parent Farms)
- Local Municipality
- District Municipality
- National Roads
- Provincial Roads
- Railway
- Towns and Settlements
- Planned Layouts

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF

2024

3.9 ENGINEERING SERVICES

3.9.1 Water Services

The information for water services in the Municipality was obtained from the Thembisile Hani Water Masterplan, 2015.

3.8.1.1 Description of Existing System

The Thembisile Hani bulk water supply system, part of the Western Highveld Scheme, is critical for servicing this municipality in Mpumalanga. Water is sourced from three major providers—Rand Water (30 Ml/day), the City of Tshwane (15.07 Ml/day), and Dr. JS Moroka Local Municipality (8 Ml/day). The total bulk potable water available under agreements is 53.07 Ml/day, though operational challenges impact the distribution efficiency.

3.8.1.2 Infrastructure Overview:

Reservoirs:

There are 23 reservoirs on 19 sites, along with one elevated tower, providing a total capacity of 121.45 Ml. Key reservoirs like Ekandustria (20 Ml), Kwaggafontein (24 Ml), and Enkeldoornoog B (11 Ml) serve multiple purposes, including direct network supply and in-line storage.

Pipelines:

The pipeline network comprises various diameters, with a critical 1,000 mm pipeline running 37.5 km to connect Ekandustria to Enkeldoornoog B. Additional pipelines, primarily AC, distribute water to other reservoirs and communities.

Pump Stations and Valves:

Four pump stations support water movement, though two lack active pumps. Several flow control valves (FCVs) are strategically placed to regulate reservoir inflow, but the absence of pressure-reducing valves (PRVs) limits overall pressure management.

Challenges Identified:

- Inadequate inflow to reservoirs such as Enkeldoornoog C, which impacts downstream supply.
- Intermittent water supply schedules due to limited reservoir capacities.
- Dependence on the Zoetmelksfontein pump station for northern supply, leading to insufficient flow for Kwaggafontein reservoirs and beyond.
- Efforts to improve the infrastructure face institutional ambiguities, particularly concerning ownership and maintenance responsibilities for shared facilities like the Ekandustria reservoir.

3.8.1.3 Masterplan Recommendations:

The study concludes that the Thembisile Hani water system faces significant challenges, including inefficiencies, inadequate infrastructure, and high-water losses. Recommendations to improve the Thembisile Hani bulk water supply system, include the following:

- Reservoir Flow Control: Regulate inflow to all reservoirs to maintain adequate back pressure and ensure supply to all elevation levels.
- Kwaggafontein Supply: Enable supply from the south through Tweefontein D and Vlaklaagte reservoirs to mitigate dependency on Dr. JS Moroka allocations.
- Pressure Zone Redefinition: Redefine reservoir and tower zones (KwaMhlanga R1, R4, Enkeldoornoog B, and C) to reduce static pressures and improve uniformity.
- Verena A Improvements: Add a booster pump station and additional storage reservoir at Verena A.
- Pipeline Optimisation: Fill Enkeldoornoog B tower from Enkeldoornoog B reservoir to free up capacity in the 1,000 mm Ekandustria pipeline.
- Storage Upgrades: Provide adequate emergency and balancing storage at all reservoir sites.

3.8.1.4 Projected Capital Expenditure

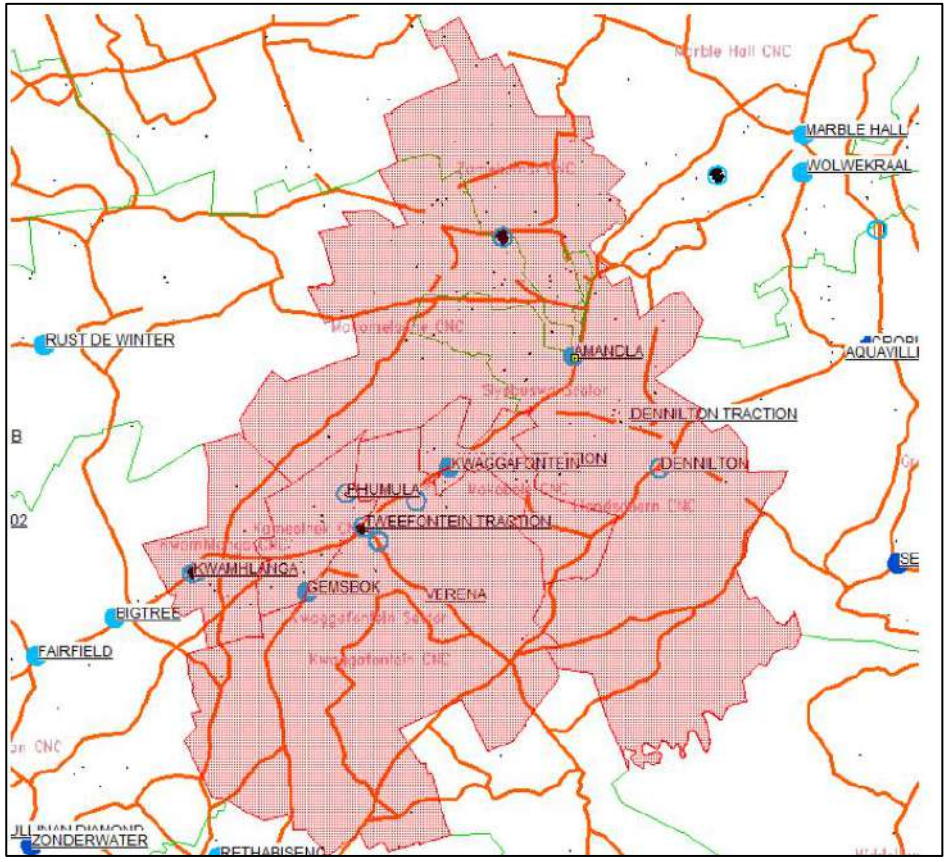
The estimated costs for the required upgrades to meet the future demands for water are estimated at R 460.9 million (including contingencies but excluding VAT).

If an additional 8 Ml/day is supplied from the south instead of the north, the cost increases to R 599.6 million.

3.9.2 Electricity Services

Most of the Thembisile Hani LM, with the exception of Moloto, falls within Eskom's Siyabuswa Sector as shown in **Diagram 9** below. The Key Issues, Proposed Solutions, Load Forecasts, and Recommendations in terms of electricity are discussed in this section.

Diagram 9: Eskom Siyabuswa Sector Map



The Amandla/Kwaggafontein NDP Revision 2 PRC Report addresses the challenges and proposed solutions for electrification and infrastructure development in Siyabuswa and Kwaggafontein, under the Nkangala District Municipality. It highlights the need for immediate infrastructure upgrades and long-term planning to support sustainable urban growth.

3.8.2.1 Key Issues

Electrification Needs:

Over 13,000 connections were required between 2019 and 2022 in Thembisile Hani and JS Moroka local municipalities.

Infrastructure Challenges:

- **Substation Capacities:** Overloaded substations (e.g., KwaMhlanga, Kwaggafontein, and Amandla) and poor transformer health in critical locations.
- **Voltage and Line Issues:** Low voltages under healthy system conditions and overloaded HV lines, especially from Vulcan MTS to Gemsbok.
- **Land Use Issues**: Land invasions, informal allocations by Tribal Authorities, and extensive land claims constrain formalisation and planning.

3.8.2.2 Proposed Solutions:

Substation Upgrades:

- Build new substations: Examples include Moutse, Dennilton, and Makometsane (132/22kV, 2x20MVA capacity).
- Upgrade existing substations: Transition feeders at Kwaggafontein and Gemsbok to 22kV and rebuild KwaMhlanga substation to 132/22kV standards.

Integration Initiatives:

Integrate Silimela MTS with Wolwekraal and Groblersdal for improved network efficiency and load balancing.

Network Reconfiguration:

- Reconfigure feeder connections, such as splitting Amandla/Siyabuswa 22kV feeders.
- Enhance protection coordination to improve network reliability and address voltage violations.

3.8.2.3 Electrification and Load Forecasts

Significant upgrades are required to meet growing energy demand and it is projected that there could be overloads on feeders like Amandla/Siyabuswa 22kV necessitate additional substations and load redistribution.

3.8.2.4 Recommendations

Infrastructure Development

- Establish additional substations and feeder lines.
- Invest in the refurbishment and upgrades of existing infrastructure.

Land Use Management

- Address land claims and formalise settlements to streamline land use management and enable planned developments.

Strategic Growth

- Consolidate urban growth within identified SDAs.
- Invest in infrastructure to meet the 2030 demands for residential, retail, and industrial development, which will require over **500 hectares of urban land**.

3.8.2.5 Expected Outcomes

- Improved substation reliability and network performance.
- Addressed electrification needs while accommodating future demands.
- Sustainable urban growth through integration with Nkangala District Municipality's Spatial Development Framework (SDF).
- Economic integration and enhanced service delivery through strategic infrastructure upgrades and TOD implementation.

3.9.3 Information and Communications Technology (ICT)

ICT Coverage refers to the extent and availability of Information and Communication Technology (ICT) infrastructure and services within a specific area. This includes access to digital communication networks such as mobile telephony (2G, 3G, 4G, and 5G), broadband internet, and other wireless or wired communication systems.

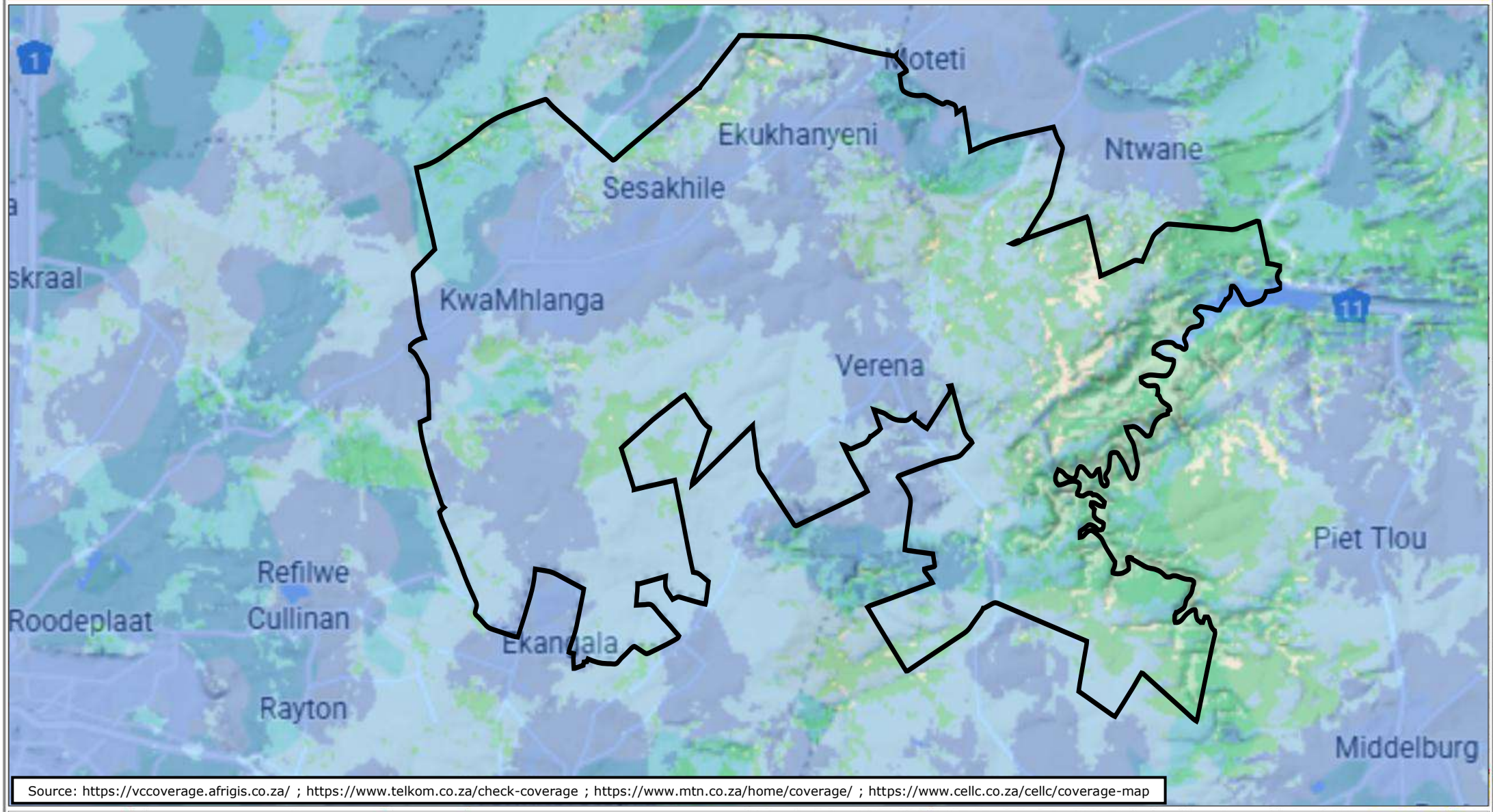
ICT Coverage is essential for facilitating economic activity, enhancing public service delivery, and improving social connectivity.

Figure 40 illustrates the ICT coverage across Thembisile Hani Local Municipality, and categorizes digital communication networks into 4G, 3G, and 2G coverage, which represents the varying levels of network strength.

It is evident that major settlements such as KwaMhlanga, Ekangala, and Verena, among others, benefit from relatively strong ICT infrastructure, likely supported by 4G and 3G networks. However, more rural areas, particularly towards the northeastern and southern regions of the municipality, illustrate weaker or more limited coverage, which is evidently influenced by factors such as geographic terrain, population density, and the availability of telecommunication infrastructure.

Figure 40 further indicates that ICT services are provided by, but not limited to Vodacom, Telkom, Cell C, and MTN, offering multiple service options for residents and businesses alike. The expansion of network infrastructure in rural areas will be crucial to improving digital inclusion and ensuring equitable access to communication technologies across the municipality.

ICT COVERAGE



Source: https://vccoverage.afrigis.co.za/ ; https://www.telkom.co.za/check-coverage ; https://www.mtn.co.za/home/coverage/ ; https://www.cellc.co.za/cellc/coverage-map

Thembisile Hani LM Boundary

Digital Cellular Telephony:
- 4G
- 3G
- 2G

Applicable to:
- Vodacom
- Telkom
- Cell C
- MTN

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF 2024

40

3.9.4 Access to Engineering Services: Water & Sanitation

Diagram 10 depicts the Level of Services in terms of Water and Sanitation for the Thembisile Hani LM.

In terms of Water Provisions, it is evident that the Municipality is well connected to water, with 95% of the population having access to municipal piped water in 2016.

Most of the sub-places in the LM are well connected to the water scheme, with the exception of Die Bron Vakansiedorp which seems to utilize the river flowing traversing the site.

In terms of Sanitation Services, only 28% of the LM has access to flush toilets in 2022, while most households (68%) made use of pit toilets.

KwaMhlanga seems to be the only sub-place with a fully functional sanitation system, where 100% of households have flush toilets.

3.9.5 Access to Engineering Services: Energy and Refuse Removal

Diagram 11 represents the level of service for energy and refuse removal in the Thembisile Hani LM.

The LM is well connected to electricity with 97% of the households using electricity as a source of lighting in 2016.

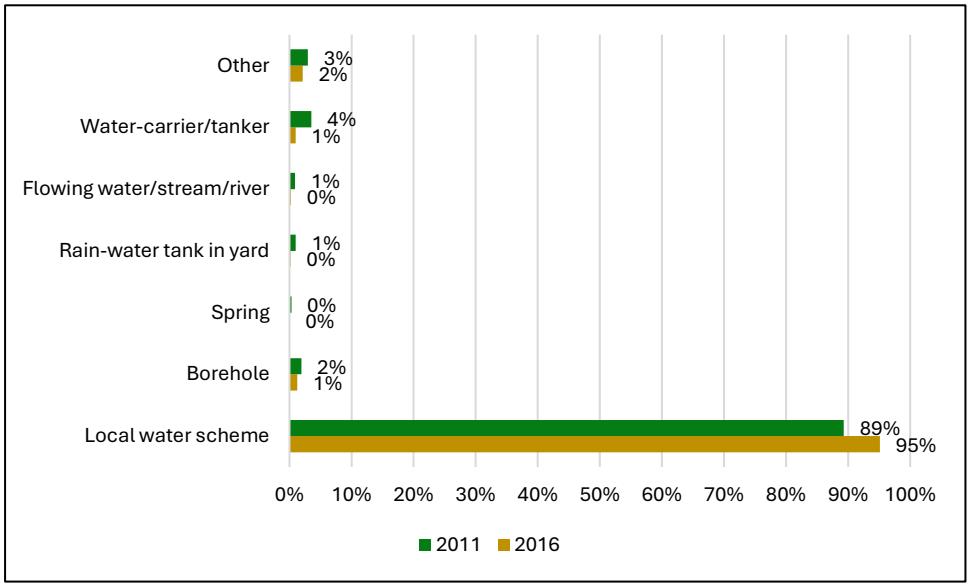
In terms of refuse removal, the level of service is very low with only 11% of households had their refuse removed by the Local Authority while 68% of households had their own refuse dump in 2016. About 9% made use of a communal refuse dump.

KwaMhlanga is the only sub-place where 100% of the households refuse is removed by the Local Authority.

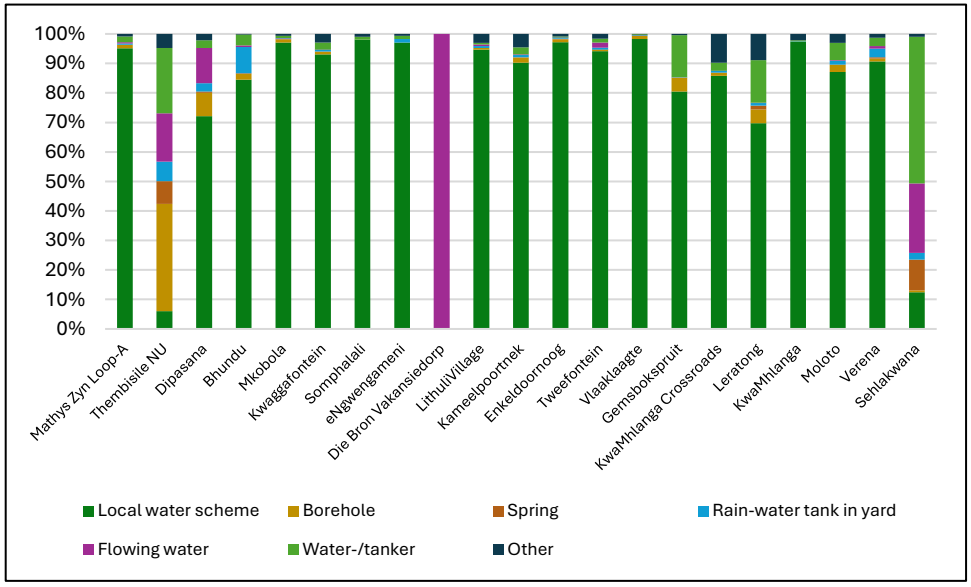
SERVICES, 2011

Diagram 10

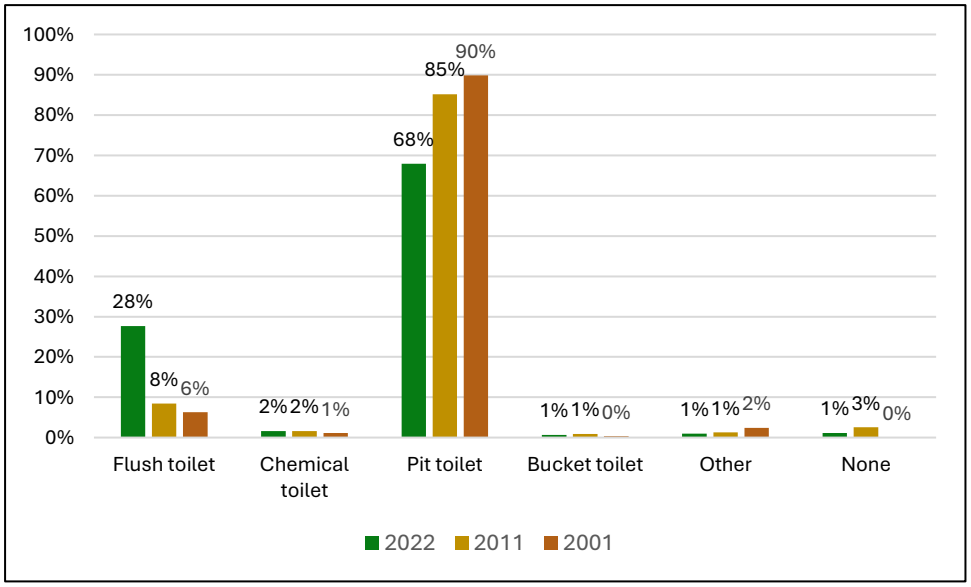
Thembisile LM: Main source of water, 2011 vs 2016



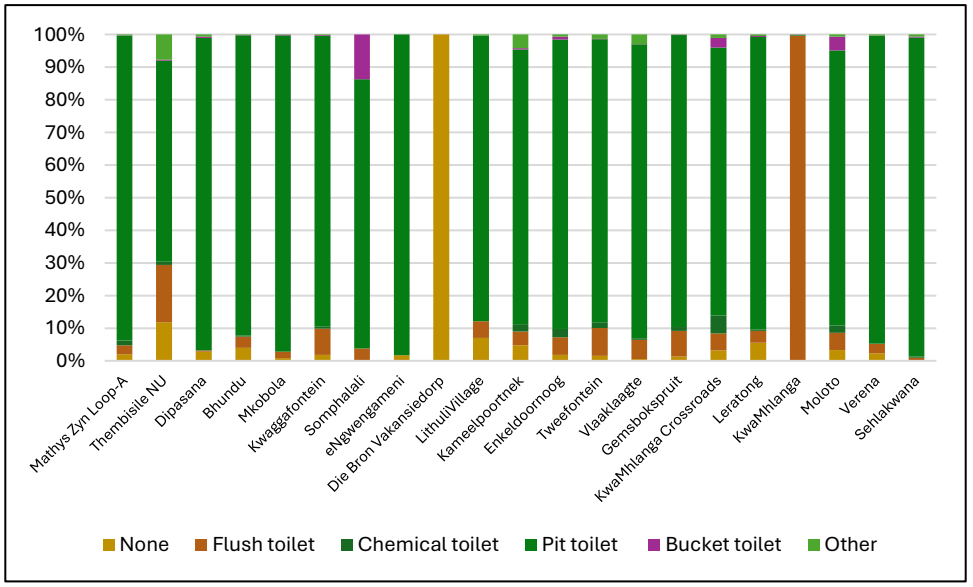
Thembisile LM: Main source of water per main place, 2011



Thembisile LM: Toilet facility, 2001, 2011, 2022



Thembisile LM: Toilet facility per main place, 2011

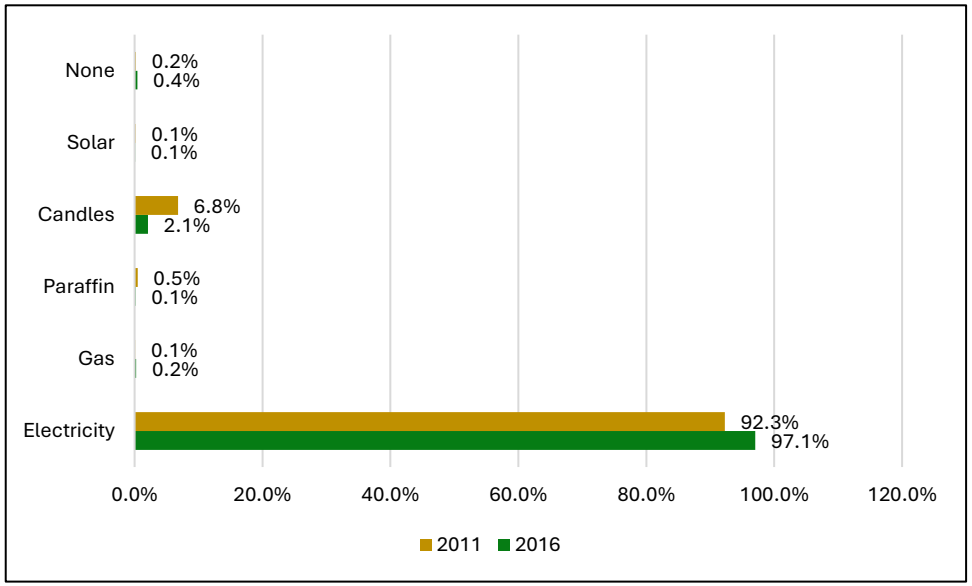


Source : Stats SA, Counts PLAN Associates

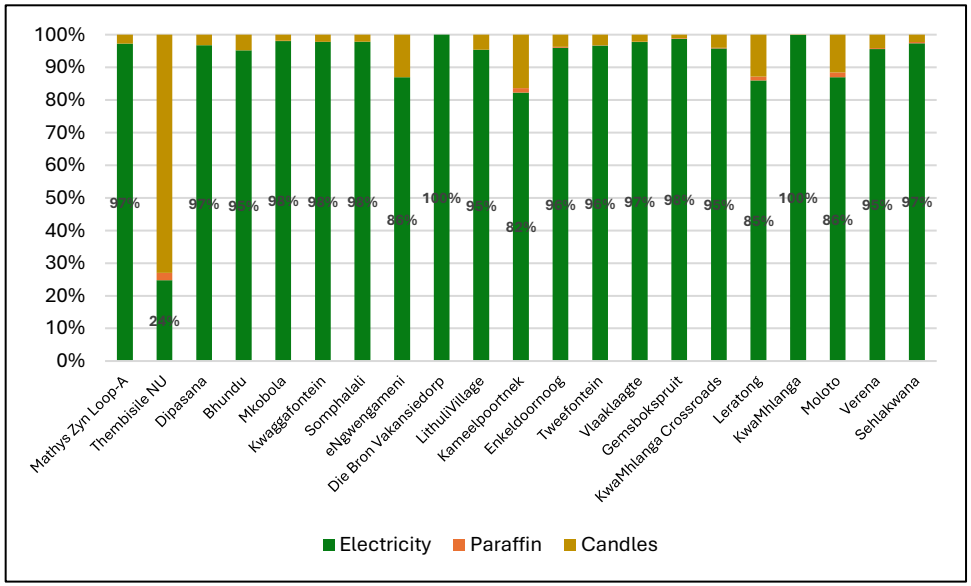
SERVICES, 2011

Diagram 11

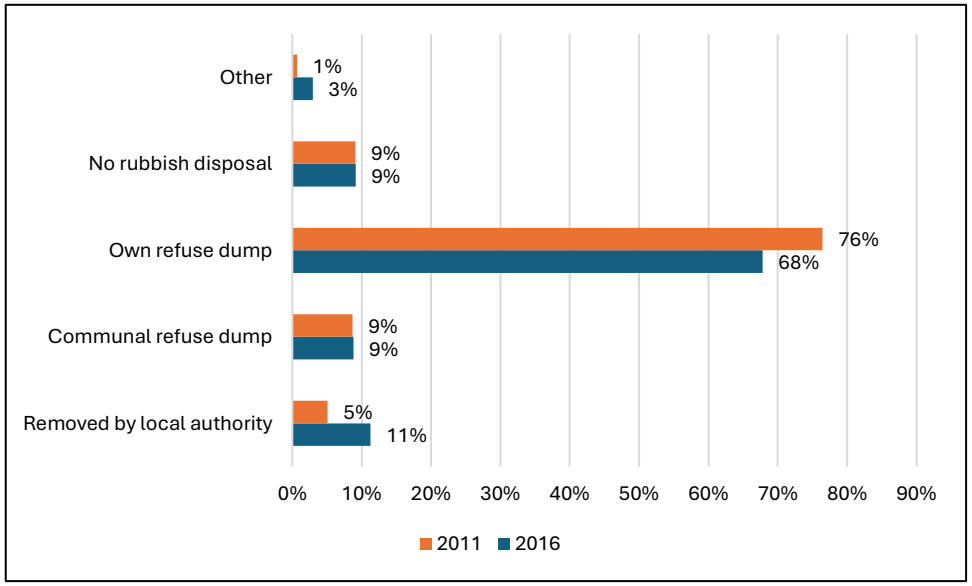
Thembisile LM: Main source of energy for lighting, 2011 vs 2016



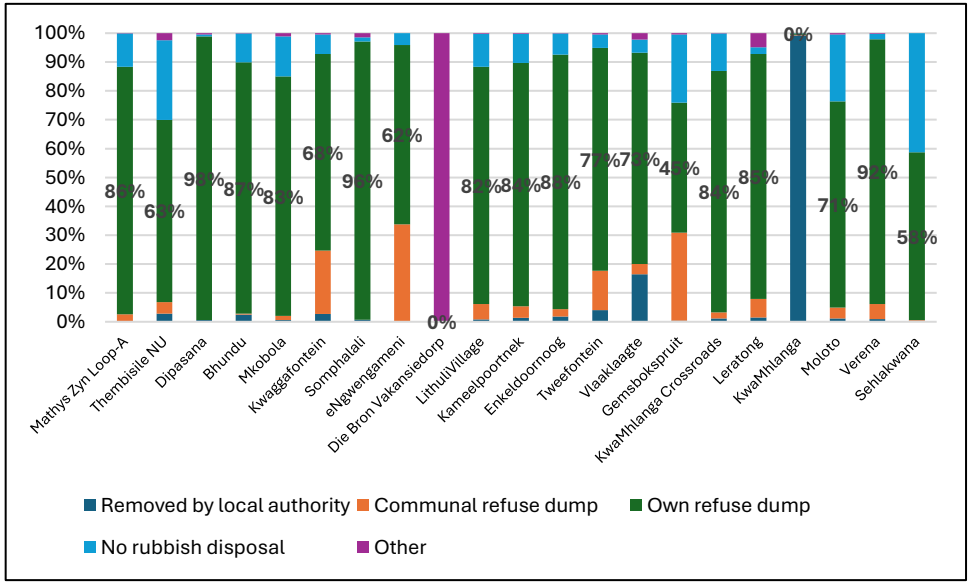
Thembisile LM: Main source of energy for lighting, 2011



Thembisile LM: Refuse removal, 2011 vs 2016



Thembisile LM: Refuse removal, 2011



Source : Stats SA, Counts PLAN Associates

3.9 SOCIO-ECONOMIC PROFILE

Chapter 4 provides a brief overview of the Socio-Economic Profile of the Thembisile Hani LM including the Level of Education; the Labour Force; and the Household and Individual Income.

3.9.1 Level Of Education

Diagram 12 depicts the Highest Level of Education for the Nkangala DM; the Thembisile Hani LM ; as well as the Sub-places of the LM, from which the following points are noted:

- The Thembisile Hani LM has the second highest % of people with No Schooling (13,1%), in the Nkangala DM, with the Emakhazeni LM at (13,2%)
- Approximately 29,3% of the Thembisile Hani LM population had completed Some Secondary School in 2022; while about 40,5% of the population received a Grade 12/Matric certificate.
- The % of the population in the Thembisile Hani LM that completed Grade 12 increased significantly from only 10% in 2001; to 26% in 2011; and further to 40% in 2022.
- The % of people with No Schooling decreased from 34% in 2001 to 13% in 2022.

3.9.2 Labour Force

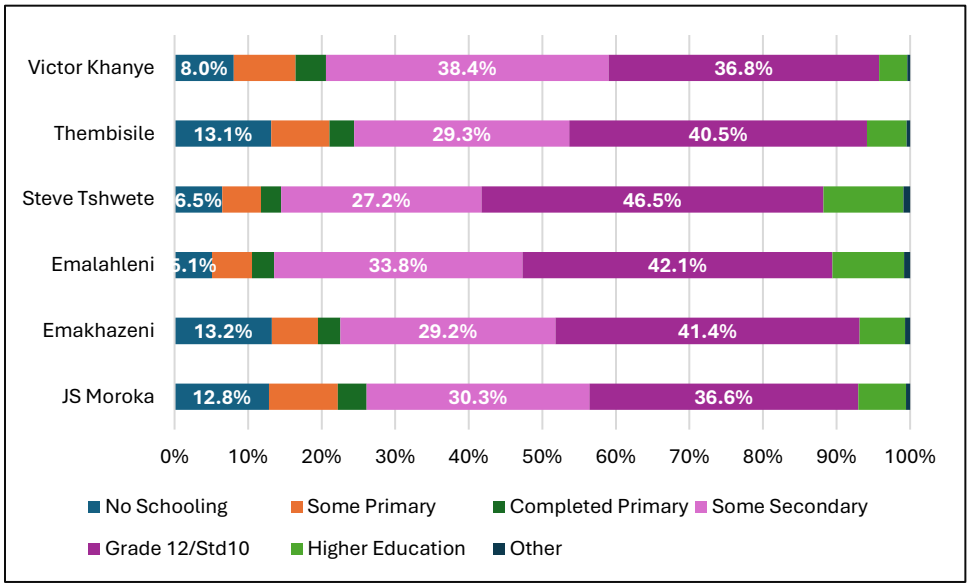
Diagram 13 represent the Labour Force (Employment Rate and Type of Sector) of the Nkangala DM as well as the Sub-Places of the Thembisile Hani LM. The following points are noted from Diagram 11:

- The unemployment rate of the Thembisile Hani LM is extremely high at 37%, compared to the Nkangala DM which is also at an alarming 30%.
- The Employment Rate is lowest us Sehlakwana (44,3%) and Verena (52,1%).
- About 54% of the employed people in the LM are employed in the Formal Sector, and about 22% in the Informal Sector.
- It is evident that the Informal Sector plays a big part in the economy of most of the sub-places.

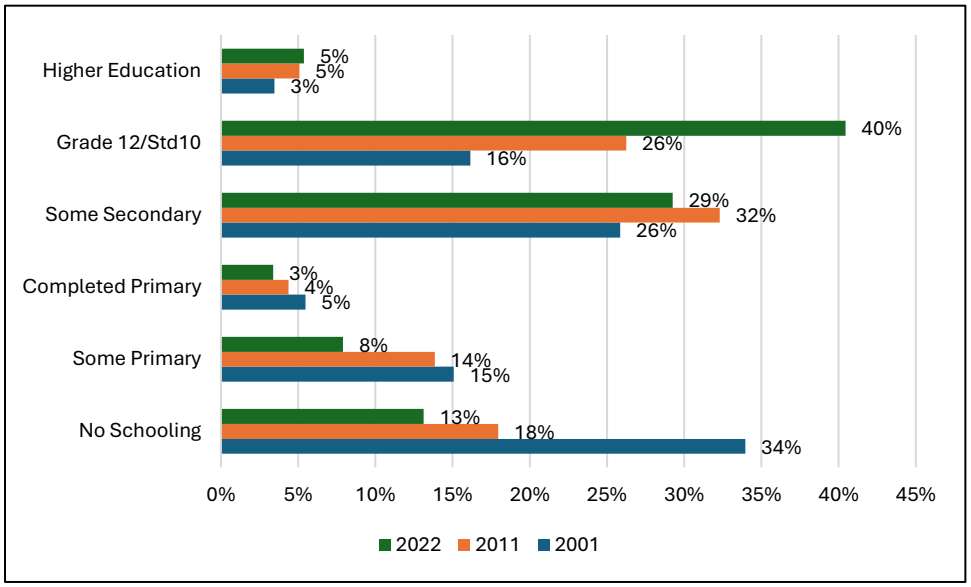
EDUCATION

Diagram 12

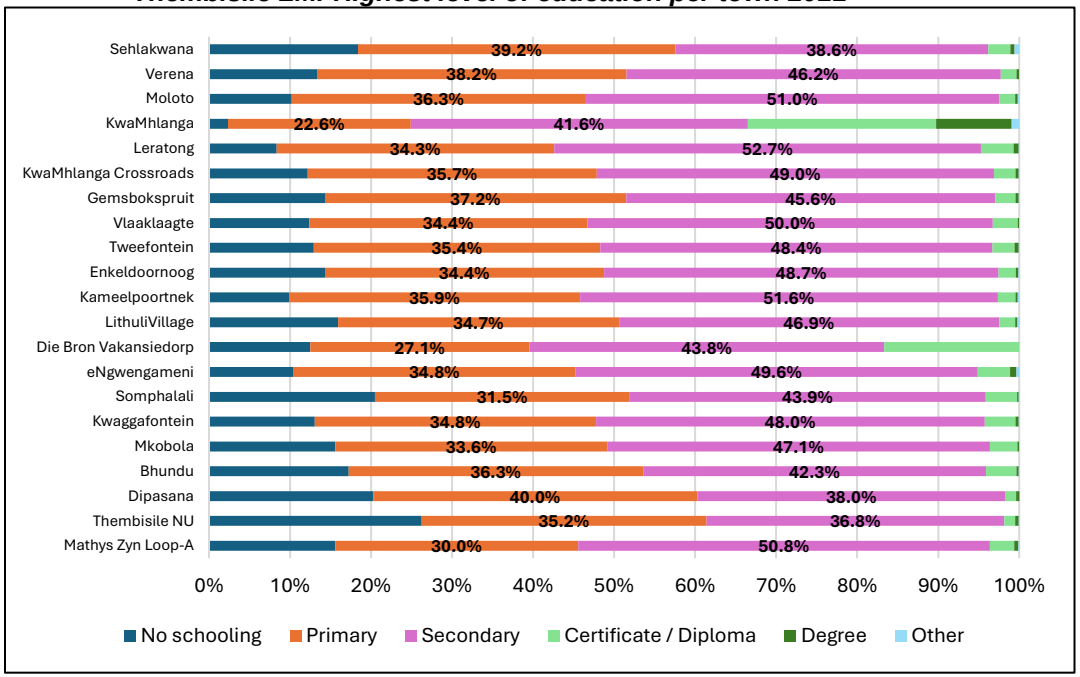
Nkangala DM: Highest level of education (20+ years) 2022



Thembisile LM: Highest level of education (20+ years) 2001-2022



Thembisile LM: Highest level of education per town 2011

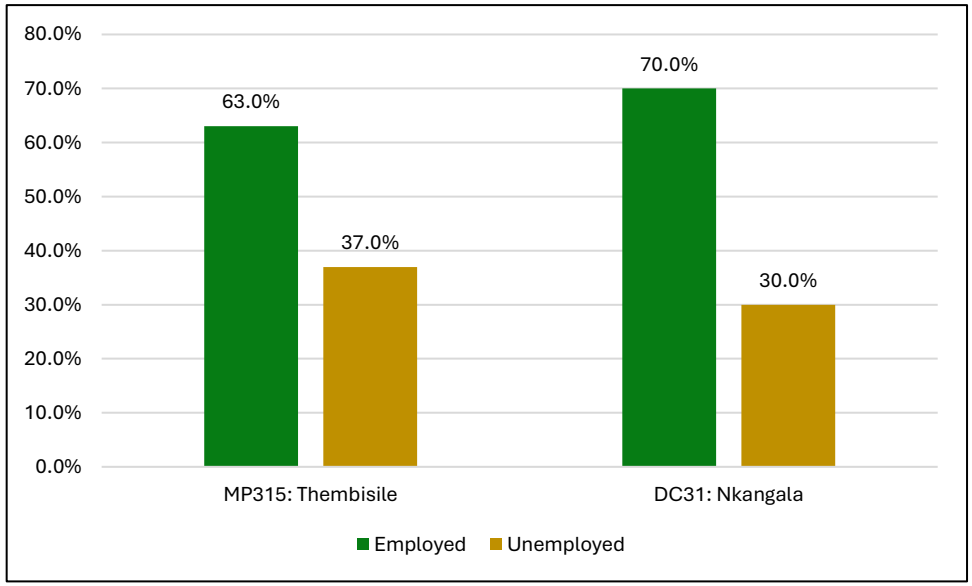


Source : Stats SA

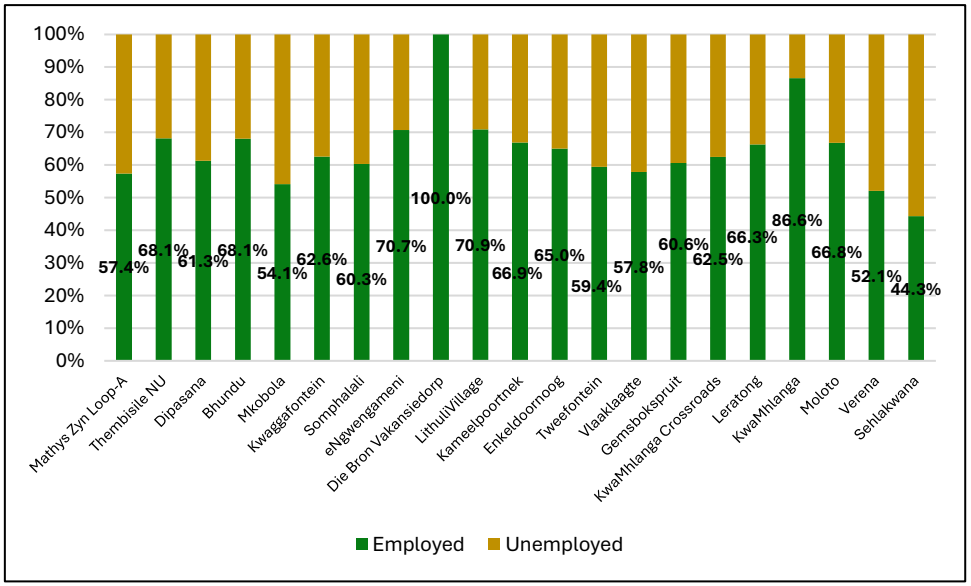
LABOUR FORCE

Diagram 13

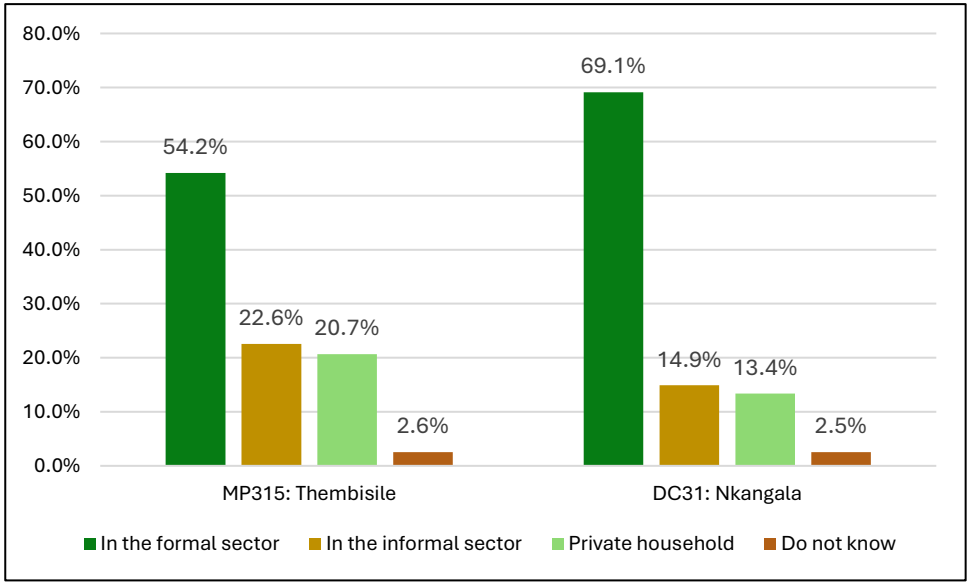
Nkangala DM vs Thembisile LM: Economically Active population, 2011



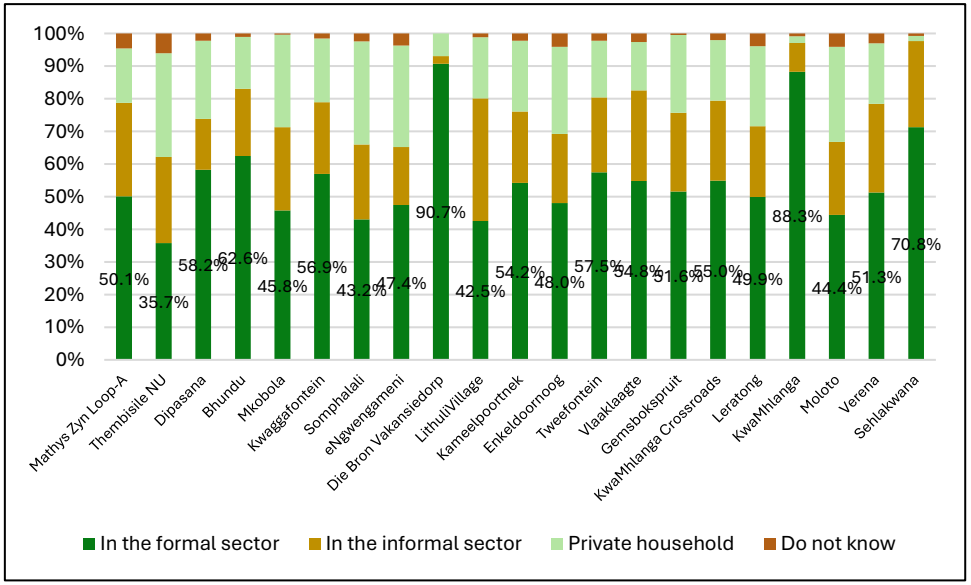
Thembisile LM: Economically Active population, 2011



Nkangala DM vs Thembisile LM: Type of Sector, 2011



Thembisile LM: Type of Sector, 2011



Source : Stats SA, Counts PLAN Associates

3.9.3 Income

Diagram 14 summarises the Monthly Household and Individual Income for the Thembisile Hani LM and it's Sub-Places.

- Approximately 73% households in the Thembisile Hani LM earned less than R3,500 monthly income in 2011, which is the housing subsidy benchmark.
- Approximately 13,8% of households had no household income in 2011.
- The households in KwaMhlanga have by far the highest monthly oncome of R21,721; compared to the second highest which is Die Bron Vakansiedorp at R4,775 in 2011.
- In terms of Individual Income, 44% individuals earned no income, while 24% earned less than R400 per month in 2011.

3.9.4 Synthesis: Socio-Economic Profile

The local economy in the Thembisile Hani LM is predominantly based on subsistence agriculture, small-scale farming, and informal trading. The unemployment rate is very high and only a minority of the population are employed in the formal sector, with many residents commuting to nearby urban centers such as Pretoria or Emalahleni for work.

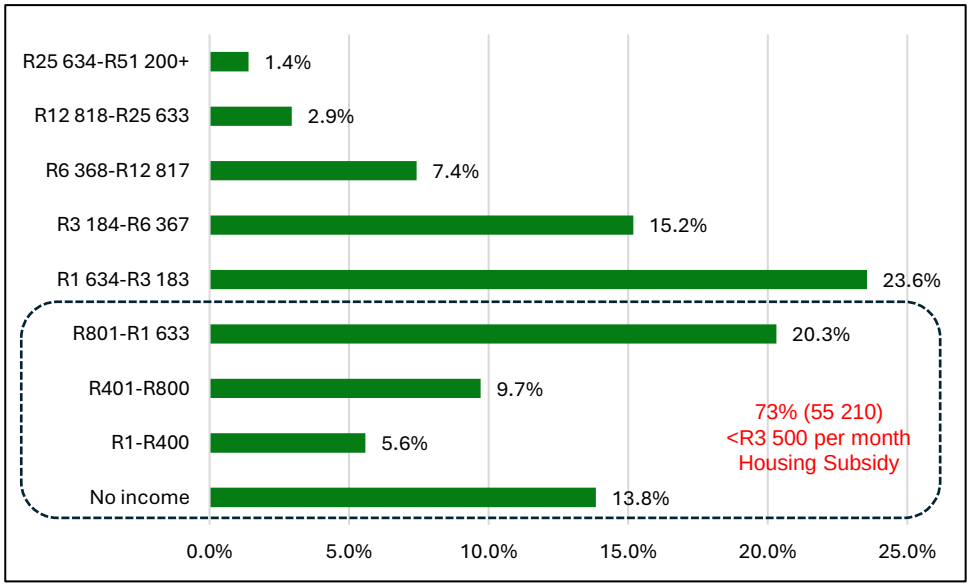
There is limited industrial or commercial development to boost the economy and provide jobs and there is a heavy reliance on government social grants as a primary source of income. Most residents live in government-subsidized housing or informal settlements.

In terms of education, the municipality has numerous primary and secondary schools but faces challenges such as overcrowded classrooms and resource shortages. Access to tertiary education is limited, and many students must travel or relocate to urban areas for further studies.

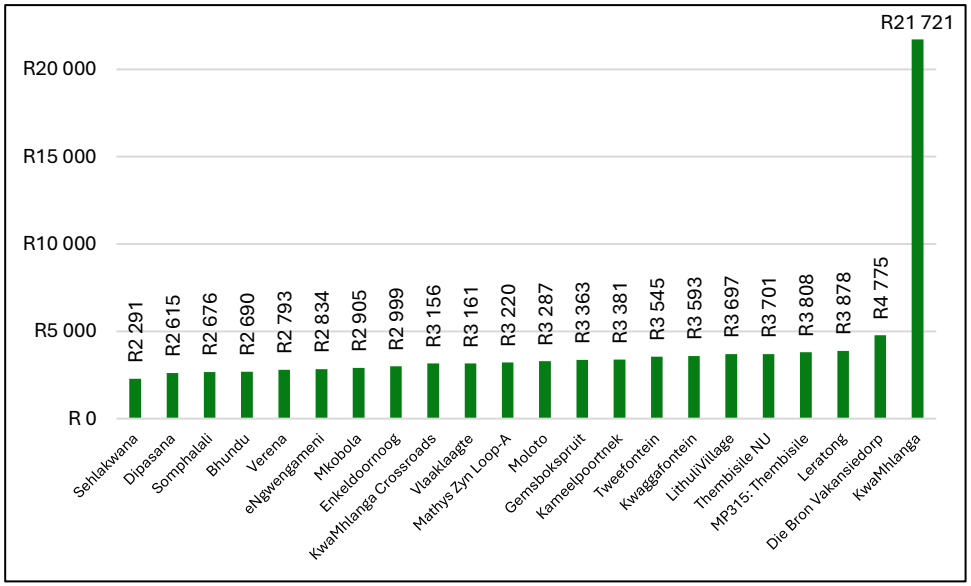
INCOME, 2011

Diagram 14

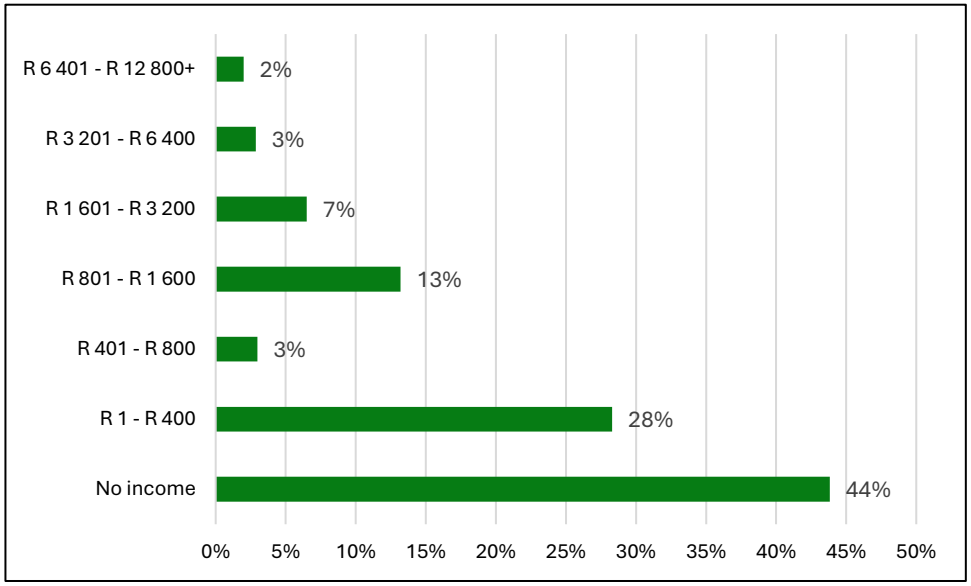
Thembisile LM: Monthly hh income, 2011



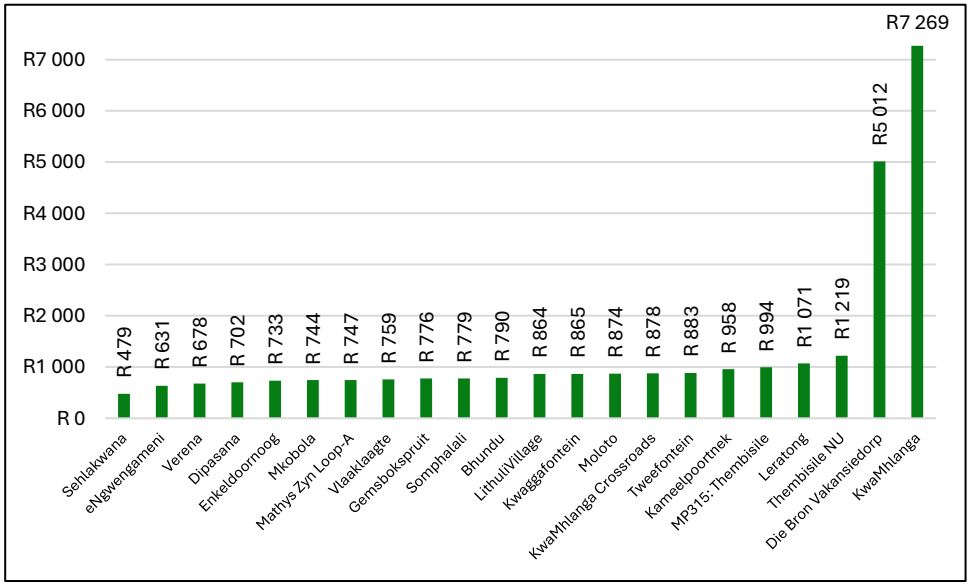
Thembisile LM: Average Monthly hh income, 2011



Thembisile LM: Individual Monthly income, 2011



Thembisile LM: Average individual Monthly income, 2011



Source : Stats SA, Counts PLAN Associates

4 SPATIAL DEVELOPMENT FRAMEWORK

The main purpose of the Municipal Spatial Development Framework is to define a spatial rationale with development concepts and guidelines that can be used by the local municipality to achieve sustainable spatial development in a consistent/coherent manner.

The Municipal Spatial Development Framework is multi-sectoral in nature and should enable decision-makers in the region – particularly municipalities and provincial and national government departments – to make well-informed decisions that are strategically sound, and in line with the development objectives outlined in the Municipal SDF.

Furthermore, it will ensure that development decisions across the Municipality are made on the basis of sound argument and a common spatial logic/rationale rather than subjective opinions of individuals.

Hence, the Thembisile Hani Local Municipality Spatial Development Framework is a broad conceptual framework aimed to achieve a range of strategic goals as summarised below:

i. Outcomes Led Planning role: Provide the spatial planning basis for achievement of the Outcomes defined in national and provincial policies and the District One Plan.
ii. Strategy Led Budgeting role: Ensure different spheres of government are able to plan and programme budgets towards an accepted district strategic purpose in line with the broad spatial concept and strategies defined in the Municipal SDF.
iii. Spatial Structuring/Restructuring role: Assist Thembisile Hani LM and surrounding local municipalities to structure/restructure their space in a manner that integrates the region and ensures that the principles of equity and sustainability are achieved.
iv. Multi-Sectoral Guiding role: Provide a useful set of guidelines to the municipality to assist them in the incorporation of the objectives contained in the framework into their sector plans.
v. Enhanced Land Use Management role: Provide the basis for the formulation of a set of land use controls for the municipality in order to perform their regulatory role in land use management.
vi. Coordination role: Enable the municipality to align their policies and practices to meet regional goals, and to align public capital investment by provincial and national government departments with these goals.

Diagram 15 illustrates the Vision and Development Objectives representing the Thembisile Hani LM SDF. This SDF Conceptual Framework is strongly informed and aligned to the legal and policy directives emanating from legislation and multi-sectoral policies at national and provincial level. It is briefly summarised as follow:

- The Spatial Vision for the Thembisile Hani LM area is aligned to the five SPLUMA Principles and the Municipal IDP.
- The Spatial Vision is next translated into a more detailed Spatial Concept and a Municipal Land Use Budget quantifying the land area required to accommodate the projected future growth of the Municipal area.
- Emanating from the Spatial Concept, a total of seven main Spatial Development Objectives are formulated for the Thembisile Hani SDF. Each

Spatial Development Objective comprises a number of Actions to be implemented, which collectively represent the Spatial Strategies of the Thembisile Hani SDF.

- The detailed Spatial Strategies will spatially culminate into the Composite Thembisile Hani SDF comprising a 5- and 20-year development perspective.
- The Implementation Framework as illustrated on Diagram 14 firstly confirm SPLUMA alignment of the SDF. It then summarizes the sectoral implications of the Thembisile Hani SDF.
- The Thembisile Hani SDF Spatial Strategies will inform the Thembisile Hani LM Budgeting Process (Strategy Led Budgeting) which includes the Thembisile Hani LM Capital Investment Framework (Long-Term Financial Plan) as well as the shorter term (3-5 year) Thembisile Hani Capital Expenditure Framework.

THEMBISILE HANI SPATIAL DEVELOPMENT FRAMEWORK STRUCTURE

Diagram 15

SPATIAL VISION

5 SPLUMA Principles → **SPLUMA LED Planning : Well Governed, Sustainable, Resilient, Inclusive, Efficient/Productive District**

SPATIAL CONCEPT

Land Use Budget

Strategic Development Objectives

Objective 1	Objective 2	Objective 3	Objective 4	Objective 5	Objective 6	Objective 7
Environmental Management	**Spatial Targeting**	**Sustainable Human Settlements**	**Community Facilities**	**Movement Network**	**Economic Development and Job Creation**	**Infrastructure Alignment**

SPATIAL STRATEGIES

❑ Climate Change Response ❑ Flooding Response ❑ Green/Eco-Belts	❑ Primary/Regional Nodes ❑ Second Order Nodes ❑ Third Order Nodes	❑ Priority Human Settlement Areas / New Development Areas	❑ Education ❑ Health & Welfare ❑ Safety and Security ❑ Sports and Recreation	❑ Mobility ❑ Accessibility ❑ Freight Corridors ❑ Multi Modal Public Transport and Transfer Facilities	**Business** ❑ CBD ❑ Community Nodes ❑ LED	**Industrial** ❑ Areas/SEZ ❑ Types of Products	**Mining** ❑ Functional Areas ❑ Rehabilitation	**Tourism** ❑ Functional Areas ❑ Types of Tourism	**Agriculture** ❑ Rural Intervention Areas ❑ FPSU's	❑ Bulk Reticulation: • Water • Sanitation • Electricity • Waste ❑ Expansion ❑ Maintenance
					ECONOMIC EMPOWERMENT					
					• **Informal / Emerging Upscaling** • **SMME Development** • **Membership Programme**			• **Agrarian Transformation** • **Land Reform** • **FPSU**		
					• **Tertiary Education and Resource Based Skills Development**					

COMPOSITE SDF:

- **Long Term : 20 Years**
- **Short Term : 5 Years**

IMPLEMENTATION FRAMEWORK

- **SPLUMA Alignment**
- **Sectoral Alignment (Master Plans)**
- **Inter-Governmental Alignment (Projects)**
- **District Service Delivery Model**

STRATEGY LED BUDGETING:

- Capital Investment Framework (Long Term): IDMS, LTFP
- Capital Expenditure Framework (5 Year): IDP, MTREF, SDBIP, Annual Budget

MUNICIPAL SPATIAL DEVELOPMENT FRAMEWORK

LOCAL AREA PLANS

1. Moloto	2. KwaMhlanga / Kameelpoortnek	3. Enkeldoornoog / Gemsbokspruit / Vlaklaagte / Tweefontein / Emlanjeni	4. Kwaggafontein / Mathys Zyn Loop / Goederede / Die Bron Vakansiedorp	5. Verena / Wolvenkop	6. Langkloof

4.1 SPATIAL DEVELOPMENT VISION AND OBJECTIVES

The long-term vision of the Thembisile Hani LM is to be:

> **Thembisile Hani, a truly African City that provides quality of life and opportunities to its citizens through the provision of Services and facilitation of Economic Growth through accelerated Land Reform and the optimal utilisation of the Natural Resources.**

The **Spatial Development Objectives** are as follows:

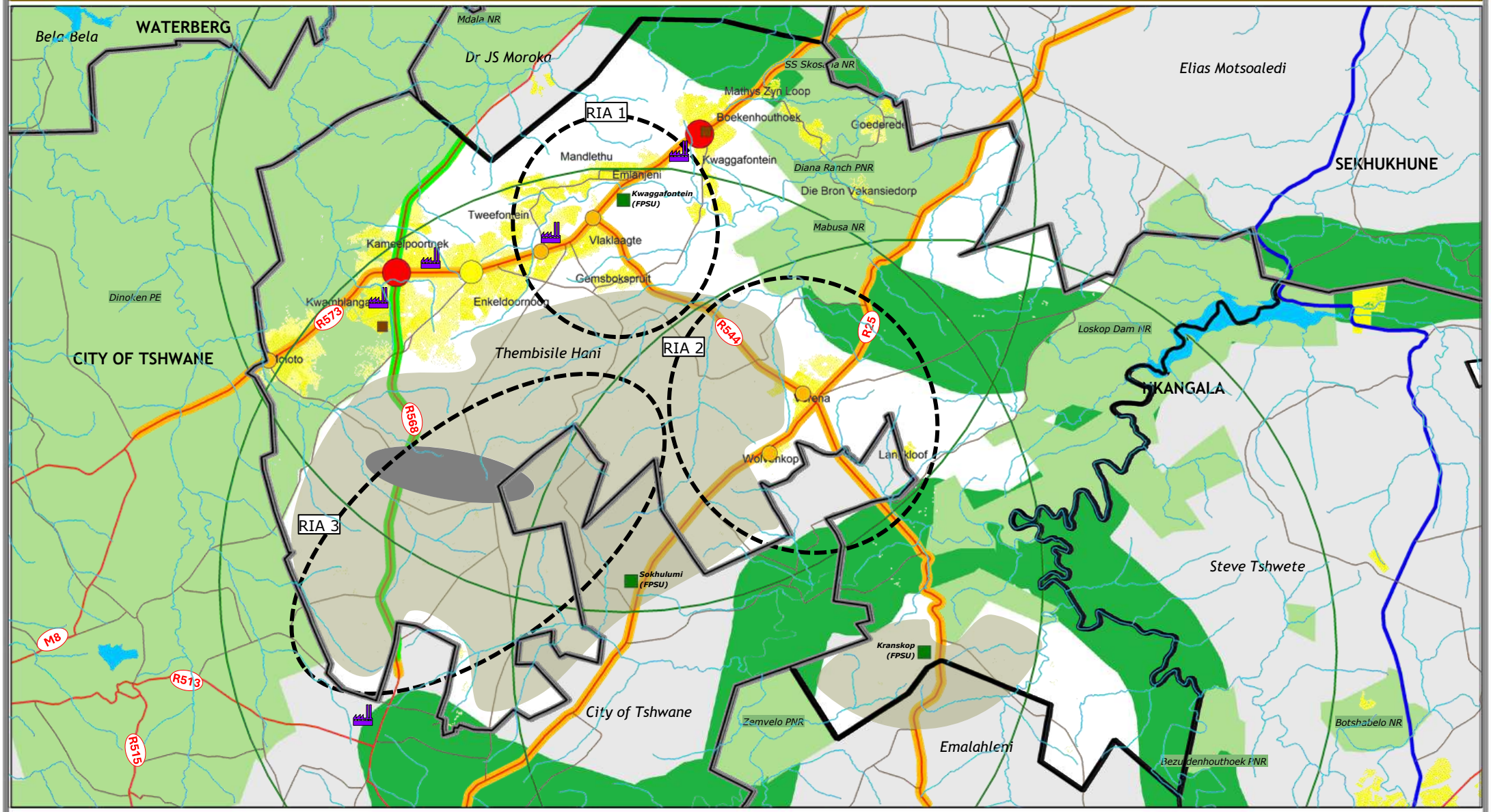
OBJECTIVE 1		Promote sustainability and responsible environmental management.
OBJECTIVE 2		Establish a Functional and Structured Hierarchy Interconnected Nodes.
OBJECTIVE 3		Enhance the Regional Movement System to improve accessibility and support economic and social integration.
OBJECTIVE 4		Plan and Establish Sustainable and Resilient Human Settlements
OBJECTIVE 5		Promote Economic Development By Leveraging Local Resources, Supporting Small Businesses and Attracting Investment
OBJECTIVE 6		Facilitate infrastructure development by improving access to essential services, upgrading existing facilities, and investing in sustainable and resilient infrastructure

4.2 SPATIAL CONCEPT

The Spatial Concept for Thembisile Hani Local Municipality is illustrated on **Figure 41**.

The Spatial Concept is informed by the Land Use Budget of the Thembisile Hani LM (*Section 4.2.1*).

SPATIAL DEVELOPMENT FRAMEWORK CONCEPT



- Thembisile Hani LM Boundary
- Local Municipality
- District Municipality
- National Roads
- Provincial Roads
- District Roads
- Regional Service Centre
- Second Order Service Centers
- Third Order Service Centers
- Administrative Node
- Tourism Corridor
- Main Road Links
- Towns and Settlements
- Industrial Node
- Mining
- Agricultural
- FPSU (30km)
- Rural Intervention Areas
- Protected Area/Environment
- Eco-Tourism Corridor
- Dams/Rivers

0 1 2 4 6 8 10 km

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Thembisile Hani SDF 2024

4.2.1 Thembisile Hani Land Use Budget

4.2.1.1 Population and Dwelling Unit Projections

Table 24 depicts the Population Projections per DM for the years 2030 and 2050. It is anticipated that the total population in the Nkangala DM will grow from 1,588 970 people in 2022 to 1,845 848 people in 2030 and further to 2,464 232 people in 2050.

It is notable that the growth by 2050 of the Thembisile Hani LM (693,685) is comparable to that of the Emalahleni LM (749,648).

In terms of the population increment, it is expected that the Thembisile Hani LM will grow with 77,108 people in the period from 2022-2030 and a further 185,329 people in the period 2030-2050. This growth translates to approximately 9,638 people per annum for the period 2022-2030 and 9,266 people per annum for the period 2030-2050. Thembisile Hani had the 5th largest population growth increment from 2001-2011 and the 4th largest growth increment from 2011-2022.

Tables 25 and 26 depict the Population and Dwelling Unit Projections per Functional Areas of the LM and it is projected that KwaMhlanga will continue to have the highest concentration of people in 2050, followed closely by Tweefontein and Kameelpoortnek. Based on the trends, it is expected that the

It is projected that Household Size will decrease from 3,9 people per household in 2024 to 3,8 people in 2030 and to 3,7 people in 2050.

Table 24: Mpumalanga Population Projections 2011-2050

	Population					Population Increment				Population Increment p.a.				Population Growth p.a.			
District Municipalities	2001	Census 2011	Census 2022	2030 Trend	2050 Trend	2001-2011	2011-2022	2022-2030	2030-2050	2001-2011	2011-2022	2022-2030	2030-2050	2001-2011	2011-2022	2022-2030	2030-2050
Gert Sibande DM	**900,007**	**1,043,194**	**1,283,459**	**1,473,428**	**1,874,861**	**143,187**	**240,265**	**189,969**	**401,433**	**14,319**	**21,842**	**23,746**	**20,072**	**1.5%**	**1.9%**	**1.7%**	**1.2%**
Chief Albert Luthuli LM	187,751	186,010	247,664	270,856	321,604	- 1,741	61,654	23,192	50,748	- 174	5,605	2,899	2,537	-0.1%	2.6%	1.1%	0.9%
Msukaligwa LM	124,812	149,377	199,314	230,177	308,744	24,565	49,937	30,863	78,567	2,457	4,540	3,858	3,928	1.8%	2.7%	1.8%	1.5%
Mkhondo LM	143,077	171,982	255,411	306,083	413,937	28,905	83,429	50,672	107,854	2,891	7,584	6,334	5,393	1.9%	3.7%	2.3%	1.5%
Pixley Ka Seme LM	80,737	83,235	115,304	137,273	165,949	2,498	32,069	21,969	28,676	250	2,915	2,746	1,434	0.3%	3.0%	2.2%	1.0%
Lekwa LM	103,265	115,662	119,669	140,044	177,060	12,397	4,007	20,375	37,016	1,240	364	2,547	1,851	1.1%	0.3%	2.0%	1.2%
Dipaleseng LM	38,618	42,390	35,980	39,326	43,468	3,772	- 6,410	3,346	4,142	377	- 583	418	207	0.9%	-1.5%	1.1%	0.5%
Govan Mbeki LM	221,747	294,538	310,117	349,670	444,099	72,791	15,579	39,553	94,430	7,279	1,416	4,944	4,721	2.9%	0.5%	1.5%	1.2%
Nkangala DM	**1,018,423**	**1,308,128**	**1,588,970**	**1,845,848**	**2,464,232**	**289,705**	**280,842**	**256,878**	**618,384**	**28,971**	**25,531**	**32,110**	**30,919**	**2.5%**	**1.8%**	**1.9%**	**1.5%**
Victor Khanye LM	56,335	75,452	106,149	122,839	149,124	19,117	30,697	16,690	26,285	1,912	2,791	2,086	1,314	3.0%	3.2%	1.8%	1.0%
Emalahleni LM	276,413	395,466	434,522	517,432	749,648	119,053	39,056	82,910	232,216	11,905	3,551	10,364	11,611	3.6%	0.9%	2.2%	1.9%
Steve Tshwete LM	142,772	229,831	242,031	269,124	332,592	87,059	12,200	27,093	63,468	8,706	1,109	3,387	3,173	4.9%	0.5%	1.3%	1.1%
Emakhazeni LM	43,007	47,216	50,165	55,019	68,356	4,209	2,949	4,854	13,337	421	268	607	667	0.9%	0.6%	1.2%	1.1%
Thembisile Hani LM	256,583	310,458	431,248	508,356	693,685	53,875	120,790	77,108	185,329	5,388	10,981	9,638	9,266	1.9%	3.0%	2.1%	1.6%
Dr JS Moroka LM	243,313	249,705	324,855	373,078	470,827	6,392	75,150	48,223	97,749	639	6,832	6,028	4,887	0.3%	2.4%	1.7%	1.2%
Ehlanzeni DM	**1,447,124**	**1,688,614**	**2,270,897**	**2,615,548**	**3,410,632**	**241,490**	**582,283**	**344,651**	**795,084**	**24,149**	**52,935**	**43,081**	**39,754**	**1.6%**	**2.7%**	**1.8%**	**1.3%**
Thaba Chweu LM	81,681	98,387	109,223	119,712	139,324	16,706	10,836	10,489	19,612	1,671	985	1,311	981	1.9%	1.0%	1.2%	0.8%
City of Mbombela	530,647	658,604	818,925	918,089	1,153,488	127,957	160,321	99,164	235,400	12,796	14,575	12,395	11,770	2.2%	2.0%	1.4%	1.1%
Nkomazi LM	334,668	393,030	591,928	709,272	987,931	58,362	198,898	117,344	278,659	5,836	18,082	14,668	13,933	1.6%	3.8%	2.3%	1.7%
Bushbuckridge LM	500,128	538,593	750,821	868,475	1,129,889	38,465	212,228	117,654	261,414	3,847	19,293	14,707	13,071	0.7%	3.1%	1.8%	1.3%
Mpumalanga	**3,365,554**	**4,039,936**	**5,143,326**	**5,934,824**	**7,749,725**	**674,382**	**1,103,390**	**791,498**	**1,814,901**	**67,438**	**100,308**	**98,937**	**90,745**	**1.8%**	**2.2%**	**1.8%**	**1.3%**
SA	**44,819,778**	**51,770,560**	**62,027,502**	**70,101,800**	**93,000,000**									**1.5%**	**1.7%**	**1.5%**	**1.4%**
MP% of SA	**7.5%**	**7.8%**	**8.3%**	**8.5%**	**8.3%**												

Source: 2001 Census, 2011 Census, 2022 Census, STATS SA per Municipality

Plan Associates Projections, based on incremental growth p.a. per LM. Assumption made on MP % contribution to SA . Used latest SA Projections. Also checked against previous study totals in MP.

Table 25: Thembisile Hani LM Functional Areas Dwelling Unit Projections, 2024-2050

Name	Census	Census adj. to Dwelling Unit Count	Current	Projections		Increment			Increment p.a.			Growth p.a.		
Functional Area	2011	2022	2024	2030	2050	2011-2024	2024-2030	2030-2050	2011-2024	2024-2030	2030-2050	2011-2024	2024-2030	2030-2050
Moloto	7,765	11,178	13,242	15,762	23,762	5,477	2,520	8,000	421	420	400	4.2%	2.9%	2.1%
Kameelpoortnek	11,865	17,752	18,009	20,829	29,229	6,144	2,820	8,400	473	470	420	3.3%	2.5%	1.7%
KwaMhlanga	13,814	21,852	22,166	26,006	38,006	8,352	3,840	12,000	642	640	600	3.7%	2.7%	1.9%
Tweefontein	9,758	17,127	17,484	20,784	30,784	7,726	3,300	10,000	594	550	500	4.6%	2.9%	2.0%
Vlaklaagte	10,436	14,158	14,577	16,377	22,177	4,141	1,800	5,800	319	300	290	2.6%	2.0%	1.5%
Kwaggafontein	10,785	12,716	12,716	13,496	15,896	1,931	780	2,400	149	130	120	1.3%	1.0%	0.8%
Mathys Zyn Loop	4,817	5,702	5,702	6,092	7,292	885	390	1,200	68	65	60	1.3%	1.1%	0.9%
Verena	5,231	10,051	10,051	11,791	17,391	4,820	1,740	5,600	371	290	280	5.2%	2.7%	2.0%
Thembisile NU	1,160	1,662	1,840	1,990	2,490	680	150	500	52	25	25	3.6%	1.3%	1.1%
Total Thembisile Hani LM	**75,631**	**112,198**	**115,787**	**133,127**	**187,027**	**40,156**	**17,340**	**53,900**	**3,089**	**2,890**	**2,695**	**3.3%**	**2.4%**	**1.7%**

Table 26: Thembisile Hani LM Functional Areas Population Projections, 2024-2050

Name	Census	Census Adj.	Current	Projections		Increment			Increment p.a.			Growth p.a.		
Functional Area	2011	2022	2024	2030	2050	2011-2024	2024-2030	2030-2050	2011-2024	2024-2030	2030-2050	2011-2024	2024-2030	2030-2050
Moloto	29,634	39,088	46,676	54,517	79,489	17,042	7,841	24,972	1,311	1,307	1,249	3.6%	2.6%	1.9%
Kameelpoortnek	46,814	66,203	67,001	76,267	103,951	20,187	9,266	27,684	1,553	1,544	1,384	2.8%	2.2%	1.6%
KwaMhlanga	53,493	78,851	80,023	92,220	130,458	26,530	12,198	38,237	2,041	2,033	1,912	3.1%	2.4%	1.7%
Tweefontein	41,931	68,000	69,484	81,253	117,016	27,553	11,769	35,763	2,119	1,961	1,788	4.0%	2.6%	1.8%
Vlaklaagte	44,862	58,943	60,686	67,564	89,785	15,824	6,878	22,221	1,217	1,146	1,111	2.4%	1.8%	1.4%
Kwaggafontein	46,957	54,505	54,505	57,430	66,387	7,548	2,925	8,958	581	487	448	1.2%	0.9%	0.7%
Mathys Zyn Loop	19,754	23,149	23,149	24,646	29,262	3,395	1,496	4,616	261	249	231	1.2%	1.0%	0.9%
Verena	22,173	40,548	40,548	47,181	68,586	18,375	6,633	21,405	1,413	1,106	1,070	4.8%	2.6%	1.9%
Thembisile NU	4,841	6,175	6,838	7,278	8,752	1,997	440	1,473	154	73	74	2.7%	1.0%	0.9%
Total Thembisile Hani LM	**310,459**	**435,463**	**448,910**	**508,356**	**693,685**	**138,451**	**59,446**	**185,329**	**10,650**	**9,908**	**9,266**	**2.9%**	**2.1%**	**1.6%**

4.2.1.2 Community Facilities Future Need

Based on the projections discussed above, the need for Community Facilities (as per the CSIR Guidelines for Small-Medium Towns/Regional Centres) in order to accommodate the future populations is shown on **Table 27.**

The required number of community facilities in order to accommodate future growth (up to 2050) of the Thembisile Hani LM is extensive and consists of 270 creches, 6 primary schools, 4 secondary schools, and 23 hospitals.

4.2.1.3 Land Required to Accommodate Growth

Table 28 illustrates the land that would be required to accommodate the growth of the Thembisile Hani LM for the Increments 2024 up to 2030 and 2030 up to 2050. This includes land required for residential purposes, business, retail, and the plethora of community and social facilities.

It is noted that in order to accommodate the future growth up to 2050; **5,224 ha of land will be required.**

Table 27: Future Community Facilities Need

Facilities	2024 Population					Increment: 2024-2030			Increment: 2030-2050			Total Increment 2024-2050			Total 2050 Complex			Community Facilities 2024-2050
	Requirement			CF Provided	Shortfall	Requirement			Requirement			Requirement			Requirement			Surplus/Deficit
	number	ha	%	number	number	number	ha	%	number	ha	%	number	ha	%	number	ha	%	number
Number of Units	**115 787**	**5 789**	**65%**			**17 340**	**867**	**68%**	**53 900**	**2 695**	**68%**	**71 240**	**3 562**	**68%**	**187 027**	**9 351**	**66%**	
Single Residential (500m² erven)	115 787	5 789	*100%*			17 340	867	*100%*	53 900	2 695	*100%*	71 240	3 562	*100%*	187 027	9 351	*100%*	
Population	**448 910**					**59 446**			**185 329**			**244 775**			**693 685**			
Nett residential Density	20					20			20			20			20			
Education		**356**	**4%**				**47**	**4%**		**147**	**4%**		**194**	**4%**		**550**	**4%**	
Small Crèche	187	4		19	(168)	25	0,5		77	2		102	2		289	6		(270)
Primary (including Grade R)	64	180		93	29	8	24		26	74		35	98		99	277		(6)
Secondary	36	172		51	15	5	23		15	71		20	94		55	266		(4)
Health Services		**15**	**0%**				**2**	**0%**		**6**	**0%**		**8**	**0%**		**23**	**0%**	
Primary Health Clinic	19	4		6	(13)	2	0		8	2		10	2		29	6		(23)
Community Health Centre/Hospital	7	11		2	(5)	1	1,5		3	4,6		4	6		12	17		(10)
Safety and Security		**10**	**0%**				**1**	**0%**		**4**	**0%**		**5**	**0%**		**15**	**0%**	
Police	7	7		4	(3)	1	1		3	3		4	4		12	12		(8)
Fire Station	7	2,2		1	(6)	1	0,3		3	0,9		4	1		12	3		(11)
Social /Cultural/Civic		**210**	**2%**				**1**	**0%**		**3**	**0%**		**4**	**0%**		**214**	**2%**	
Local Library	22	1		5	(17)	3	0,1		9	0,5		12	1		35	2		(30)
Thusong Centre/SASSA Paypoint*	7	1			(7)		-			-		-	-		7	1		(7)
Solid Waste Disposal Site	8	200			(8)		-			-		-	-		8	200		(8)
Municipal Office/Tribal Office	1	1		8	7		-			-		-	-		1	1		7
Magistrate's Court	2	1		2	-		-			-		-	-		2	1		-
Post Office/ICT Access Point	45	2			(45)	6	0,3		19	0,9		24	1		69	3		(69)
Communty Hall (large)	7	4		5	(2)	1	0,5		3	1,54		4	2		12	6		(7)

Notes: Standards based on CSIR Guidelines for Small-Medium Towns/Regional Service Centres

*Thusong Centre includes Home Affairs Office (Social Grants), Labour Office and functions as a community based "one stop" Development centre

Table 28: Land Required for Future Growth

Facilities	2024 Population Requirement			Increment: 2024-2030 Requirement			Increment: 2030-2050 Requirement			Total Increment 2024-2050 Requirement			Total 2050 Complex Requirement		
	number	ha	%	number	ha	%	number	ha	%	number	ha	%	number	ha	%
Number of Units	**115 787**	**5 789**	**65%**	**17 340**	**867**	**68%**	**53 900**	**2 695**	**68%**	**71 240**	**3 562**	**68%**	**187 027**	**9 351**	**66%**
Single Residential (500m² erven)	115 787	5 789	*100%*	17 340	867	*100%*	53 900	2 695	*100%*	71 240	3 562	*100%*	187 027	9 351	*100%*
Population	**448 910**			**59 446**			**185 329**			**244 775**			**693 685**		
Nett residential Density	20			20			20			20			20		
Business (m²)	**437 823**	**146**	**2%**	**40 918**	**14**	**1%**	**127 233**	**42**	**1%**	**168 151**	**56**	**1%**	**605 975**	**202**	**1%**
Small Free standing & Local retail centre (floor area in m²)	134 673	45		19 011	6		59 175	20		78 186	26		212 859	71	
Contribution to Neighbourhood	132 622	44		15 136	5		47 087	16		62 223	21		194 845	65	
Contribution to Community retail	125 677	42		6 771	2		20 971	7		27 742	9		153 419	51	
Contribution to retail Town Centre	44 852	15		-	-		-	-		-	-		44 852	15	
Offices (floor area in m²)	**43 782**	**15**	**0%**	**4 092**	**1**	**0%**	**12 723**	**4**	**0%**	**16 815**	**6**	**0%**	**60 597**	**20**	**0%**
Education		**356**	**4%**		**47**	**4%**		**147**	**4%**		**194**	**4%**		**550**	**4%**
Small Crèche	187	4		25	0		77	2		102	2		289	6	
Primary (including Grade R)	64	180		8	24		26	74		35	98		99	277	
Secondary/Combined	36	172		5	23		15	71		20	94		55	266	
Health Services		**15**	**0%**		**2**	**0%**		**6**	**0%**		**8**	**0%**		**23**	**0%**
Primary Health Clinic	19	4		2	0		8	2		10	2		29	6	
Community Health Centre/Hospital	7	11		1	1		3	5		4	6		12	17	
Safety and Security		**10**	**0%**		**1**	**0%**		**4**	**0%**		**5**	**0%**		**15**	**0%**
Police	7	7		1	1		3	3		4	4		12	12	
Fire Station	7	2		1	0		3	1		4	1		12	3	
Social /Cultural/Civic		**210**	**2%**		**1**	**0%**		**3**	**0%**		**4**	**0%**		**214**	**2%**
Local Library	22	1		3	0		9	0		12	1		35	2	
Thusong Centre/SASSA Paypoint*	7	1		-	-		-	-		-	-		7	1	
Solid Waste Disposal Site	8	200		-	-		-	-		-	-		8	200	
Municipal Office/Tribal Office	1	1		-	-		-	-		-	-		1	1	
Magistrate's Court	2	1		-	-		-	-		-	-		2	1	
Post Office/ICT Access Point	45	2		6	0		19	1		24	1		69	3	
Communty Hall (large)	7	4		1	0		3	2		4	2		12	6	
Sports and Recreation		**224**	**3%**		**30**	**2%**		**93**	**2%**		**122**	**2%**		**347**	**2%**
Sports Facilities and Parks (ha)		135			18			56			73			208	
Regional Parks (ha)		90			12			37			49			139	
Streets		**2 165**	**24%**		**308**	**24%**		**958**	**24%**		**1 266**	**24%**		**3 432**	**24%**
TOTAL		**8 930**	**100%**		**1 271**	**100%**		**3 952**	**100%**		**5 224**	**100%**		**14 154**	**100%**
Gross Density	**13**			**14**			**14**			**14**			**13**		

4.2.1.4 Projected Dwelling Unit Demand

Table 29 shows the Existing Dwelling Unit Demand (see *Section 3.8*), as well as the expected growth (as per projections) up to 2050 in order to project the expected demand for 2050, which translates to **113,617 Dwelling Units**.

The informal settlements represents the immediate demand, however; pro-active planning is required to address/prevent additional unplanned developments.

Table 29: Projected Dwelling Unit Demand

Name	Existing Demand			Expected Growth			Total Demand
Functional Area	Informal	Backyard / Rooms	Total	2024-2030	2030-2050	Total 2024-2050	2024-2050
Moloto	6,055	-	6,055	2,520	8,000	10,520	16,575
Kameelpoortnek	7,489	549	8,038	2,820	8,400	11,220	19,258
KwaMhlanga	11,982	-	11,982	3,840	12,000	15,840	27,822
Tweefontein	5,279	-	5,279	3,300	10,000	13,300	18,579
Vlaklaagte	2,185	310	2,495	1,800	5,800	7,600	10,095
Kwaggafontein	1,295	-	1,295	780	2,400	3,180	4,475
Mathys Zyn Loop-A	836	-	836	390	1,200	1,590	2,426
Verena	4,557	-	4,557	1,740	5,600	7,340	11,897
Thembisile NU	1,840	-	1,840	150	500	650	2,490
Total Thembisile Hani LM	**41,518**	**859**	**42,377**	**17,340**	**53,900**	**71,240**	**113,617**

4.2.1.5 Projected Dwelling Units Supply

The Dwelling Units Supply comprises the following:

- Vacant Erven in Existing Townships (see *Section 3.8.2.1):* **6,892 erven**;
- Vacant Erven in New Townships (see *Section 3.8.2.2):* **8,956 erven**);
- Strategic Development Areas (see *Section 3.8.2.3*): **2,767 erven**).

Furthermore; three additional SDA's are proposed for future expansion. These SDA's are indicated as numbers 8.1; 8.2; 9 and 10 on **Table 30**, which summarises the Development Potential of each SDA.

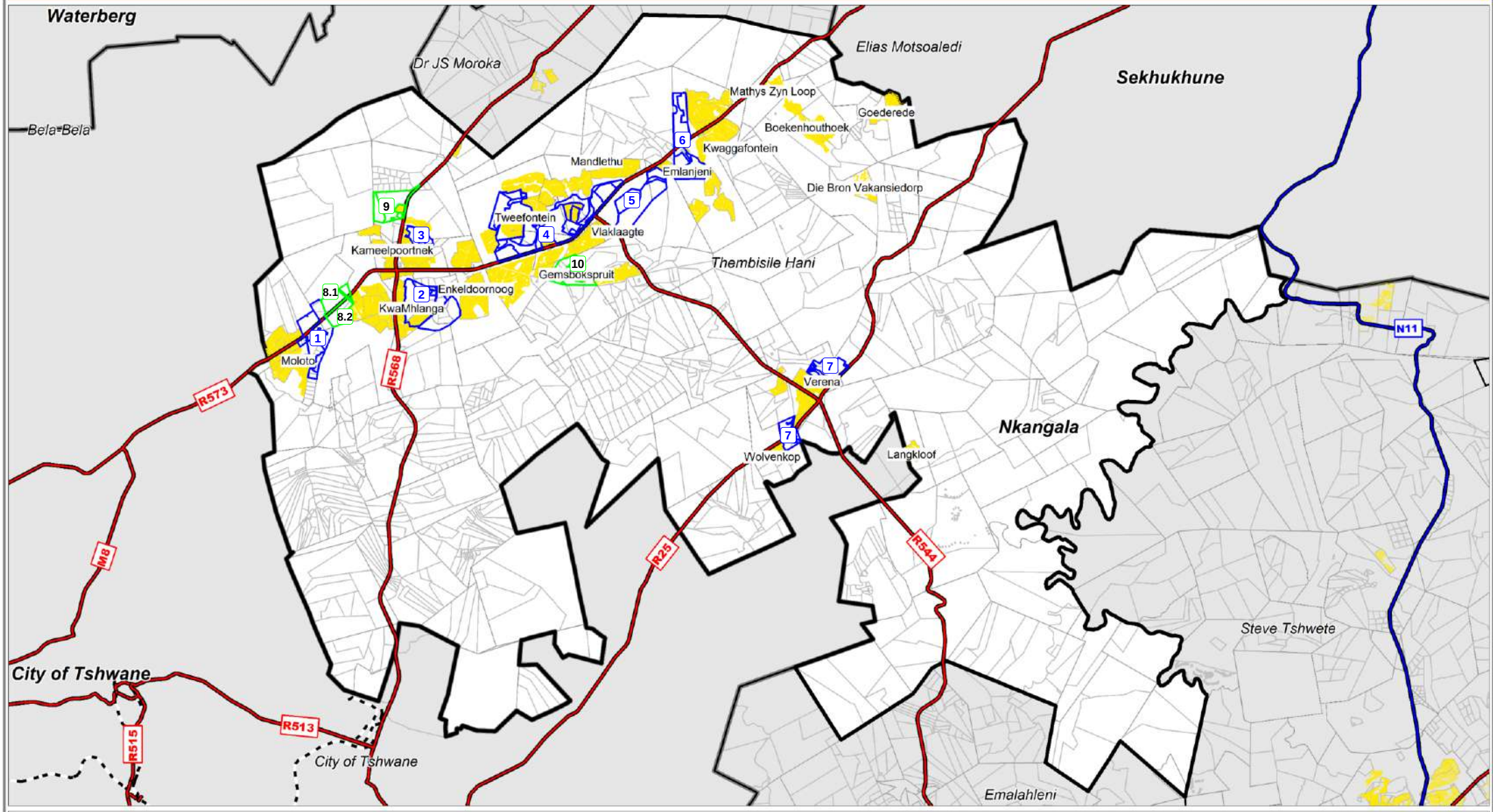
The additional SDA's increase the development yield from 33,142 units to 47,334 units.

These new proposed SDA's are shown in **Figure 42.**

Table 30: SDA 1 to 10 Development Potential

SDA	Developable (ha)	Residential Area (ha)	Number of erven (500m²)	Nett Density (du/ha)	Number of Dwelling Units	Expected Population	HH size
1	351	230	4,599	20	4,599	17,829	3.9
2	75	49	981	20	981	3,802	3.9
3	68	44	890	20	890	3,450	3.9
4	751	488	9,767	20	9,767	37,867	3.9
5	573	377	7,541	20	7,541	29,237	3.9
6	361	236	4,725	20	4,725	18,317	3.9
7	589	415	4,640	11	4,640	17,989	3.9
Subtotal 1	**2,767**	**1,840**	**33,142**	**18**	**33,142**	**128,492**	**3.9**
8.1	209	137	2,749	20	2,749	10,656	3.9
8.2	210	138	2,762	20	2,762	10,709	3.9
9	356	234	4,682	20	4,682	18,153	3.9
10	304	200	3,999	20	3,999	15,503	3.9
Subtotal 2	**1,078**	**710**	**14,192**	**20**	**14,192**	**55,021**	**3.9**
Total	**3,846**	**2,549**	**47,334**	**19**	**47,334**	**183,513**	**3.9**

STRATEGIC DEVELOPMENT AREAS: EXISTING AND PROPOSED



- Thembisile Hani LM Boundary
- Cadastral (Farms / Parent Farms)
- Local Municipality
- District Municipality
- National Roads
- Provincial Roads
- Railway
- Towns and Settlements
- Existing Strategic Development Areas
- Proposed Strategic Development Areas

0 1,5 3 6 9 12 15 km

N

Thembisile Hani SDF

2024

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Table 31 below provides a summary of the Total Land Supply for the Thembisile Hani LM and there is a **Total Supply of 68,182 units up to 2050.**

Table 31: Total Land Supply

Name	Vacant Erven			Land Audit												
Functional Area	Existing Township	New Township	Total	SDA 1	SDA 2	SDA 3	SDA 4	SDA 5	SDA 6	SDA 7	SDA 8.1	SDA 8.2	SDA 9	SDA 10	Total	Total
Moloto	568		568	4,599							2,749				7,347	7,915
Kameelpoortnek	689	517	1,206			890							4,682		5,572	6,778
KwaMhlanga	417	3,400	3,817		981							2,762			3,743	7,560
Tweefontein	2,107	1,094	3,201				9,767								9,767	12,968
Vlaklaagte	60	1,977	2,037					7,541						3,999	11,540	13,577
Kwaggafontein	678		678						4,725						4,725	5,403
Mathys Zyn Loop-A	723		723												-	723
Verena	1,650	1,968	3,618							4,640					4,640	8,258
Thembisile NU			-												-	-
Total Thembisile Hani LM	**6,892**	**8,956**	**15,848**	**4,599**	**981**	**890**	**9,767**	**7,541**	**4,725**	**4,640**	**2,749**	**2,762**	**4,682**	**3,999**	**47,334**	**63,182**

4.2.1.6 Dwelling Unit Demand vs. Supply

Table 32 represents the Dwelling Unit Demand vs. the Supply for the period 2024 up to 2050.

If the current development trend continues there may be a deficit of land in most areas, with the exception of Vlaklaagte (surplus of 5,977 units) and Kwaggafontein (2,223 units). The total deficit for the LM is estimated at 12,615 units, with majority of the units being required in KwaMhlanga (8,280 units); Kameelpoortnek (4,442 units); and Verena (3,639 units).

Based on the Land Use Budget; the Thembisile Hani LM may have enough land for development up to the year 2045, which includes the three additional SDA's.

Table 32: Thembisile Hani Dwelling Unit Demand vs. Supply

Name	Demand (Dwelling Units)	Supply (Dwelling Units)																In situ	Demand vs Supply					
	Total Demand	Vacant Erven			Land Audit												Total Supply	Existing Demand	Demand	Surplus/ Deficit	Demand	Surplus/ Deficit	Deficit
Functional Area	2024-2050	Existing Township	New Township	Total	SDA 1	SDA 2	SDA 3	SDA 4	SDA 5	SDA 6	SDA 7	SDA 8.1	SDA 8.2	SDA 9	SDA 10	Total	2024-2050	2024-2030	Growth 2024-2030	2024-2030	Growth 2030-2050	2030-2050	Enough Land up to
Moloto	**16,575**	568	-	568	4,599	-	-	-	-	-	-	2,749	-	-	-	7,347	**7,915**	**6,055**	2,520	5,395	8,000	-2,605	2043
Kameelpoortnek	**19,258**	689	517	1,206	-	-	890	-	-	-	-	-	-	4,682	-	5,572	**6,778**	**8,038**	2,820	3,958	8,400	-4,442	2039
KwaMhlanga	**27,822**	417	3,400	3,817	-	981	-	-	-	-	-	-	2,762	-	-	3,743	**7,560**	**11,982**	3,840	3,720	12,000	-8,280	2036
Tweefontein	**18,579**	2,107	1,094	3,201	-	-	-	9,767	-	-	-	-	-	-	-	9,767	**12,968**	**5,279**	3,300	9,668	10,000	-332	2049
Vlaklaagte	**10,095**	60	1,977	2,037	-	-	-	-	7,541	-	-	-	-	-	3,999	11,540	**13,577**	**2,495**	1,800	11,777	5,800	5,977	
Kwaggafontein	**4,475**	678	-	678	-	-	-	-	-	4,725	-	-	-	-	-	4,725	**5,403**	**1,295**	780	4,623	2,400	2,223	
Mathys Zyn Loop-A	**2,426**	723	-	723	-	-	-	-	-	-	-	-	-	-	-	-	**723**	**836**	390	333	1,200	-867	2036
Verena	**11,897**	1,650	1,968	3,618	-	-	-	-	-	-	4,640	-	-	-	-	4,640	**8,258**	**4,557**	1,740	1,961	5,600	-3,639	2037
Thembisile NU	**2,490**	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	**-**	**1,840**	150	-150	500	-650	
Total Thembisile Hani LM	**113,617**	**6,892**	**8,956**	**15,848**	**4,599**	**981**	**890**	**9,767**	**7,541**	**4,725**	**4,640**	**2,749**	**2,762**	**4,682**	**3,999**	**47,334**	**63,182**	**42,377**	**17,340**	**41,285**	**53,900**	**-12,615**	2045

4.4 SPATIAL DEVELOPMENT PROPOSALS

Figure 43 depicts the Spatial Development Framework for the Thembisile Hani Local Municipality.

The sections below describe the various development proposals for the Thembisile Hani LM, as per the Six Strategic Objectives.

4.4.1 Spatial Proposals: Objective 1

Objective 1	Promote sustainability and responsible environmental management.

The environmental wellbeing of the Thembisile LM is a key requirement towards long term economic sustainability and diversity of the economy of the LM.

The following actions are part of the strategy aimed at achieving the objectives above.

Action 1.1: Manage Urban and Rural Development through appropriate application of Nkangala Bioregional Plan Guidelines

- Figure 43 depicts the Thembisile Hani LM SDF which includes the CBA and Conservation Areas (identified from the Nkangala Bioregional Plan).
- These Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs) need to be considered in all development applications within the Thembisile Hani LM and are intended to inform decision-making regarding developments, their location and context, and to guide planning, environmental assessments, authorisations and resource management within the municipal area.
- **Tables 33** and **34** provide a summary of the proposed Land Management Objectives and Appropriate Land Uses to be allowed in the various Terrestrial and Freshwater Biodiversity Areas.
- For legibility purposes the Composite Thembisile Hani LM SDF only depicts the main ecological corridors (mostly following drainage lines), dams and the proclaimed nature reserves in the municipal area.

Annexure B in this report comprises more detailed land use management guidelines for these areas as defined in the Nkangala Bioregional Plan.

COMPOSITE SPATIAL DEVELOPMENT FRAMEWORK

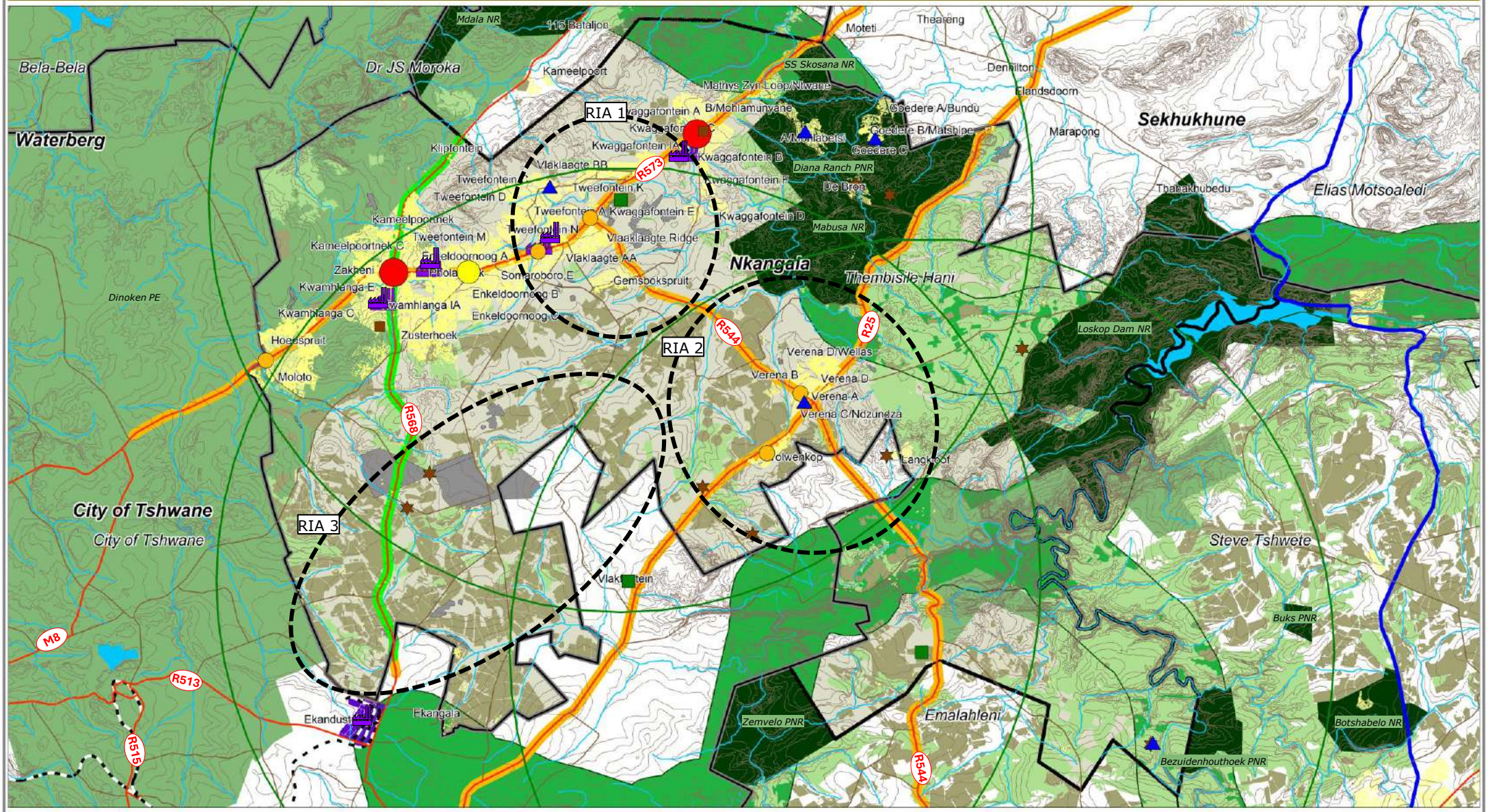


Table 33: Land Use Guidelines for Terrestrial Critical Biodiversity Areas

Map Category	Desired Management Objective	General Guidelines	
Protected Areas	According to Protected Area Management Plans	❖ All operational aspects of managing these areas must be subject to their main purpose, which is to protect and maintain biodiversity and ecological integrity, and should be governed by a formally approved protected area management plan. ❖ The management plan must identify allowable activities, which should be consistent at least with the CBA Irreplaceable Category; the location of these allowable activities should be captured in a zonation plan in the management plan. ❖ Activities relating to the construction of roads, administrative or tourism infrastructure and services (such as water reticulation systems, power lines and the likes) that are required ❖ to support the primary function of the protected area and its allowable activities, must be subject to at least a basic scoping report, or a full EIA, as specified by NEMA, and the protected area management plan.	
Critical Biodiversity Areas (CBA)	Maintain in a natural or near- natural state with no further loss of natural habitat.	❖ Allow low-impact land uses that are compatible with maintaining CBAs in a natural state, with no loss of habitat or species. ❖ Earmark CBAs as priority sites for land care projects such as Working for Water, Working for Wetlands, and Working on Fire and other compatible, conservation activities. ❖ Avoid activities identified in the three Listing Notices (R983, R984 and R985), if at all possible, as they are in conflict with the desired management objectives for terrestrial CBAs. Where they cannot be avoided, the impacts of these activities should be minimised and remedied, and EIA conditions should be strictly applied by the competent authority. ❖ In larger geographically sensitive areas, Environmental Management Frameworks (provided for under sections 24 (5)(i) and 44 of NEMA) should be developed and implemented to ❖ inform environmental authorisations, promote sustainability, secure biodiversity and ecological functionality and promote co-operative governance. The information and maps of the NBRP should be used to promote and support compilation of any Environmental Management Frameworks.	
Sub-Categories	**Desired Management Objective**	**General Guidelines**	**Specific Guidelines for meeting Minimum Requirements**
Irreplaceable CBAs	Maintain in a natural or near- natural state with no further loss of natural habitat.	❖ Biodiversity loss and land-use change in Irreplaceable CBAs should be monitored as a matter of priority, to prevent unauthorized land-use change or degradation by neglect or ignorance. ❖ Where appropriate, these areas should be incorporated into the formal Protected Area system through biodiversity stewardship agreements (contract Nature Reserves or Protected Environments). ❖ Ideally, conservation management activities should be the primary land use in all irreplaceable areas, OR they should at least be managed in ways that have no negative impact on	❖ In general, Irreplaceable sites must be avoided in terms of the mitigation hierarchy. ❖ A specialist study must be part of the Basic Assessment, Scoping or EIA process for all land-use applications in these areas, using the services of an experienced and locally knowledgeable biodiversity expert. ❖ Applications for land use of any kind should be referred to the biodiversity specialists in MTPA and DARDLEA for evaluation. ❖ Degraded areas included in the land parcel, but not the

		species, ecosystems or ecosystem services. ❖ Extensive (widespread, low-intensity) livestock or game ranching, if well-managed, is compatible with the land uses are acceptable if they take into account the specific biodiversity features (e.g. infestation by invasive alien plants) at each site, if they comply with recommended stocking rates, if any associated infrastructure (required to ○ support the ranching activities) is kept to low levels.	land use proposal, should be restored to natural ecosystem functioning where possible. ❖ Provision of alternative land as a 'biodiversity offset' in exchange for biodiversity loss in these areas CANNOT be considered except in exceptional circumstances and would need to be considered on a case by case basis.
Optimal CBAs (Referred to as important and Necessary in MBCP)	Maintain in a natural or near- natural state with no further loss of natural habitat.	❖ Acceptable land uses are those that are least harmful to biodiversity, such as conservation management, or extensive livestock or game farming (see below). Large- scale cultivation, mining and urban or industrial development are not appropriate. ❖ Extensive (widespread, low-intensity) livestock and game ranching, if well-managed (see above), is compatible with the desired management objectives for these areas.	❖ If small-scale land-user change is unavoidable, it must be located and designed to be as biodiversity-sensitive as possible. ❖ A specialist study must be part of the Basic Assessment, Scoping or EIA process for all land-use applications in these areas, using the services of an experienced and locally knowledgeable biodiversity expert. ❖ Provision for biodiversity offsets in exchange for biodiversity loss should only be considered as a **last resort** and at a ratio consistent with national policy.
Ecological Support Areas	The desired management objective for all ESAs is to maintain the land in a near-natural and ecologically functional state, even if some loss of ecosystem composition or structure takes place.		
Landscape and Local- Scale Corridors	Maintain ecological functionality in support of biodiversity connectivity by retaining the existing natural vegetation cover in a healthy ecological state and restore 'critical-linkages' where necessary.	❖ A greater range of land uses over wider areas is appropriate, subject to an authorisation process that ensures the underlying biodiversity objectives are not compromised.	❖ Certain activities covered under Listing Notice 3 trigger the EIA process in ESA corridors. ❖ Restoration of corridors is important, particularly in terms of the Working for Water programs. ❖ The impact of land-use proposals on the functionality of ecological corridors must be assessed by the relevant biodiversity specialist as part of the EIA/Scoping report. ❖ Impenetrable fences that restrict animal movement should be discouraged.

Protected Area Buffers	To minimise the impacts of surrounding land uses on the ecological integrity, character and tourism potential of protected areas.	❖ When assessing the impacts of proposed land uses in protected area buffers, consideration needs to be given to both direct (e.g. cultivation and the loss of habitat) and indirect impacts (e.g. light and noise pollution).	❖ Buffer distances vary according to the nature of the Protected Area, as follows: ◦ Nature Reserves: 5 km buffer as indicated in Listing Notice 3. ❖ Land-use change applications within the buffer zone may be referred to the protected area manager or ecologist for evaluation. ❖ A viewshed analysis of the potential visual impact of the proposed land use on adjacent protected areas should be undertaken where necessary.
Other Natural Areas	N/A	❖ These areas have the greatest flexibility in terms of management objectives and permissible land uses. ❖ Where possible, avoid modifying any remaining natural habitat by locating land uses, including cultivation and plantations, in already-modified areas. ❖ Authorisation may be required for high-impact land uses (such as intensive industry or urban development) and standard application of EIA regulations and other planning procedures is required.	
Heavily or Moderately Modified Areas	N/A	❖ Areas with no natural habitat remaining are preferred sites for higher-impact land uses, and new projects should be located in these areas before modifying any remaining natural habitat. ❖ Restoration should be prioritised where heavily modified areas occur close to land of high biodiversity value, or are located such that they could potentially serve useful ecological connectivity functions (such as in ecological corridors). ❖ When locating land uses in these modified areas, consider the off-site impacts they may have on neighbouring areas of natural habitat, especially if these are of high biodiversity value. For example, controlling use of pesticides in modified areas, because of the impacts on neighbouring areas of natural habitat. ❖ Encourage landowners and developers to use indigenous plants, especially trees, where aesthetic or functional options exist. ❖ Stabilise ecosystems and manage them to restore ecological functionality, particularly soil carbon and water-related functionality, using indigenous plant cover. Old lands should be burnt and grazed appropriately.	

Table 34: Land Use Guidelines for Freshwater Critical Biodiversity Areas

Map Category	Desired Management Objective	General Guidelines	Specific Guidelines for meeting Minimum Requirements
All Freshwater CBAs	Maintain in a natural or near- natural state with no loss of ecosystems, functionality or species. Where they are currently degraded, they should be rehabilitated, with no further degradation of ecosystem condition	❖ Freshwater CBAs should be maintained in good ecological condition, and those that are degraded should ideally be rehabilitated to a good condition. ❖ Land-use practices or activities that will lead to deterioration in the current condition of a freshwater CBA, or that will make rehabilitation difficult, are not acceptable. ❖ Any proposed land-use change must be subject to the EIA process as it is likely to impact on the ecological drivers of the river or wetland ecosystem and can, potentially, alter its functioning or lead to loss of species. ❖ Specialist studies by a freshwater ecologist should be conducted if there is a watercourse that is likely to be affected.	❖ All questions about land-use change and its impact on water supplies must be referred to the Department of Water and Sanitation (DWS). ❖ National Water Quality Standards are set by DWS and return flows (of effluent) from any land use, are subject to these. ❖ The process of determining the "Ecological Reserve" flow, developed by DWS, is an essential tool in managing water use so that rivers can survive as ecosystems. ❖ All land-use activities should also be subject to the accepted standards set for construction of structures like bridges, culverts and dams. ❖ Ideally, effluent released should be aligned with Resource Quality Objectives, as determined by a Reserve Determination, or determined on the basis of species sensitivities. ❖ **A buffer of 100 m should be used to buffer rivers and wetlands, unless DWS's river/ wetland buffer tool has been applied.** ❖ **Mining should not take place within 1,000 m of a freshwater CBA buffer.**
CBA Rivers	Maintain in a natural or near- natural state with no loss of ecosystem functionality or species.	❖ There is no flexibility in land-use options in this category. ❖ Any activities that may impact on CBA rivers, even upstream or in sub-catchments, need to be avoided, or impacts mitigated if they cannot be avoided. ❖ Any damaging activities within CBA river buffers must be avoided. ❖ A 100 m buffer is the greater of the delineated riparian area or 100 m measured from the top of bank.	
CBA Aquatic Species	Maintain in a natural or near- natural state with no loss of species or ecosystems.	❖ Avoid the use of pollutants such as pesticides and other agricultural toxins. ❖ There are few appropriate land-use options as any loss of habitat could result in extinction of threatened freshwater-dependent invertebrate species.	
CBA Wetlands	Maintain in a natural or near- natural state with no loss of species or ecosystem functionality.	❖ If the current ecological condition is good (either natural and unmodified, or largely natural with only small change in habitats and biota), then this condition needs to be maintained. ❖ If the current ecological condition is fair to poor (i.e. moderately to severely degraded with significant loss of natural habitat, biota and ecosystem functions), then this needs to be improved through rehabilitation measures. ❖ Refer to the NFEPA Implementation Manual for specific guidelines (for example, mining should not take place within 1 km	

		of the boundary of the buffer around a FEPA wetland). ❖ Any further loss of area or ecological condition must be avoided, including in a 100 m generic buffer around the wetland edge.
ESAs		
ESA Important Sub- Catchments and Fish Support Areas	Maintain in a natural or near- natural state with limited loss of ecosystems or functionality, but with-out lowering its Present Ecological State. Where there is a FSA for a fish species, more	❖ Manage the cumulative impacts of land-use activities in the sub-catchment (including land-based activities), ensuring no further deterioration of the ecological state of river FEPAs. ❖ In the case of Fish Support Areas, apply authorisation requirements more stringently. Ensure that freshwater specialist studies are conducted in ESA Fish Support Areas. ❖ Maintain flow rates in streams in agricultural catchments in good condition, by managing land-use practices to mitigate the impacts of stream-flow reduction and ensuring that the extent of agriculture (and forestry) in the catchment do not exceed 30-50% of land surface areas. ❖ **Generic buffers of 100 m should be established around streams and wetlands within these catchments.** These buffers can be refined based on a site visit and applying DWS's wetland delineation tool. ❖ **Land-**use practices or activities that are not consistent with keeping natural habitat and biota intact in ESA Important sub-catchments are not acceptable.

Action 1.2: Create GIS based Bioregional Plan Overlay Zones and use BGIS LUDS Tool to inform Land Use Decisions

Overlay zones should be developed for the most critical environmental features noted in the Bioregional Plan. These need to be incorporated into municipal planning systems (GIS) and should be used as decision support tools when land use applications are considered.

In this regard the Land Use Decision Support (LUDS) Tool developed by SANBI could be utilised to great effect.

The LUDS Tool extracts the most important biodiversity planning information for an area from national and regional spatial datasets, thereby facilitating local deliberations and decision-making processes when assessing the possible impacts of development or land-use changes.

The LUDS tool has been designed as a series of three steps, which use the BGIS website and its online maps. Each step links to background information and specific instructions as summarised in the **Info Box 2**:

Info Box 2: Thembisile Hani LUDS Tool User Instructions

THEMBISILE HANI LUDS TOOL
LUDS Step 1: Find the appropriate BGIS online map (LUDS map) for the municipality
This step is done in the BGIS website's Municipal Biodiversity Information Index. ❖ Open the Municipal Biodiversity Information Index by clicking on the "Municipal" tab on the BGIS website. ❖ Click on one of South Africa's nine provinces on the map. ❖ Select a municipality by either clicking on the province map or selecting from the box below it. ❖ Links which launches the appropriate BGIS online map for Land Use Decision Support (LUDS map) in your selected municipality may be found either under "Map Tools" in the left-hand column or "Land Use Decision support" in the main text.
LUDS Step 2: Select an area for analysis
This step must be completed in LUDS map for the specific municipality selected in LUDS Step 1. ❖ Click on the "Land Use Decision Support (LUDS)" tab on the tool bar. ❖ Click on the "LUDS Tool" button to initialise the tool which will open in a left-hand information pane of the map viewer. ❖ The tool guides user on how to zoom and pan to the area on the map he/she wishes to analyse. ❖ Using one of the analysis mark-up tools the user can then draw the analysis area on the map.
LUDS Step 3: Produce a LUDS report
This step is mostly automated and takes place as a continuation of LUDS Step 2 in the LUDS map: ❖ The map automatically zooms into the analysis area drawn. ❖ User will be asked to supply BGIS login email address and a few details about the envisaged development. ❖ System then analyses the analysis area against a set of pre-defined national and regional layers that coincide spatially with that location. ❖ The results of the analysis are then incorporated into a PDF file which on completion can be downloaded. ❖ User can create a map PDF by using the "Print map" tool.

Action 1.3: Implement Flood Control Measures

In terms of Flood Risks associated with the Thembisile Hani LM (see *Section 2.2.6*), the Moloto Corridor is relatively low (low and moderate risk), with the exception of the areas around Kwaggafontein (high risk) while the southern parts of the LM, south of Verena, are considered high-risk areas, with parts ranked as very-high risk.

Table 35 shows a number of mitigation factors which should be considered for the LM (as per the Mpumalanga Flood Management Strategy, 2024)

Table 35: Flooding Mitigations for High and Very-High Risk Areas

FLOODING MITIGATIONS FOR THEMBISILE HANI LM	
HIGH RISK	**MODERATE RISK**
❖ Control discharge at dams. ❖ Limiting sewerage contamination. ❖ Afforestation. ❖ Wetland restoration. ❖ Installing Storm water pumps aimed at getting water off the streets. ❖ Regrading property by adjusting the building foundation to allow water to flow pass the building. ❖ Upgrade roads and bridges	❖ Dredging of silt along river banks before a major rain event to increase the river carrying capacity. ❖ Building Levees that along the banks of a river and streams: NB: Levees are barriers made from earth, wood, rock or concrete aimed at the protection of communities from flooding. ❖ Installing Solid fences. ❖ Sealing doors with solid boards ❖ Upgrade roads and bridges ❖ Desilt gutters and drains ❖ Install flooding foundation vents in houses to allow water to flow through the house than to pool around it.

Action 1.4: Implement Climate Change Strategic Objectives and Mitigation Measures

The Climate Change Vulnerability Assessment that was done for the LM (see *Section 2.4.4*) indicated that the Socio-Economic Vulnerability, which is the vulnerability of households with regards to household composition, education and health, access to basic services and safety and security; is very high.

The Economic, Physical and Environmental Risk of the Thembisile Hani LM was very low; and Climate Change Response Strategies, specifically surrounding human health and human settlements, were formulated to mitigate the risks which are shown in **Table 36.**

Table 36: Climate Change Response Strategies

CLIMATE CHANGE RESPONSE STRATEGIES: SOCIO-ECONOMIC VULNERABILITY
1 HUMAN HEALTH
1.1 Manage the Impacts of increased heat stress
❖ Identify communities that have the least capacity to respond to increased temperatures. ❖ Conduct awareness campaigns on the health risks of high temperatures and inform on appropriate responses such as improved ventilation and promotion of behaviours that increase resilience. ❖ Commission a reliable early warning system to alert communities and industries on the possible occurrences of high temperatures. ❖ Introduce, enhance and integrate surveillance systems to monitor changes in climate and climate-related diseases. Systems should include a weather watch system, accurate record keeping of climate related illnesses, such as heat-related illnesses and vector-borne, water-borne and food-borne illnesses.

❖ Develop a health data-capturing system that records data both at spatial and temporal scales and that ensures that information collected can be imported into multiple-risk systems.
1.2 Manage the increasing occupational health problems
❖ Conduct climate change impact assessment on occupational health. ❖ Identify and profile the groups that are most vulnerable to heat stress and dehydration. ❖ Conduct awareness campaigns on the health risks of high temperatures in the workplace and inform on appropriate responses such as improved ventilation and promotion of behaviours that increase resilience. ❖ Commission a reliable early warning system that will alert industries and businesses on extreme weather events in order to manage exposure of employees.
2 HUMAN SETTLEMENTS
2.1. Manage potential increased isolation of rural communities
❖ Identify alternative access routes to rural communities. ❖ Identify roads at risk of flooding and erosion and prioritise those for upgrading and maintenance. ❖ Identify local responses that will reduce isolation of rural communities. ❖ Build climate change resilient road infrastructure that serves as a link for rural areas. ❖ Implement flooding drainage systems that will reduce impacts on rural roads. ❖ Develop economic nodes and improved service provision in rural areas to improve connectivity.

Further to the above Climate Change Response Strategies, the following more detailed Climate Change Mitigation Measures are proposed to be implemented in the Thembisile Hani LM (see **Table 37**).

Table 37: Proposed Mitigation Interventions for the Thembisile Hani LM

SECTOR	PROPOSED MITIGATION INTERVENTIONS	DETAILS OF THE INTERVENTIONS
Energy	Renewable Energy	Build Solar parks that will feed electricity to the National Grid, use of Solar in residential areas and industry
	Energy Efficiency (EE)	Refurbish buildings (Government buildings, hospitals, clinics and schools with EE equipment)
		Refurbish streetlights with LED lights
		Encourage EE by industry processes
Human Settlements	Insulate RDP Houses	To reduce heating and air conditioning needs for human comfort
	Renewable Energy	Install Solar Water Heaters or heat pumps in Residential areas (existing and new houses and RDP houses)
	Energy Efficiency	Refurbish residential areas with LED lighting
Agriculture	Smart Agriculture	Agricultural practices that reduce methane emissions
		Encourage organic farming (Introduce vermiculture – organic manure)
Transport	Public Transport	Prioritize comprehensive Taxi/bus public transport system
	Introduce bicycle lanes	Encourage bicycle use / Non-Motorized Transport (NMT)

SECTOR	PROPOSED MITIGATION INTERVENTIONS	DETAILS OF THE INTERVENTIONS
Waste Management	Waste to Energy Recycling	Convert Landfill gas to electricity
		Use waste to generate Biodiesel and Biogas (Biofuels)
		Reduction, Recycling, Reuse of waste material
		Separation at Source
		Introduce Manufacturing Plant industries using Recycled materials to create jobs
Biodiversity	Plant indigenous trees to act as carbon emissions sinks	Remove invasive alien plant species and plant indigenous plants
	Protect parks and open spaces to maintain their role as carbon sinks	e.g., Municipal Open Space System
Commercial and Industry	Energy Efficiency	Encourage and incentivize EE initiatives by industries

Action 1.5: Mining Rehabilitation

It is recommended that procedures be put in place to ensure collective (Thembisile Hani LM, DMR and Mpumalanga Tourism and Parks Agency) monitoring of the following mining related matters in the Thembisile Hani LM area:

- Issuing of mining licenses;
- Continuous operational compliance with mining license requirements/conditions;
- Continuous monitoring of mining rehabilitation processes and water quality in mining areas.

Activity 1.6: Manage Sand Mining Activities

It is proposed that strong measures be put in place to manage and regulate sand mining activities within the Thembisile Hani LM. The following measures are proposed:

- By-Law Enforcement:
  - The Municipality can utilize its Land Use Management By-Law to regulate sand mining. Strict enforcement of the By-Law is essential to ensure compliance and prevent illegal operations.
- Environmental Impact Assessments:
  - Ensure that all activities that trigger a listed activity in terms of NEMA comply with the necessary regulations.
- Community Engagement and Awareness:
  - Inform Communities about the environmental impact of uncontrolled sand mining such as flooding risks, erosion, destruction of high potential agricultural areas, etc.
  - Alternative economic opportunities: provide alternative employment and livelihood programmes to reduce dependence in sand mining (agriculture, tourism, etc).

4.4.2 Spatial Proposals: Objective 2

Objective 2  Establish a Functional and Structured Hierarchy of Interconnected Nodes

Action 2.1: Promote Development and Investment in accordance with the Thembisile Hani LM Settlement Hierarchy

It is important to define a range of well-located activity nodes / settlements with the very specific goal to guide and direct public and private investment towards these areas (spatial targeting), and to optimise agglomeration benefits to be derived from such clustering of activities.

These settlements/nodes should serve as focal points for attracting a diverse range of land uses including housing, community facilities and economic activities (job opportunities). Activity nodes are also important public transport destinations.

Table 38 outlines the proposed hierarchy of settlements within the Thembisile Hani LM.

All these settlements should be carefully planned, maintained and managed as these area represent the major areas of future population growth, service delivery and economic development within the Thembisile Hani LM.

Table 38: Thembisile Hani Hierarchy of Settlements

NO.	SETTLEMENT	HIERARCHY	COMMUNITY FACILITIES	ECONOMIC ACTIVITY
1	**Moloto**	Third Order	Basic	Limited Local (Big Tree Mall is located in CoT)
2	**KwaMhlanga/ Kameelpoortnek**	Primary Node	Higher Order	Comprehensive Regional
3	**Tweefontein**	Second Order	Higher Order	Comprehensive Local
4	**Vlaklaagte**	Third Order	Middle Order	Limited Local
5	**Kwaggafontein**	Primary Node	High Order	Comprehensive Local
6	**Verena**	Third Order	Middle Order	Limited Local

Action 2.2: Implement a Municipal Growth Management Strategy

A growth management strategy entails the application/ utilisation of a number of growth management tools in combination with one another in a specific area, with a view to achieve the desired spatial outcome for that area as reflected in the spatial development framework.

At the core of the proposed Growth Management Strategy for the Thembisile Hani LM should be the strategic guidelines outlined in **Info Box 3.**

Info Box 3: Growth Management Outcomes and Guidelines for the Thembisile Hani LM

GROWTH MANAGEMENT OUTCOMES
❖ Preventing development in sensitive environments; ❖ Discouraging development in peripheral locations (i.e.: curbing urban sprawl); ❖ Encouraging development primarily in identified priority development areas, and; ❖ Facilitating densification along public transport corridors and intensification of a range of mixed land uses within identified activity nodes.
GROWTH MANAGEMENT STRATEGIC GUIDELINES
❖ Identify priority investment areas (e.g.: Priority Housing Development Areas) for public and private sector development; short-medium investment; specifically in respect of municipal infrastructure; allocation of future development rights. ❖ Introduce development obligations relating to the full spectrum of inclusionary housing (i.e.: subsidised housing, bonded, rental / social housing) in identified priority development areas. ❖ Re-direct the respective capital investment programmes of the sector departments to address the short-term problem areas and strategic priority areas. ❖ Limit future development rights in infrastructure problem areas within the municipality until backlogs have been addressed. ❖ Apply a package of incentives to promote and facilitate development that subscribes to the socio-economic and spatial imperatives of the municipality in priority areas (especially around public transport corridors). ❖ Introduce development conditions that are congruent with global best-practice standards relating to resource efficiency (Smart Growth).

Action 2.3: Demarcate an Urban Edge around each of the Urban Nodes

There are several growth management tools available to guide and influence public and private development processes, and in the growth management strategy an authority indicates which of these instruments it intends using and what it wants to achieve with these. The Urban Edge is one such growth management tool, but its efficiency is significantly enhanced only when used in combination with some of the other instruments.

Following from the above, it is recommended that an urban edge be demarcated around each of the identified urban nodes in order to contain urban sprawl and to contribute towards the overall management of growth and budget prioritization in the Thembisile Hani municipal area.

All areas located outside the urban edge are deemed to form part of the rural environment of the Thembisile Hani LM (see Urban Edges per town on Local Area Plans – *Section 4.5*).

Action 2.4: Manage Development in Rural Areas in line with Rural Development Guidelines

The rural environment should be protected from development which will be harmful to the rural character of the area. The most important principle that applies is that development should be restricted and that the rural character should be maintained.

The guidelines shown in **Info Box 4** should apply when evaluating applications for land use developments in rural areas (outside the urban edge).

Info Box 4: Land Use Guidelines for Rural Areas

GENERAL RURAL LAND USE DEVELOPMENT GUIDELINES
❖ Development in the rural and agricultural landscapes of the Thembisile Hani LM area should be managed in line with the guidelines provided in the Thembisile Hani LM Land Use Scheme and the Nkangala Bioregional Plan. (Also refer to *Annexure B)*.
❖ Subdivisions of farm portions for exclusive rural residential use or so-called rural/country estates should only be permitted around and contiguous to existing urban areas.
❖ Uses should be rural in nature or should require a rural setting in order to be functional or viable and should not have any negative environmental impact.
❖ The development should not require extensive service infrastructure.
❖ Country Estates outside the urban edge, should not bear any service delivery burden or consequences, financial or otherwise, for the municipality. Strict requirements must be laid down for the provision of engineering services to and within these estates to ensure that it does not lead to environmental problems. Hence, the ability to provide services according to the standards set by the municipality is a pre-requisite.
❖ The development should not create possibilities for other developments to be attracted to the area.
❖ Illegal land uses on farm portions, such as industrial and commercial developments that have no direct relation to agriculture, should be eradicated and moved to the urban areas or the rural towns. Uses which are located at a defined and approved service delivery centre in the rural area should be permitted (serving rural communities).
❖ Uses which are resource based (mining, tourism, agri-industry, etc.) may be permitted (subject to conditions as specified by the Thembisile Hani LM).
❖ Mining activities in the rural environment may not be permitted within protected natural areas or high potential agricultural areas.
TYPICAL RURAL LAND USES TO BE PERMITTED OUTSIDE URBAN EDGE
❖ Nature conservation/sensitive natural areas;
❖ Agricultural and agri industry activities;
❖ Tourism and related Conference and Training activities;
❖ Recreational facilities which are essentially rural in nature;
❖ Farm stalls and home industries;
❖ Resource based mining industries, and
❖ Any other uses that in the municipality's discretion fits in with the character of the area outside the urban edge, provided that such development adheres to the general criteria set out above.

4.4.3 Spatial Proposals: Objective 3

Objective 3  Enhance the Regional Movement System to improve accessibility and support economic and social integration.

The R573 plays a pivotal role in the functionality of the Thembisile Hani LM and is the main link to economic livelihoods for the residents of the area.

Action 3.1: Maintain the Mobility of the R573 and Ensure Road Safety

The R573 is the main access into the Thembisile Hani LM and the mobility of the route should be maintained. The access management strategy of SANRAL should be integrated into the planning of the area.

Service roads / secondary road networks should be developed parallel to the R573 to ensure economic activities obtain maximum visual exposure from the R573, but access should be directed to the secondary road network.

Action 3.2: Facilitate the Establishment of a public Transport Network serving Local and Regional Movement Needs

The R573, R568, R25 and R544 are the main public transport routes in the Thembisile Hani LM. The main routes should be complimented with the feeder routes from the settlements towards the main transport routes. The public transport network should provide access to the major destinations in Mpumalanga, Tshwane and other parts of the Gauteng City Region.

4.4.4 Spatial Proposals: Objective 4

Objective 4  Plan and Establish Sustainable and Resilient Human Settlements

Action 4.1: Actively Promote Development aligned to Smart Growth Principles in all Settlements

Info Box 5 provides the Smart Growth Principles which should be applied in all human settlements within the Thembisile Hani LM in order to enhance the sustainability of these areas:

Info Box 5: Smart Growth Principles for Sustainable Human Settlements

SUSTAINABLE HUMAN SETTLEMENT: SMART GROWTH PRINCIPLES
❖ Provide for a mix of different kinds of land uses, e.g. residential, retail, business, and recreational opportunities in mixed use activity nodes and along priority public transport corridors. (The Urban Network).
❖ Create well-designed, compact neighbourhoods where the different activities are in close proximity to each other.
❖ Provide a variety of transportation choices, including private, public and non-motorised transport opportunities that are safe.
❖ Create a variety of housing opportunities, i.e., in terms of function, form and affordability.
❖ Encourage growth in existing communities through infrastructure upgrade, urban renewal, new amenities and densification.
❖ Preserve open spaces, natural beauty, and environmentally sensitive areas.

- ❖ Protect and enhance agricultural lands and secure these as a productive land base for food security, employment, etc.
- ❖ Utilise smarter and cheaper infrastructure and green buildings and promote renewable and sustainable technologies.
- ❖ Foster a unique neighbourhood identity, building on the diverse characteristics of each community.
- ❖ Engage citizens to participate in community life and decision-making

Action 4.2: Identify Strategically Located Land as Strategic Development Areas

The Thembisile Hani LM will require approximately 5,224 ha of land to accommodate the projected growth up to 2050. In light of this, the Thembisile Hani LM and Dr JS Moroka LM still carry the spatial legacy of the apartheid depression which separates communities socially and economically, and results in a highly fragmented urban form. In response to the above, the Thembisile Hani LM needs to ensure that the spatial imbalances of the past are corrected, and that people are located closer to places of work and economic and social opportunities.

It is thus essential that each of the settlements within the Thembisile Hani LM be planned and developed in a manner aimed at consolidating the urban form and **limiting further expansion** by way of an urban edge / urban development boundary.

The SDF has identified 10 Strategic Development Areas (SDA's) which should be prioritised for strategic development. It is further proposed that land acquisition within the SDA's be prioritised.

Activity 4.3: Promote the Development of a Diverse Range of Housing Typologies offering multiple choices in terms of Affordability, Density and Tenure Options

It is important to facilitate the development of low, medium and high-density housing typologies (as graphically illustrated in **Annexure C**) for low income, middle income and high-income communities throughout the Municipality. Unfortunately, low density typologies dominate the urban landscape in the Thembisile Hani LM as is the case in most urban areas in South Africa.

In the case of low-income housing; the subsidy scheme only makes provision for single residential full title BNG Units which normally result in densities around 20 units/ha which is very low.

The only subsidised medium to higher density typologies is Community Residential Units (CRU) and Social Housing both of which only cater for the rental market. There are, however, several initiatives underway throughout South Africa to develop "RDP Flats" and/or medium density double storey row housing or semi-detached RDP units in order to increase density yields.

The following housing programmes should be favoured in the Priority Housing Development Areas located in the urban and rural parts of the municipality respectively:

- ❖ **Urban Areas:**
  - Land Acquisition with a focus on acquiring land located within the PHSHDAs and Strategic Development Areas;

- Integrated Human Settlements/IRDP projects on land suitable for mixed income development, including GAP market housing and rental stock;
- Upgrading of Informal Settlements in areas where the location of an existing informal settlement complies with the principles of spatial justice, sustainability and efficiency and/or these settlements are located within the existing urban footprint or an identified PHSHDAs and SDAs;
- Social Housing and Community Residential Units close to economic activity areas like Public Transport Corridors (Integration Zones); Township Hubs (in line with the Neighbourhood Development Partnership Grant (NDPG) and Central Business Districts, or in areas earmarked for urban renewal (Restructuring Zones), and
- Inclusionary Housing projects driven by the private sector and which comprises both bonded and subsidised housing, and which caters for full ownership and rental stock.

❖ **Rural Areas:**

- Upgrading of Informal Settlements, IRDP, Rural Housing, Farm Worker Housing Assistance and Peoples Housing Programmes (PHP) within the Rural Intervention Areas in the District with emphasis on areas around rural nodes in order to add to the "critical mass" required to sustain economic activity in these areas.

Activity 4.4: Prioritise Land Acquisition within SDA's

The Thembisile Hani LM Land Audit findings and recommendations should be implemented to prioritise the acquisition of land. The land acquisition process should be coupled with the development of precinct plans for the parcels of land to determine the development priorities.

Most of the SDA's fall within the Traditional Authority Areas and therefore detailed precinct plans should be compiled with the Traditional Authorities. The Precinct Plans need to be compiled in close collaboration with the TA's, the Thembisile Hani LM and DALRRD and the plans need to align with the Land Planning Programme which DALRRD is rolling out in South Africa in TA's.

The Precinct Plans should contain the following:

- ❖ Provide spatial direction and customized land use management.
- ❖ Outline the land use controls to protect and promote regional landscape.
- ❖ Develop modified controls to promote opportunities to diversify, innovate and value-add to activities.
- ❖ Identify key areas where the precinct can sustain rural economic activities.
- ❖ Prevent key areas where the precinct can sustain rural economic activities.
- ❖ Prevent inappropriate fragmentation of land and to protect and promote productive activities within a precinct and associated regional landscape values within a precinct.
- ❖ Formulate proposals for the provision of engineering infrastructure.
- ❖ Align the various legislative requirements and customary practices as part of the land use and spatial planning processes.
- ❖ Guide the Traditional Authority on the formal record of land use rights and tenure arrangements.

An example of a typical precinct plan compiled for a Traditional Authority (TA) in the City of Tshwane is shown in **Annexure D** [Source: Draft Sokhulumi Precinct Plan, DALRRD, 2024]. The plan contains the following spatial elements:

- Urban boundary and incremental edges to contain development;
- A core cluster for business, industrial and community facility development;
- Access management along the main road; and
- Preservation and incorporation of cultural open spaces and cultural practices.

The detailed involvement of the TA's is to form a working relationship with the TA's and to work toward the safeguarding of vacant land and the systematic development of the areas.

Action 4.5: Consolidate Community Facilities at Urban And Rural Nodal Points

Community facilities should be consolidated at strategic points in order to enhance "one-stop" access to such facilities for the community, and to contribute towards creating "critical mass" required to stimulate local economic development.

The development of unplanned housing areas (limited community facilities) in the Thembisile Hani LM has resulted in both a lack of, and the need for costly duplication of essential social services/ community facilities and engineering infrastructure. In principle, the objective is to provide a full range of social services/ community facilities within a reasonable distance of all communities. These services need to be consolidated/ clustered together in precincts/ buildings (Thusong Centres) for maximum efficiency as there are spin-off benefits to be derived from such consolidation such as enhanced access to services; enhanced functionality of modal transfer facilities (bus/taxi ranks); increased economic potential ("critical mass") in surrounding areas; and greater sense of "community identity" around such multi-functional areas.

Furthermore, community facilities should be clustered together in an area or in a single building in order to provide a one-stop service – the so-called Thusong Center concept, which is depicted in **Annexure E**.

The establishment of such one-stop service centres in the Thembisile Hani LM holds the following advantages:

- Provides a one stop comprehensive service to members from surrounding communities which are in many cases very poor and cannot afford multiple trips.
- It promotes nodal development which is conducive to targeted infrastructure spending, local economic development and corridor development.
- Consolidates human settlement around nodal points and protect valuable agricultural land from urbanisation pressures.
- Provides guidance for the development and provision of engineering services.
- Indicates where to provide higher quality road infrastructure and multi-modal transport facilities.

- Basic services are provided by government in a financially sustainable manner.
- Provides a platform for entrepreneurship and small business development (LED).
- Provides government with a platform from which to develop ICT in rural areas, as well as rural energy centres.
- Supports the rural nodal concept as contained in the Comprehensive Rural Development Plan and the National Development Plan.

Community facilities in the Thembisile Hani LM should be provided to all human settlement areas in accordance with the CSIR Guidelines for the Provision of Social Facilities.

4.4.5 Spatial Proposals: Objective 5

Objective 5	 Promote Economic Development By Leveraging Local Resources, Supporting Small Businesses and Attracting Investment.

Table 39 below provides an outline of the projects contained in the Thembisile Hani LED Strategy.

Table 39: Thembisile Hani LED Strategy Projects

PROJECTS	RATIONALE FOR THE PROJECT	STAKEHOLDERS
Development of Business incubators	❖ Generate revenue for the municipality ❖ Formalize the non- formal trading ❖ Create job opportunities for the locals who were not operating due to lack of operating space	THLM
Fresh produce market	❖ Enhance farmers productivity ❖ Maximise local products and local purchase for local money circulation	THLM
Capacitation of the SMME`s	❖ To capacitate local SMME`s and enable them to participate in the local and national economy on an equal footing with their opposite numbers	THLM & Sector Departments
Development of Tourism sites	❖ Identify and develop spots that will entice tourists and ultimately create jobs	MTPA & THLM
Development of Mining forum	To coordinate mining activities with local forums	Palesa, THLM and Business forums
Establishment of Tourism Information Centres	Creating Tourism Information Centres at the Malls	PED /THLM /MTPA & Malls

The proposed LED projects are based on the opportunities within Thembisile Hani including agriculture, mining, training and tourism.

The Thembisile Hani LM SDF was formulated with the focus to further expand on the proposed activities at the appropriate location for the respective projects.

Action 5.1: Implement a "Township Economy Support Programme" to Promote Economic Empowerment of Emerging Entrepreneurs

There is a wide variety of economic activities that can be pursued in a "Township Economy" which is elaborated on in **Annexure F**. The Thembisile Hani LM should actively promote the establishment of as many as possible of these enterprises at appropriate locations within the settlement areas in order to enhance economic empowerment and job creation.

> There is also little support for the informal economy, while township economies are unable to retain local spending power. Many of the challenges are as a result of insufficient institutional capacity and lack of strong instruments for implementation. (NDP)

It is proposed that the properties at the existing and proposed access points along route R573 be earmarked and utilised for the promotion of the economic activities.

Linked to the above, a variety of formalised informal trading structures should be encouraged at strategic locations within business areas and close to community facilities (Thusong Centres), public transport facilities and public open spaces within the Thembisile Hani LM.

Informal trading, skills training of informal traders, and proper management and regulation of designated informal trade areas should be dealt with as a consolidated programme in the Thembisile Hani LM linked to the Local Economic Development (LED) Strategy of the municipality.

Annexure F further provides more detail about **Informal Trade Empowerment** and **Upgrading** and illustrates various 'levels' of informal trade. These range from traders operating without formalised informal trading structures in 'level 1' and up to 'level 4' where traders are incorporated into the formal economy within the retail and manufacturing/ service industry sectors.

It could also involve the establishment of an "LED Warriors Forum" to make potential entrepreneurs aware of the different opportunities available and to guide them (mentorship programmes) towards establishing themselves in the municipal economy. The Thembisile Hani LM private sector could also provide mentorship assistance to emerging entrepreneurs in such programmes.

Action 5.2: Align Tertiary Education and skills Development Programmes to Priority Economic Sectors.

There is significant scope to enhance skills in a range of programmes listed in *Annexure F*.

The skills development centres can be established within the existing industrial hubs to link skills with development opportunities. Agricultural skills related training centres can be established at the proposed Kwaggafontein and Kranspoort FPSU's.

Action 5.3: Facilitate Development of Industrial and Commercial Uses at Designated Strategic Locations

There is significant scope for local industrial activity comprising light industries and service industries along the R573.

The manufacturing industry should be focused on motor service and engineering services such as fitment centres, motor workshops, welding, joinery, etc (KwaMhlanga, Tweefontein and Kwaggafontein).

The existing industrial hubs and the land available at the key intersections should be earmarked for compatible land uses.

Action 5.4: Facilitate Mining Activity strictly in line with Mining and Biodiversity Guidelines.

Mining and the associated Coal Freight Routes currently holds a significant footprint within the south western extents of the Thembisile Hani LM.

Although mining is not managed at municipal level, the Thembisile Hani LM must aim to ensure that mining activities do not compromise the long-term sustainability of the natural environment (and therefore the local tourism and agriculture industry). Particular attention has to be given to proper management to ensure that mines do not waste and/ or pollute wetlands and groundwater sources and that post-mining rehabilitation processes are properly undertaken and completed to the satisfaction of the relevant authorities.

Guidelines for responsible mining management are shown in **Info Box 6**.

Info Box 6: Responsible Mining Practices Guidelines

GENERAL MINING MANAGEMENT GUIDELINES
❖ Facilitate the exploration for, and extraction of unexploited minerals in the Thembisile Hani LM where such potential exists.
❖ Maintain and upgrade (where feasible) existing mining operations and police illegal mining activities.
❖ Enforce rehabilitation programmes on closed/ abandoned mines. Rehabilitation of land should be conducted in accordance with environmental regulations and should allow for establishment of the same or similar activities on the land as before mining operations commenced.
❖ Leverage forward and backward linkage opportunities in mining.

Action 5.5: Promote Tourism in the Area

Figure 43 Composite SDF illustrates proposed and identified Tourism Anchors and Corridors in the Thembisile Hani LM.

Eco-Tourism: the main eco-tourism focus areas are listed below:

- The Dinokeng Corridor extends from the CoT to the west, through Dr JS Moroka linking into Diana Ranch, SS Skosana and Mabusa Nature Reserves. The Zithabiseni Resort is situated within the SS Skosana Reserve which can provide accommodation and conference facilities.
- Loskop Dam Nature Reserve to the east of the Municipality which is a popular spot for adventure tourism.

Heritage Tourism: The Thembisile Hani and Dr JS Moroka LM's have very rich Ndebele culture with a number of cultural/historic sites such as Kghodwana

Cultural Village, the Royal Kraals of the Manala and Ndzundza Mabhoko, Ndebele Villages, etc. The following routes can also play an important roll in enhancing tourism within the Thembisile Hani LM:

- R568 from Ekandustria towards KwaMhlanga and continues north towards Mdala Nature Reserve;
- R573 from Moloto towards Kwaggafontein;
- R25 from CoT (Bronkhorstspruit), Sokhulumi (CoT), Verena, and Zithabiseni.

Through proper planning, branding and signage, the Tourism Routes and Tourism Anchors should be developed individually but also to contribute the collective Tourism Vision and Strategy for the Nkangala District.

Action 5.6: Promote Agriculture focusing on Priority Commodities in Functional Areas and Optimally Exploiting the entire Value Chain associated with these commodities.

Agriculture related interventions should be aimed at optimising agricultural production and downstream beneficiation in line with the most suitable commodity value chains relevant to each of the areas noted above.

The Thembisile Hani LM consist of two broad agricultural areas south of the R573 and the main commodities include the following:

- Livestock grazing and dry land crops south of KwaMhlanga up to Verena.
- Pivot Irrigation and livestock farming south of Verena

Action 5.7: Incrementally Implement the Agri Park Initiative and Support Land Reform and Upscaling of Emerging Farmers in Priority Rural Intervention Area

The Nkangala Rural Development Plan and the Kranspoort and Kwaggafontein RIAPP identified the potential for the establishment of two Farmer Production Support Units (FPSU's). It comprises the following as illustrated on Figure 43:

- Three Rural Intervention Areas accommodating two FPSU's in the Thembisile Hani LM where land reform and agrarian transformation in support of emerging/ small-scale farmers should be promoted. These include:
  - RIA 1 west of Kwaggafontein, adjacent to the R573
  - RIA 2 south of Verena along the R544
  - RIA 3 to the south along the CoT boundary. This RIA could be served by the FPSU at Sokhulumi.

It is important that emerging farmers be supported in these Farmer Production Support Areas in the Thembisile Hani LM area as a means to contribute towards poverty alleviation, enhancing food security, and establishing sustainable livelihoods. This can be achieved by way of implementing a number of measures as defined in the Emerging Farmer Upscaling Model illustrated in **Annexure G.**

Action 5.8: Action 6.9: Utilise precision farming to minimise the impact of agriculture on natural resources.

Against the backdrop of the limited water resources available in the region and in line with the "Smart Development" concept which aims to use ICT as a means to advance development, it is furthermore recommended that the Thembisile Hani LM promotes the introduction of Controlled Environment Farming/ Precision Farming with specific focus on vacant factory shells located in the municipal area, or the establishment of large-scale urban agriculture and/or other container farming on shallow undermined areas around the various towns in the Thembisile Hani LM area.

This approach optimises the use of resources such as water, energy, and space, and could provide a means of income to a number of emerging/ small farmers in the municipality. It also poses the opportunity to promote agri tourism. (Refer to **Info Box 7** and **Annexure H** for more detail in this regard.)

Info Box 7: Controlled Environment Farming/ Precision Farming

Controlled Environment Agriculture is a technology-based approach toward food production including hydroponics, aquaculture, and aquaponics. The aim of CEA is to provide protection and maintain optimal growing conditions through- out the development of the crop which takes place within an enclosed growing structure such as a greenhouse or building. CEA optimises the use of resources such as water, energy, space, capital and labour.

Vertical Farming is the practice of producing food in vertically stacked layers, such as in a skyscraper, used warehouse, or shipping container. The modern ideas of vertical farming use indoor farming techniques and controlled- environment agriculture (CEA) technology, where all environmental factors can be controlled. These facilities utilise artificial control of light, environmental control (humidity, temperature, gases) and fertigation. Some vertical farms use techniques similar to greenhouses, where natural sunlight can be augmented with artificial lighting and metal reflectors.

"We believe strongly that vertical farming can be a driver for sustainability in cities, but it's a young emerging industry with a very green face, focused on growing local, pesticide-free food, using less water, and creating potentially green jobs". (Henry Gordon-Smith, vice chair of AVF).

4.4.6 Spatial Proposals: Objective 6

Objective 6		Facilitate infrastructure development by improving access to essential services, upgrading existing facilities, and investing in sustainable and resilient infrastructure.

Action 6.1: Align infrastructure Implementation and Upgrading Programmes with Land Use Development Programmes

Engineering services are critical towards the establishment of sustainable human settlements and facilitating economic development and job creation. Hence, infrastructure investment within the Thembisile Hani LM should be primarily directed towards serving the identified urban and rural nodes within the municipal area.

More specifically, all Infrastructure Master Plans should be aligned to the 2030 and 2050 growth projections and designated SDA's as defined in the Thembisile Hani Spatial Development Framework.

This should then inform the long-term Infrastructure Development Management Strategy (IDMS) and Long-Term Financial Plan (LTFP) of the Thembisile Hani LM as recommended by National Treasury/COGTA.

In general, Council should be committed to provide bulk and reticulation services under the following conditions:

- Where existing township development exists within the Urban Edge;
- Extensions of existing urban development where development is contiguous (i.e. abutting) to existing municipal infrastructure services, or within designated Priority Development Areas within the Urban Edge, and
- Resort and resource based industrial developments (e.g. mining and agriculture) outside of the Urban Edge where, by prior arrangement, service provision can be feasibly provided.

Developments in all other areas will be responsible for providing capital, operating and management costs, their own bulk (treatment plants), as well as link and individual services to the standards required by the municipality.

Action 5.2: Promote the Transition towards "Green Technology/Energy" and Incrementally Implement the Smart City Concept

In line with the Smart City concept (refer to **Annexure I** for further information), the Thembisile Hani LM should focus on the continuous introduction of a range of important engineering services transitions over the short- to medium-term as listed in **Table 40**.

Specifically notable in the above regard is the establishment of solar plants to augment the current supply of Eskom. Extensive solar plants should not be allowed in protected areas and/or on high potential agricultural land in the Thembisile Hani LM area.

Table 40: Proposed Green Transitions – Engineering Services

WATER:
❖ More stringent water conservation and demand-management initiatives; ❖ Increase water-use efficiency and equitable distribution through appropriate regional distribution schemes and incentives; ❖ Develop available groundwater resources and adopt the re-use of wastewater effluent as standard practice, and ❖ Improve monitoring and reporting to maintain standards in water and wastewater management.
ENERGY:
❖ Promote and enable energy efficiency and demand side management; ❖ Promote the development of renewable energy plants (especially solar plants); ❖ Enhance universal access to clean, renewable energy services.
TRANSPORT:
❖ Invest in public transport and non-motorised transport (NMT); ❖ Promote and enable low carbon transportation and shift transport patterns to reduce reliance on liquid fuels, and ❖ Shift freight traffic from road to rail along major routes.
WASTE:
❖ Reduce waste volumes and increase recycling and re-use; ❖ Introduce waste-to-energy initiatives in the longer term, and ❖ Invest in clean technology and value adding to waste.
INFORMATION AND COMMUNICATION TECHNOLOGY:
❖ Establish a strong broadband and fibre infrastructure network to ensure efficient communications and internet services, and to support the implementation of the Smart City concept.

4.5 LOCAL AREA SPATIAL PLAN PROPOSALS

The following section comprises more detailed proposals for the Regional, Second Order and Third Order Service Centres as depicted on the SDF (Figure 43).

It should be noted that for each local area, an Urban Edge is proposed for as a growth management tool. The Thembisile Hani LM should take cognisance of the Urban Edge when considering development applications. The line may be amended from time to time when the municipal SDF is reviewed, but in general the land included within the Urban Edge should be sufficient to serve the demand up to 2050 without placing an unnecessary burden on the municipality in terms of providing such areas with bulk services.

4.5.1 Local Area Spatial Plan Proposals: Moloto

Figure 44 depicts the Local Area Plan for Moloto.

Road Network:

- The mobility and safety of the R573 needs to be maintained and access to the road should be at specific access points in line with SANRAL's access spacing.
- A road network should be developed parallel to the R573 to allow access from the back of properties adjoining the R573.

Human Settlement:

- Informal settlements have increased in the Thembisile Hani LM and a coordinated approach is proposed to prevent further urban sprawl and consolidate development. Future human settlement coupled with the provision of community and economic facilities should be focused along the R573 to ensure accessibility to public transport and to link into existing services.
- It is proposed that the informal settlements be formalised linked to the release of state land. A precinct plan should be compiled for SDA 1 in partnership with the Traditional Authority to ensure sufficient land is reserved for the provision of community facilities.

Community Facilities:

- A site needs to be reserved for a cluster of community facilities within SDA's to serve the future residents of SDA 1.

Economic Facilities:

- Mixed land uses should e promoted at the various planned intersection of the R573. No direct access to the R573 from individual sites should be permitted to ensure safety and mobility of the road.

4.5.2 Local Area Spatial Plan Proposals: KwaMhlanga/Kameelpoortnek

Figure 45 depicts the Local Area Plan for the KwaMhlanga area.

Road Network:

- Access to and from the R573 should be according to the access management strategy compiled by SANRAL.
- Public transport facilities should be developed along the R573 to ensure pedestrian safety and safe lay-by's.

Human Settlement:

- The Regional Centre has experienced the highest growth within the Thembisile Hani LM and a pragmatic approach is proposed to curb unplanned development. The formulation of a precinct plan is proposed for the Centre which needs to incorporate the following aspects:
  - Detailed human settlement planning
  - Economic activities
  - Provision of community facilities
  - Provision of bulk engineering services.
- The centre consists of approximately 20,000 informal units that need to be formalised and the area is projected to grow with an additional 37,000 units. SDA's 2 and 3 are proposed to serve as future receiving areas, however; additional land may be required in the future.
- The Centre contains three vacant townships which should be prioritised for future development as listed below:
  - Mashiloville – 517 erven (*Number 1 on Figure 45*)
  - KwaMhlanga E – 2,701 erven (*2*)
  - KwaMhlanga C – 699 erven (*3*)
  - Total – 3,907 erven

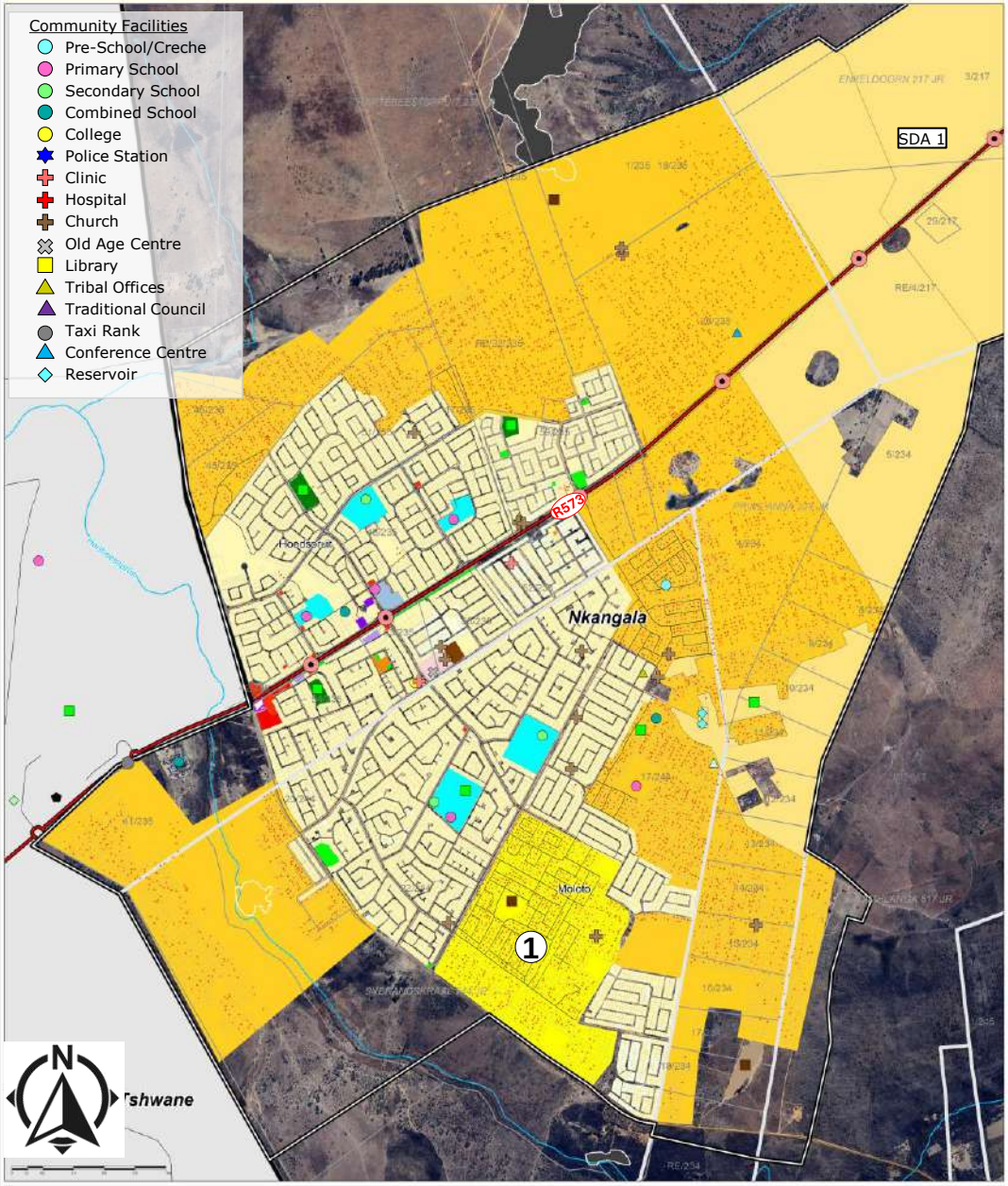
Economic Activities:

- KwaMhlanga Crossroads and Phola Mall are the two main economic anchors that could be complimented with the various service and manufacturing industries. The properties along the R573 are proposed to be earmarked and utilised for mixed use activities.
- Formalised informal trading is proposed at the various access points and along the main pedestrian movement networks (see *Annexure F*).

Infrastructure:

- The Luthuli WWTW is proposed to augment the existing KwaMhlanga treatment works.

FUNCTIONAL AREA 1
LOCAL AREA PLAN: Moloto



Cadastral
Urban Edge
Towns/Settlements
National Roads
Provincial Roads
Railway

SDA
UISP
Formalization
Access Points
Mixed Use at Access Points

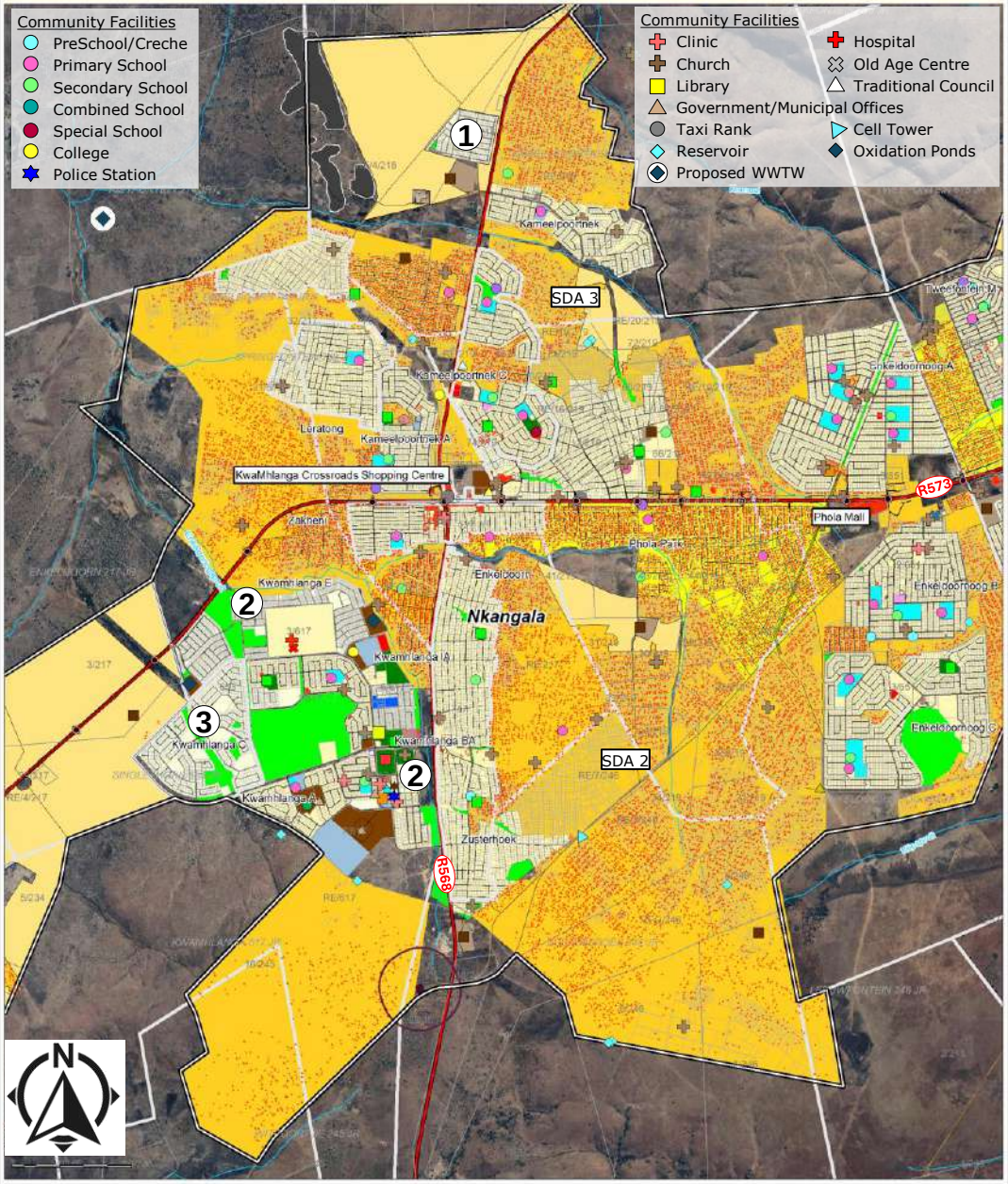
Education
Institutional
Community Facility
Business
Commercial
Industrial
Filling Station

Government/Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Accommodation
Informal Dwellings

Sand Mining
Dams / River

Thembisile Hani SDF 2024

FUNCTIONAL AREA 2
LOCAL AREA PLAN: Kwamhlanga / Kameelpoortnek



Cadastral
Urban Edge
Towns/Settlements
National Roads
Provincial Roads
Railway
Proposed Office

Proposed SMME
SDA
UISP
Formalization
Access Points
Mixed Use at Access Points
Informal Dwellings

Education
Institutional
Community Facility
Business
Commercial
Industrial
Filling Station

Government/Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Accommodation
Landfill (450m Buffer)

Sand Mining
Dams / Rivers

Thembisile Hani SDF 2024

4.5.3 Local Area Spatial Plan Proposals: Enkeldoornoog/ Gemsbokspruit/ Vlaklaagte/ Tweefontein/ Emlanjeni

The Local Area Plan for the area is depicted on **Figure 46.**

Road Network:

- The mobility and safety of the R573 needs to be maintained and access to the road should be at specific access points in line with SANRAL's access spacing.
- A road network should be developed parallel to the R573 to allow access from the back of properties adjoining the R573.

Human Settlement:

- The Tweefontein area experienced the second highest human settlement growth in the Thembisile Hani LM and it is crucial that the vacant SDA's be prioritised for planning for human settlements coupled with the provision of adequate community facilities.

Community Facility Development:

The provision of community facilities should coincide with the development of human settlements.

The delay in the provision of community facilities increases the burden on surrounding facilities with the increase in popularity.

- The area contains two approved, vacant townships which should be prioritised for development, namely:
  - Vlaklaagte View – 1,001 units (*Number 1 on Figure 46)*
  - Emlanjeni – 487 units (*Number 2*)
  - Total – 1,488 units
- The community facility stands at Vlaklaagte View should be reserved for the provision of the necessary facilities.

4.5.4 Local Area Spatial Plan Proposals: Kwaggafontein/ Mathys Zyn Loop/ Goederede/ Die Bron Vakansiedorp

The Local Area Plan for the area is depicted on **Figure 47.**

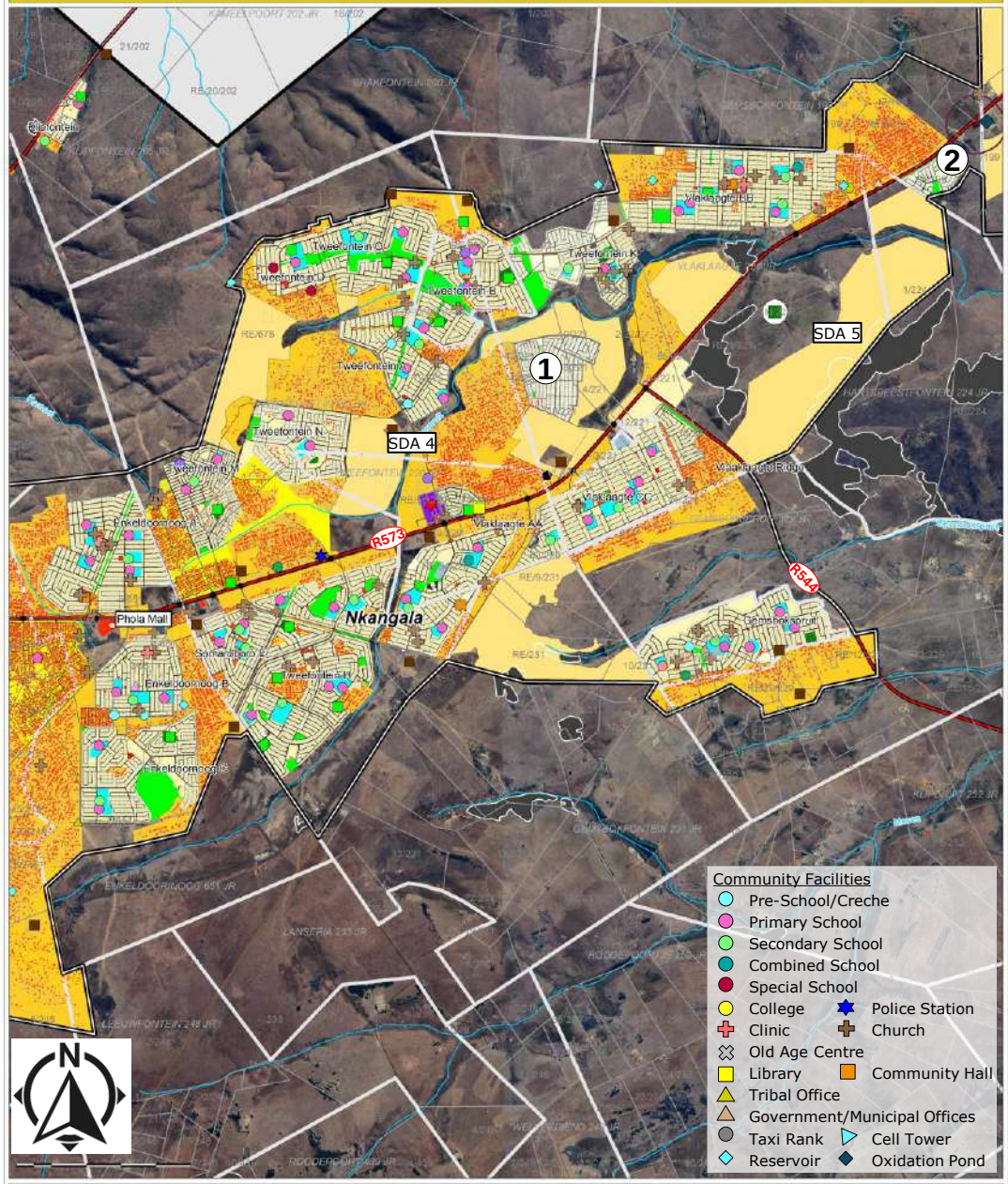
Human Settlement:

- SDA 6 has been identified for the future expansion of Kwaggafontein in a westerly direction. The land north of the R573 should be prioritised for expansion.
- Goederede C is a current UISP project that needs to be finalised.
- The necessary state land release needs to be undertaken o ensure communities obtain security of tenure.

Industrial Development:

- Industrial development should be promoted in KwaMhlanga Industrial Area, which can be coupled with the planned agricultural activities at the Kwaggafontein FPSU.

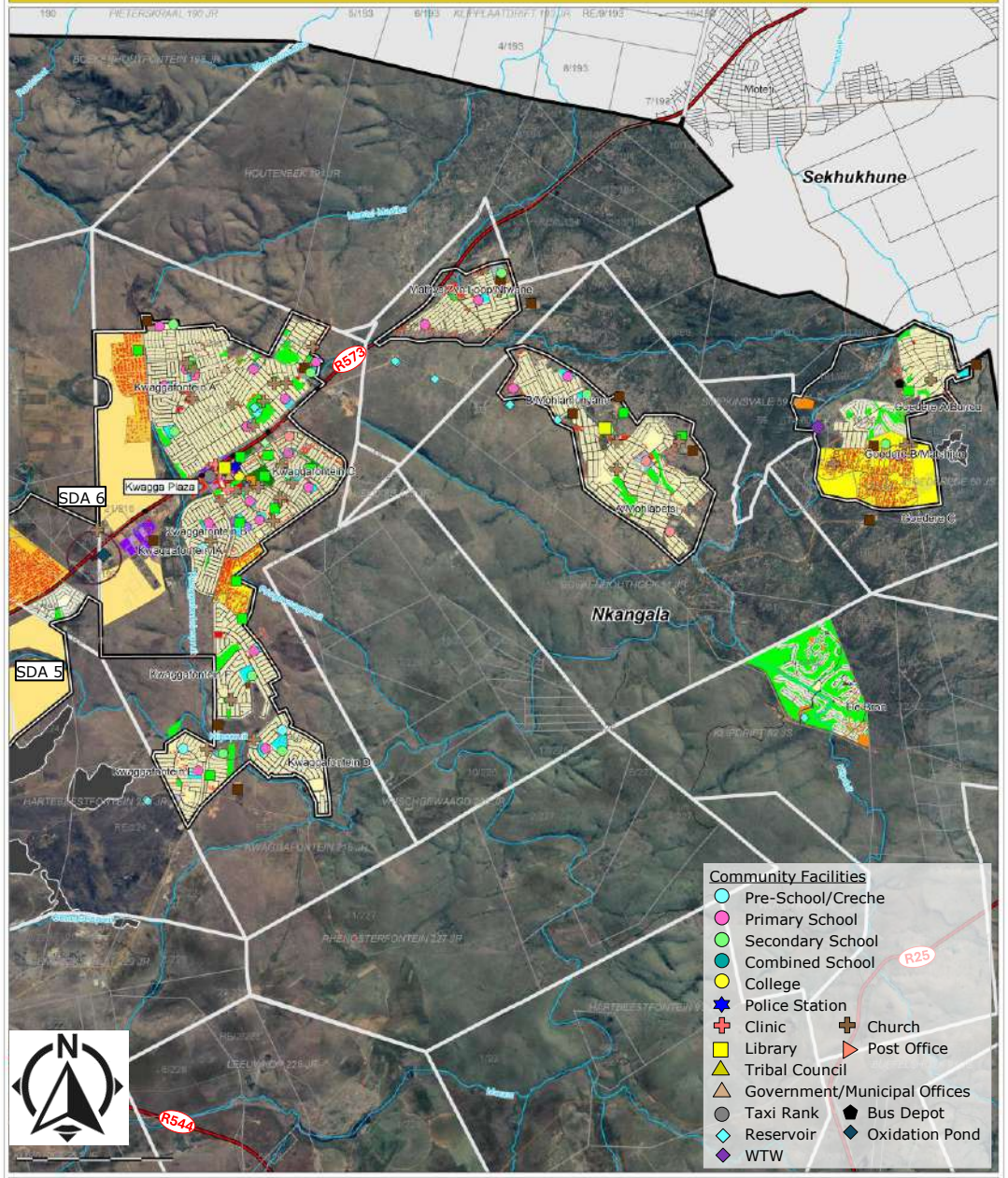
FUNCTIONAL AREA 3 - LOCAL AREA PLAN: Enkeldoornoog / Gemsbokspruit / Vlaklaagte / Tweefontein / Emlanjeni



Cadastral
Urban Edge
Towns/Settlements
National Roads
Provincial Roads
Railway
SDA
UISP
Formalization
Access Points
Mixed Use at Access Points
FPSU
Education
Institutional
Community Facility
Business
Commercial
Industrial
Filling Station
Government/Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Informal Dwellings
Landfill (450m Buffer)
Sand Mining
Dams / Rivers

Thembisile Hani SDF 2024

FUNCTIONAL AREA 4 - LOCAL AREA PLAN: Kwaggafontein / Mathys Zyn Loop / Goederede / Die Bron Vakansiedorp



Cadastral
Urban Edge
Towns/Settlements
National Roads
Provincial Roads
Railway
SDA
UISP
Formalization
Access Points
Mixed Use at Access Points
Informal Dwellings
Education
Institutional
Community Facility
Business
Commercial
Industrial
Filling Station
Government/Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Accommodation
Landfill (450m Buffer)
Sand Mining
Dams / Rivers

Thembisile Hani SDF 2024

4.5.5 Local Area Spatial Plan Proposals: Verena/ Wolvenkop

The Local Area Plan for the area is depicted on **Figure 48.**

Movement Network:

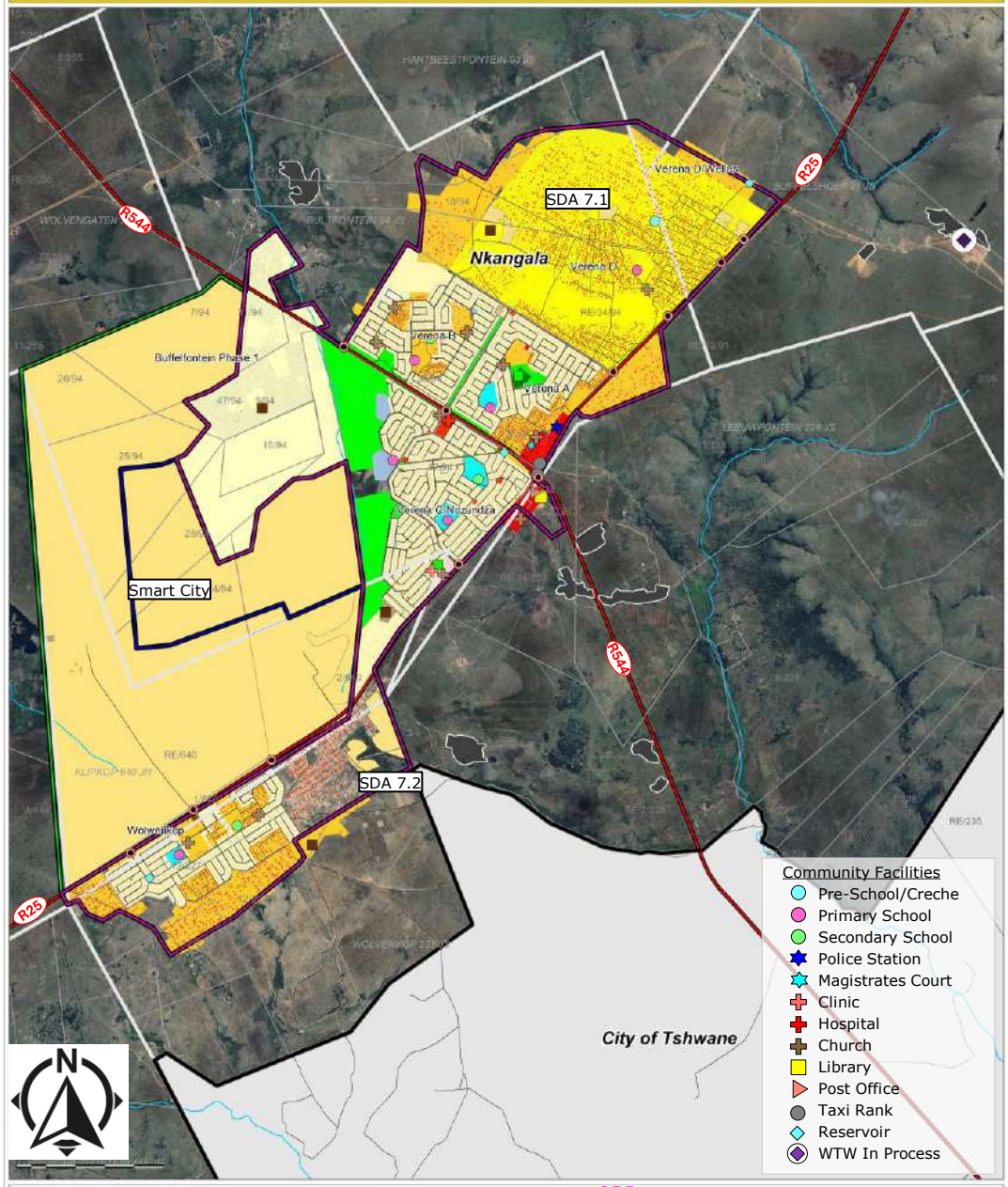
- The R25 provides the strategic link between Gauteng, Mpumalanga and Limpopo province which links into the R544. Access management needs to be maintained along both provincial routes.

Human Settlement:

- Verena currently has a demand of 4,557 units and a large portion of the current demand is being addressed through the formalisation of Verena D. The housing demand for Verena is projected at 1,740 for 2030 and 5,600 for 2030-2050, which translates to a total demand of 7,340 units.
- The Verena Smart City Concept has been approved for Verena and Bultfontein Phase 1 in the Smart City comprises the first phase of the development. Phase 1 yield 1,968 units which addresses the need up to 2030.
- The development of the Smart City should be phased to coincide with the provision of services and the required socio-economic facilities.
- An overall urban edge has been proposed at Verena and incremental urban edges for the Smart City. The incremental edges are aligned to the population projections for the area.

Kindly note that no spatial proposals are made for the Langkloof area as part of this SDF. The area is managed by the CoT and Figure 49 is simply included for completion purposes as the area does partly lie within the Thembisile Hani LM boundaries.

FUNCTIONAL AREA 5
LOCAL AREA PLAN: Verena / Wolvenkop



Cadastral
Urban Edge 2030
Urban Edge 2035
Urban Edge 2050
Towns/Settlements
National Roads
Provincial Roads

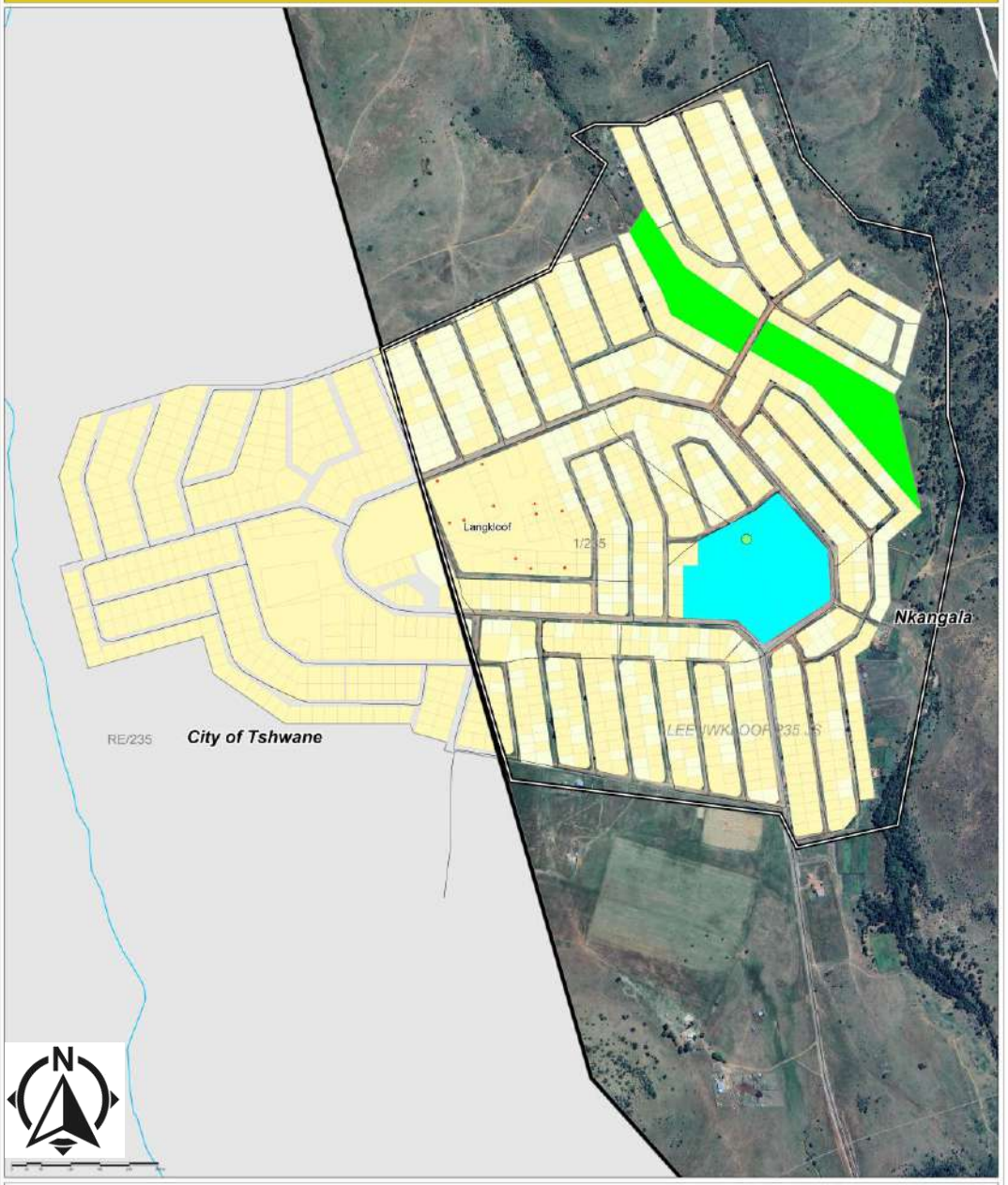
Railway
SDA
UISP
Formalization
Access Points
Mixed Use at Access Points

Education
Institutional
Community Facility
Business (Urban Core)
Industrial

Filling Station
Government/Municipal
Sports and Recreation
Open Space
Vacant Erven
Cemetery
Informal Dwellings

Sand Mining
Dams / Rivers

FUNCTIONAL AREA 6
LOCAL AREA PLAN: Langkloof



Cadastral (Farms/Parent Farms)
Urban Edge (2015)
Towns and Settlements (Erven)

Land Use
Education / Secondary School
Vacant Erven
Open Space

ANNEXURE A:

Land Claims Registered in the Thembisile Hani LM

LAND CLAIMS IN THE THEMBISILE HANI LOCAL MUNICIPALITY					
ID	**LAND**	**AREA**	**LAND USE**	**OWNERSHIP**	**T.A.**
1	Ptn 11 of the Farm Enkeldoornoog 219 JR	42.45 ha	Informal / Vacant	National Government of South Africa	Manala (Mbongo)
2	Ptn of Ptn 21 of the Farm Enkeldoornoog 219 JR	13.13 ha	Informal / Vacant	Government of KwaNdebele (National Government of South Africa)	Manala (Mbongo)
3	Ptn of Ptn 2 of the Farm Enkeldoornoog 219 JR	312.665 ha	Informal	National Government of South Africa	Manala (Mbongo)
4	Ptn 42 of the Farm Enkeldoornoog 219 JR	45.01 ha	Vacant / Agricultural	Government of KwaNdebele (National Government of South Africa)	Manala (Mbongo)
5	Ptn 29 of the Farm Enkeldoornoog 219 JR	40.38 ha	Informal / Vacant / Agricultural	Government of KwaNdebele (National Government of South Africa)	Manala (Mbongo)
6	Ptn 44 of the Farm Enkeldoornoog 219 JR	45.60 ha	Informal	Government of KwaNdebele (National Government of South Africa)	Manala (Mbongo)
7	Ptn 28 of the Farm Enkeldoornoog 219 JR	44.88 ha	Informal	Government of KwaNdebele (National Government of South Africa)	
8	Ptn 32 of the Farm Enkeldoornoog 219 JR	40.18 ha	Informal	Government of KwaNdebele (National Government of South Africa)	Manala (Mbongo)
9	Ptn of Ptn 13 of the Farm Buffelshoek 91 JS	83.86 ha	Informal	Government of KwaNdebele (National Government of South Africa)	Manala (Mbongo)
10	Ptn of Ptn 8 of the Farm Wolvenkop 227 JS	49.59 ha	Vacant / Agricultural	Government of KwaNdebele (National Government of South Africa)	Ndzundza (Mabhoko)

11	Ptn of Ptn 3 of the Farm Enkeldoorn 217 JR	58.64 ha	Vacant	Government of KwaNdebele (National Government of South Africa)	Manala (Mbongo)
12	Ptn of Ptn 2 of the Farm Enkeldoorn 217 JR	28.06 ha	Vacant	Government of KwaNdebele (National Government of South Africa)	Manala (Mbongo)
13	Kwamhlanga D & E (Mountain View 746 JR)	276.516 ha	Informal	Mpumalanga Provincial Government	
14	Ptn 46 of the Farm Hartbeestspruit 235 JR	20.16 ha	Informal	National Government of South Africa	Manala (Mbongo)
15	Ptn 45 of the Farm Hartbeestspruit 235 JR	25.94 ha	Informal	National Government of South Africa	Manala (Mbongo)
16	A Portion Ptn 17 of the Farm Sybrandskraal 244 JR	165.03 ha	Informal / Incomplete Planning	National Government of South Africa	
17	Ptn 14 of the Farm Prins Anna 234 JR	22.09 ha	Vacant	National Government of South Africa	
18	Ptn of Ptn 13 of the Farm Prins Anna 234 JR	20.55 ha	Vacant	National Government of South Africa	
19	Ptn of Ptn 12 of the Farm Prins Anna 234 JR	20.92 ha	Vacant / Slight encroachment	National Government of South Africa	
20	Ptn of Ptn 11 of the Farm Prins Anna 234 JR	22.34 ha		National Government of South Africa	
21	Ptn 10 of the Farm Prins Anna 234 JR	21.95 ha	Vacant	National Government of South Africa	

22	Ptn 9 of the Farm Prins Anna 234 JR	22.89 ha	Vacant	National Government of South Africa	
23	Ptn 8 of the Farm Prins Anna 234 JR	22.15 ha	Vacant	National Government of South Africa	
24	Ptn 5 of the Farm Prins Anna 234 JR	88.69 ha	Vacant	National Government of South Africa	
25	Ptn 4 of the Farm Prins Anna 234 JR	98.56 ha	Vacant	National Government of South Africa	
26	Ptn 26 of the Hatebeestspruit 235 JR	500.79 ha	Vacant	National Government of South Africa	
27	Ptn of Ptn 4 of the Farm Enkeldoorn 217 JR	89.94 ha	Vacant	National Government of South Africa	
28	Portion of Erf 6830 - Moloto South (A portion of the farm Sybrandskraal 244 JR)	61.99 ha	Informal	National Government of South Africa	Amandebele- Akwa- Ndzundza-Somphalali
29	Various Portions of Remainder the Farm Kwamhlanga 617 JR	386.796 ha	Informal	National Government of South Africa	
30	Ptn of the Remainder of the Farm Enkeldooom217 JR	164.175 ha	Informal / Vacant	National Government of South Africa	Manala (Mbongo)
31	Ptn 7 of the Farm Enkeldoornoog 217 JR	277.594 ha	Informal / Vacant	National Government of South Africa	Manala (Mbongo)
32	Ptn of Ptn 4 of the Farm Kameelpoortnek 218 JR	76.85 ha	Informal	National Government of South Africa	Manala (Mbongo)
33	Ptn 19 of the Farm Enkeldoornoog 219 JR	45.68 ha	Informal / Vacant	National Government of South Africa	Manala (Mbongo)
34	Ptn 10 of the Farm Enkeldoornoog 219 JR	43.05 ha	Informal	National Government of South Africa	Manala (Mbongo)

35	Ptn 41 of the Farm Enkeldoornoog 219 JR	38.74 ha	Vacant / Agricultural	National Government of South Africa	Manala (Mbongo)
36	Ptn 43 of the Farm Enkeldoornoog 219 JR	41.22 ha	Informal	National Government of South Africa	Manala (Mbongo)
37	Ptn 31 of the Farm Enkeldoornoog 219 JR	43.77 ha	Informal	National Government of South Africa	Manala (Mbongo)
38	Ptn 30 of the Farm Enkeldoornoog 219 JR	41.35 ha	Informal	National Government of South Africa	Manala (Mbongo)
39	Ptn 25 of the Farm Enkeldoornoog 219 JR	46.72 ha	Informal	National Government of South Africa	Manala (Mbongo)
40	Ptn 33 of the Farm Enkeldoornoog 219 JR	43.06 ha	Informal	National Government of South Africa	Manala (Mbongo)
41	Ptn 22 of the Farm Enkeldoornoog 219 JR	55.35 ha	Vacant / Agricultural/slight encroachment	National Government of South Africa	Manala (Mbongo)
42	Ptn 45 of the Farm Enkeldoornoog 219 JR	48.02 ha	Vacant / Agricultural	National Government of South Africa	Manala (Mbongo)
43	Ptn 23 of the Farm Enkeldoornoog 219 JR	45.47 ha	Vacant / Agricultural	National Government of South Africa	Manala (Mbongo)
44	Ptn of Ptn 54 a Remainder of the Farm Tweefontein 220 JR	245.866 ha	Informal (Recent) / Vacant	National Government of South Africa	
45	Ptn 1 of the Farm Vlaklaagte 221 JR	296.922 ha	Vacant / Agricultural	National Government of South Africa	Ndzundza (Mbhoko)
46	Various Ptn of Ptn 4 of the Farm Vlaklaagte 221 JR	107.865 ha	Informal (Recent)/ Vacant	National Government of South Africa	Ndzundza (Mbhoko)
47	Ptn of Ptn 2 of the Farm Gemsbokspruit 229 JR	45.10 ha	Informal (Recent)/ Vacant	National Government of South Africa	Amandebele- Akwa- Ndzundza-Somphalali
48	Ptn of Ptn 1 of the Farm Hartebeestfontein 224 JR	22.33 ha	Informal / Vacant (Recent)	National Government of South Africa	

49	Ptn of Ptn 1 of the Farm Gemsbokspruit 199 JR	61.71 ha	Informal / Vacant (Recent)	National Government of South Africa	Ndzundza (Mbhoko)
50	Ptn of Remainder of the Farm Kwaggafontein 216 JR	651.539 ha	Vacant	National Government of South Africa	
51	Ptn of Ptn 18 of the Farm Bulfontein 94 JS	95.36 ha	Informal	National Government of South Africa	
52	Ptn of Ptn 34 of the Farm Bulfontein 94 JS	233.802 ha	Informal	National Government of South Africa	
53	Ptn of Ptn 12 of the Farm Wolvenkop 227 JS	75.29 ha	Vacant / Agricultural	National Government of South Africa	
54	Ptn of Remainder of the Farm Wolvenkop 640 JR	139.271 ha	Vacant / Agricultural	National Government of South Africa	
55	Ptn of Ptn 182 of the Farm Goederede 60 JS	159.884 ha	Informal	National Government of South Africa	
56	Remainder 7 of the Farm Zustershoek 246 JR	212.554 ha	Informal	National Government of South Africa	
57	Ptn of Ptn 5 of the Farm Kameelpoortnek 218 JR	197.178 ha	Informal / Vacant	Provincial Government of Mpumalanga	Manala (Mbongo)
58	Ptn of Ptn 18 of the Farm Enkeldoornoog 219 JR	29.47 ha	Informal / Vacant	Provincial Government of Mpumalanga	Manala (Mbongo)
59	Ptn of Ptn 16 of the Farm Enkeldoornoog 219 JR	31.86 ha	Informal	Provincial Government of Mpumalanga	Manala (Mbongo)

60	Ptn 12 of the Farm Enkeldoornoog 219 JR	41.75 ha	Informal	Provincial Government of Mpumalanga	Manala (Mbongo)
61	Ptn of Ptn 13 of the Farm Enkeldoornoog 219 JR	32.93 ha	Informal	Provincial Government of Mpumalanga	Manala (Mbongo)
62	Various Ptn of Ptn 5 of the Farm Vlaklaagte 221 JR	1276.45 ha	Informal / Vacant	Provincial Government of Mpumalanga	
63	Ptn of Remainder of the Farm Enkeldoornoog 651 JR	73.67 ha	Informal	To be reconstructed by Land Surveyor	Manala (Mbongo)
64	Ptn 27 of the Farm Enkeldoornoog 219 JR	41.54 ha	Informal	Under Investigation	
65	Ptn of Remainder of the Farm Tweefontein 675 JR	1484.69 ha	Informal / Vacant / Agricultural	Under Investigation	
66	Portion 20 of the farm Enkeldoornoog 219 JR	42ha	Vacant	National Government of South Africa	

ANNEXURE B:

Nkangala Bioregional Plan Detailed Land Use Management Guidelines

1. LAND-USE GUIDELINES FOR TERRESTRIAL ECOSYSTEMS

1.1 LAND-USE GUIDELINES FOR PROTECTED AREAS (PAs)

It is beyond the scope and purpose of this bioregional plan to provide detailed land-use guidelines for protected areas. By definition, all protected areas exist primarily for the purpose of securing biodiversity and maintaining the ecological integrity of the landscapes in which they are situated. The National Environmental Management: Protected Areas Act (Act 57 of 2003) requires that land use and management in each protected area is governed by a management plan that has been approved by the relevant conservation authority. Such plans identify permissible activities and allocate them to appropriate zones within the protected area.

Protected area management plans are not purely spatial, but also deal with issues relating to policy and implementation, staffing, performance criteria and budgets, public participation, resource use and other social and economic opportunities.

Where there is an approved protected area management plan in place, this will determine the permissible and prohibited activities within each zone. In general, protected areas should be treated in the same way as Irreplaceable CBAs – that is, they should be maintained in a natural or near natural state, in good ecological condition, with no loss or degradation of natural habitat. Where there is pre-existing degradation, this should be restored. Where it is necessary to establish or expand infrastructure within a protected area, this should be carried out subject to the provisions of NEMA and the protected area management plan. In general, land uses that are inappropriate in protected areas include any form of commercial mining and prospecting, exploration for oil and gas, production of oil or gas and extensive or intensive grazing of livestock that leads to loss of species diversity, and modification of natural habitat for cultivation, plantation forestry, urban and industrial development.

1.2 LAND-USE GUIDELINES FOR TERRESTRIAL CRITICAL BIODIVERSITY AREAS (CBAs)

Critical Biodiversity Areas are required to meet biodiversity targets and need to be maintained in a healthy natural or near-natural state.

Irreplaceable CBAs are the most important biodiversity priority areas in the District, outside of the protected area network. They represent the last remaining options for securing critical biodiversity and ecosystems and for achieving biodiversity targets. If these areas suffer any further loss of habitat or ecological function, it is likely that the biodiversity targets will not be met and the threat status of species and ecosystems will decline.

Some CBAs are considered irreplaceable because they form what are called ‘critical linkages’ or ‘pinch points’, or because they incorporate threatened ecosystems. Critical linkages are highly constrained areas within a natural landscape that are vital for maintaining the linkage and ecological integrity of the corridor network as a whole. If these critical linkages are lost, it would result in disruption of the entire corridor network.

Optimal CBAs (previously referred to as ‘Important & Necessary’ in the MBCP, 2006) have an irreplaceability of less than 80%, but are considered to be the most optimally-located and the most efficient solution (i.e. occupying the smallest possible area) to meet biodiversity targets, as well as other criteria such as avoiding high cost areas where there are competing land uses. There may be options to achieve the biodiversity targets elsewhere, but these will require more land or may lead to increasing conflict between competing land uses.

Permissible land uses within irreplaceable CBAs are those that are compatible with maintaining the natural vegetation cover in a healthy ecological state, and that do not result in loss or degradation of natural habitat. Some low-intensity agricultural land uses, such as grazing of livestock, may be acceptable in CBAs, on condition that best-practice production guidelines aimed at benefiting the biodiversity assets and reducing the vulnerability of each site are implemented. An example of such best-practice guidelines is the recently released grazing and burning guidelines for managing grasslands for biodiversity and livestock production (SANBI, 2014).

Land uses that should not be located in terrestrial CBAs because they cause loss of natural habitat or ecosystem functionality, include:

- Any form of surface mining or prospecting.
- Extensive or intensive grazing that results in species diversity being lost through selective- or overgrazing.
- Conversion of natural habitat for intensive agriculture (commercial-scale cultivation) or plantation
- forestry.
- Expansion of existing settlements or residential, commercial or industrial infrastructure.
- New hard infrastructure, and linear developments such as roads, railways and pipelines.
- Complete-barrier fencing (i.e. game-proof fences) in CBA corridors.
- Linear infrastructure of any sort that disrupts the connectivity of CBA corridors.

More detailed land-use guidelines for working in terrestrial CBAs are provided in **Table 1**: Land-use guidelines for terrestrial critical biodiversity areas.

Table 1: Land Use Guidelines for Terrestrial Critical Biodiversity Areas

Map Category	Desired Management Objective	General Guidelines	
Protected Areas	According to Protected Area Management Plans	❖ All operational aspects of managing these areas must be subject to their main purpose, which is to protect and maintain biodiversity and ecological integrity, and should be governed by a formally approved protected area management plan. ❖ The management plan must identify allowable activities, which should be consistent at least with the CBA Irreplaceable Category; the location of these allowable activities should be captured in a zonation plan in the management plan. ❖ Activities relating to the construction of roads, administrative or tourism infrastructure and services (such as water reticulation systems, power lines and the likes) that are required ❖ to support the primary function of the protected area and its allowable activities, must be subject to at least a basic scoping report, or a full EIA, as specified by NEMA, and the protected area management plan.	
Critical Biodiversity Areas (CBA)	Maintain in a natural or near- natural state with no further loss of natural habitat.	❖ Allow low-impact land uses that are compatible with maintaining CBAs in a natural state, with no loss of habitat or species. ❖ Earmark CBAs as priority sites for land care projects such as Working for Water, Working for Wetlands, and Working on Fire and other compatible, conservation activities. ❖ Avoid activities identified in the three Listing Notices (R983, R984 and R985), if at all possible, as they are in conflict with the desired management objectives for terrestrial CBAs. Where they cannot be avoided, the impacts of these activities should be minimised and remedied, and EIA conditions should be strictly applied by the competent authority. ❖ In larger geographically sensitive areas, Environmental Management Frameworks (provided for under sections 24 (5)(i) and 44 of NEMA) should be developed and implemented to ❖ inform environmental authorisations, promote sustainability, secure biodiversity and ecological functionality and promote co-operative governance. The information and maps of the NBRP should be used to promote and support compilation of any Environmental Management Frameworks.	
Sub-Categories	**Desired Management Objective**	**General Guidelines**	**Specific Guidelines for meeting Minimum Requirements**
Irreplaceable CBAs	Maintain in a natural or near-natural state with no further loss of natural habitat.	❖ Biodiversity loss and land-use change in Irreplaceable CBAs should be monitored as a matter of priority, to prevent unauthorized land-use change or degradation by neglect or ignorance. ❖ Where appropriate, these areas should be incorporated into the formal Protected Area system through biodiversity stewardship agreements (contract Nature Reserves or Protected Environments). ❖ Ideally, conservation management activities should be the primary land use in all irreplaceable areas, OR they should at least be managed in ways that have no negative impact on species, ecosystems or ecosystem services. ❖ Extensive (widespread, low-intensity) livestock or game ranching, if well-managed, is compatible with the land uses are acceptable if they take into account the specific biodiversity features (e.g. infestation by invasive alien plants) at each site, if they comply with recommended stocking rates, if any associated infrastructure (required to ○ support the ranching activities) is kept to low levels.	❖ In general, Irreplaceable sites must be avoided in terms of the mitigation hierarchy. ❖ A specialist study must be part of the Basic Assessment, Scoping or EIA process for all land-use applications in these areas, using the services of an experienced and locally knowledgeable biodiversity expert. ❖ Applications for land use of any kind should be referred to the biodiversity specialists in MTPA and DARDLEA for evaluation. ❖ Degraded areas included in the land parcel, but not the land use proposal, should be restored to natural ecosystem functioning where possible. ❖ Provision of alternative land as a 'biodiversity offset' in exchange for biodiversity loss in these areas CANNOT be considered except in exceptional circumstances and would need to be considered on a case by case basis.
Optimal CBAs (Referred to as important and Necessary in MBCP)	Maintain in a natural or near-natural state with no further loss of natural habitat.	❖ Acceptable land uses are those that are least harmful to biodiversity, such as conservation management, or extensive livestock or game farming (see below). Large- scale cultivation, mining and urban or industrial development are not appropriate. ❖ Extensive (widespread, low-intensity) livestock and game ranching, if well-managed (see above), is compatible with the desired management	❖ If small-scale land-user change is unavoidable, it must be located and designed to be as biodiversity-sensitive as possible. ❖ A specialist study must be part of the Basic Assessment, Scoping or EIA process for all land-use applications in these areas, using the services of an experienced and locally knowledgeable biodiversity expert.

		objectives for these areas.	❖ Provision for biodiversity offsets in exchange for biodiversity loss should only be considered as a **last resort** and at a ratio consistent with national policy.
Ecological Support Areas	The desired management objective for all ESAs is to maintain the land in a near-natural and ecologically functional state, even if some loss of ecosystem composition or structure takes place.		
Landscape and Local- Scale Corridors	Maintain ecological functionality in support of biodiversity connectivity by retaining the existing natural vegetation cover in a healthy ecological state and restore 'critical-linkages' where necessary.	❖ A greater range of land uses over wider areas is appropriate, subject to an authorisation process that ensures the underlying biodiversity objectives are not compromised.	❖ Certain activities covered under Listing Notice 3 trigger the EIA process in ESA corridors. ❖ Restoration of corridors is important, particularly in terms of the Working for Water programs. ❖ The impact of land-use proposals on the functionality of ecological corridors must be assessed by the relevant biodiversity specialist as part of the EIA/Scoping report. ❖ Impenetrable fences that restrict animal movement should be discouraged.
Protected Area Buffers	To minimise the impacts of surrounding land uses on the ecological integrity, character and tourism potential of protected areas.	❖ When assessing the impacts of proposed land uses in protected area buffers, consideration needs to be given to both direct (e.g. cultivation and the loss of habitat) and indirect impacts (e.g. light and noise pollution).	❖ Buffer distances vary according to the nature of the Protected Area, as follows: ○ Nature Reserves: 5 km buffer as indicated in Listing Notice 3. ❖ Land-use change applications within the buffer zone may be referred to the protected area manager or ecologist for evaluation. ❖ A viewshed analysis of the potential visual impact of the proposed land use on adjacent protected areas should be undertaken where necessary.
Other Natural Areas	N/A	❖ These areas have the greatest flexibility in terms of management objectives and permissible land uses. ❖ Where possible, avoid modifying any remaining natural habitat by locating land uses, including cultivation and plantations, in already-modified areas. ❖ Authorisation may be required for high-impact land uses (such as intensive industry or urban development) and standard application of EIA regulations and other planning procedures is required.	
Heavily or Moderately Modified Areas	N/A	❖ Areas with no natural habitat remaining are preferred sites for higher-impact land uses, and new projects should be located in these areas before modifying any remaining natural habitat. ❖ Restoration should be prioritised where heavily modified areas occur close to land of high biodiversity value, or are located such that they could potentially serve useful ecological connectivity functions (such as in ecological corridors). ❖ When locating land uses in these modified areas, consider the off-site impacts they may have on neighbouring areas of natural habitat, especially if these are of high biodiversity value. For example, controlling use of pesticides in modified areas, because of the impacts on neighbouring areas of natural habitat. ❖ Encourage landowners and developers to use indigenous plants, especially trees, where aesthetic or functional options exist. ❖ Stabilise ecosystems and manage them to restore ecological functionality, particularly soil carbon and water-related functionality, using indigenous plant cover. Old lands should be burnt and grazed appropriately.	

1.3 LAND-USE GUIDELINES FOR TERRESTRIAL ECOLOGICAL SUPPORT AREAS

Ecological Support Areas (ESAs) are not essential for meeting biodiversity targets but play an important role in supporting the ecological functioning of CBAs, and deliver important ecosystem services. They facilitate landscape connectivity, promote resilience to climate change, and buffer elements of the landscape including protected areas and sites that are important for the survival of individual species. They need to be maintained in an ecologically functional state.

ESA - Landscape and Local Corridors: The purpose of ecological corridors is to provide intact pathways of intact habitat that allow for long-term biological movement. Landscape corridors represent the best option for promoting resilience to climate change and the persistence biodiversity as they provide pathways for the movement of plants and animals in response to environmental change. They also support the natural movement of species between populations to ensure population viability. Landscape corridors are aligned with areas that have maximum amounts of remaining natural habitat. Local corridors are fine-scale corridors that contribute to connectivity between climate change refugia. They represent alternative pathways for movement of species, and thus lessen impacts on critical linkages and landscape-scale corridors, and provide networks that are more robust to disturbance.

ESA - Protected Area Buffers: These are areas around protected areas where changes in land use may affect the ecological functioning or tourism potential of the adjacent protected area. The purpose of buffer zones is to reduce the impacts of undesirable land uses on the environment, and to provide opportunities for tourism. Modification of the natural habitat within the buffer zones may have negative impacts on the zonation and management plan of the adjacent protected area.

Permissible land uses: There is more flexibility in terms of options for compatible land uses in ESAs than there is in CBAs. However, ESAs do need to remain ecologically functional, which means that they need to be maintained in at least a near-natural state and in a good to fair ecological condition, although some loss of biodiversity pattern is acceptable.

Details of land-use guidelines for working within ESAs are provided in the attached Table 1.

1.4 LAND USE GUIDELINES FOR OTHER NATURAL AREAS

Other Natural Areas (ONAs) are not required to meet biodiversity targets, and so are not identified as a priority in the Nkangala Bioregional Plan. They do, however, often retain much of their natural character. The biodiversity in these non-priority landscapes may still be of value and contribute to maintenance of viable species populations and natural ecosystem functioning, and Other Natural Area may provide important ecological infrastructure and ecosystem services.

Permissible land uses: ONAs offer the greatest flexibility in terms of management objectives and permissible land uses, and are generally recommended (along with Heavily or Moderately Modified Areas) as the sites for higher-impact land uses. However, because ONAs may still have significant ecological, aesthetic and social value, they should not be regarded as 'ecological wastelands' or areas where 'anything goes.' Planners are still required to give due consideration to assessing environmental factors, socio-economic efficiency, aesthetics and impacts on the sense-of-place in making decisions about the location of land uses in these areas. Environmental authorisation may still be required for high-impact land uses in terms of the listed activities in the EIA Regulations, and other relevant legislation.

1.5 LAND-USE GUIDELINES FOR HEAVILY OR MODERATELY MODIFIED AREAS

Heavily modified areas are those in which significant or complete loss of natural habitat and ecological functioning has taken place due to activities such as ploughing, hardening of surfaces, mining, cultivation and other activities that modify natural habitat. Even so, heavily modified areas may include small remnants of natural habitat such as the patches or strips of natural habitat that survive between cultivated lands, along river-lines and ridges and in open spaces in towns. These disconnected remnants are often biologically impoverished, highly vulnerable to damage and have limited likelihood of being able to persist, but they may contain residual biodiversity value or may provide ecological infrastructure or certain ecosystem services.

Moderately Modified - Old Lands, (sometimes called 'old fields' in other documents) are those areas that were used for cultivation or mining in the past (within the last 80 years or so), but are no longer used for these purposes and have been left to re-vegetate. These 'old lands' are areas where biodiversity pattern and ecological function have been seriously compromised in the past, but they may still play an important role in the provision of ecosystem services, or may provide important habitats for certain animal species. For example, old lands can provide important feeding grounds for birds such as blue cranes, and disused mine shafts can provide suitable habitats for certain bats.

Permissible land uses: Heavily modified areas are those preferred for intensive land uses such as the construction of settlements, industrial development and other land uses that have a high impact. These land uses should still be located and managed in ways that maintain any residual ecological functionality, and that do not impact negatively on species for which these modified sites may be important. In some cases restoration may be advisable.

All land-use sectors will benefit from applying the land-use guidelines in this bioregional plan, in conjunction with other codes of best-practice such as those that have been developed in the timber growing industry, the recently-published Mining and Biodiversity Guideline (DEA et al., 2013) the Grazing and Burning Guidelines (SANBI, 2014) and the Grassland Ecosystem Guidelines (SANBI, 2013), to reduce impacts on biodiversity.

2. LAND-USE GUIDELINES FOR FRESHWATER ECOSYSTEMS

Locating land uses relative to freshwater ecosystems requires special consideration of the nature of these

ecosystems. They are highly interconnected systems, and the links between "cause and effect" are not limited to the immediate locality at which a land use is implemented relative to a wetland or river. Impacts on one wetland at a particular point in the landscape will have implications for other wetlands in that wetland system. Similarly, rivers are affected by longitudinal, lateral and vertical processes and are sensitive to upstream, downstream and land-based activities. Because of the way in which river ecosystems connect with their catchments through the hydrological cycle, there is a strong link between catchment health and river health. Rivers are both subject to and indicators of land-based catchment management practices. Both direct and indirect impacts on freshwater ecosystems (including dispersed impacts such as acid rain) result from urban industrial and agricultural land uses. Management must be considered on a catchment or sub-catchment basis as well as applying best-practice management principles in the terrestrial landscape.

Land-use guidelines for freshwater ecosystems in Nkangala District are provided in the overleaf **Table 2**.

2.1 LAND-USE GUIDELINES FOR FRESHWATER CBAs

Freshwater Critical Biodiversity Areas (CBAs) are those freshwater ecosystems required to meet freshwater biodiversity targets as defined in the National Freshwater Ecosystems Priority Areas project (NFEPA, Nel et al., 2011). Freshwater CBAs include: CBA Rivers, CBA wetlands and CBAs for specific freshwater species not used in NFEPA (such as threatened freshwater invertebrates).

- CBA Rivers: These are rivers that need to be maintained in a good ecological condition in order to meet biodiversity targets for freshwater ecosystems. They include FEPA rivers and all free-flowing rivers (of which there is only a few left in Mpumalanga).
- CBA Wetlands: These are wetlands that have been identified as freshwater ecosystem priority areas (referred to as FEPA wetlands) that are important for meeting biodiversity targets for freshwater ecosystems. Examples of these wetland types that are in good ecological condition are scarce.
- CBA Aquatic species: These are areas considered critical for meeting the habitat requirements of selected freshwater invertebrate species. These species are all known from only one or two localities and are at risk of extinction if their habitat is lost.

Each of the subcategories of freshwater CBAs have fairly unique land-use guidelines and planning requirements. The most common impacts on river and wetland systems, which may also impact on the CBA Aquatic species are summarised below:

- Water extraction: cumulative reduction of river flow.
- Open-cast and strip mining (especially of coal): destruction of the water table, acid mine drainage, toxic ground-water discharge.
- Planting high water-demand crops (e.g. timber and sugarcane): lowers the water table, stream flow reduction, complex soil changes.
- Industrial-scale agriculture: causes widespread changes to soil and vegetation cover, with major impacts on soil erosion, infiltration of rainfall, water-table recharge and sedimentation of rivers. Of particular concern is the use of pesticides in the vicinity of the CBA Aquatic species areas.
- Atmospheric pollution: changes the chemistry of rain water (acid rain).

Hard paving and built structures (urban development): reduced infiltration and water-table recharge; enhanced flooding, erosion and sedimentation of riverbed; pollution and changes to overall river ecology.

- *Point-source pollution* from sewage, industrial and mining discharges (toxic to biodiversity and humans) damages ecosystem health.
- *Dams and weirs:* change downstream hydrology and flow characteristics, water temperature, turbidity and dissolved nutrients; provide a physical barrier to fish.
- *Non-point-source pollution (e.g. groundwater and seepage):* from dumps (mine, industrial and rubbish), surface runoff (agricultural, mine, industrial and urban) and irrigation seepage.
- *Engineering/construction/earth-moving:* causes accelerated soil erosion, turbidity (suspended solids) and sedimentation.
- *Structures such as bridges, causeways (+ weirs and dams):* can change the natural erosion and sedimentation characteristics of a river, causing local and downstream channel modification.

Broad guidelines for locating land uses relative to freshwater CBAs are provided in Table 2. The NFEPA guidelines (Nel, *et al.*, 2011), have informed the development of the land-use guidelines for freshwater CBAs in the Emalahleni District. For specific land-use practices and activities that impact on water quantity, water quality, or habitat and biota in freshwater CBAs.

2.2 LAND-USE GUIDELINES FOR FRESHWATER ESAs

Ecological Support Areas are not required to meet freshwater biodiversity targets, but support the ecological functioning of freshwater CBAs. They are grouped into four sub-categories, including: ESA Important sub-catchments (and fish support areas); ESA Wetlands; ESA Wetland clusters, and ESA Strategic Water Source Areas. These are described briefly below:

ESA - Wetlands: This sub-category includes all non-FEPA wetlands. Some wetlands in the Emalahleni District have been extensively degraded and, in some cases, irreversibly modified and lost through a combination of inappropriate land-use practice, whereas others are still in a good ecological condition. Wetlands represent high value ecological infrastructure for delivering, managing and storing good quality water for human use, and they are vulnerable to harmful impacts. It is, therefore, in the interests of national water security that all wetlands are protected by law (National Water Act, Act 36 of 1998).

ESA - Wetland clusters: These are clusters of wetlands embedded within a largely natural landscape that function as a unit and allow for the migration of species such as frogs and insects between individual wetlands. They also support other freshwater ecological processes that operate at a broader, landscape scale.

ESA - Important Sub-Catchments (and Fish Support Areas): This sub-category includes FEPA sub-catchments and Fish Support Areas. A river FEPA is the river reach that is required for meeting biodiversity targets for river ecosystems and threatened fish species. In managing the condition of a river FEPA, it is important to manage not only the river reach itself, but also the network of streams and wetlands that feeds into it, as well as land-based activities in the sub-catchment that supports the river FEPA. A proportion of tributaries and wetlands need to remain healthy and functional in order for the river FEPA to be kept in a good ecological condition. This requires that management activities are focussed on maintaining water quantity and quality and the integrity of natural habitat in the sub-catchment. Fish support areas (that are not already FEPAs) are sub-quaternary catchments that are not in good ecological condition, but are still important for supporting threatened and near-threatened indigenous freshwater fish populations that are of conservation concern. This category is similar to FEPAs, except that Fish Support Areas may not always be required to meet proportional targets. The fish populations may also not always be present in the mainstem river, but are found in the tributaries within these sub-catchments, from which they are able to re-populate mainstem rivers after pollution events.

ESA - Strategic Water Source Areas: Strategic Water Source areas produce more than 50% of Mpumalanga's runoff in only 10% of the land surface area. Any land uses that place the continued delivery of an adequate volume of good quality water at risk should be avoided or, at least, mitigated. Guidelines for locating land uses in relation to these ESAs are provided below and table attached. More detailed guidelines for managing land-use activities that impact on water quantity in sub-quaternary catchments associated with river FEPAs, can be found in the NFEPA Implementation Manual (Driver *et al*., 2011).

2.3 LAND-USE GUIDELINES FOR OTHER NATURAL AREAS AND HEAVILY MODIFIED FRESHWATER ECOSYSTEMS

Other Natural Areas: These are natural areas that are potentially available for changes in land use, subject to environmental authorisation processes. Although they are not identified to support freshwater CBAs or ESAs, they still provide important ecosystem services. Freshwater ONAs are particularly important in buffers around rivers and wetlands to reduce siltation and improve water quality. Old lands were included under Freshwater ONAs because of their functional importance in supporting and maintaining freshwater CBAs.

Heavily Modified areas: All areas currently modified to such an extent that any valuable biodiversity and ecological function has been largely lost. Indirect polluting effects from modified surfaces or land uses need to be assessed, particularly where modified areas occur together with freshwater CBAs and ESA in sub-catchments.

Heavily Modified – Dams: Although dams are not natural water bodies, they may still have a recharge effect on wetlands, groundwater and river systems and may support river-or water-dependent fauna and flora, such as water birds and wetland vegetation. For this reason, it is important to manage them carefully and avoid negative impacts on water quantity and quality in particular.

Table 2: Land Use Guidelines for Terrestrial Critical Biodiversity Areas

Map Category	Desired Management Objective	General Guidelines	Specific Guidelines for meeting Minimum Requirements
All Freshwater CBAs	Maintain in a natural or near-natural state with no loss of ecosystems, functionality or species. Where they are currently degraded, they should be rehabilitated, with no further degradation of ecosystem condition	• Freshwater CBAs should be maintained in good ecological condition, and those that are degraded should ideally be rehabilitated to a good condition. • Land-use practices or activities that will lead to deterioration in the current condition of a freshwater CBA, or that will make rehabilitation difficult, are not acceptable. • Any proposed land-use change must be subject to the EIA process as it is likely to impact on the ecological drivers of the river or wetland ecosystem and can, potentially, alter its functioning or lead to loss of species. • Specialist studies by a freshwater ecologist should be conducted if there is a watercourse that is likely to be affected.	• All questions about land-use change and its impact on water supplies must be referred to the Department of Water and Sanitation (DWS). • National Water Quality Standards are set by DWS and return flows (of effluent) from any land use, are subject to these. • The process of determining the "Ecological Reserve" flow, developed by DWS, is an essential tool in managing water use so that rivers can survive as ecosystems. • All land-use activities should also be subject to the accepted standards set for construction of structures like bridges, culverts and dams. • Ideally, effluent released should be aligned with Resource Quality Objectives, as determined by a Reserve Determination, or determined on the basis of species sensitivities. • **A buffer of 100 m should be used to buffer rivers and wetlands, unless DWS's river / wetland buffer tool has been applied.** • **Mining should not take place within 1,000 m of a freshwater CBA buffer.**
CBA Rivers	Maintain in a natural or near-natural state with no loss of ecosystem functionality or species.	• There is no flexibility in land-use options in this category. • Any activities that may impact on CBA rivers, even upstream or in sub-catchments, need to be avoided, or impacts mitigated if they cannot be avoided. • Any damaging activities within CBA river buffers must be avoided. • A 100 m buffer is the greater of the delineated riparian area or 100 m measured from the top of bank.	
CBA Aquatic Species	Maintain in a natural or near-natural state with no loss of species or ecosystems.	• Avoid the use of pollutants such as pesticides and other agricultural toxins. • There are few appropriate land-use options as any loss of habitat could result in extinction of threatened freshwater-dependent invertebrate species.	
CBA Wetlands	Maintain in a natural or near-natural state with no loss of species or ecosystem functionality.	• If the current ecological condition is good (either natural and unmodified, or largely natural with only small change in habitats and biota), then this condition needs to be maintained. • If the current ecological condition is fair to poor (i.e. moderately to severely degraded with significant loss of natural habitat, biota and ecosystem functions), then this needs to be improved through rehabilitation measures. • Refer to the NFEPA Implementation Manual for specific guidelines (for example, mining should not take place within 1 km of the boundary of the buffer around a FEPA wetland). • Any further loss of area or ecological condition must be avoided, including in a 100 m generic buffer around the wetland edge.	
ESAs			
ESA Important Sub-Catchments and Fish Support Areas	Maintain in a natural or near-natural state with limited loss of ecosystems or functionality, but without lowering its Present Ecological State. Where there is a FSA for a fish species, more stringent authorisation requirements will be required.	• Manage the cumulative impacts of land-use activities in the sub-catchment (including land-based activities), ensuring no further deterioration of the ecological state of river FEPAs. • In the case of Fish Support Areas, apply authorisation requirements more stringently. Ensure that freshwater specialist studies are conducted in ESA Fish Support Areas. • Maintain flow rates in streams in agricultural catchments in good condition, by managing land-use practices to mitigate the impacts of stream-flow reduction and ensuring that the extent of agriculture (and forestry) in the catchment do not exceed 30-50% of land surface areas. • **Generic buffers of 100 m should be established around streams and wetlands within these catchments.** These buffers can be refined based on a site visit and applying DWS's wetland delineation tool. • **Land-**use practices or activities that are not consistent with keeping natural habitat and biota intact in ESA Important sub-catchments are not acceptable.	

ANNEXURE B

Map Category	Desired Management Objective	General Guidelines	Specific Guidelines for meeting Minimum Requirements
ESA Wetland Clusters	Maintain in a natural or near-natural state with no further loss of natural habitat.	• Wetland clusters should not be further fragmented, but should be managed as a unit. • Land uses that disrupt the possibility of migration, or the functioning of other ecological processes, across the cluster should not be allowed and sensitivity to disruption must be assessed in the EIA process. • **Delineate all wetlands within 500 m of a land-use activity**, and apply for a Water Use Licence if needed. • Conduct a buffer determination assessment around all wetlands, regardless of ecological condition or ecosystem threat status.	
ESA Wetlands	Maintain in a fair ecological condition with limited loss of functionality or composition, but without lowering its Present Ecological State.	• All wetlands are protected under the National Water Act (Act 36 of 1998). • Delineate all wetlands around a land-use activity, and apply for a Water Use Licence. • Conduct a buffer determination assessment around all wetlands, regardless of ecological condition or ecosystem threat status. Refer to the NFEPA Implementation manual for specific guidelines (for example, mining should not take place within 100 m of the boundary of the buffer around a wetland).	
ESA Strategic Water Source Areas	Maintain in at least a fair ecological condition paying particular attention to maintaining water quantity, water quantity, water quality and habitat integrity.	• Strategic Water Source Areas tend also to be favoured for plantation forestry and the application of best-practice management is encouraged. • Mining places the delivery of good quality water in adequate quantities at risk, and any cumulative impact of mines needs to be assessed and considered when processing mining applications. • The clearing of invasive alien plants from drainage lines and wetlands within these areas must be a provincial priority. • Restoration of wetlands and degraded areas within these catchments is encouraged.	

3. INTEGRATION OF CBA MAP CATEGORIES AND OTHER LAND-USE SCHEMES

The Emalahleni Local Municipality planning departments use variants of a provincial zonation system (Mpumalanga, 2008) to inform their decision-making. It is anticipated that a similar zonation system may be used to implement SPLUMA (Spatial Planning and Land Use Management Act, Act 16 of 2013) or Bylaws for implementing SPLUMA, within the District. The current zonation system describes zones in which various land uses are allowed or prohibited, regulated through a permitting system. Although there are categories in this zonation scheme for agriculture and environmental conservation, there was no congruence between this system and the mapped biodiversity categories that were used in the MBCP (2006).

In an attempt to make the land-use guidelines in the Mpumalanga Biodiversity Sector Plan, and this bioregional plan, more useful to the district planning community, the biodiversity map categories have been integrated with the existing zonation definitions used in other planning schemes. This should make it easier for biodiversity priorities to be adequately represented in the existing planning systems (and the Land Use

Schemes developed under SPLUMA).

The zonation system uses 25 zones, many of which provide for the distinctions needed for urban planning, such as five density classes for urban residential zones. Such fine definition is not relevant to biodiversity management and conservation; for example, all densities of urban residential land fall under the 'Heavily modified areas' category on a CBA map. So, to simplify the integration of the biodiversity map categories, some zones were grouped together, giving the 14 zones described below.

In some zones, such as Agriculture, Quarries and Mines, and Environmental Conservation, it was helpful to make further distinction based on the most common land uses taking place within them. Thus, the final land-use guidelines are based on a matrix of biodiversity categories, land-use zones and common land uses (**Table 3**).

This section describes the general impacts of the zonation and permissible land uses on biodiversity.

3.1 Agriculture (A)

This zone accommodates a range of land uses including:

- Extensive livestock and game ranching (where 'extensive' means livestock or game farming at low stocking rates over large areas).
- Arable Land, including cultivation of irrigated and dryland crops, orchards and multi-cropping systems.
- Plantation Forestry, including all kinds of commercial timber plantations, woodlots, and converted infestations of invasive alien woody species.
- Agricultural Infrastructure, including Agri-Industrial facilities, Agri-Villages, Buildings, Houses, Sheds, and Intensive Animal Production facilities.

Although many land uses are freely permitted within the Agricultural zone, all of them, other than extensive livestock and game production, have significant impacts on biodiversity, and are largely incompatible with biodiversity conservation objectives. They may even accelerate degradation by causing habitat loss, soil erosion and hydrological changes. Their impacts vary from moderate to severe depletion of natural biota and disturbance of ecosystem functioning. However, they can still contribute to the overall functionality of a landscape and allow for the movement and foraging of animals.

3.1.1 Extensive Game or Livestock Production

Extensive livestock and game ranching is the management of large areas of natural (unimproved) rangelands, at low stocking rates, with the commercial objective of producing livestock or game animals for hunting, or to sell as live animals or processed animal products.

This land use is considered to be compatible with biodiversity objectives of some protected areas (such as Protected Environments), CBAs and ESAs, under certain conditions, including:

- A biodiversity and veld condition assessment should underpin the calculation of carrying capacity.
- Game and livestock stocking rates should never exceed the recommended carrying capacity.
- If the irreplaceability of the site is due to the presence of a grassland vegetation feature, then exclusive sheep farming should be avoided and stocking rates of concentrate grazers such as blesbok should be conservative (this may mitigate against commercial-scale production).
- Give preference to keeping game species that fall within their natural distribution range in Mpumalanga
- or the Emalahleni District.
- Appropriate grazing and burning regimes must employed to ensure that rangeland condition does not deteriorate, specifically in terms of implementing a rotational burning and grazing system that allows for adequate rest of the vegetation.
- A coherent management plan that governs grazing, burning and invasive alien plant control (and other aspects of farm management) must be in place.
- Sensitive habitats and species-rich areas, such as intact grasslands, wetlands, rivers and forests, should ideally be delineated accurately and zoned separately.
- Ecologically and economically sustainable management is applied to farm portions above a certain minimum size, based on ecological and economic viability.

3.1.2 Arable Land

Arable Land category includes all forms of irrigated or dry-land crops including orchards, planted pastures and ‘improved’ grasslands.

Any activity that turns the soil or replaces the natural vegetation with a crop generally results in loss of ecosystem composition and structure and is not considered compatible with the biodiversity objectives of protected areas, CBAs, and some ESAs. In a few species-specific instances, arable land does contribute to an ESA objective by providing foraging habitat for animals such as blue cranes.

3.1.3 Plantation Forestry

Forestry includes all land planted to trees (primarily pine, gum and wattle species) for commercial timber or pulp production, irrespective of the size of the area. It excludes the natural, open areas that remain unplanted within a plantation. Although very similar to arable land in terms of biodiversity impact, plantations have been separated out due to the unique nature of their land management context.

All planted areas are considered to be incompatible with biodiversity objectives of protected areas, CBAs and most ESAs. It should be noted however, that the unplanted areas within plantations often harbour important biodiversity and can make an important contribution to meeting biodiversity conservation goals and for providing connectivity between natural areas across landscapes. This means that with sound planning, the biodiversity-compatibility of plantation forestry can be improved, but afforested land must

be covered by the necessary plantation permits and the management of the plantation and associated lands must adhere to industry best-practice guidelines. Forestry Stewardship Council (FSC) certification is encouraged.

3.1.4 Agricultural Infrastructure

Agricultural Infrastructure includes all the land-use categories associated with infrastructure in the agricultural sector, including facilities associated with Agri-Industry (the processing of agricultural products close to the land where these are produced) and Intensive Animal Production (the production of confined animals that are dependent primarily on imported food, including dairy cattle in feedlots, piggeries, and fish farms in rivers).

These land uses have impacts that are felt beyond the direct footprint of the land-use activity itself, thus impacting on ecosystem functionality.

All such Infrastructure is considered incompatible with the desired management objectives of protected areas, CBAs and most ESAs.

3.1.5 Municipal Commonage (MC)

The Municipal Commonage zone provides for the implementation of the Municipal Commonage Policy of the National Government and the relevant municipality and to promote and facilitate local agri-economic development. Allowed activities include the development of small-scale infrastructure and cropping, and often include unmanaged, extensive grazing (with stocking rates that are often higher than the carrying capacity of the vegetation).

The activities listed above are generally not compatible with CBA management objectives but may (under certain conditions) be permitted in ESAs and ONAs. Furthermore, some areas of commonage contain areas of natural vegetation that could be of significant biodiversity value if the land is managed appropriately, and commonage may be important for maintaining ecological connectivity across landscapes.

3.1.6 Environmental Conservation (EC)

The Environmental Conservation zone provides for a range of land-use activities in which biodiversity conservation is the primary land-use objective. It includes land uses that:

- Protect the natural environment and natural processes for their historic, scientific, landscape, biodiversity, habitat, or cultural values.
- Provide facilities which assist in public education and the integration of the built and natural environments, with minimal degradation of the natural environment or natural processes.
- Create a holistic framework where culturally significant and historical sites are accorded equal status and value along with new developments.
- Ensure the sustainable provision of ecosystem services to the community.

This zone provides for conservation management activities in protected areas and informal conservation areas managed for biodiversity, wildlife production and recreational/educational tourism; low-intensity eco-tourism activities (such as hiking trails) and sustainable consumptive activities (e.g. sustainable harvesting of natural resources such as medicinal plants), conducted in natural habitats on public or private land.

Subject to appropriate controls, low-impact eco-tourism and sustainable consumptive activities can be biodiversity-compatible and may be accommodated in CBAs and ESAs. The Environmental Conservation category is encouraged as the preferred land use in CBAs and ESAs. Where there is a requirement to use natural resources, this should be demonstrably sustainable. This would include the concept of catchment management and protection for water security.

3.1.7 Open-Space (OS)

The Open Space category provides for:

- Appropriately situated sites that are easily accessible for recreational purposes and activities for local and designated communities (including the physically challenged, the elderly, women, and children), and are located and maintained to attract visitors and tourists.
- Parks, botanical gardens and other open spaces as well as corridor linkages between open areas for passive recreational purposes.

Although there will be some infrastructural development associated with this land-use zone, it could potentially be compatible with some of the management objectives of CBAs and ESAs if it secures significant areas of natural habitat. However, this would need to be decided on a case-by-case assessment of the nature of the land use and the context of the area. In CBA or ESA areas, only Open Space areas where the land use maintains and enhances the natural vegetation should be permitted.

3.1.8 Tourism and Accommodation (TA)

The Tourism and Accommodation zone provides opportunities for the development of a broad range of tourist and recreational facilities, inclusive of tourism, recreation and accommodation facilities. The degree of impact on biodiversity depends on the nature of the tourism facility.

Low impact facilities include things such as outdoor recreation (e.g. hiking trails, 4 X 4 tracks), camping sites, gift shops, restrooms and non-place bound tourist and recreation facilities such as paint-ball parks.

High-impact facilities include developments such as large resorts, Golf Courses and Gold Estates, Polo Estates, and the likes.

Low Impact tourism and accommodation facilities that are in support of sustainable rural tourism, rural businesses and communities and that provide for the rural recreational and leisure needs of urban dwellers, could be allowed in protected areas, CBAs and ESAs subject to the appropriate biodiversity-related controls being in place. High-impact tourism and accommodation facilities could only be considered in ONAs and some ESAs. In all cases, permission would be required to ensure that these land uses do not compromise the specific biodiversity objectives of the area, that the location of infrastructure is within already-modified areas (if possible), that large-scale tourist facilities are kept to the 'urban fringe' and that infrastructure development is kept out of ecologically sensitive areas and priority ecological corridors.

3.1.9 Rural Residential (RR)

The Rural Residential zone makes provision for residential and recreational non-urban infrastructure associated with rural landscapes, including the villages and gardens of traditional areas (but excluding subsistence agriculture). It includes low-density rural housing, the establishment of lifestyle estates or investment-type recreational ownership of facilities such as share-block schemes, multi-ownership reserves and eco-estates but excludes golf estates.

The purpose of this land-use zone is:

- To create the opportunity for people to enjoy a semi-rural life-style and yet have ready access to the full range of physical and social services which are available in the adjacent urban areas.
- To allow only a limited number of ancillary uses so as to protect the primary low- density residential or agricultural land use.

- To ensure that urban agricultural activities are undertaken in a sustainable manner and in accordance with the relevant environmental principles.

Land uses in the RR zone can be compatible in CBA and ESA categories, although impacts must be carefully assessed and managed. Applications should be handled on a case-by-case basis and EIA regulations applied. Low-density rural residential housing and the development of some lifestyle estates may be compatible with biodiversity conservation objectives if land portions are large and the development footprint is small. In some cases, these kinds of land uses can lead to an increase in the amount of land available for conservation.

The following conditions should be observed:

- Intensive recreational developments such as golf and polo estates, which result in significant habitat loss and which represent urban development outside the urban edge, are not compatible with CBAs.
- Any infrastructural developments in Irreplaceable CBAs should be avoided.
- Infrastructure development within Optimal CBAs and ESAs may be suitable if the property size exceeds 250 ha and if over 90% of the land is not modified in any way (through the establishment of infrastructure or gardens).
- Rural Residential development within Optimal CBAs, ESAs and ONAs can be considered if the houses and infrastructure are clustered, and meet other criteria that are consistent with the desired management objectives.
- Residential developments within ESAs must consider the functionality of the ESA which may be related to connectivity and their role as ecological corridors. In these cases residential houses and infrastructure should not disrupt or fragment the corridor, or establish impermeable fences or boundaries to disrupt faunal movement.

3.1.10 Residential (RES)

The Residential zone provides for safe and sustainable residential environments for all communities. It limits the allowable ancillary uses to those that can be accommodated within the residential fabric with minimal impact or disruption. Although the zonation scheme distinguishes between four categories of residential land use based on density (low, low-medium, medium-high, and high), and an additional general zone called 'Residential', these have been grouped into a single category in this bioregional plan as the impacts on biodiversity objectives, and the recommended land-use guidelines, are very similar.

Residential land uses are generally not compatible with the desired management objectives of protected areas, CBAs or ESAs, and should only be considered, subject to the necessary authorisations, in ONAs or Heavily Modified areas. Urban expansion should be managed through the delineation of an urban edge, and all residential developments (and their associated infrastructure) should be located within the urban edge.

3.1.11 Urban Influence (UI)

This category is an amalgamation of a number of land-use zones (including Institutional, Urban Influence, General Mixed Use, Low Impact Mixed Use, Suburban Mixed Use and General Business) that have similar impacts on biodiversity.

In all cases, the land uses allowed in these zones are not compatible with protected areas, CBAs or ESAs, and should only be considered, subject to the necessary authorisations, in ONAs or Heavily Modified areas.

3.1.12 Low Impact and General Industry (LI)

This zone brings together a group of land-use activities recognised in the Zonation Scheme, including Low Impact Industry, General Industry and Industry.

None of the land uses in this category are biodiversity-compatible and should not be located in CBAs or ESAs. They should be located in ONAs or Heavily Modified areas, subject to the appropriate authorisations.

3.1.13 High Impact Industry (HI)

The High Impact Industry zone accommodates intensive, high-impact industries, which have high local impacts (e.g. high levels of air, water and noise pollution and heavy traffic) as well as significant dispersed and cumulative impacts. These types of industrial developments have significant and wide-ranging impacts, that may have effects hundreds of kilometres from their source, especially along river systems.

High-impact industrial development is not compatible with biodiversity and should not be located in protected areas, CBAs or ONAs. High Impact industry should be located in heavily modified areas, subject to the necessary authorisations and on condition that there are no negative impacts on neighbouring areas of high biodiversity importance.

3.1.14 Quarrying and Mining (QM)

The Quarrying and Mining zone includes all forms of mineral extraction including underground mining, strip and open-cast mining, excavations or quarrying, and the surrounding 'footprint' of associated activities including the establishment of residential areas, waste dumps, settlement ponds and disposal sites, urban waste sites and landfill sites.

None of the activities, excluding underground mining, in this zone are biodiversity compatible and they should not be located in protected areas, CBAs or ESAs. They should only be located in Heavily Modified areas, or in some ONAs, and then should be subject to all relevant authorisations and the proviso that they will not impact negatively on neighbouring biodiversity priority areas.

3.1.14.1 Prospecting versus Mining Applications:

Prospecting, particularly bulk sampling and the fracturing of water-tables, can have negative impacts on the environment. Prospecting also includes associated disturbances such as the construction of roads. Although prospecting does not automatically lead to the issuing of mining rights, it does grant the prospecting license holder exclusive right of applying to mine the mineral resource. Prospecting is therefore considered to have negative impacts on both CBAs and ESAs and any prospecting activities should be placed outside of these priority areas.

The QM zone is also be split into surface and underground mining activities. Although impacts from underground mining may be less than open-cast mining, impacts need to be considered in terms of both terrestrial and freshwater ecosystems. Ideally, no underground mining infrastructure should be located in or adjacent to terrestrial or freshwater CBAs and ESAs and no open-cast mining should occur in these biodiversity priority areas.

The NFEPA Implementation Manual (Nel *et al*., 2011) recommends that mining should not take place within 1,000 m from the outer edge of a generic 100 m wetland buffer (i.e. 1.1km if buffer is 100m). Buffer widths should be determined based on the guidelines in the NFEPA Implementation Manual, or according to the Department of Water and Sanitation's buffer tool, when it

is available. These recommended buffers are also adopted within the Mining & Biodiversity Guidelines (2013).

3.1.15 Transport Services (TS)

This zone accommodates transportation service functions and land uses such as airports, railway stations, petro-ports and truck stops, bus and taxi ranks and other transport depots. These services should be located so that they provide the catalyst for local economic development whilst ensuring that they are developed in accordance with EIA requirements and ongoing environmental monitoring procedures.

All the land uses allowed in this zone are not compatible with protected areas, CBAs and most ESAs, and should only be considered in some ONAs or Modified areas where it is certain they will not impact on neighbouring biodiversity priority areas.

3.1.16 Roads and Railways (R)

This category is an amalgamation of two land-use categories in the Zonation Scheme (Existing and Future Roads, and Rails), and it includes all existing and planned linear infrastructure such as hardened roads and railways. It includes the activities and buildings associated with road construction and maintenance, e.g. toll booths, construction camps and road depot sites. It does not include power and telephone lines (which are accommodated under the next category, Utilities).

The land uses allowed in this zone can be biodiversity-sensitive and compatible with the desired management objectives of CBAs, and ESAs under certain conditions, but should be discouraged wherever the management objective is the maintenance of ecological connectivity across the landscape, or where the installation of the infrastructure would disrupt this connectivity. In all other cases, transportation infrastructure could be allowed in ESAs and ONAs under certain conditions, and subject to the necessary environmental authorisations and other relevant approvals.

The design of the transportation network should avoid impacts (direct or indirect) on CBAs and ESAs, especially connectivity of the landscape and local corridors. Transport infrastructure should not be located in sensitive areas such as river and wetland buffers, and should avoid flood-lines.

3.1.17 Utilities (U)

The Utilities zone allocates land for the provision of a diverse range of services such as water and sewerage works, linear structures (such as pipelines, canals and power lines) and other similar utilities. The Utilities zone should be located at a distance from residential or other land uses where they may detract from levels of amenity or safety. They should also be located such that disruption to natural areas and water courses through the laying of service pipelines or cables is minimised by adhering to sound environmental management principles.

3.1.17.1 Waterworks, Sewerage Works, Energy-Generation Facilities

This category includes a wide range of infrastructural installations serving rural and urban areas, including wastewater treatment works, bulk water transfer schemes, impoundments and energy-generation facilities (powers station, wind farms). Sewerage works and catchment transfers may have significant impacts on water quality and flow in rivers and wetlands. This land-use category also falls outside of the municipal land-use zonation system but is important when considering impacts on freshwater CBAs and ESAs.

None of the land uses in this category are biodiversity-compatible and should not be located in CBAs or ESAs. They should be located in ONAs or heavily modified areas, subject to the appropriate authorisations.

3.1.17.2 Water Projects and Catchment Transfers

This category includes all substantial impoundments, dams and weirs, and bulk water transfer schemes,

including those associated with power generation.

Surface water in the Nkangala District is already over-committed to various forms of development and human consumption. All our major rivers are impacted by water extraction and dam construction, leading to severely reduced flows in lower reaches.

Large public development structures will go through a full EIA process with mandatory public participation. Small farm dams however, are often thought to be too small to justify impact assessment. Historically farm dams were subsidized by the state, being considered good water conservation practice. Subsequent study has shown their cumulative effect has been to reduce stream-flow dramatically as well as several other negative impacts. In many areas small farm dams are being deliberately breached to correct this error. All farm dams and weirs are subject to EIA legislation.

All proposals for dams require detailed planning and strict following of formal EIA procedures, including serious consideration of alternatives.

Fish passes:

Any structure that obstructs or modifies the flow in a river or creates a sharp increase in water velocity may require a fish pass to allow for upstream (as well as downstream) movement of fish. Fish passes are gently inclined, sometimes stepped, shallow channels that allow fish to swim upstream to breed. Specialised expertise is required to design and build fish passes. These structures should be compulsory wherever movement of fish up or downstream is necessary. This is particularly important in the identified priority sub-catchments, 'important freshwater corridors' and in the lower reaches of rivers. These corridors are identified on the freshwater Biodiversity Map as critical movement links to retain some connectivity in our fractured river systems.

Instream engineering – channel or bank modification:

Wherever engineering works will disturb water courses or when structures have to be built through them, such as road and rail crossings, special measures must be taken to ensure minimal disturbance, obstruction to fish movement or restriction of the channel. This provision must take into account a generous assessment of expected flood volumes as there is every indication that flood peaks (and droughts) will become more extreme as global climate change proceeds. Design specifications for such structures must be based on South African conditions and information. Imported specifications may be from less extreme climates and have inadequate margins to accommodate extremes.

Linear Engineering Structures: Pipelines, Canals, Catchment Transfers and Power-lines:

The structures included here are similar to transport services and roads and railways, but also include those linear engineering structures not included under Transport, Roads and Railways, such as pipelines, conveyor belts, power-lines, canals, and so on. These can have measurable impacts on particular species, for example the impacts of power-lines on birds.

The land uses allowed in this zone can be biodiversity-sensitive and compatible with the desired management objectives of CBAs, and ESAs, but should not be established in CBA irreplaceable sites or wherever the management objective is the maintenance of ecological connectivity in the landscape, or where the installation of the infrastructure would disrupt this connectivity. In all other cases, linear infrastructure could be allowed in ESAs and ONAs under certain conditions, and subject to the necessary environmental authorisations and other relevant approvals; it should be discouraged in all CBAs.

The design of the infrastructure should avoid impacts (direct or indirect) on CBAs and ESAs, especially on ecological connectivity of the landscape and disruption of local corridors. Linear infrastructure should not be located in sensitive areas such as river and wetland buffers, and should avoid flood-lines.

Other utilities:

This category provides for any other land uses not specified in any of the other categories, and may include a wide variety of infrastructure, such as radio masts, electrical sub-stations and other such utilities. Generally, land uses in the utilities category are not compatible with the desired management objectives of freshwater CBAs or ESAs, but could be allowed, under certain conditions in terrestrial CBAs, ESAs and ONAs

Table 3: Land-Use Guidelines per Municipal Planning Zone and CBA Category

Bioregional Plan category			Mpumalanga Land-use Zones (2008)	A				MC	EC	OS	TA		RR		RES	UI	LI	HI	QM			TS	R	U		
Category	Subcategory	Details of what is included (ecosystems, species, processes)	Land-use Groups per Land-use Zone (2007)	Arable Lands	Agricultural infrastructure	Livestock & game ranching	Forestry	Municipal commonage	Conservation / stewardship	Open Space	Low impact tourism	High Impact Tourism	Rural Residential	Eco-estates	Residential (LR, LMR, MR, HMR, HR, SH, GR)	Urban influence (Ist, UI, GMU, LMU, SMU, GB)	Low Impact & General Industry	High Impact Industry	Quarrying / Opencast Mining	Prospecting	Underground Mining	Transport Services	Roads & Rails	Water works, sewerage works, catchment transfers	Linear structures: pipelines, canals, power lines	Other Utilities
			Primary objective of the biodiversity category	*1. Permissible land uses that are unlikely to compromise the biodiversity objective*							*2. Land uses that may compromise the biodiversity objective and that are only permissible under certain conditions.*							*3.Landuses that will compromise the biodiversity objective and are not permissible.*								
Protected areas	PA: National Parks & Nature Reserves	Gazetted National Parks, Nature Reserves, and Special Nature Reserve, and Forest Nature Reserves.	According to Protected Area management Plans.	3	3	2	3	3	1	2	2	3	3	2	3	3	3	3	3	3	3	3	3	2	2	3	3
	PA: Protected Environment: Natural	Gazetted Protected Environments, in terms of PA Act.	Meeting biodiversity targets in largely production focused landscapes. Biodiversity management plans in place to improve state of biodiversity.	3	3	1	3	3	1	2	1	2	3	2	3	3	3	3	3	3	3	3	3	2	2	2	3

Bioregional Plan category			Mpumalanga Land-use Zones (2008)	A				MC	EC	OS	TA		RR		RES	UI	LI	HI	QM			TS	R	U		
CBA Terrestrial	PA: Protected Environment: Modified	Heavily modified areas in Protected Environments.	Biodiversity lost or compromised within Protected Environments.	2	2	1	2	2	1	1	1	1	1	2	2	3	3	3	3	3	3	2	2	2	2	2
	CBA: Irreplaceable	Areas that are 80-100% irreplaceable for meeting biodiversity conservation targets; or Critical Linkages; or Critically Endangered ecosystems.	Maintain in a natural or near-natural state with no further loss of natural habitat.	3	3	2	3	3	1	2	2	3	3	3	3	3	3	3	3	3	2	3	3	2	3	3
	CBA: Optimal	Areas that are optimally located as part of the most efficient solution to meet biodiversity targets.	Maintain in a natural or near-natural state with no further loss of natural habitat.	3	3	2	3	2	1	2	1	2	3	2	3	3	3	3	3	2	2	2	2	2	2	2
CBA Freshwater	CBA: Rivers	Free-flowing or FEPA rivers (with a 100 m buffer).	Maintain in a natural or near-natural state with no loss of ecosystem functionality or species.	3	3	2	3	3	1	2	2	3	3	3	3	3	3	3	3	3	3	2	2	3	2	2
	CBA: Aquatic Species	Point locations of listed Odonata and Crustacea with a 300m buffer.	Maintain in a natural or near-natural state with no loss of species or ecosystems.	3	3	2	3	3	1	2	2	3	3	3	3	3	3	3	3	3	3	2	2	3	2	2
	CBA: Wetlands	FEPA wetlands.	Maintain in a natural or near-natural state with no loss of species or ecosystem functionality.	3	3	2	3	3	1	2	2	3	3	3	3	3	3	3	3	3	3	2	3	3	2	2
ESA Terrestrial	ESA: Landscape corridor	Areas that are the ideal or best route option to support existing biodiversity and allow them to adapt to the impacts of climate	Maintain ecological functionality in support of biodiversity and connectivity by retaining existing	3	3	1	3	2	1	2	2	3	3	2	3	3	3	3	3	2	2	2	3	2	2	2

ANNEXURE B

Bioregional Plan category			Mpumalanga Land-use Zones (2008)	A				MC	EC	OS	TA		RR		RES	UI	LI	HI	QM			TS	R	U		
		change.	natural vegetation.																								
	ESA: Local corridor	Fine scale connectivity pathways that contribute to resilience and connectivity between climate change focal areas.	Maintain ecological functionality in support of biodiversity and connectivity by retaining existing natural vegetation.	3	3	1	3	2	1	2	2	3	3	2	3	3	3	3	3	2	2	2	3	2	2	2
	ESA: Protected Area Buffer	A buffer distance of either 10 km for National Parks; 5km for all other PAs.	To minimise the impacts of surrounding land uses on the ecological integrity, character and tourism potential of protected areas.	2	2	1	2	2	1	1	1	2	2	1	3	3	3	3	3	2	2	2	2	2	2	2
ESA Freshwater	ESA: Important sub-catchments & FSA	FEPA subcatchments, FEPA Fish Support Areas.	Maintain in a natural or near-natural state with limited loss of condition, but without lowering its Present Ecological State. Where there is a FSA for a fish species, more stringent authorisation requirements will be required.	2	2	1	3	2	1	1	1	2	2	2	3	3	3	3	3	2	2	2	2	2	2	2
	ESA: Wetland Clusters	FEPA wetland clusters.	Maintain a natural buffer around wetlands that will limit impacts on species' ability to move between wetlands	3	3	1	3	3	1	2	2	3	3	3	3	3	3	3	3	2	2	3	3	3	2	2

Bioregional Plan category			Mpumalanga Land-use Zones (2008)	A				MC	EC	OS	TA		RR		RES	UI	LI	HI	QM			TS	R	U		
	ESA: Wetlands	Non-FEPA wetlands.	Maintain in a fair ecological condition with limited loss of functionality or composition, but without lowering its Present Ecological State.	3	3	1	3	2	1	1	1	2	3	3	3	3	3	3	3	2	2	3	3	2	2	2
	ESA: Strategic Water Source Areas	SWS areas map, 10% of area producing >50% of Mpumalanga's water.	Maintain in at least a fair ecological condition paying particular attention to maintaining water quantity, water quality and habitat integrity.	2	2	1	2	2	1	1	1	2	2	1	3	3	3	3	3	2	2	2	2	2	2	2
Other Natural Areas		Natural areas which are not identified as CBAs or ESAs but which provide a range of ecosystem services from their ecological infrastructure.	Minimise habitat and species loss through strategic landscape planning, and ensure basic ecosystem functionality.	1	1	1	1	1	1	1	1	1	1	1	2	2	2	2	2	2	2	1	1	2	2	2
Heavily or Moderately Modified	Heavily modified	Transformed areas, where biodiversity and ecological function have been lost to the point that they are not worth considering for conservation at all.	Manage the landuse in a biodiversity-friendly manner aiming to maximise ecological functionality.	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1
	Moderately modified / old Lands	Areas which were modified within the last 80 years but now abandoned, including old mines and old cultivated lands.	Stabilise and manage to restore ecological functionality, particularly soil carbon and water-related functionality.	1	1	1	1	1	2	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	1	1

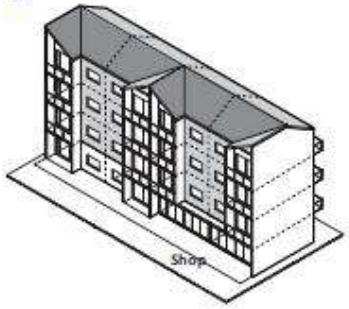
ANNEXURE C:

Housing Densities/Typologies

Housing Typologies

BUILDING FORMS

1 WALK UP



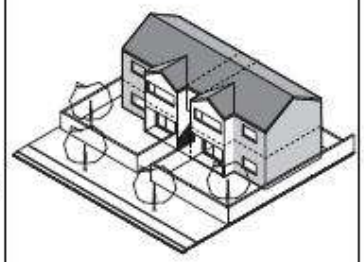
Typically three or four stories tall, walk-up multi-family housing draws its name from its lack of elevator. It also relies on on-grade parking solutions.

DENSITY
250 UNITS/ha
86% OF TOTAL HOUSING

HEIGHT
G+3 STOREYS

LAND UTILISATION

2 CLUSTER HOUSING



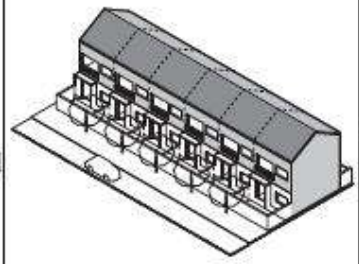
Cluster (or Clustering) is a site-planning technique that concentrates buildings and structures in specific areas on a lot, site, or parcel to allow the remaining land to be used for recreation, open space, or preservation of features or structures with environmental, historical, cultural, or other significance.

83 UNITS/ha
3% OF TOTAL HOUSING

HEIGHT
G+1 STOREYS

LAND UTILISATION

3 TERRACE HOUSING



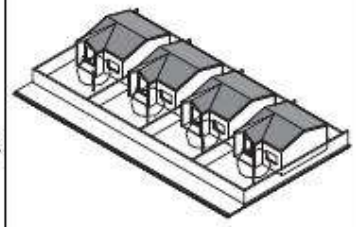
The terrace house is a dwelling that is joined to at least two other houses, usually of identical design, to form a row.

63 UNITS/ha
3% OF TOTAL HOUSING

HEIGHT
G+1 STOREYS

LAND UTILISATION

4 STANDALONE HOUSING



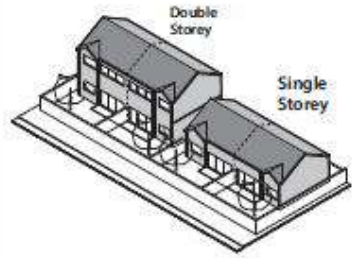
A row house is a type of townhouse that is created exclusively for a single family and has a shared wall with the other units. A row house has a fairly consistent architectural framework with an aesthetically beautiful design, however all of the units share a common façade.

40 UNITS/ha
1% OF TOTAL HOUSING

HEIGHT
G STOREYS

LAND UTILISATION

5 SEMI-DETACHED



A semi-detached house (often abbreviated to semi) is a single family duplex dwelling house that shares one common wall with the next house. The name distinguishes this style of house from detached houses, with no shared walls, and terraced houses, with a shared wall on both sides.

75 UNITS/ha
7% OF TOTAL HOUSING

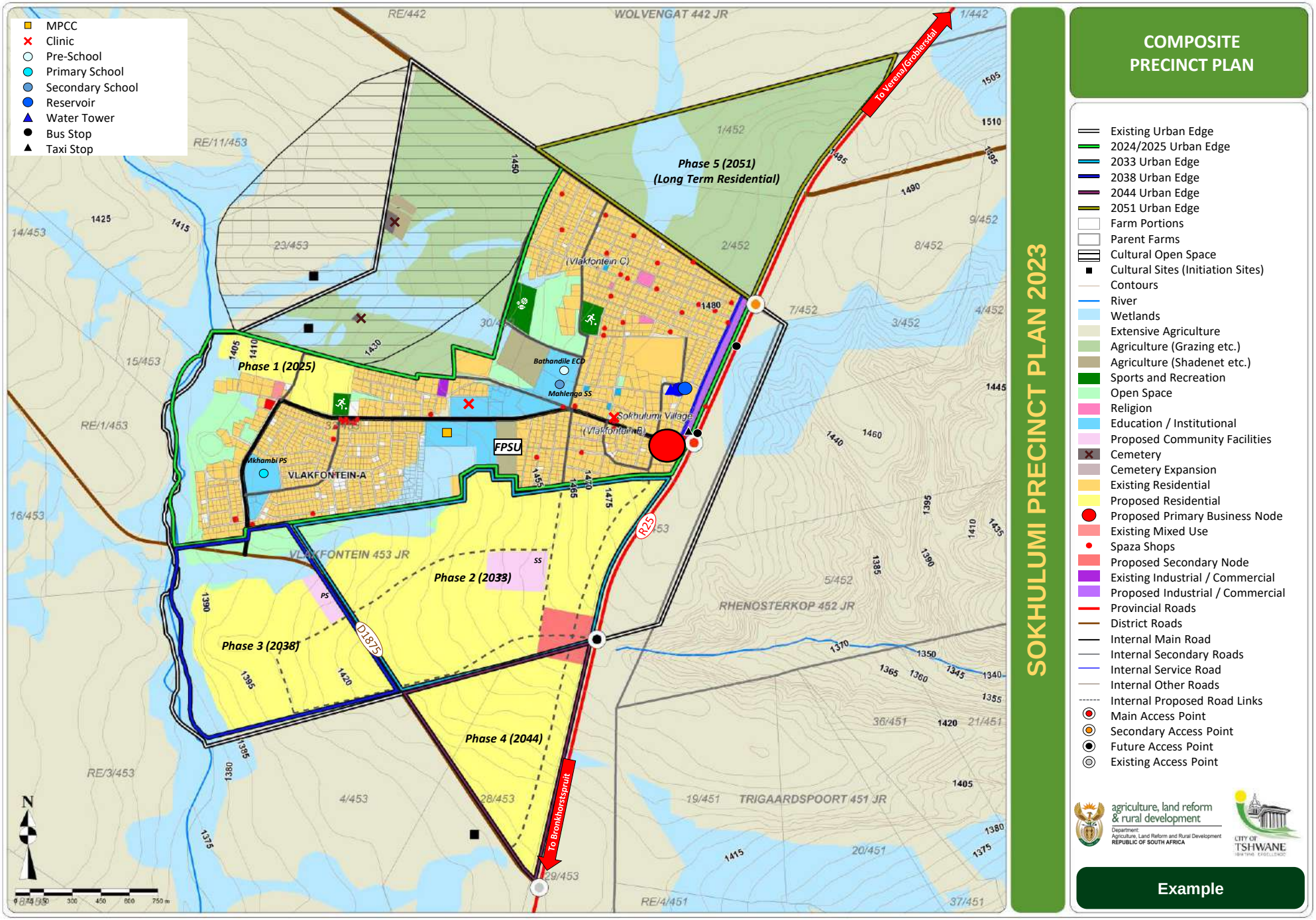
HEIGHT
G STOREYS

LAND UTILISATION

Housing Typologies

ANNEXURE D:

Sokhulumi Precinct Plan (Example)


MPCC
Clinic
Pre-School
Primary School
Secondary School
Reservoir
Water Tower
Bus Stop
Taxi Stop
Phase 1 (2025)
Phase 2 (2033)
Phase 3 (2038)
Phase 4 (2044)
Phase 5 (2051)
(Long Term Residential)
Bathandile ECD
Mahlenga SS
Sokhulumi Village
(Vlakfontein B)
(Vlakfontein C)
FPSU
Mkhambi PS
VLAKFONTEIN-A
VLAKFONTEIN 453 JR
RHENOSTERKOP 452 JR
TRIGAARDSPOORT 451 JR
WOLVENGAT 442 JR
To Verena/Groblersdal
To Bronkhorstspruit
R25
D1875
SOKHULUMI PRECINCT PLAN 2023
COMPOSITE
PRECINCT PLAN
Existing Urban Edge
2024/2025 Urban Edge
2033 Urban Edge
2038 Urban Edge
2044 Urban Edge
2051 Urban Edge
Farm Portions
Parent Farms
Cultural Open Space
Cultural Sites (Initiation Sites)
Contours
River
Wetlands
Extensive Agriculture
Agriculture (Grazing etc.)
Agriculture (Shadenet etc.)
Sports and Recreation
Open Space
Religion
Education / Institutional
Proposed Community Facilities
Cemetery
Cemetery Expansion
Existing Residential
Proposed Residential
Proposed Primary Business Node
Existing Mixed Use
Spaza Shops
Proposed Secondary Node
Existing Industrial / Commercial
Proposed Industrial / Commercial
Provincial Roads
District Roads
Internal Main Road
Internal Secondary Roads
Internal Service Road
Internal Other Roads
Internal Proposed Road Links
Main Access Point
Secondary Access Point
Future Access Point
Existing Access Point
agriculture, land reform & rural development
Department: Agriculture, Land Reform and Rural Development
REPUBLIC OF SOUTH AFRICA
CITY OF TSHWANE
Example

ANNEXURE E:
Thusong Centre Concept

Thusong Centre Concept

INCREMENTAL DEVELOPMENT OF A THUSONG CENTRE/MPCC

Essentially, a Thusong Centre is "*a focal point at which a comprehensive range of essential services can be obtained by people living in its vicinity*". The key to the success of Thusong Centre development is rooted in the principle of focused and deliberate government investment spending within and around a strategically selected spatial point, to ensure that these centres develop to provide an extensive range of community facilities. Such points are typically major intersections, and/or consolidated with existing cluster(s) of business activity and social services. A good example of a Thusong Centre/ MPCC in Olievenhoutbosch is depicted on **Diagram D1**.

The development of a Thusong Centre takes place over time and is based on an incremental growth process guided and stimulated by a number of strategic investments by various spheres of government (i.e. public investment). This process is, however, not limited to a single building as noted in the example above, but can also relate to the incremental development of a broader precinct (refer to **Diagram D2**).

Very briefly, the first step in the physical development of a Thusong Centre could be the establishment of a community hall which is utilised for a variety of functions, including serving as a SASSA pay-out point by the end of the month; accommodating the mobile clinic once a week; serving as an ABET entre during certain times of the week; etc. Because of the concentration of people at the community hall during the week, a formal/ informal public transport facility may establish which, in turn, attracts informal trade.

As the Thusong Centre develops, a greater variety of more permanent community facilities may be added by various spheres of government, including a clinic, post office, and police station.

With the increased intensity of activity and visitors at the precinct, the initial informal trade at the public transport facility can transform into some formal retail activities. Low and medium density residential development should be developed in close proximity around the node which not only enhances the viability of existing community facilities, but also strengthens the capacity for local economic development as the "critical mass" in the precinct increases.

Associated with the residential development follows the establishment of educational facilities like a crèche, primary school and sports fields. Over a period of time the node expands incrementally, and as more functions and associated residential activities are added, it may eventually also accommodate specialised services like adult education (FET colleges and ABET centres), some commercial activities like hardware stores and even light service industries.

Diagram D1

MULTI-PURPOSE COMMUNITY CENTRE (MPCC) / THUSONG CENTRE CONCEPT

MPCC in Thekwane, Rustenburg, North West Province

Public-Private Partnership funded by Glencore Mine and Merafe Resources (R20-million)

Source:
South African Business Website: https://www.southafricanbusiness.co.za/08/2023/construction-and-engineering/r20-million-multi-purpose-community-centre-constructed-in-rustenburg/

SASSA Grant Office

Multi-Purpose Courts

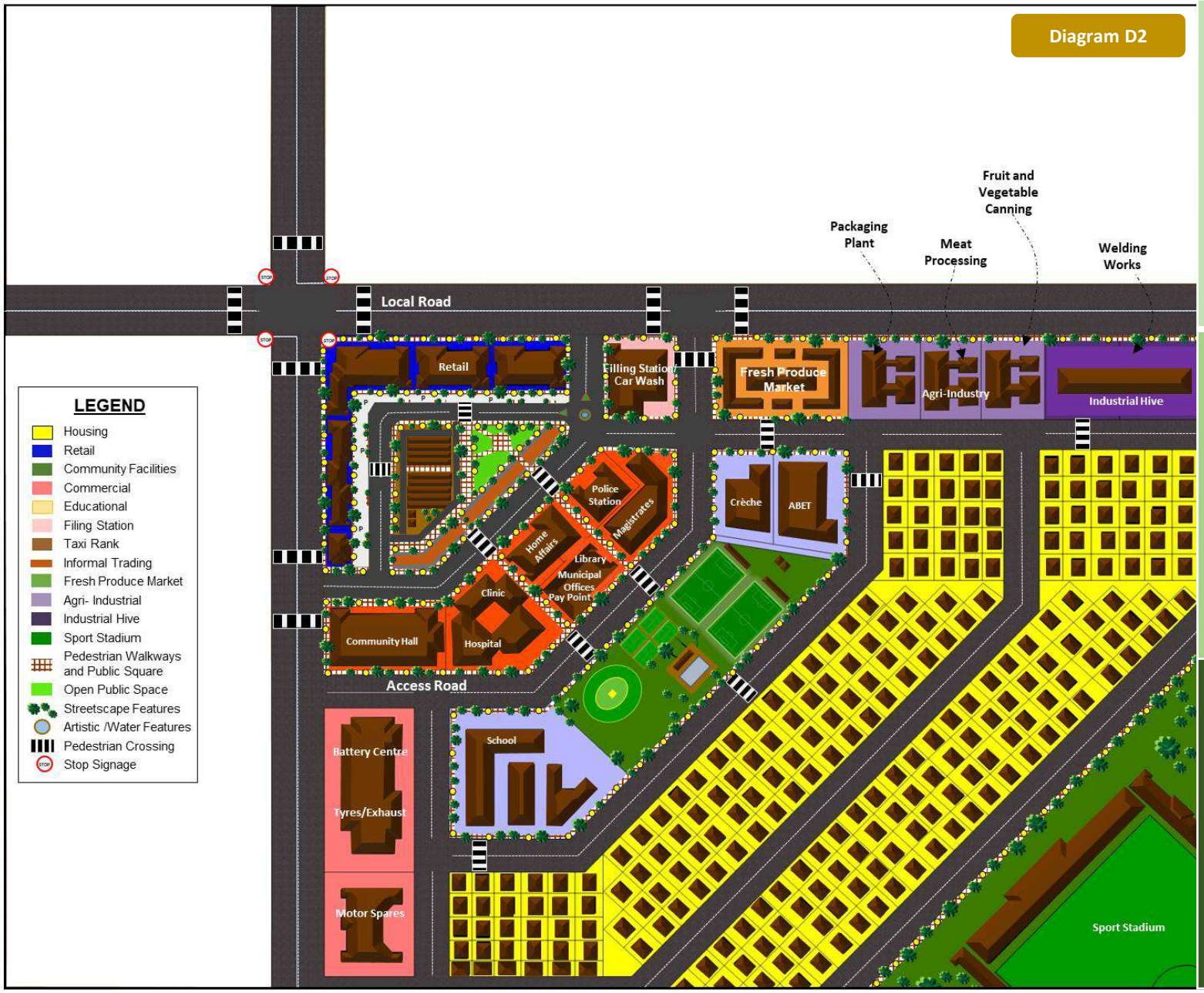
Home Affairs Office

Community Hall

Police Station

Clinic

Thusong Centre Concept



ANNEXURE F:

Township Economy Industries & Informal Trade Upscaling

TOWNSHIP ECONOMY: POTENTIAL JOB CREATION OPPORTUNITIES

Main Sectors	Secondary Category	Examples of Business Opportunities
1. Business	Retail (Formal)	Butchery, Bottle store, Cellphone, Café, Clothing, Tombstones, Fast Food, General Dealer, Farm Shop, Plant Nursery
	Retail (Informal)	Street Vending/Food Seller, Fruit & Vegetable Seller, Brick Making, Liquor Seller, Shebeen, Tavern, Spaza, Tombstone Trader
	Retail (Markets)	Crafters Market, Food & Fresh Produce Market
	Personal Services	Hair & Beauty Salons, Fashion Designer, Laundrette, Gym, Traditional Healer
	Offices	Burial Society, Banks, ATM, Financiers/Cash Loans, Internet Café, Renting of Machinery, Home Office, Security Companies
	Motor Vehicle Related Retail	Car Sales Lot, Car Wash, Cash for Scrapyard, Motor Spares, Filling Station
2. Service Industries	Services	Dress Making/Tailors/Manufacture Uniforms, Bakery/Catering, Engraving, Printing, Picture Framing, Jewellery Manufacturing, Watch/Cellphone Repairs, Shoe Repairs, Key Cutting, Dry Cleaners, Funeral Services (Parlour/Undertaker), Basket Ware and Cane Furniture, Office Furniture, Upholstery
	Infrastructure	Sanitation (plumbers), Electrician, Security Gates & Fencing, Mobile Toilets, Solar Panels/Geysers
	Green Economy	Cleaning Services, Waste Collection and Sorting/Recycling
3. Tourism	Retail (Formal)	Craft/Curio Shop, Coffee Shop, Restaurant
	Retail (Informal)	Crafters Market, Food & Fresh Produce Market
	Offices	Tourist Operators
	Hospitality Establishment	Hotel, Guest House, Bed & Breakfast, Conferencing, Camp Sites
	Services	Catering & Events, Heritage Tourism, Sports/Adventure Tourism, Water Sports and Recreation Parks, Tourist Guide, Hunting Guide
4. Creative Industry	Services	Arts & Crafts Workshops/Exhibitions, Cinemas, Music & Entertainment, Music & Video Production, Fashion Designer, Jewellery Manufacturing, Bead Making, Leather/Hide Products, Coordination of Cultural Events

TOWNSHIP ECONOMY: POTENTIAL JOB CREATION OPPORTUNITIES

Main Sectors	Secondary Category	Examples of Business Opportunities
5. Community Services	Medical & Health	Hospital and Clinic, Substance Abuse Treatment/War on Drugs, Hospice/Nursing/Care Centre (treatment and care for HIV/AIDS and other chronic ailments), Traditional Healer
	Funeral / internment services (confinement)	Burial Society, Catering-, Renting-, Cemetery Services
	Institutional Care Facility	Orphanage/Children's Home, Shelters, Soup Kitchen, Care for Elderly, Assisting the Elderly with Social Grants
	Cultural Facilities	Community Centres, Church and Religious Services
	Educational Facilities	Crèche & pre-schools, Schools, Sports Coaching, FET Colleges, Feeding schemes for schools and hospitals
	Other Education	Motor vehicle driving school, Special education - disabilities, Initiation school, Dancing /Music/Art Schools
	Protection services	Security Guards
	Emergency services	Ambulance Services/Paramedics
	Administrative	Postal/Courier Services
	Animal Care Facilities	Indoor / outdoor kennels, Veterinarian clinic, Animal rehabilitation centres
	ICTS	Internet Solutions, Multimedia Service Centres, Internet Cafes, Electronic Repairs, ICT Recycling Depots
6. Agriculture and Agro Processing	Animal production	Livestock/Poultry Farming
	Crop production	Vegetable/Herb Farming
	Agricultural industry	Milling, Feed Mixing, Processing/Sorting/Packing of Farm Produce, Farm Stall, Oil refinery, Biofuels
7. Transport	Services	Taxi Operators/Associations, Logistics companies, Tour Operators
	Infrastructure	Paving of Walkways and Cycle Lanes
8. Finance	Services	Stokvels, Money Lending Schemes, Burial Societies
9. Manufacturing	Production & Manufacturing	Food production, Bakery, Manufacturing of Machinery-/Metal (steel)- /Non-metal (charcoal/tar/bricks)- /Clothing and Textile-/ Wood and Furniture (Carpentry) Products, Abattoir
	Motor Service related (Light) Industry	Fitment centre/Vehicle repairs, Panelbeater/Auto body, Towing Service, Motor Workshop
	Engineering Service related (Light) Industry	Engineering Workshop e.g. welding, cutting, joinery, pumps, pipes and fitting, etc. Electrical Workshop/Contractors, Lawnmower Repairs
10. Commercial	Warehousing & storage	Storage Facilities, Storage and selling of coal, sand, building material, Scrap Yard, Recycling Depot, Auction Yard
11. Construction and Real Estate	Services	Construction Business, Property Developers, Estate/Renting Agents
	Infrastructure	Builders, Carpenters, Brick/Paving layers, Electricians, Plumbers
12. Mining	Active Mining	Sand Mining, Quarrying
	Mining Rehabilitation	Cleaning Services, Waste Collection and Planting of new vegetation

INFORMAL TRADE / SERVICES INDUSTRY UPSCALING

Informal Trade Empowerment and Upscaling refers to initiatives and strategies designed to support informal traders in enhancing their capacities, improving their economic outcomes, and scaling their businesses to achieve greater sustainability and competitiveness. This approach recognizes the critical role of informal trade in many economies, particularly in providing livelihoods and meeting the needs of underserved markets.

The following pages highlight the concept to upscale informal trading businesses and show examples of the various levels of upscaling (Levels 1-4), which are discussed below.

LEVEL 1	Informal trading business in a form of selling perishable or non-perishable goods, and informal motor repair businesses are being conducted without adequate formalised informal structures.
LEVEL 2	Formalised informal trading structures in this level are very basic. Level 2A structures are temporary and may be placed along pedestrian movement desire lines where space is limited. Level 2B structures are more permanent in nature, and may be utilised by small emerging service industries.
LEVEL 3	The structures at Level 3 are permanent and typically larger in size when compared with 'level 1' informal trading structures. Level 3a includes features such as lock-up roller doors for over-night storage, and may include water and sanitation services shared between traders. This allows for more comprehensive retail activities including food preparations and/ or service industries such as internet cafes, kiosk, electronic repair services, motor repairs services and welding works.
LEVEL 4	Level 4 provides that informal traders be incorporated into the formal economy by way of providing permanent and formalised trading structures as part of a shopping centre or business incubation centre.

DEVELOPMENT APPROACH TO INFORMAL TRADE

LEVEL 1 - Lack of Formal Structure

Retail

A Trade of goods along roadside

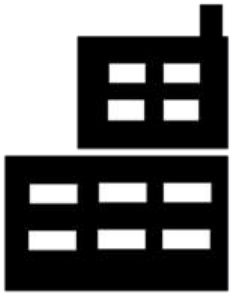
Manufacturing/ Service Industry

B Services and sales along roadside

LEVEL 4 - Informal Trade Incorporated into Formal Retail

Retail

A Market area forms part of shopping centre/ parking lot



B Fresh produce processed at Agro-Industries

Manufacturing/ Service Industry

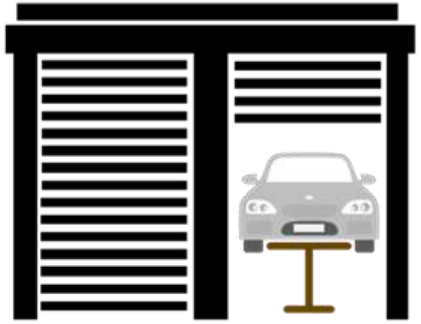
C Formal business eg. workshop

LEVEL 2 - Small-scale Formalised Structure

Retail

A Temporary stalls, with display shelves

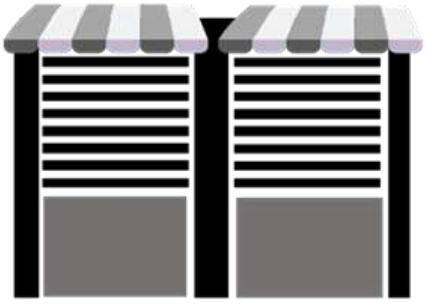
Manufacturing/ Service Industry



B Narrow 'beehive industries'

LEVEL 3 - Medium-scale Formal Business Structure

Retail



A More comprehensive stalls (eg. Including bench, lock-up option, services etc)

Manufacturing/ Service Industry

B Larger 'beehive industries'

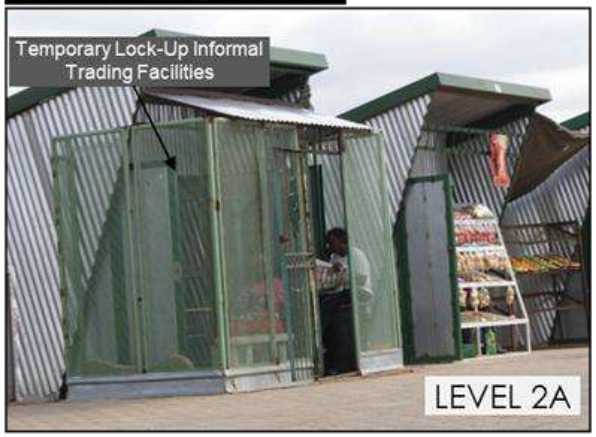
TYPES OF FORMALISED INFORMAL TRADE STRUCTURES

LEVEL 2

RETAIL – Temporary Formalised Informal Trading Structures

Pretoria - Hatfield

Johannesburg - Lesedi



SERVICE INDUSTRIES - Formalised Informal Trading Structures

LEVEL 3

RETAIL – Permanent Formalised Informal Trading Structures

Tshwane – Khutsong Station

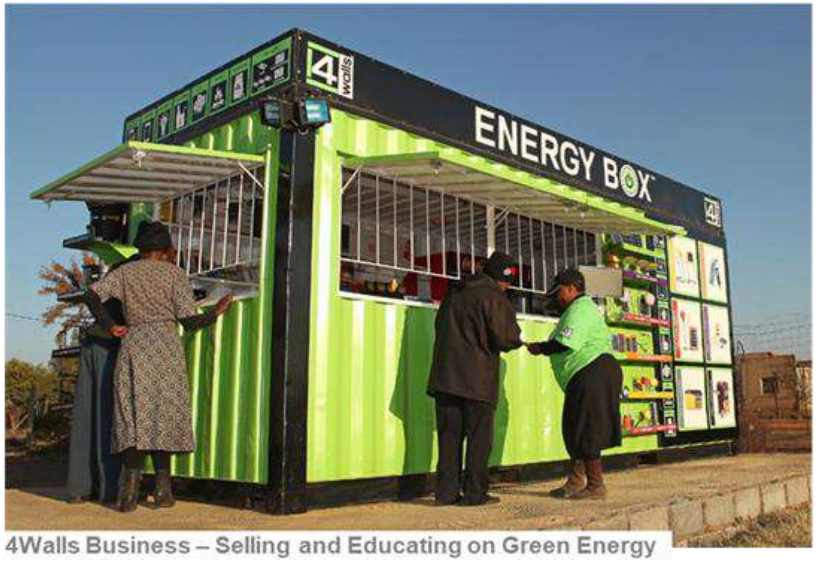
Ogies – Nkangla DM

SERVICE INDUSTRIES - Formalised Informal Trading Structures

EMERGING LOCAL ENTREPRENEURS – SHIPPING CONTAINERS CONVERTED FOR BUSINESS

RETAIL – Temporary Formalised Informal Trading Structures

Local Barber



4Walls Business – Selling and Educating on Green Energy


Local Businesses in Shipping Containers close to Taxi Rank

Spinach King Bakery and Gym in Khayelisha

LEVEL 3B

SERVICE INDUSTRIES - Formalised Informal Trading Structures

Motor Repair Services

LEVEL 3B

TYPES OF FORMALISED INFORMAL TRADE STRUCTURES

RETAIL - Formalised Informal Trading Structures

LEVEL 4A

Cape Town - Nomzamo Business Area

Johannesburg - Lesedi

Ga- Nala – Ogies, Nkangala DM

SERVICE INDUSTRIES - Formalised Informal Trading Structures

LEVEL 4B

SMME INFRASTRUCTURE - Linear Beehive Buildings

ANNEXURE G:

Emerging Farmer Upscaling Model

Emerging Farmer Upscaling

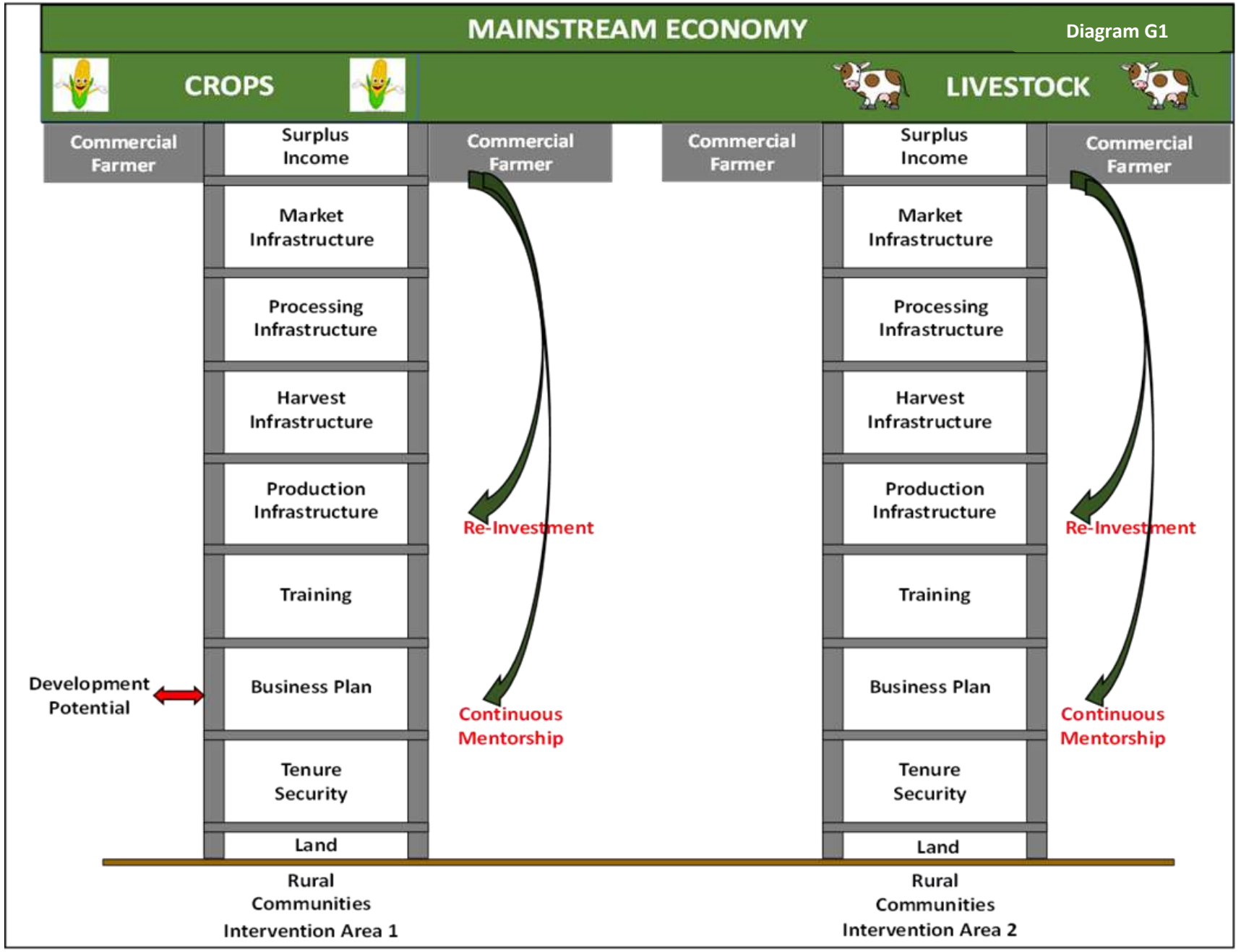
Support Emerging Farmers to Become Part of the Mainstream Economy

It is important that emerging farmers be supported in the Thembisile Hani Municipality as a means to contribute towards poverty alleviation, enhancing food security, and establishing sustainable livelihoods. This can be achieved by way of implementing the following measures in identified Rural Intervention Areas::

- Increasing land availability and tenure security for agricultural purposes through prioritised processing of Land Claims/ Restitution processes in this area.
- Exploiting the opportunities offered by the potential of the agricultural land identified within the area (in conjunction with Department of Rural Development and Land Reform).
- Significantly increasing production per hectare beyond the subsistence farming yield.
- Providing training support to emerging and small-scale farmers and ensuring that appropriate skills development takes place in line with the most appropriate farming activities in the area.
- Encouraging the use of different crops and new planting, harvesting and processing techniques.
- Supporting a variety of farming concepts including intensive commercial farming, small scale commercial farming (vertical farming/ precision farming), subsistence farming, aquaculture development, and agro processing industries.
- Providing production and harvesting infrastructure in order to create production surplus in the area.
- Increasing job creation in the area through labour-intensive agricultural projects and extending the agriculture value chain by way of agro-industries and agro-tourism.
- Establishment of a fresh produce market which would support the globally growing demand for organic (chemical free) produce and 'farmer's markets', while supporting small-scale farmers by creating offset areas for both individually and communally harvested produce from surrounding areas.

The surplus income generated through the initiatives above would assist emerging farmers to become part of the mainstream economy as shown on **Diagram G1**.

Emerging Farmer Upscaling



ANNEXURE H:

Precision Farming

Precision Farming Examples

Vertical Farming in Green Building

Horizontal Farming in Green Building

Vertical Farming in an Iron-Zinc Vertical Box

Precision Farming Examples: In Shipping Containers

ANNEXURE I:

Smart City Concept

Smart City Concept

What is a Smart City?

A **Smart City** primarily uses **information and communication technologies (ICT)** to enhance quality, performance and interactivity of urban services, to reduce costs and resource consumption and to improve contact between citizens and government. It connects human capital, social capital and ICT infrastructure in order to address public issues, achieve a sustainable development and increase the quality of life of citizens.

Smart city applications are developed with the goal of improving the management of urban flows and allowing for real time responses to challenges. A smart city may therefore be more prepared to respond to challenges than one with a simple 'transactional' relationship with its citizens.

Smart Mobility aims to provide an on-demand mobility system that would allow customers to choose among motorised public and private transport modes and / or non-motorised transport modes to assemble the fastest or cheapest way of getting anywhere they need to go at any time. It includes new mobile technologies and intuitive apps which integrate public transportation, better infrastructure, and car sharing.

Smart Government entails the use of innovative policies, business models, and technology to address the financial, environmental, and service challenges facing public sector organizations. It relies on open and accessible consolidated information systems and communication networks from which the public becomes better informed about whether the government is performing and conforming to highest ethical standards.

Smart Communities are strategic, purposeful, and resourceful. They are driven by long-term commitments to safeguard their natural resources and economic opportunities for future generations, and preserving the beauty, vitality, and equity of the region. These communities protect their ecological assets from destruction or degradation, promote renewable energy solutions, and practice sustainable development.

Smart City Concept

Smart Living is fuelled by the rise of devices and objects connected to the internet – wearables, home appliances, fashion accessories etc. Internet-connected appliances that communicate with one another, more efficient energy usage and cloud-enhanced home security are just some of the developments that consumers are starting to enjoy. Advances in technology, such as mobile and GPS-enabled devices, live data sensors, and big data, have created a foundation for governments to develop better services, foster accountability, and increase transparency. When disaster incidents strike, critical information exchange across departmental, municipal, and jurisdictional lines expedites communication to at-risk populations and hastens their evacuation from harm's way. It tracks disasters in real-time, locate medical resources, align logistics, coordinate response teams, and automatically publish updated maps that keep the media and public informed. Similarly, GIS highlight recurring crime hot spot locations, and help deploy critical resources to the right place at the right time. Real-time monitoring tools are used to regulate infrastructure and manage natural and manmade threats like vandalism/ theft.

A **Smart Environment** aims to provide more efficient urban structure, buildings and energy. A compact city characterised by medium and high-density mixed-use environments which are designed around efficient multi modal public transport systems. Careful building design to reduce heat loads, maximise natural light and promote the circulation of fresh air and installation of solar heaters and water harvesting infrastructure. Green energy generated from natural sources: solar power, wind power, hydropower, geothermal energy, biomass and biofuels. Monitoring and controlling operations of urban and rural infrastructures like bridges, railway tracks, on- and offshore- wind-farms and it can also be used for scheduling repair and maintenance activities.

Smart Economies are largely the result of the influence of ICT applications on all aspects of urban economy, which in turn changes the land-use system. Main Economic Sectors influenced by Smart Technology include:

- Banking and Finance
- Education and Research
- ICT, Mobile and Telecommunications
- Travel, Tourism and Transportation
- Healthcare and Social Welfare
- National Security and Defence
- Retail and Distribution
- Energy and Utilities

Smart City Concept Components