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Development of a Reconciliation Strategy for the Luvuvhu and Letaba Water Supply System

DEMOGRAPHIC AND ECONOMIC DEVELOPMENT POTENTIAL

FINAL

February 2013

DEVELOPMENT OF A RECONCILIATION STRATEGY FOR THE LUVUVHU AND LETABA WATER SUPPLY SYSTEM

DEMOGRAPHIC AND ECONOMIC DEVELOPMENT POTENTIAL

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DEVELOPMENT OF A RECONCILIATION STRATEGY FOR THE LUVUVHU AND LETABA WATER SUPPLY SYSTEM

Demographic and Economic Development Potential

EXECUTIVE SUMMARY

The Department of Water Affairs (DWA) has identified the need for the Reconciliation Study for the Luvuvhu-Letaba WMA. The WMA is almost fully developed and demands from the Letaba River currently exceed the yield capability of the system. Regulation for the Letaba WMA is mainly provided by Middle Letaba, Ebenezer and Tzaneen Dams. In the Luvuvhu WMA the recently completed Nandoni Dam will be used in combination with Albasini, Vondo and Damani dams to be managed as one system. It is expected that the total yield from this combined system will be fully utilized by around 2020, considering only the current planned projected demands. The yield of the Albasini Dam has reduced over the years and as a consequence the dam is over allocated. The Shingwedzi catchment is situated almost entirely in the Kruger National Park and for all practical purposes no sustainable yield is derived from surface flow in the Shingwedzi catchment.

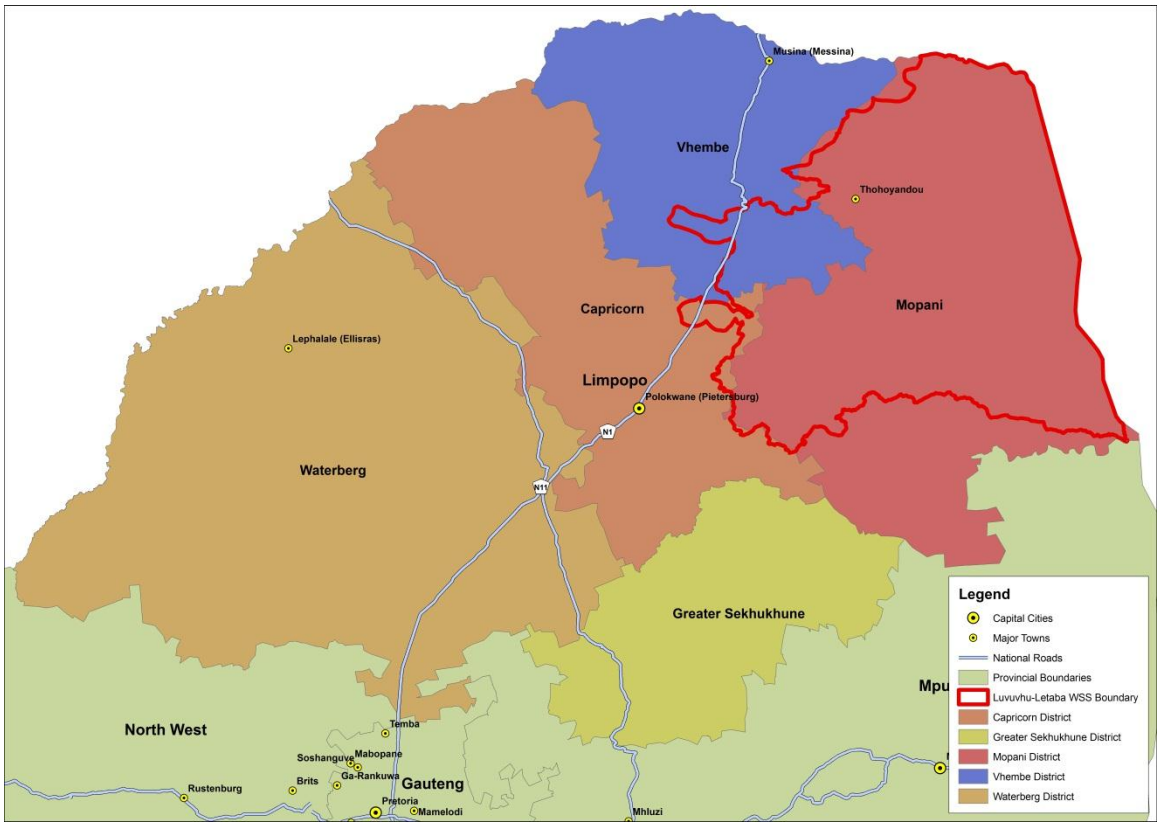
The main objective of the study is to compile a Reconciliation Strategy that will identify and describe water resource management interventions that can be grouped and phased to jointly form a solution to reconcile the water requirements with the available water for the period up to the year 2040 and to develop water availability assessment methodologies and tools applicable to this area that can be used for decision support as part of compulsory licensing to come. The development of the strategy requires reliable information on the water requirements and return flows (wastewater) as well as the available water resources for the current situation and likely future scenarios for a planning horizon of thirty years.

To achieve the above objectives, the following main aspects will be covered in the study:

- *Update the current and future urban and agricultural water requirements and return flows;*
- *Assess the water resources and existing infrastructure;*
- *Configure the system models (WRSM2005, WRYM, WRPM) in the Study Area at a quaternary catchment scale, or finer where required, in a manner that is suitable for allocable water quantification;*
- *To firm up on the approach and methodology, as well as modelling procedures, for decision support to the on-going licensing processes;*
- *To use system models, in the early part of the study, to support allocable water quantifications in the Study Area and, in the latter part of the study, to support ongoing*

licensing decisions, as well as providing information for the development of the Reconciliation Strategy;

- *Formulate reconciliation interventions, both structural and administrative/regulatory;*
- *Document the reconciliation process including decision processes that are required by the strategy; and*
- *Conduct stakeholder consultation in the development of the strategy.*



Source: Kayamandi Development Services, 2012

Figure a: District Municipalities included in the Study Area

- *The primary purpose of this report is to provide insight into the demographic and economic growth characteristics of the Luvuvhu and Letaba WSS, and to provide growth estimates (moderate growth and high growth scenarios) of population growth and economic development up to 2040.*
- *The study area comprises of the water resource of the catchment of the Luvuvhu, Mutale, Letaba and Shingwedzi rivers linked to adjacent systems as indicated by the inter-basin transfers. Adjacent areas supplying water to this WSS or getting water from this WMA is also part of the study area. The Luvuvhu and Letaba WSS is located in the north-eastern portion of South Africa, where it borders on Zimbabwe in the north and on Mozambique along the eastern*

side. It falls entirely within the Limpopo province, and adjoins the Olifants and Limpopo WSS to the south and west respectively.

-

Figure a indicates the location of various district municipalities in relation to the study area.

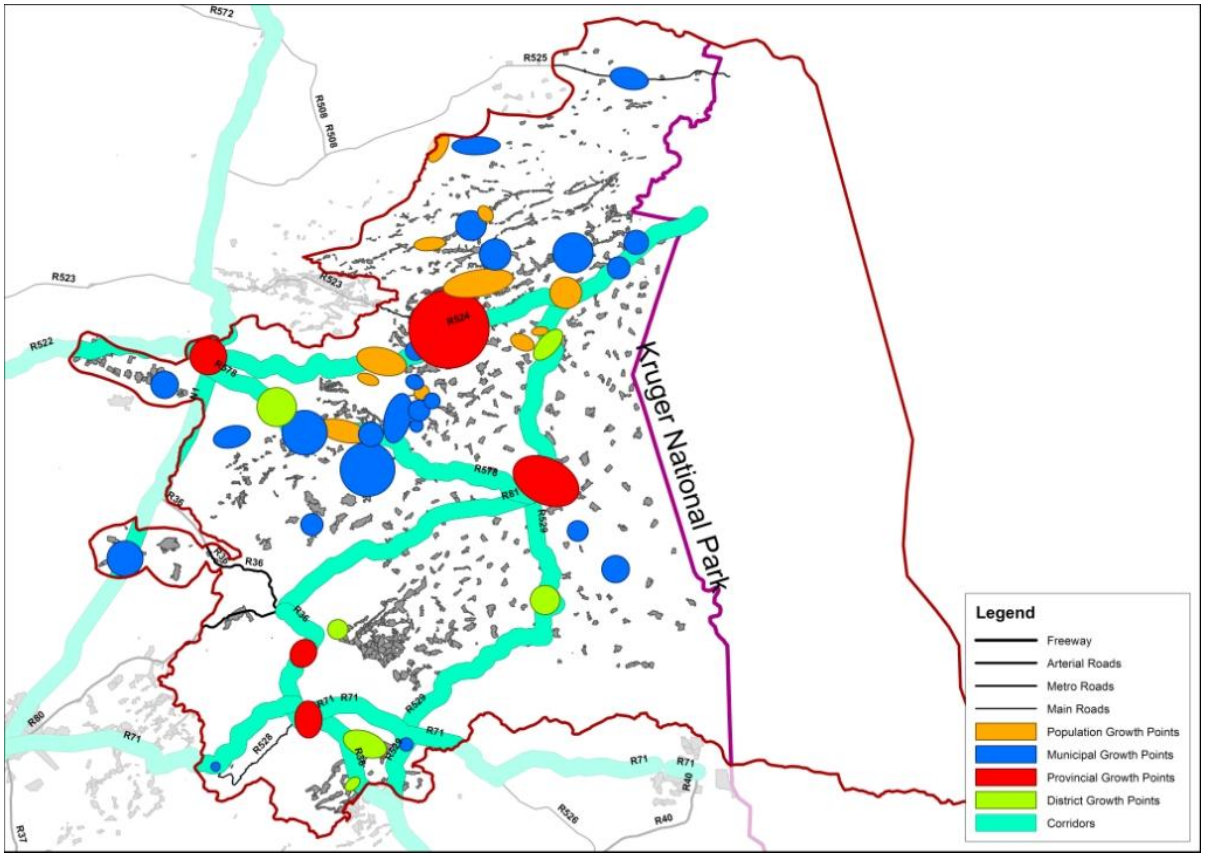
The steps involved in the methodology are as follows:

- *Orientation*
- *Data collection, analysis and interpretation*
- *Development of growth scenarios*
- *Modelling and sensitivity analysis*
- *Future water requirements*

Figure b below provides a spatial representation of where development is foreseen to be concentrated based on information sourced from municipal documents and discussions with municipal officials.

As can be seen below, growth points are mainly concentrated in the north-western portion of the study area, and are mostly located on or near transport routes.

Based on available statistics, a 2008 base figure was determined to form the starting point for the demographic modelling. The number of households per settlement from the 2008 DWA settlements database was used to determine the base, as this correlates with the 2008 Spot Building Count data. Household sizes were refined for each area based on Census 2001 information and updated knowledge on changes in socio-economic circumstances. The population per settlement was then calculated based on the number of households from the 2008 DWA settlements database and refined household sizes. Calculations were done on a low (settlement) level to enable grouping of settlements into different water schemes. Although possible inaccuracies exist on settlement level due to limited up-to-date data, the information becomes more accurate when grouped on a higher level.

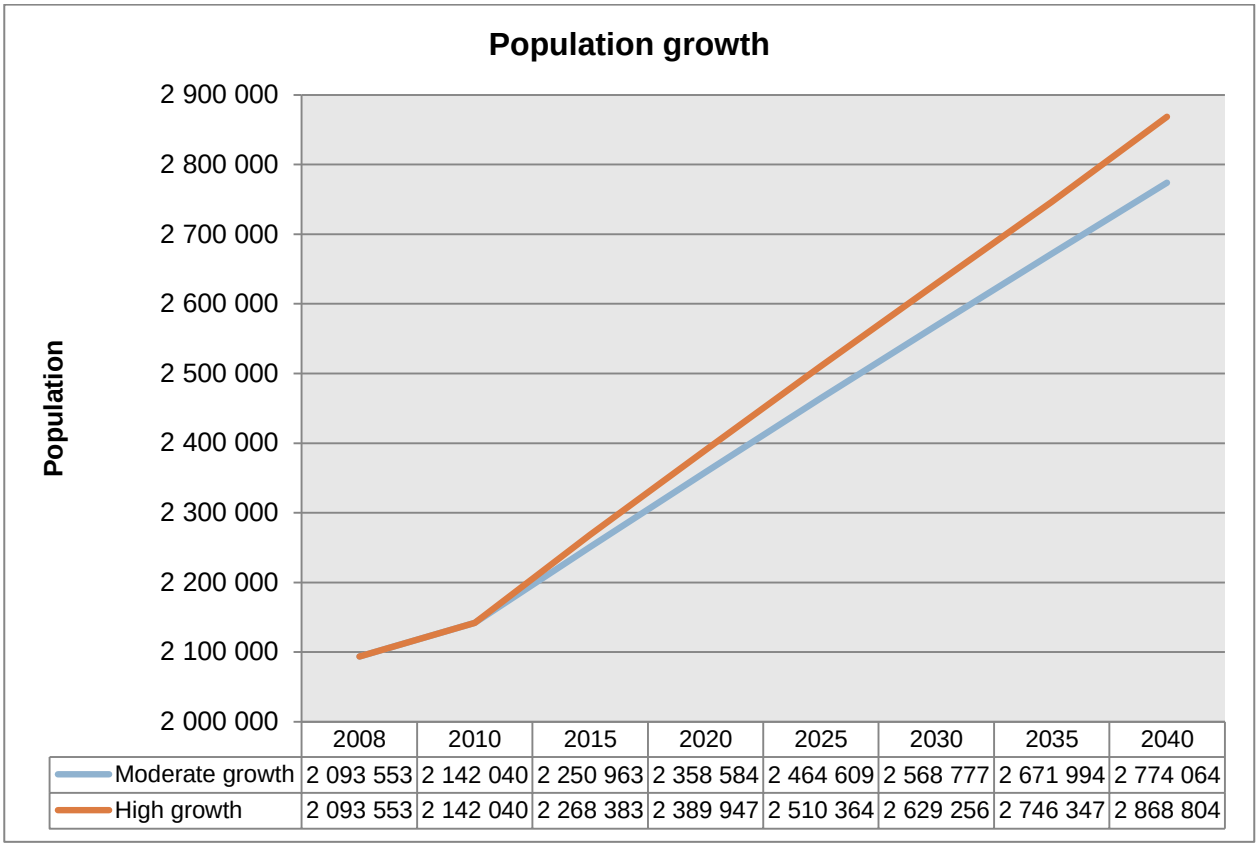


Source: Kayamandi Development Services, 2012

Figure b: Spatial development

Different growth scenarios for development was determined, as it is impossible for all the smaller settlements in the study area to grow at the same rate. The following demographic development determinants have been identified as likely factors to cause different water resource responses: migration, mortality, fertility, and HIV/AIDS, etc. For the moderate growth scenario, it is expected that population growth in the study area will largely follow historical growth trends, and a decrease in the overall population growth rate will be evident. Fertility rates will reduce, and mortality rates will remain fairly high. In addition to this, there is continuing out-migration to large economic hubs such as Gauteng, and internal migration exists from rural areas to urban nodes as people try to access employment and better services. In the moderate growth scenario, economic growth remains relatively low. In the high growth scenario, economic growth will initially be low, but will peak in 20 years after which it will gradually flatten out. There is a large focus on the development of rural areas, and the installation of infrastructure and services will result in declining out-migration to urban areas in search of improved services. Health services are expected to improve, which will result in declining mortality. Urbanisation levels within the study area are expected to decrease, and there is a focus on agriculture, mining and tourism development, especially in rural areas.

Graph a below shows the projected growth of population for the Luvuvhu and Letaba WSS up to 2040 for the moderate and high growth scenarios.



	2008	2010	2015	2020	2025	2030	2035	2040
Moderate growth	2 093 553	2 142 040	2 250 963	2 358 584	2 464 609	2 568 777	2 671 994	2 774 064
High growth	2 093 553	2 142 040	2 268 383	2 389 947	2 510 364	2 629 256	2 746 347	2 868 804

Source: Kayamandi calculations, 2012

Graph a: Population growth in the Luvuvhu and Letaba WSS (2008 to 2040)

From the above graph it is evident that the base 2008 population for the Luvuvhu and Letaba WSS was 2 093 553 people. The population for the Luvuvhu and Letaba WSS for 2010 was determined to be 2 142 040 people in both the moderate and the high scenarios, indicating a 1.2% growth between 2008 and 2010 in both growth scenarios. However, from 2015 onwards, there is a distinction in the rate of growth between the two scenarios. In the moderate growth scenario, the population increased from 2008 to 2040 by 680 511 people with a projected population of 2 774 064 people in 2040. In the high growth scenario, the population increased from 2008 to 2040 by 775 251 people with a projected population of to 2 868 804 people in 2040. The total difference in population as at 2040 between the moderate and high growth scenario is 94 740 people.

In order to understand the Luvuvhu and Letaba WSS and all its components, reference was made to GGP figures, and sectoral GGP growth. This information provides a depiction of economic trends and impacts which could inform future economic growth and development in the area. For the purposes of this discussion, standardised industry data from 2001 onwards per year was reviewed. The annual data was categorised and analysed into two 5-year intervals, 2001-2005 and 2006-2010.

The total GGP per local municipality was extracted to indicate the contribution by each municipality to the national economy.

Table a below indicates the GGP contribution (in R million) per local municipality from 2001 to

2010 and Table b provides the GGP growth per annum. For analysis purposes, only municipalities with 30% or more of the total municipal area inside the study area have been included.

Table a: Total GGP per local municipality (R millions at constant 2005 prices)

Local Municipality	GGP (in R million) at constant 2005 prices									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Greater Giyani	2 365	2 498	2 618	2 782	3 019	3 313	3 584	3 832	3 911	4 024
Greater Letaba	1 835	1 918	1 952	2 022	2 187	2 301	2 420	2 558	2 573	2 638
Greater Tzaneen	5 165	5 219	5 187	5 218	5 402	5 572	5 702	5 784	5 575	5 710
Ba-Phalaborwa	6 812	7 079	7 007	6 848	6 698	6 605	6 499	6 218	5 643	5 906
Mutale	991	1 077	1 175	1 231	1 263	1 348	1 503	1 627	1 941	2 140
Thulamela	6 307	6 585	6 793	7 071	7 518	8 083	8 593	9 023	9 138	9 424
Makhado	5 847	6 050	6 179	6 383	6 772	7 182	7 547	7 869	7 816	8 032

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

Table b: GGP growth per local municipality (2001-2010)

Local Municipality	GGP Growth (constant 2005 prices)									
	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	01-10
Greater Giyani	5.6%	4.8%	6.3%	8.5%	9.7%	8.2%	6.9%	2.1%	2.9%	6.1%
Greater Letaba	4.5%	1.8%	3.6%	8.2%	5.2%	5.2%	5.7%	0.6%	2.5%	4.1%
Greater Tzaneen	1.0%	-0.6%	0.6%	3.5%	3.1%	2.3%	1.4%	-3.6%	2.4%	1.1%
Ba-Phalaborwa	3.9%	-1.0%	-2.3%	-2.2%	-1.4%	-1.6%	-4.3%	-9.2%	4.7%	-1.6%
Mutale	8.7%	9.1%	4.8%	2.6%	6.7%	11.5%	8.3%	19.3%	10.3%	8.9%
Thulamela	4.4%	3.2%	4.1%	6.3%	7.5%	6.3%	5.0%	1.3%	3.1%	4.6%
Makhado	3.5%	2.1%	3.3%	6.1%	6.1%	5.1%	4.3%	-0.7%	2.8%	3.6%

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

As is evident from the above tables, the Mutale Local Municipality experienced mixed growth spurts over the time period, with an average annual growth over the time period of 8.9% per year, which is the highest growth rate of all the local municipalities analysed. Greater Giyani Local Municipality experienced the second highest growth rate over the time period, with an annual growth rate of 6.1%. The other local municipalities all experienced positive economic growth between 2001 and 2010, except for Ba-Phalaborwa Local Municipality, which had a growth rate of -1.6% per annum over the time period.

Before the growth scenarios and estimated future commercial and industrial development can be discussed, it is necessary to provide a snapshot of historical economic growth in the study area. As is evident from the above discussions on sectoral GGP growth and sectoral contribution to GGP, the agriculture sector plays a less significant role in the majority of the economies of local municipalities included in the study area, and has in fact been declining in the past years. The dominant economic sectors in the majority of local municipalities are trade, business services, and government sectors. The larger economic nodes in the study area serve the surrounding rural areas, which are often poorly serviced. As these rural areas expand, more services have been required, which has necessitated development, especially retail development, in the larger nodes.

The mining sector on the other hand plays a very significant role in the Ba-Phalaborwa Local Municipality and the Mutale Local Municipality. In 2010, the sector contributed 45% and 35% of the total GGP in each of the local municipalities respectively. Despite the fact that this is a large contribution in both cases, the sectoral contribution declined by 16% from 61% in 2000 to 45% in 2010 in the Ba-Phalaborwa Local Municipality, and declined by 6% from 33% to 27% from 2000 to 2005, after which the sectoral contribution increased by 8% to 35%.

Table c: Economic land use per town in the Luvuvhu and Letaba WSS, 2010

Town	***Economic land use (ha)***	
	Commercial	***Industrial***
Giyani	*160.19*	*45.95*
Haenertsburg	*4.2*	*4.9*
Makhado	*111.12*	*211*
Modjadjiskloof	*26.7*	*14.6*
Thohoyandou	*227.28*	*61.16*
Tzaneen	*98.97*	*234.25*

Source: Satellite imagery, 2010 and Kayamandi calculations, 2012

Table c provides a snapshot of existing land use (commercial and industrial) in the major economic

centres in the study area.

Mining, especially coal (Mutale Local Municipality) and copper (Ba-Phalaborwa Local Municipality) mining has made a significant contribution to the growth of these two municipalities. Despite this, a number of diamond and coal mines have closed down in Mutale Local Municipality.

A growth scenario for economic development has been developed, as it is impossible for all the smaller settlements and service areas in the study area to grow at the same rate as larger economic nodes such as Tzaneen, Thohoyandou, Giyani and Makhado, as various factors affect each area according to their individual characteristics. The following economic development determinants have been identified as likely factors to cause different water resource responses: Gross Gross Domestic Growth (GDP) growth, employment per sector, and growth relative to other areas.

In addition to the above, strategic processes and forces such as political, administrative and spatial manifestations, anchor projects, etc. can influence water demand, and need to be taken into account. The economy could grow faster in line with government policies, economic interventions and major projects, or it could show slower growth rates if policy directives and major interventions are not put into action.

It is thus important to have a perspective on relevant factors that presently have an impact and those that may have an impact on the economic activities practised. This perspective is important for the purpose of this study as these economic activities together with their scale and the level of intensity determine the direction and the monetary value of the economy of areas. Economic factors determine (or influence) the economy in terms of its sectoral structure, monetary value and spatial locations.

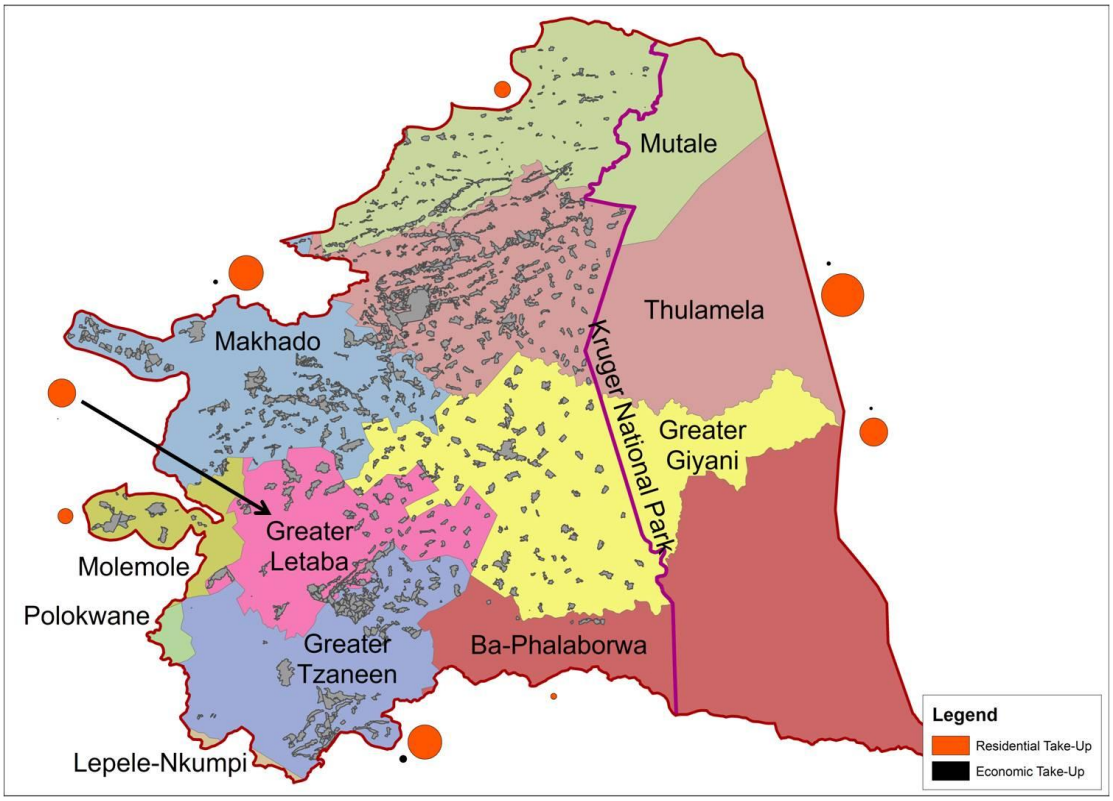
The stimulation of fewer but larger growth points, nodes, corridors and population concentrations (in line with policy directives) would inevitably result in the concentration of consumer spending power, which could in turn stimulate economic development in these priority development nodes, corridor routes, strategic development areas and flagship projects with regards to tourism, mining, agriculture, industry, etc. In other words the premise of this determinant is that economic policy and interventions (at national, provincial, and local levels) could alter the flow of people.

This section provides information concerning the economic growth within the Luvuvhu and Letaba WSS based on results obtained from the modelling process. The economic growth results are focussed on providing information and an overview of the proposed commercial and industrial land in the study area, as well as the determined take-up and utilisation of this land. This growth forecast provides an indication of the required future land for economic growth and the expected take-up rate and location of developments.

Table d below provides a summary of the take-up of all proposed commercial and industrial land represented in hectares within the major economic centres in the study area up to 2040.

Table d: Summary of the take-up of all proposed commercial and industrial land in the Luvuvhu and Letaba WSS up to 2040

Town	***Use zone (ha)***		***TOTAL (ha)***
	Commercial	***Industrial***	
Giyani	*37.6*	*6.7*	***44.4***
Haenertsburg	*0*	*0*	***0***
Makhado	*45.1*	*52.1*	***97.2***
Modjadjiskloof	*0*	*2.3*	***2.3***
Thohoyandou	*57.9*	*17.7*	***75.6***
Tzaneen	*105.4*	*166.4*	***271.8***
TOTAL	***246.0***	***245.3***	



Source: Kayamandi Development Services, 2012

Figure c: Spatial indication of future land take-up per use, 2010-2040

Based on the modelling undertaken and the projected future growth in population (and related residential take-up) as well as projected economic growth and economic take-up (comprised of commercial and industrial), the below spatial representation of anticipated future growth is shown. Evidently, economic and residential growth and development in the Luvuvhu and Letaba WSS is concentrated in the main economic nodes, such as Tzaneen, Thohoyandou, Makhado, Greater Giyani, Greater Letaba, etc.

Development of a Reconciliation Strategy for the Luvuvhu and Letaba Water Supply System

WATER REQUIREMENTS DETERMINATION

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Development of a Reconciliation Strategy for the Luvuvhu and Letaba Water Supply System

Demographic and Economic Development Potential

1 INTRODUCTION

1.1 BACKGROUND

The Department of Water Affairs (DWA) has identified the need for the Reconciliation Study for the Luvuvhu-Letaba WMA. The WMA is almost fully developed and demands from the Letaba River currently exceed the yield capability of the system. Regulation for the Letaba is mainly provided by Middle Letaba, Ebenezer and Tzaneen Dams. The recently completed Nandoni Dam located in the Luvuvhu basin will be used in combination with Albasini, Vondo and Damani dams to be managed as one system. It is expected that the total yield from this combined system will be fully utilized by around 2020, considering only the current planned projected demands. The yield of the Albasini Dam has reduced over the years and as a consequence the dam is over allocated. The Shinwedzi catchment is situated almost entirely in the Kruger National Park and for all practical purposes, no sustainable yield is derived from surface flow in the Shingwedzi catchment.

The main urban areas in these catchments are Tzaneen and Nkowakowa in the Groot Letaba River catchment, Giyani in the Klein Letaba River catchment and Thohoyandou and Makhado (Louis Trichardt) in the Luvuvhu catchment. An emergency water supply scheme to transfer water from Nandoni Dam is currently under construction to alleviate the deficits of the stressed Middle Letaba sub-system in the Letaba River basin. Other future developments planned to be supplied from Nandoni Dam will already utilize the full yield available from the Nandoni sub-system by 2021, without supporting Giyani. Supporting Giyani from Nandoni will bring this date forward to approximately 2018

Intensive irrigation farming is practised in the upper parts of the Klein Letaba River catchment (upstream and downstream of the Middle Letaba Dam), the Groot Letaba (downstream of the Tzaneen Dam) and Letsitele rivers, as well as in the upper Luvuvhu River catchment. Vegetables (including the largest tomato production area in the country), citrus and a variety of sub-tropical fruits such as bananas, mangoes, avocados and nuts are grown. Large areas of the upper catchments have been planted with commercial forests in the high rainfall parts of the Drakensberg escarpment and on the Soutpansberg. The area, particularly the Groot Letaba sub-area, is a highly productive agricultural area with mixed farming, including cattle ranching, game farming, dry land crop production and irrigated cropping. Agriculture, with the irrigation sector in particular, is the main base of the economy of the region. Large scale utilization of the groundwater resource occurs mostly downstream of the Albasini Dam in the Luvuvhu catchment, where it is used by irrigators as well as in the vicinity of Thohoyandou where it is used to supply rural communities. The limited mineral resources in the Luvuvhu basin are dominated by deposits of cooking coal in the northeast near Masisi. In addition to irrigation water supply from the dams in the study area, towns, villages and rural settlements are also supplied with potable water.

DWA and other institutions involved in the management of the water resource and supply systems of the Luvuvhu-Letaba catchments, have in the past carried out various studies on intervention measures to improve the water supply situation. The knowledge base that has been created by these studies provides a sound and essential platform from which the Reconciliation Strategy will be developed. In order to harness this information a Literature Review Report (DWA, 2013) was compiled to summarise the available information in one document and also present a synthesis of the information by highlighting the pertinent aspects of Integrated Water Resource Management that will be assessed and incorporated in the Reconciliation Strategy.

1.2 MAIN OBJECTIVES OF THE STUDY

The main objective of the study is to compile a Reconciliation Strategy that will identify and describe water resource management interventions that can be grouped and phased to jointly form a solution to reconcile the water requirements with the available water for the period up to the year 2040 and to develop water availability assessment methodologies and tools applicable to this area that can be used for decision support as part of compulsory licensing to come. The development of the strategy requires reliable information on the water requirements and return flows (wastewater) as well as the available water resources for the current situation and likely future scenarios for a planning horizon of thirty years.

To achieve the above objectives, the following main aspects will be covered in the study:

- Update the current and future urban and agricultural water requirements and return flows;
- Assess the water resources and existing infrastructure;
- Configure the system models (WRSM2005, WRYM, WRPM) in the Study Area at a quaternary catchment scale, or finer where required, in a manner that is suitable for allocable water quantification;
- To firm up on the approach and methodology, as well as modelling procedures, for decision support to the on-going licensing processes;
- To use system models, in the early part of the study, to support allocable water quantifications in the Study Area and, in the latter part of the study, to support ongoing licensing decisions, as well as providing information for the development of the reconciliation strategy;
- Formulate reconciliation interventions, both structural and administrative/regulatory;
- Document the reconciliation process including decision processes that are required by the strategy; and
- Conduct stakeholder consultation in the development of the strategy.

1.3 STUDY AREA

The study area comprises of the water resources of the catchment of the Luvuvhu, Mutale, Letaba and Shingwedzi rivers linked to adjacent systems as indicated by the inter-basin transfers on **Figure 1.1**. This area represents the entire WMA 2 and includes tertiary catchments A91, A92,

B81, B82, B83 and B90. Adjacent areas supplying water to this WMA or getting water from this WMA are also part of the study area.

The Luvuvhu-Letaba water management area (WMA) is located in the north-eastern corner of South Africa, where it borders on Zimbabwe in the north and on Mozambique along the eastern side. It falls entirely within the Northern Province, and adjoins the Olifants and Limpopo WMAs to the south and west respectively. The Luvuhu-Letaba WMA forms part of the Limpopo River Basin, an international river shared by South Africa, Botswana, Zimbabwe and Mozambique.

Approximately 35% of the land area of the WMA along the eastern boundary falls within the Kruger National Park. The rivers flowing through the park are of particular importance to the maintenance of ecosystems.

The confluence of the Luvuvhu and Limpopo rivers forms the common point where South Africa borders on both Zimbabwe and Mozambique. The Shingwedzi River first flows into the Rio des Elephantes (Olifants River) in Mozambique, which then joins the Limpopo River.

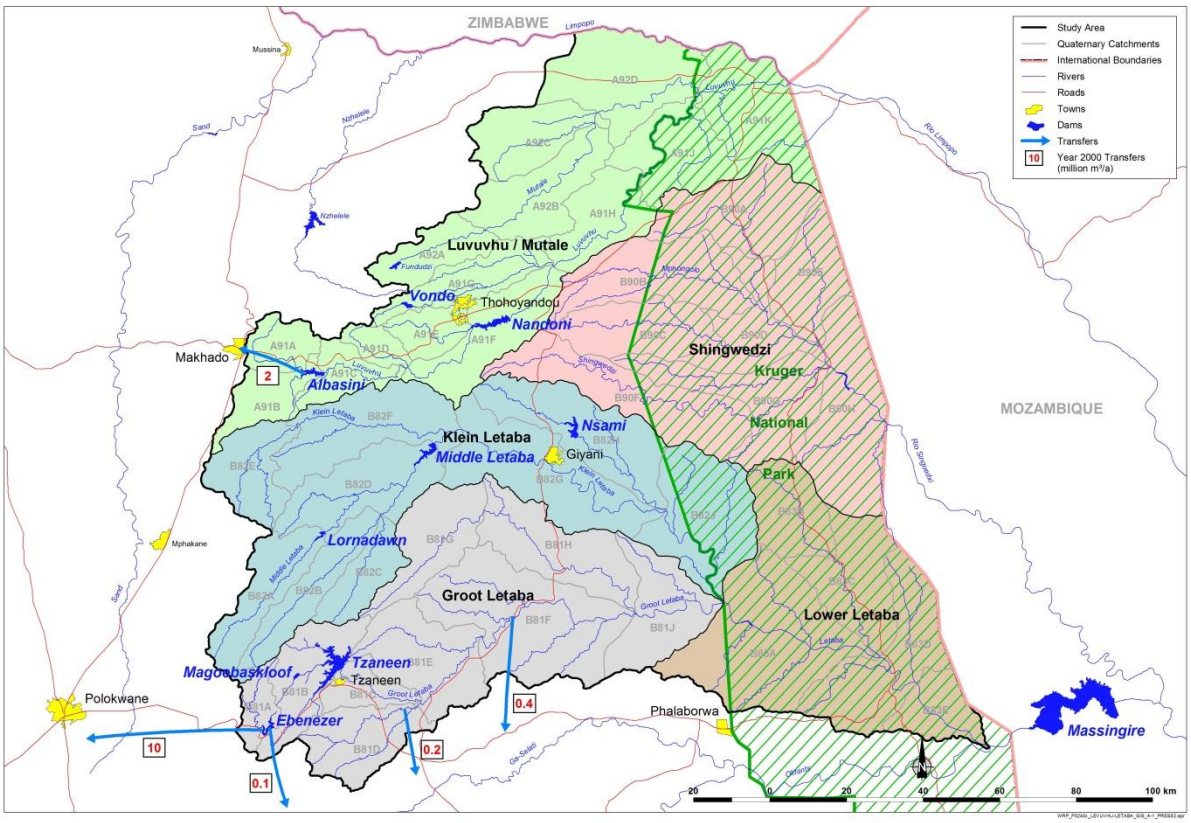


Figure 1.1: Study Area

The two main branches of the Letaba River, the Klein and Groot Letaba, have their confluence on the western boundary of the Kruger National Park. The Letaba River flows into the Olifants River just upstream of the border with Mozambique (**Figure 1.1**).

The topography is marked by the northern extremity of the Drakensberg range and the eastern

Soutpansberg, which both extend to the western parts of the water management area, and the characteristic wide expanse of the Lowveld to the east of the escarpment. Climate over the water management area is generally sub-tropical, although mostly semiarid to arid. Rainfall usually occurs in summer and is strongly influenced by the topography.

Along the western escarpment rainfall can be well over 1 000 mm per year, while in the Lowveld region in the eastern parts of the water management area rainfall decreases to less than 300 mm per year and the potential evaporation is well in excess of the rainfall. Grassland and sparse bushveld shrubbery and trees cover most of the terrain, marked by isolated giant Boabab trees.

The geology is varied and complex and consists mainly of sedimentary rocks in the north, and metamorphic and igneous rocks in the south. High quality coal deposits are found near Tsikondeni and in the northern part of the Kruger National Park. The eastern limb of the mineral rich Bushveld Igneous Complex touches on the southern parts of the WMA. With the exception of sandy aquifers in the Limpopo River valley, the formation is of relatively low water bearing capacity. A wide spectrum of soils occurs in the WMA, with sandy soils being most common.

1.4 PURPOSE OF THIS REPORT

The primary purpose of this report is to provide insight into the demographic and economic growth characteristics of the Luvuvhu and Letaba WSS, and to provide growth estimates (moderate growth and high growth scenarios) of population growth and economic development up to 2040.

1.5 METHODOLOGY

The methodology section is focused on providing a clear description of the process that was followed in completing this task.

Figure 1.2 below provides a generalised depiction of all steps involved, whilst an in-depth discussion surrounding each step is given in the subsequent sections.

The project process illustrated below, indicates the various steps involved in the compilation, extraction and analysis of socio-economic data necessary to complete this task.

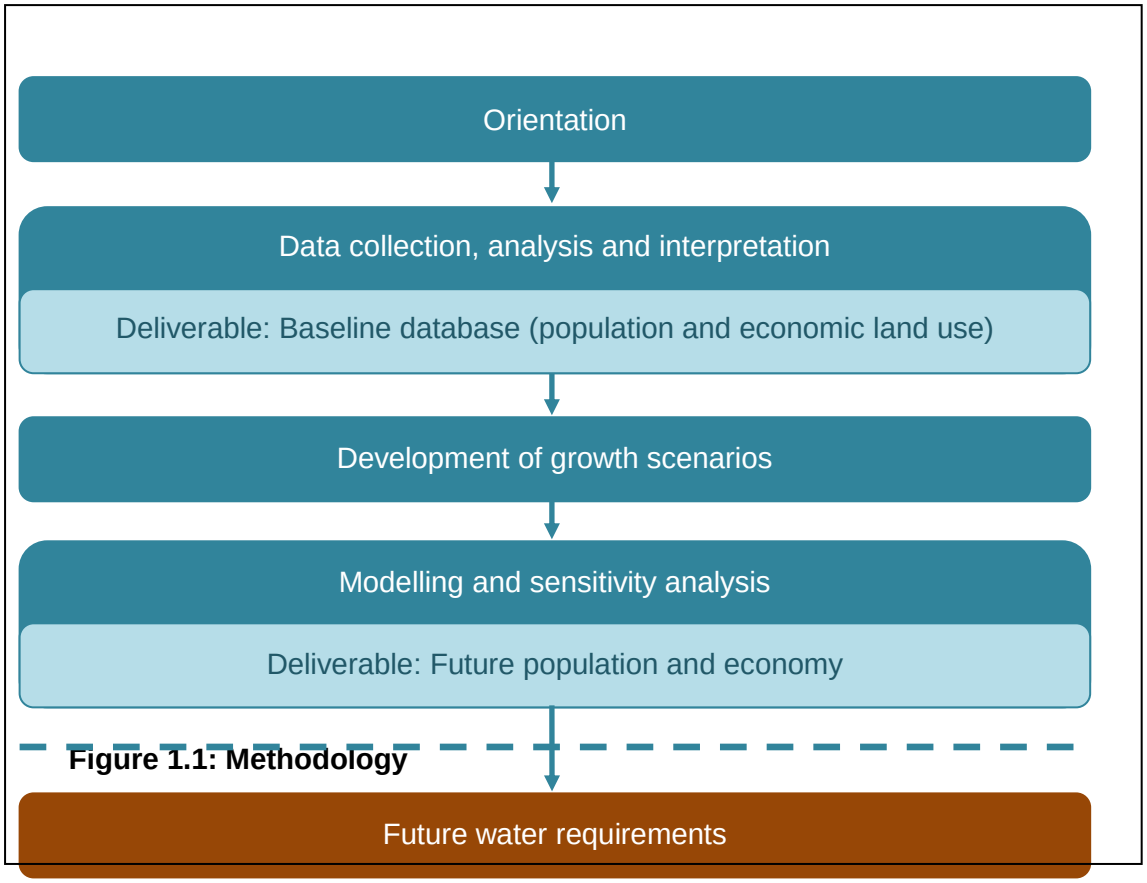


Figure 1.1: Methodology

The purpose of this step was to become familiarised with the purpose and intended outcomes of the study, as well as with the study area itself.

1.5.2 Data collection, analysis and interpretation

This step entailed gathering information from previous studies that have been undertaken by DWA and other stakeholders. In addition to this, desktop research was done to gain insight into the current reality and to facilitate discussions with relevant stakeholders and role-players. The desktop research was done by obtaining documents and/or any other related information electronically from Local, District, and Provincial websites. Major data sources that formed part of this research were:

- Spatial Development Frameworks (SDF);
- Integrated Development Plans (IDP);
- Local Economic Development (LED) strategies;
- Housing plans;
- Zoning schemes;
- Urbanisation or densification strategies; and
- Urban edge strategies.

The above-mentioned documents were reviewed in order to get an overview of the demographic and economic status quo, infrastructure spending budgets, economic development priorities,

priority areas for development (growth points), various development nodes and corridors, spatial development initiatives and sensitive/conservation areas. Based on the information obtained from the above documents, discussions were held with various municipal role-players regarding the dynamics and development patterns of the municipalities. Discussions revolved around municipal plans; current commercial, industrial and residential developments in the municipal area; housing projects; future proposals for developments, etc.

The most important objective of this step was to understand the study area in its current socio-economic context, and to compile a status quo (baseline) database based on information obtained from a variety of sources. The population base was compiled by making use of the following sources of information:

- Population and settlement database of the DWA Water Resources Planning Systems (WRPS) and Water Services directorates;
- All Towns Study;
- 2008 Spot Building Count data;
- Census 2001 information; and
- Community Survey 2007 information.

The base population calculations are discussed in more detail under section 3.2.

1.5.3 Development of growth scenarios

Once the base population data was refined, a moderate growth and high growth scenario was developed up to 2040. The scenarios were based on information relating to structural economic changes, social dynamics, infrastructure developments, urbanisation and migration trends, and historical growth patterns. Each scenario clearly sets out the basic assumptions made and indicates which of the driver variable/s selected should be monitored over time to indicate at some point in the future which scenario is actually being played out in the real world. This assists in identifying the most appropriate intervention required in the future to balance water requirement with water availability, as informed by actual trends in the market place.

With baseline demographic statistics taken from Stats SA and the 2008 DWA settlements database, as well as through discussions with the relevant municipalities, it was possible to project future growth and development expectations for the municipal areas. The model used, produced results in terms of a moderate and high growth scenario in order to provide various perceptions of future outcomes.

1.5.4 Modelling and sensitivity analysis

Modelling was done according to regions, which is each characterised by unique attributes and circumstances. The geographic region can be viewed as an area on its own which interrelates with various other regions identified within the study area. Each region, based on information obtained

from local municipalities, documents and discussions with role-players, has a specific growth forecast, which determines the pace and rate of population growth and the take-up rate of commercial and industrial developments. The modelling process focused on the growth of population up to 2040, and the distribution of this population growth within the study area.

The results of the modelling process will be used to inform future water requirements in the study area.

2 STUDY AREA OVERVIEW

This section seeks to provide a contextual overview of the Luvuvhu and Letaba WSS within the broader spectrums within which the area functions. This includes a broad contextualisation of the locality of the area in relation to South Africa and the Limpopo province. The section also provides a broad overview of the various development nodes in the WSS. The discussions concentrate on providing an overview of the current conditions and attributes of the study area, the factors currently impacting on the WSS, the directives and objectives of various municipal plans, and the future developmental potential for the area.

2.1 NATIONAL AND PROVINCIAL OVERVIEW

The Luvuvhu and Letaba WSS is situated in the Limpopo province, which is the northernmost province in South Africa. Limpopo shares its borders with the Gauteng province to the south, Mozambique to the east, Zimbabwe to the north and Botswana to the west. Limpopo's strategic location puts the province in a favourable position in terms of movement and access, and serves as one of the gateways from South Africa to the rest of the continent. The study area boundary includes the Local Municipalities of Ba-Phalaborwa, Greater Giyani, Greater Letaba, Greater Tzaneen, Lepelle-Nkumpi, Makhado, Molemole, Mutale, Polokwane and Thulamela, which are all situated in Limpopo.

In addition to its strategic location, Limpopo has a diversity of cultures, which can partially be attributed to its position with regard to its national neighbours. The province has a large diversity of agricultural resources, tourism destinations and mineral reserves and has a spectrum of more than 70 minerals, which includes precious metals and stones, industrial minerals, and coal. The province is replete of the world's largest reserve of the platinum group of metals, chrome and vanadium, as well as copper, nickel, iron ore and titanium. It is also one of South Africa's richest agricultural regions, with fruit and vegetables being the most significant crops. The natural environment of Limpopo is also rich world-wide in terms of biodiversity, wildlife and archaeological sites that continue to offer immense tourism opportunities. Nearly 80% of South Africa's game hunting industry is situated in the Limpopo province

Limpopo province is also strategically situated at the northern-most tip of South Africa. It is ideally positioned for easy access to African markets. Its proximity to Zimbabwe, Mozambique and Botswana provides investors with a powerful platform from which to access the South African region. Due to the aforementioned, the province considers agriculture, mining, tourism and sector-related manufacturing industries as its competitive advantage and the sectors of growth.

The province is however faced with a number of key developmental challenges like unemployment, high dependency ratios, poverty, illiteracy and skewed distribution of resources. Though meaningful progress has been made in some instances, the situation has not changed substantially. The most pressing problem facing Limpopo today is the absence of sustained economic growth and job creation, which are essential to reduce poverty and improve living conditions.

A variation of population densities among the various district municipalities is noted, with higher

densities in local municipalities that have larger settlements and more urban areas. The majority of the population in the province are living in poverty, with the rural areas reflecting the highest poverty levels. The Limpopo province is characterised by high levels of migration, both internally and internationally. A substantial amount of migration in the province occurs when people in the province migrate to other provinces, especially Gauteng, in search of employment. The province is also home to a large number of cross-border immigrants, the majority of them being in the country illegally. These immigrants have an enormous impact on all aspects of development, particularly employment and increased pressure on social facilities and physical infrastructure.

The Limpopo province has a dualistic economy with a highly developed commercial sector existing next to an informal subsistence sector. The commercial sector has established itself largely in accordance with the spatial location of production factors. The economic space of the Limpopo province is characterised by the uneven spatial distribution of various economic activities. These characteristics can be attributed to a number of causes, the most important of which relates to the spatial location / distribution of production resources, and secondly the functioning of non-economic forces and processes. The industrial sector is relatively small and no major industrial clusters have established themselves in the province.

The Capricorn and Mopani District Municipalities are seen as the main economic engines of the province, with Polokwane, Phalaborwa and Tzaneen identified as the principal economic centres. The provincial development strategy sees the economic heart of the province as formed by the circle of towns stretching from Mogalakwena, Polokwane, Makhado, Thohoyandou, Giyani, Phalaborwa, Tzaneen, Lebowakgomo and other smaller towns and villages within this circle. The area covers one quarter of the province, and accommodates the majority of the population.

According to the Limpopo GDS (2004-2014), the agriculture, mining, tourism and related manufacturing industries are sectors with a competitive advantage in the province, and are key sectors of growth. Seven industrial development clusters have been identified throughout the Limpopo province to stimulate growth in the area. Development clusters are critical masses, spatially concentrated and of unusual competitive success in a particular field. They encompass an array of linked industries, from suppliers and providers of infrastructure to down-stream activities and service organisations. They also include training, research and governmental institutions. The identified clusters are:

1. A platinum mining cluster on the Dilokong Corridor between Polokwane and Burgersfort (Sekhukhune district) as well as in the Waterberg district, which will be anchored by platinum and chrome mines and a smelter;
2. A coal mining and petrochemical cluster at Lephalale on the East-West Corridor (Waterberg district) which involves expanding the existing Grootgeluk coal mine and the power station and also to build an aromatics extraction factory;
3. A fruit and vegetable (horticulture) cluster in Vhembe, Mopani and Bohlabela Districts, which includes the development of fruit and vegetable processing facilities, the local production of such as plant material production, nurseries, pesticides and fertilisers, packaging and exporting industries;

4. A logistics cluster in Polokwane that focuses on providing inter-modal transportation that incorporates Polokwane International Airport, the rail station and the proposed truck inn;
5. A red and white meat cluster on all the corridors in all the District Municipalities in Limpopo which aims to build on current and emergent cattle and poultry production, as well as animal-feed production;
6. Eight tourism sub-clusters at a number of high-potential destinations:
    a. Special interest activities, such as Mapungubwe and Nyslvlei Birding
    b. The game industry value-chain
    c. Golf and game tours
    d. Biospheres, such as Waterberg, Soutpansberg and Lowveld
    e. Family entertainment (including resorts, sport and picnic places)
    f. Polokwane business tourism
    g. Mountain adventure on escarpments
    h. Trans-frontier Parks
7. A forestry cluster in the Mopani and Vhembe Districts which focuses mainly on existing plantations and associated services such as nurseries, plant material production, sawmills and other timber processing facilities.

No specific areas have been identified where some of the clusters (horticulture cluster, meat cluster, tourism cluster, forestry cluster) will be promoted, but it will likely have an influence in the larger towns such as Makhado, Thohoyandou, Giyani, Tzaneen, etc., as these are the towns with existing infrastructure and services to support the development of these clusters.

According to the Limpopo Employment, Growth and Development Plan (2009-2014), the province has excellent agricultural potential, mineral reserves, and tourism resources. Potential growth sub-clusters within the mining sector include platinum mining along the Dilokong Corridor, coal mining, the Medupi power station and the planned Sasol Coal to Liquids petrochemicals industrial complex in the Waterberg District.

Ensuring more inclusive economic growth, decent work and sustainable livelihoods, provision of economic and social infrastructure, rural development, food security and land reform, access to quality education, and improved health care are just some of the key strategic priorities identified in the Limpopo Employment, Growth and Development Plan (2009-2014) to guide service delivery over the period up to 2014. A series of key action programmes are identified in the plan. These are:

- An industrial development programme which focuses on diversifying export products and markets, creating a conducive business environment, investing in the necessary physical infrastructure; and the development of industrial technology;
- Stimulation of mining and minerals beneficiation industries through the creation of beneficiation

clusters to create a conducive and favourable environment for effective value addition;

- Enterprise development to promote the development and transformation of the provincial economy by promoting the SMME sector. sectoral SMME growth initiatives will be established around the agro-processing, mining and minerals, infrastructure, coal and energy, ICT, tourism, freight and logistics and the creative industries;
- A regional economic development and integration programme that focuses on addressing key obstacles to the functioning of the economy, primarily through infrastructural interventions. Industrial development in under-developed municipalities will be stimulated through the establishment of regional and local economic corridors, special economic zones or economic development hubs, export processing zones and Industrial Development Zones (IDZ);
- A public infrastructure investment programme focussed on physical, social and economic infrastructure such as bulk services, roads, clinics, schools, housing, etc. The construction of a new hospital in Mutale Local Municipality has specifically been highlighted as one of the high impact projects;
- An agriculture and rural development programme targeting food insecure households, subsistence and emerging farmers, profitable commercial small-scale farming and profitable large-scale farming to provide assistance in terms of technical, institutional, communication and networking and marketing issues;
- Education and skills development programme aimed at improving education and skills levels in the province, specifically for SMMEs and the mining sector;
- A health care development programme focussed on infrastructure development, the provision of quality health care services, human resource development and capacity building and research, development and innovation; and
- The green economy and creation of green jobs which involves in investing in renewable energy within the context of agriculture, manufacturing, construction, installation, and maintenance, as well as scientific and technical, administrative, and service-related activities.

According to the National Development Plan (NDP) 2030, government is focused on human capital (built through education, health and skills development), physical infrastructure (schools, clinics, ports and power lines), technologies, social institutions and management skills to enable competitiveness. The objectives are to create jobs and livelihoods, expand infrastructure, transition to a low-carbon economy, transform urban and rural spaces, improving education and training and provide quality health care. Government's aim is to create 11 million jobs by 2030 through creating an environment for sustainable employment and inclusive economic growth, promoting employment in labour-absorbing industries and raising exports and competitiveness in those areas where endowments and comparative advantages exist, such as mining, construction, mid-skill manufacturing, agriculture and agro-processing, tourism and business services.

Priority infrastructure investments are: the upgrading of informal settlements; development of infrastructure to import liquefied natural gas; a new heavy-haul rail corridor to the Waterberg coal field; upgrades to the central basin coal network; and improvements to water, transport and energy

infrastructure to increase mineral exports. Transport links will be built and fixed in the Durban-Gauteng freight corridor; a new port will be built at the old Durban airport site; coal, iron ore and manganese lines will be expanded; the Sishen to Saldanha iron ore line will be upgraded; capacity on the manganese line will be expanded; two universities will be built in Mpumalanga and the Northern Cape; and a new medical school will be built in Limpopo. There is however no clear indication of where the proposed medical school will be built, but discussions indicate that it will be located at the University of Limpopo's Polokwane campus. The construction of the De Hoop dam on the Steelpoort River and its associated distribution systems will deliver water for domestic and mining use in the Sekhukhune, Waterberg and Capricorn Districts, and will benefit approximately 2.3 million people in the domestic sector. The Great Letaba River Water Augmentation Project in the Limpopo province is another major infrastructure investment project in the area.

Furthermore, industries such as agro-processing, tourism, fisheries and small enterprises are proposed to be developed where potential exists. Priority areas for mining beneficiation should include those where suitable capacity already exists, or where beneficiation is likely to lead to downstream manufacturing. Beneficiating all of the country's minerals is neither feasible nor is it essential for developing a larger manufacturing sector.

Another aim of government is to increase urban population densities and to move jobs and investment towards dense townships on the peripheries of cities.

According to the State of the Nation Address by President Zuma on 9 February 2012, high unemployment rates, inequality and poverty continue to challenge development in the country. In reaction to the challenges, government launched the New Growth Path framework in 2010, and identified infrastructure development, tourism, agriculture, mining, manufacturing and the green economy as key job drivers. High on the agenda of government is infrastructure development, and a national infrastructure plan driven by the Presidential Infrastructure Coordinating Commission (PICC), which highlights the following 5 key strategic projects:

1. Develop and integrate rail, road and water infrastructure in an attempt to unlock mineral reserves, to facilitate increased mining and to increase the beneficiation of minerals. This project is centred around Waterberg in the western part of Limpopo and Steelpoort in the eastern part of Limpopo. Using the developments in Limpopo as a base, rail transport will be expanded in Mpumalanga, connecting coalfields to power stations;
2. Improve the movement of goods and economic integration through a Durban-Free State-Gauteng logistics and industrial corridor;
3. Develop a major new South Eastern node that will improve the industrial and agricultural development and export capacity of the Eastern Cape region, and expand the province's economic and logistics linkages with the Northern Cape and KwaZulu-Natal;
4. Expand the roll-out of water, roads, rail and electricity infrastructure in North West province;
5. Improve infrastructure to unlock development potential along the west coast of the country. Plans include the expansion of the iron-ore rail line between Sishen in Northern

Cape and Saldanha Bay in the Western Cape, which will create large numbers of jobs in both provinces.

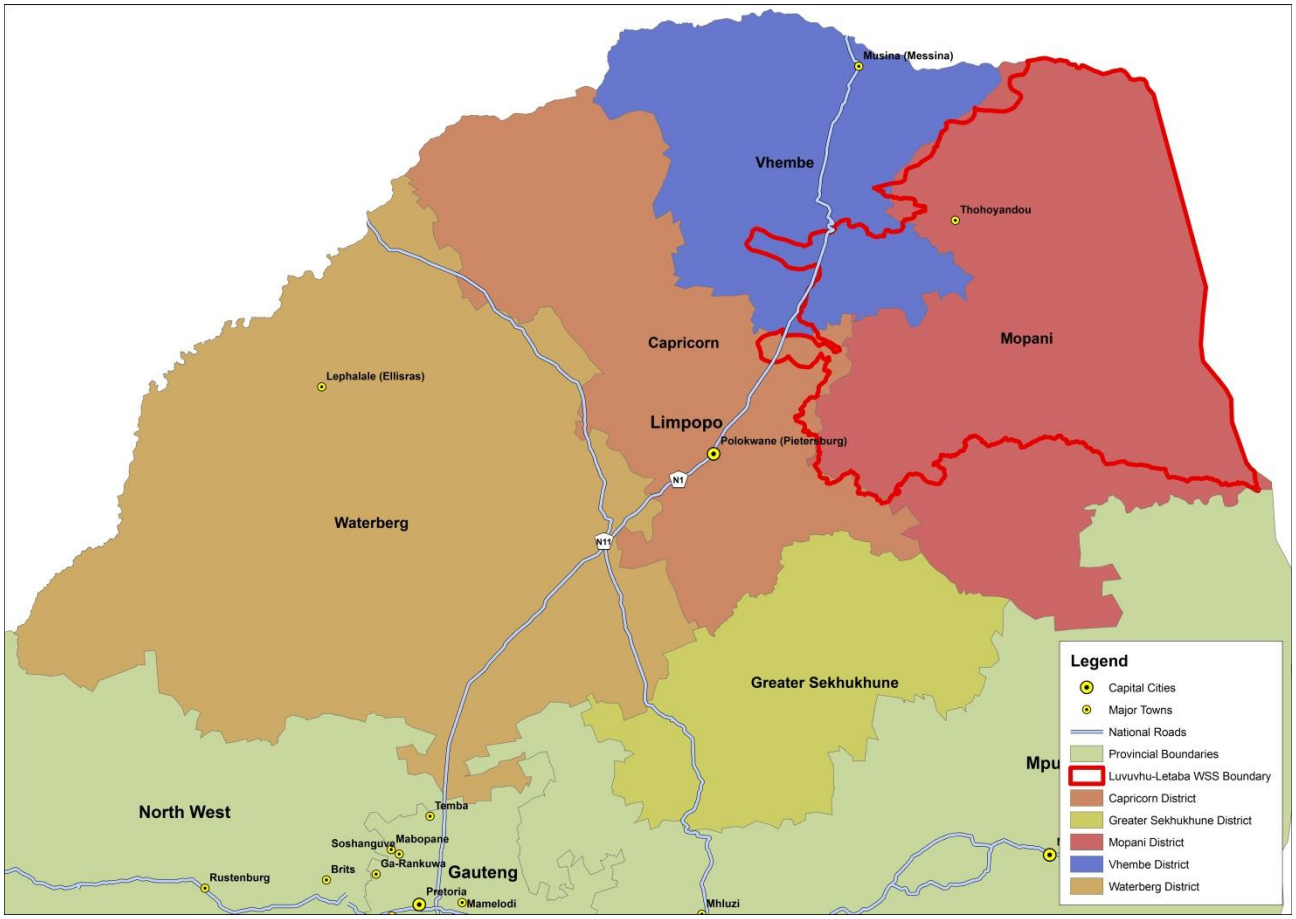
Other key strategic infrastructure projects include electricity generation to support socio-economic development, electricity transmission and distribution, integrated municipal support, integrated urban space and public transport, agri-logistics and rural infrastructure development, revitalisation of public hospitals and other health facilities, national school build programme, higher education infrastructure development, radio-telescope development, improved access to ICT and regional cooperation and development.

2.2 DISTRICT AND MUNICIPAL OVERVIEW

In this section, an overview of the following districts and local municipalities located within the study area is provided:

- Capricorn District Municipality
    - Lepelle-Nkumpi Local Municipality
    - Molemole Local Municipality
    - Polokwane Local Municipality
- Mopani District Municipality
    - Ba-Phalaborwa Local Municipality
    - Greater Giyani Local Municipality
    - Greater Letaba Local Municipality
    - Greater Tzaneen Local Municipality
- Vhembe District Municipality
    - Makhado Local Municipality
    - Mutale Local Municipality
    - Thulamela Local Municipality

Figure 2.1 below indicates the location of the various district municipalities in relation to the study area.



Source: Kayamandi Development Services, 2012

Figure 2.1: District Municipalities Included in the Study Area

As can be seen from the above figure, the Mopani District Municipality is largely contained within the study area, while smaller portions of the Vhembe and Capricorn District Municipalities are included in the study area.

2.2.1 Capricorn District Municipality

The Capricorn District Municipality is situated in the centre of the Limpopo province, and shares its borders with four district municipalities:

- Mopani District Municipality to the east;
- Sekhukhune District Municipality to the south;
- Waterberg District Municipality to the west; and
- Vhembe District Municipality to the north.

The district is situated at the core of economic development in the Limpopo province and includes

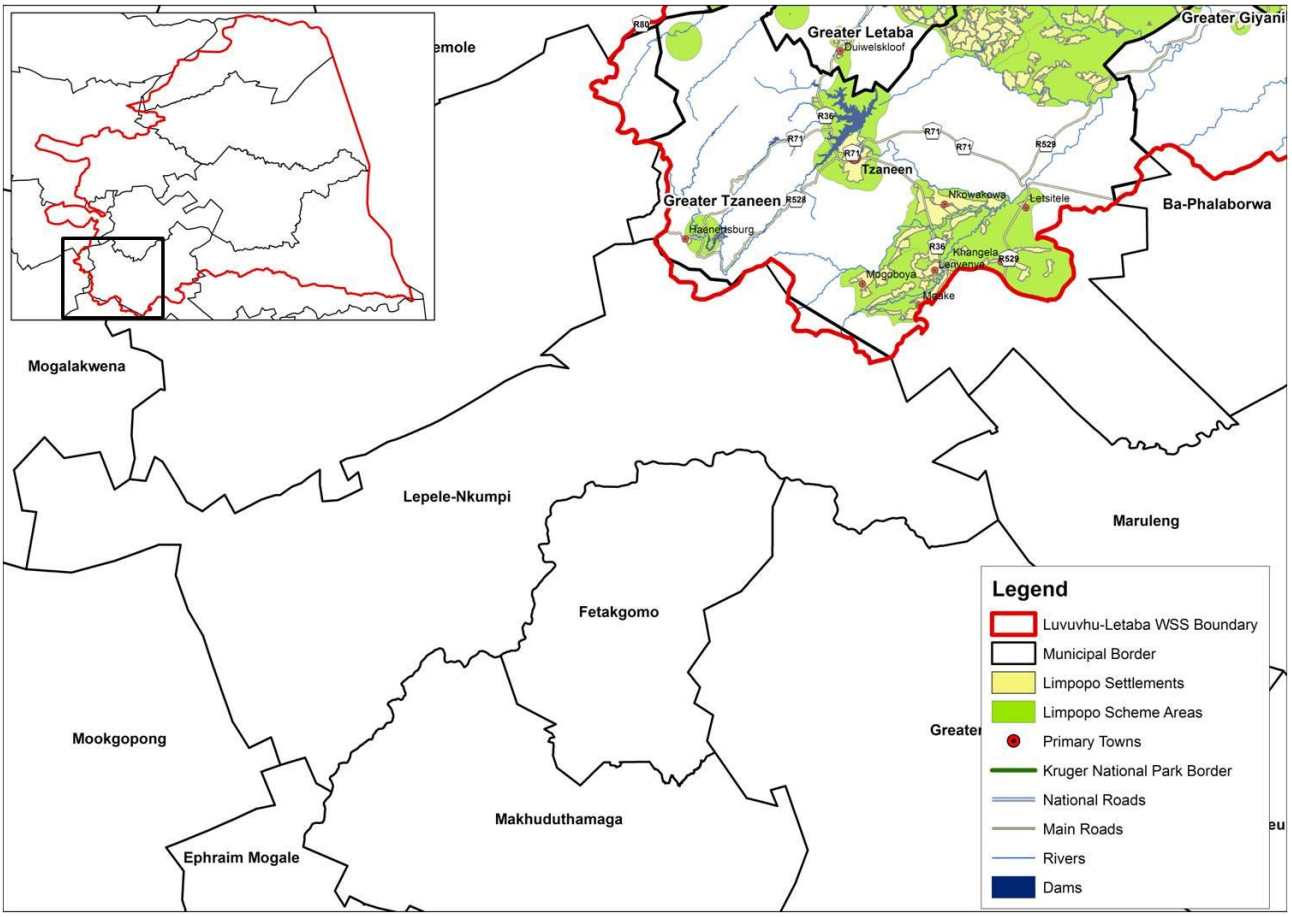
Polokwane, the capital of the province. The District Municipality covers an area of 21 705 km^2, which constitutes 17% of the total surface area of the Limpopo province. The District has five local municipalities under its jurisdiction, namely Aganang, Blouberg, Lepelle-Nkumpi, Molemole and Polokwane. Small portions of Lepelle-Nkumpi, Molemole and Polokwane local municiplaites are included in the study area, and discussed further hereunder.

2.2.1.1 Lepelle-Nkumpi Local Municipality

The Lepelle-Nkumpi Local Municipality is the third largest of the five local municipalities within the Capricorn District Municipality, and covers an area of approximately 3 460 km², which constitutes 16% of the Capricorn District. The municipality is bordered by Greater Tubatse, Fetakgomo and Makhuduthamaga Local Municipalities to the south, Mookgophong and Mogalakwena Local Municipalities to the west, Polokwane and Greater Tzaneen Local Municipalities to the north and Maruleng Local Municipality to the east.

Figure 2.2 below indicates the location of the Lepelle-Nkumpi Local Municipality.

A number of important regional routes transverse the area, of which the R37 (Polokwane-Burgersfort road) is the most important. The municipality is predominantly rural in nature with a several small villages and two urban nodes, namely Magatle and Lebowakgomo. These two nodes are however outside the Luvuvhu and Letaba WSS. The small settlements vary in size are scattered throughout the municipal area. Almost all these settlements have no or a very small economic base, and function as dormitory settlements. Settlement densities are generally higher in urban areas, although some rural settlements register relatively high densities.



Source: Kayamandi Development Services, 2012

Figure 2.2: Lepelle-Nkumpi Local Municipality

The following nodes have been identified as growth points:

- District growth point:
    - Lebowakgomo
- Municipal growth point:
    - Magatle

Large areas of land in the municipality (approximately 95% of the land) forms part of the former Lebowa homeland which is currently held in trust for tribal and community authorities. These traditional authorities play a very important role in terms of their culture and have a major influence in the manner in which land is made available to individuals for settlements, as well as the use of land for economic purposes (e.g. agriculture, tourism, etc.). A further constraint to development in the municipality is the large proportion of land subject to land claims.

The majority of Lepelle-Nkumpi is comprised of a non-commercial component, which comprises

informal and marginal activities such as subsistence farming and informal trading. The Lepelle-Nkumpi Local Municipality has a weak wholesale and retail sector which has difficulty to develop due to limited local buying power in especially rural villages. This is worsened by the high incidence of migrant labour, which results in high leakage of the already limited buying power. In Lebowakgomo, the business sector has largely developed as a result of the buying power generated by the service sector. The Lebowakgomo Central Business District (CBD) is of regional importance since there are no suburban shopping centres in the municipal area.

The industrial sector in Lepelle-Nkumpi Local Municipality is relatively small and no major industrial clusters exist in the municipality. One of the most important factors which hamper industrial development relates to the fact that Lepelle-Nkumpi is located on the periphery of the economic space of South Africa, which implies long distances to and from markets. A small industrial sector exists in Lebowakgomo where provision has been made for industrial premises for both small and large enterprises, but there is a high vacancy rate.

There is limited potential for intensive crop production in the municipality due to the arid/semi-arid nature of the area. Crops are however produced in the area, the most important being maize, grain sorghum, citrus and watermelon. Eco-tourism opportunities are vast and key tourism related opportunities lie in the potential for commercialisation and merging of the Bewaarskloof, Lekgalameetse and Wolkberg nature reserves. The mountainous section occurring northeast of the Municipality is considered highly sensitive and no development can be supported there.

Mining activity is largely concentrated in the Zebediela Estates, Hwelereng, and GaMathabatha areas but potential exists to spread this activity to other parts of the municipality. The chances of locating undiscovered mineral deposits are also favourable which will lead to a healthy growth in the mining industry within Lepelle-Nkumpi.

The following four Strategic Development Areas (SDAs) have been identified in the municipal area:

- SDA 1: Area between Mashite and Makotse which includes Lebowakgomo, Mamaolo and Seleteng;
- SDA 2: Area between Mogoto and Magatle which includes Moletlane and Sekgophokgophong;
- SDA 3: Area of Ga-Mathabatha; and
- SDA 4: Mafefe area.

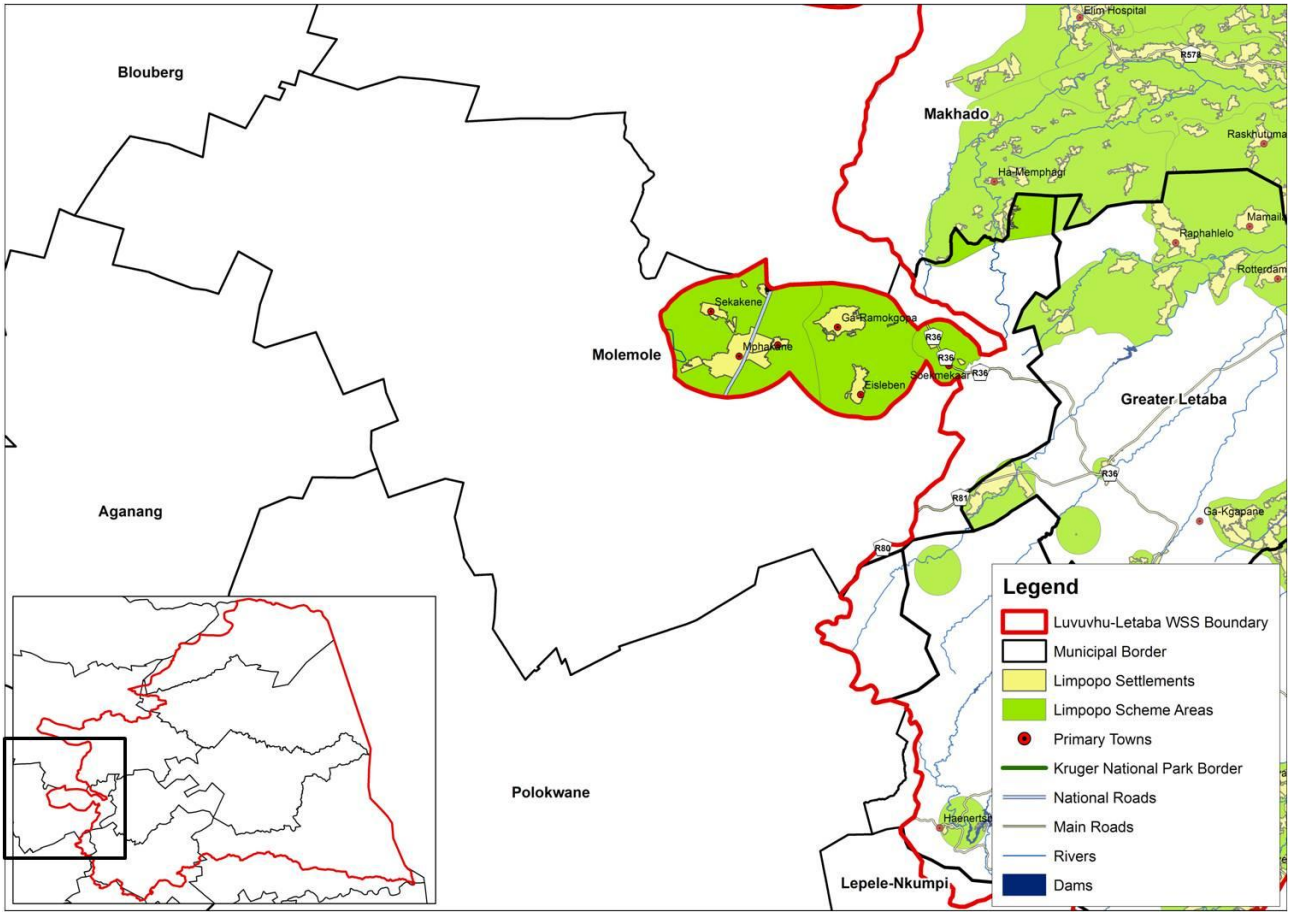
None of the above SDAs or growth points however falls within the Luvuvhu and Letaba WSS.

2.2.1.2 Molemole Local Municipality

The Molemole Local Municipality is the second smallest of the five local municipalities within the Capricorn District Municipality, and covers an area of approximately 3 350 km², which constitutes

15% of the Capricorn District. The municipality is bordered by Polokwane Local Municipality to the south, Aganang and Blouberg Local Municipalities to the west, Makhado Local Municipality to the north, and Greater Letaba Local Municipality to the east.

Figure 2.3 below indicates the location of the Molemole Local Municipality.



Source: Kayamandi Development Services, 2012

Figure 2.3: Molemole Local Municipality

Molemole Local Municipality is predominantly rural and is characterised by high levels of poverty and inequality. The municipal area is comprised of approximately 40 settlements and two main towns, namely, Mogwadi (formerly known as Dendron) and Morebeng. The residential areas are primarily structured around the urban development nodes of Botlokwa, Morebeng and Mogwadi. The Botlokwa area is the primary urban settlement area adjacent to the N1. Although the settlement areas of Mokomene and Mohodi are not strategically located along major transportation routes, these areas provide strategic support (employment, social services and linkages) to the areas of Botlokwa, Mogwadi and Morebeng. The other smaller settlement areas, particularly in the western part of Molemole municipal area are fragmented intensive agriculture zones and extensive farming areas. The following nodes have been identified as growth points:

- District growth points:

  - Mogwadi
  - Morebeng
  - Mphakane
- Municipal growth points:
  - Mohodi
  - Mokomene
  - Eisleben
- Local service points:
  - Ga-Phasa
  - Brussels
  - Ga-Moleele

In view of the large rural component, the majority of roads within the Municipal area are gravel which makes accessibility to and from certain settlements very difficult. There are however four national roads which converge in Molemole municipality and link the municipality with other local and district municipalities and other provinces. These national roads include:

- The N1 (along Machaka corridor) which link Limpopo to Zimbabwe;
- R36 from Phalaborwa to the intersection with the N1 at Botlokwa (along Machaka corridor);
- The R521 which link Mogwadi and Polokwane; and
- The R81 from Polokwane, via Molemole, to Giyani.

The municipality has high potential in agricultural development with large scale production of various farming products, mainly potatoes, tomatoes, cassava, jatropha and game for both the domestic and export markets. The municipality has potential for agro-processing, although the agricultural sector has contracted significantly, resulting in many commercial crop farmers opting for game farming instead.

Retail or commercial opportunities exist in the form of three economic activity nodes located at Mogwadi, Morebeng and N1 (along Machaka corridor). These activity nodes provide for convenience shopping and can be classified as second order retail activities with a potential for industrial development. The commercial and industrial activities are primarily characterised by very limited higher order facilities in the municipality as most of the residents conduct shopping in bigger centres.

Molemole municipal area is richly endowed with natural assets and unique natural attributes, and is currently a domestic and international tourism destination. The municipality is a gateway to Zimbabwe and Botswana, and includes a number of tourist attractions and resources, namely the Tropic of Capricorn needle, Motumo Trading Post, Machaka game reserve, privately owned game

farms and Morebeng settlement (formerly known as Soekmekaar) which has historical significance.

A large variety of minerals occur in the municipal area, although most of them are small in size, uneconomical or mainly suitable for exploitation by small-scale miners. These include gold, copper, graphite, nickel, lithium, chromites, corundum, and resources of stone dimension stones. Currently there are several dimension stone quarries operating in the municipal area. These quarries have the potential to grow into larger projects if proper planning and marketing of the products is put in place. Currently companies such as Sishen Iron Ore Company (Pty) Ltd and Sekoko Resources have completed their exploration activities on iron ore.

The following six SDAs have been identified in the municipal area:

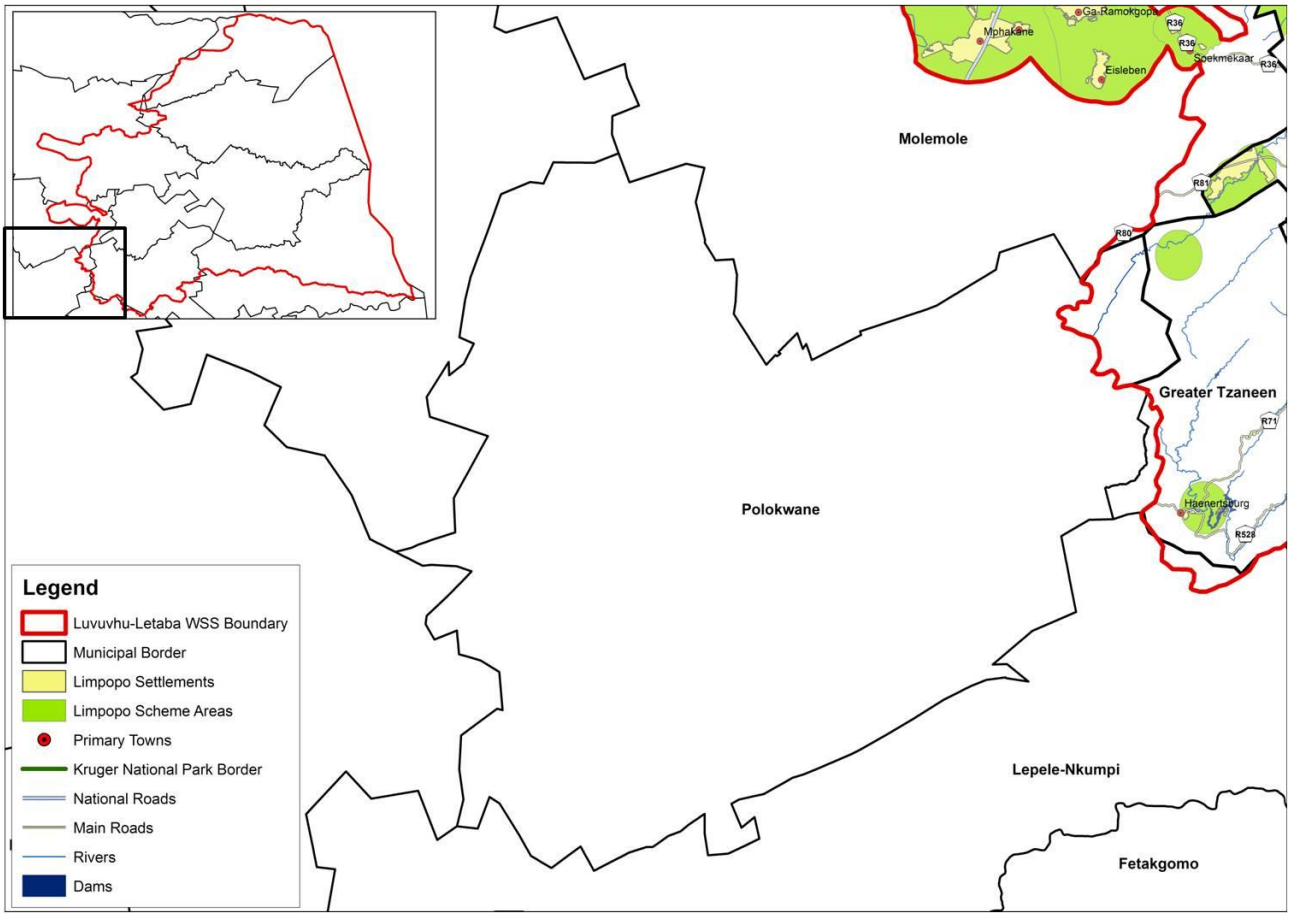
1. SDA 1: Machaka Corridor along the N1
2. SDA 2: Mokomene
3. SDA 3: Mohodi
4. SDA 4: Eisleben
5. SDA 5: Mogwadi
6. SDA 6: Morebeng

None of the above SDAs or growth points however falls within the Luvuvhu and Letaba WSS.

2.2.1.3 Polokwane Local Municipality

The Polokwane Local Municipality is the second largest of the five local municipalities within the Capricorn District Municipality, and covers an area of approximately 3 770 km², which constitutes 17% of the Capricorn District. The municipality is bordered by Lepelle-Nkumpi Local Municipality to the south, Mogalakwena and Aganang Local Municipalities to the west, Molemole Local Municipality to the north, and Greater Tzaneen Local Municipality to the east.

Figure 2.4 below indicates the location of the Polokwane Local Municipality in relation the Luvuvhu and Letaba WSS.



Source: Kayamandi Development Services, 2012

Figure 2.4: Polokwane Local Municipality

Polokwane is the economic hub of the Limpopo province, and is strategically located to be the administrative and economic capital of the Province. It is situated at the cross roads of important national and provincial roads which radiate out into the surrounding rural and tribal areas, providing good access to other towns. The municipality is largely rural in nature, and according to the municipal IDP, only 23% of the total municipal area is urbanised.

There is a definite opportunity for Polokwane to become an important logistics and freight hub within the region, given its strategic location and proximity to Botswana, Zimbabwe, Mozambique and Swaziland. Three of the four Spatial Development Initiatives (SDIs) identified for Limpopo pass through Polokwane, which repeat the city's strategic location and its importance as far as the economy of the Province is concerned. The town of Polokwane, however, does not fall within the study area boundary.

The following nodes have been identified as growth points:

- Provincial growth point:

  - Polokwane
- District growth point:
  - Mankweng
- Municipal growth point:
  - Sebayeng
- Population concentration points:
  - Dikgale
  - Mabukele
  - Perskebult
  - Badimong
  - Ramongwane
- Local service points:
  - Chuene
  - Moshate
  - Thokwaneng
  - Ga-Maja
  - Ga-Molepo
  - Laaste Hoop Ward 7

At the centre of the municipal area is the Polokwane economic hub, which comprises the CBD, industrial area, and range of social services and well established formal urban areas. Situated on the outskirts of the municipality in several clusters are less formal settlement areas which are experiencing enormous influx from rural urban migration trends. These areas are in dire need of upgraded services and infrastructure, both social and engineering, and are struggling to cope with the informal influx of more people who want access to an improved quality and standard of living.

Due to the rural nature of the municipality, agricultural activities are a common occurrence. A number of agri-processing activities exist in the municipality, namely the processing of mango, guava, citrus, tomatoes, potatoes, litchi, oil extraction, macadamia nut processing, as well as other forms of side stream manufacturing. The municipal area has a number of world class tourism destinations, especially pertaining to nature reserves, leisure resorts, lodges and hotels and game farms for hunting expeditions. Some mining activity exists in the municipal area, but mining does not make a significant contribution to the local economy. Mining activities mostly relate to coal extraction and beneficiation, platinum group metals and related industries, chrome, ferrochrome and granite.

The following eight SDAs have been identified in the municipal area:

- SDA 1: Area between Polokwane and Seshego;
- SDA 2: Area known as Ivydale Agricultural holdings;
- SDA 3: Eastern suburbs of Polokwane and adjacent area to the east;
- SDA 4: Mankweng/Badimong cluster;
- SDA 5: Area abutting Mankweng to the south west;
- SDA 6: Sebayeng Municipal Growth Point and area directly surrounding it;
- SDA 7: The area which forms the remainder of the Sebayeng/Dikgale cluster which is not part of SDA6; and
- SDA 8: The area or settlements which are located in the southern parts of the municipal area, known as Chuene.

None of the above SDAs or growth points however falls within the Luvuvhu and Letaba WSS.

2.2.2 Mopani District Municipality

Mopani District Municipality is situated in the centre of the Limpopo province, and shares its borders with four district municipalities:

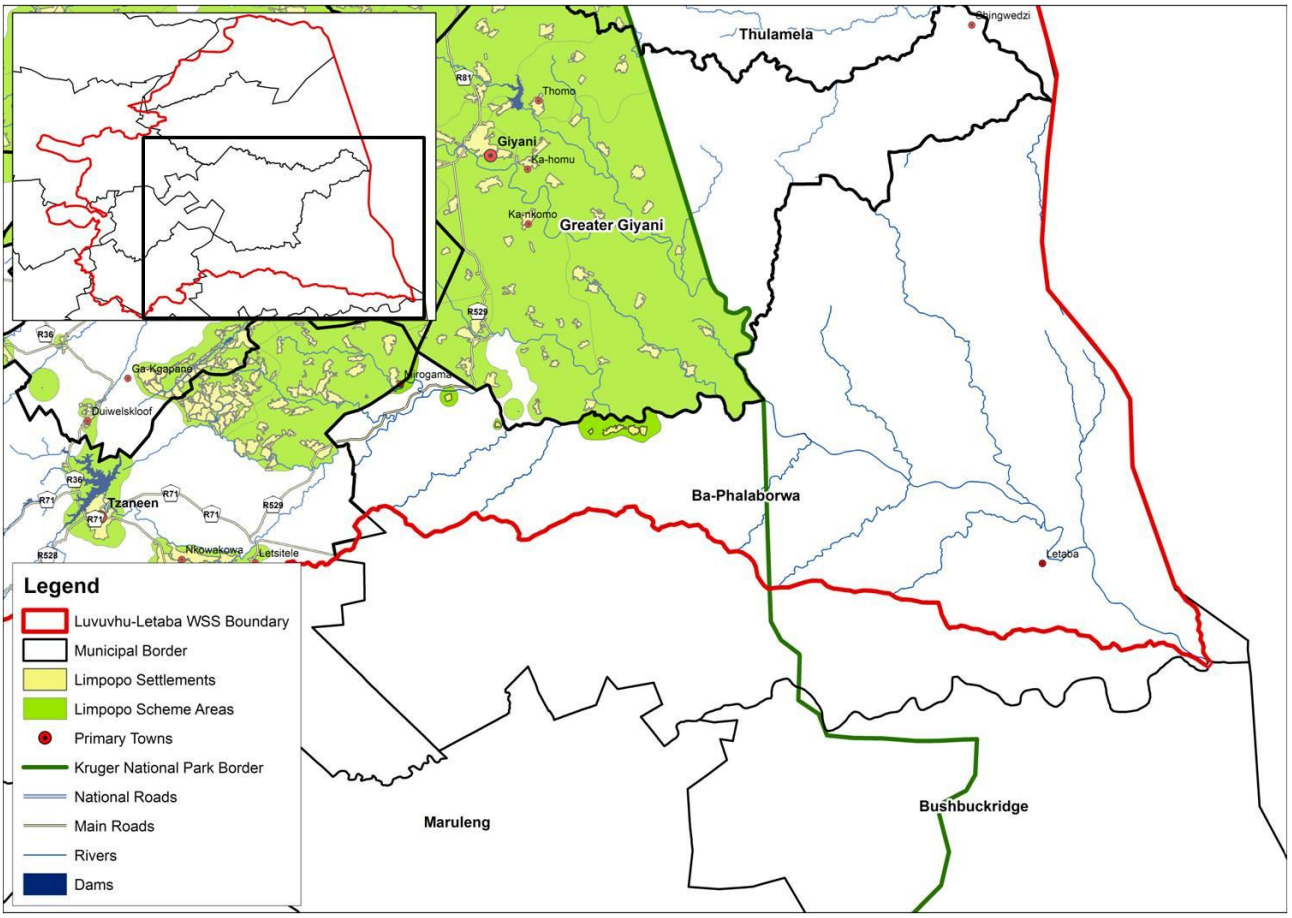
- Ehlanzeni District Municipality and Sekhukhune District Municipality to the south;
- Capricorn District Municipality to the west; and
- Vhembe District Municipality to the north.

The district is also bordered by Mozambique to the east. The district is situated in the northern-eastern part of the Limpopo province, 70 km east of Polokwane. The District Municipality covers an area of 20 012 km², inclusive of a portion of the KNP from Olifants to Tshingwedzi camps. Mopani District Municipality is also part of the Great Limpopo Transfrontier Park, the park that combines South Africa, Mozambique and Zimbabwe. The District has five local municipalities under its jurisdiction, namely, Greater Tzaneen, Greater Letaba, Ba-Phalaborwa, Greater Giyani and Maruleng, of which all except Maruleng Local Municipality, are included in the study area.

2.2.2.1 Ba-Phalaborwa Local Municipality

Ba-Phalaborwa Local Municipality is the largest of the local municipalities included in the Mopani District Municipality, and covers an area of approximately 7 460 km², which constitutes 37% of the Mopani District. The municipality is bordered by Bushbuckridge and Maruleng Local Municipalities to the south, Greater Tzaneen Local Municipality to the west, Greater Letaba and Greater Giyani Local Municipalities to the north, and Mozambique the east.

Figure 2.5 below indicates the location of the Ba-Phalaborwa Local Municipality.



Source: Kayamandi Development Services, 2012

Figure 2.5: Ba-Phalaborwa Local Municipality

The municipality serves as a convenient gateway to the KNP and the Transfrontier Park through the Mozambique Channel. Ba-Phalaborwa Local Municipality is predominantly a rural area with a number of villages and four major nodes, namely Gravelotte, Namakgale, Lulekani and Phalaborwa. Other smaller rural settlements such as Prieska and Gaselwane are situated to the north in proximity to the Letaba River, which forms the northern boundary of the municipal area.

Denser settlement patterns are evident in certain rural parts of the municipal area adjacent to the Olifants River, as well as along the Letaba River. This settlement pattern stems both from the potential for more intensive farming activities associated with the rivers, as well as from the up-market residential and tourism opportunities it represents.

The following nodes have been identified as growth points, but are located outside the study area boundary:

- Provincial growth point:
    - Phalaborwa

- District growth points:
    - Namakgale
    - Gravelotte
- Municipal growth point:
    - Lulekani

Migration and urbanisation are important issues in the municipality, as a large amount of people are migrating from rural areas to urban areas. High unemployment and poverty rates are key drivers behind migration patterns in the area, as people have a tendency to move to areas where there are employment opportunities, better services and a better quality of life. Migration in the Ba-Phalaborwa Local Municipality is mainly from the rural settlements of Lulekani, Namakgale, Maseke, Mashishimane, Makhushane and Gravelotte to the town of Phalaborwa. High unemployment and poverty rates have a detrimental impact on local development and investment, and together with prevailing conditions like scattered human settlement patterns, a limited manufacturing base, limited human resource base, outstanding land claims and high prevalence of HIV/AIDS, make economic growth very difficult. Some residential development is taking place outside of Phalaborwa town to the south-east, which falls outside the study area.

Predominant land uses in the municipality are game farming, nature conservation, irrigation farming (along the Letaba River in the north-western section of the municipal area) and mining. Most of the farms in the municipality area are under land claims in terms of government's land reform program, which has a significant impact on investment and development initiatives. Game and citrus farms, in private ownership, cover a substantial portion of the municipal area. A significant amount of land belongs to tribal authorities which is under the control of traditional leaders namely: Majeje Traditional Authority, Ba-Phalaborwa Traditional Authority, Maseke Traditional Authority, and Selwane Traditional Authority.

The municipality has high business tourism flows – especially linked to commerce, industry and the mines. Commercial activities are mainly centred in the town of Phalaborwa. Two shopping complexes are proposed in Namakgale, which falls outside the study area. The manufacturing activities in the Municipality are mainly focused on the mining sector. There is, however, a potential for the processing and packaging of agricultural related products such as cattle, poultry, vegetables, eggs, etc. A manufacturing hub is proposed in the Phalaborwa industrial area, which falls outside the study area.

A wide variety of agricultural products are currently grown in the area. Fruit and vegetables are mostly destined for fresh consumption by the local and export markets, but numerous farmers and private companies are responsible for some value-adding activities like manufacturing of fruit juices, drying of fruit and vegetables, manufacturing of pickled fruit, etc. The Selwane area, along the Groot Letaba River, has a potential of becoming a formidable agricultural cluster with a tourism element in the Eland and Letaba Ranch.

Ba-Phalaborwa has the highest concentration of minerals in the Mopani District, and the mining

and quarrying sector is subsequently a major contributor to the local economy. The most mined resources in the municipal area are copper and phosphate in the Phalaborwa area, with gold and antimony in the Murchison Greenstone Belt which stretches from Tzaneen in an easterly direction.

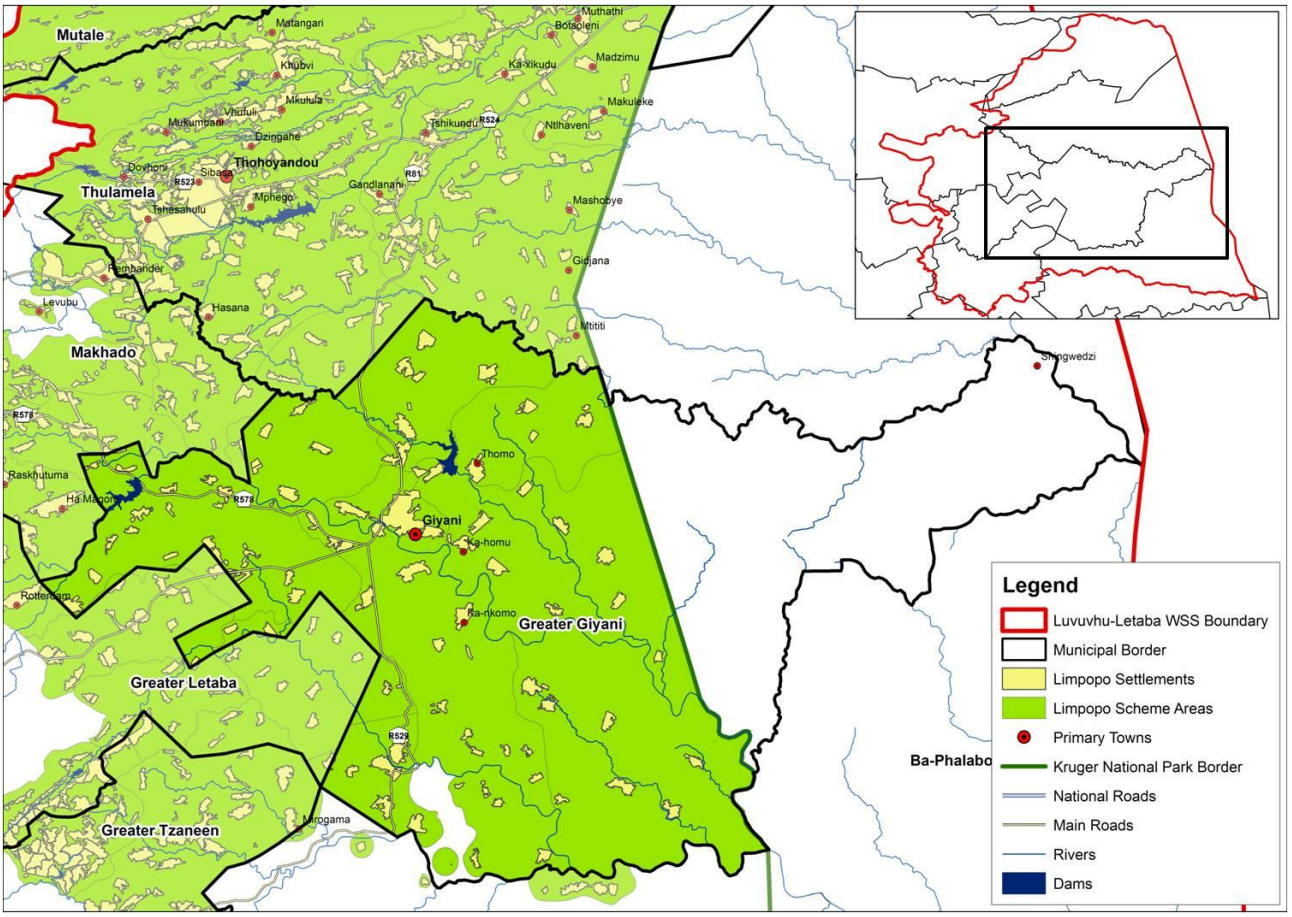
Palabora Mining Company, situated close to Phalaborwa but outside the study area, operates South Africa's largest copper mine. Most of the finished copper product is for local consumption, while most of the vermiculite is exported. Palabora is the only producer of refined copper in South Africa and supplies the country with the majority of its copper needs. The Foskor group has a phosphate rock mine and beneficiation plant situated in Phalaborwa, and Consolidated Murchison Mine (Metorex Group), situated at Gravelotte close to Phalaborwa in the Limpopo province, is located on the single largest antimony ore-body known in the world, having produced in excess of nine million tons of high-grade stibnite ore. Gold is produced at Consolidated Murchison as a co-product of antimony.

Although the mining sector has declined somewhat over the last years, it is still a major economic role-player. According to the municipal IDP, the mining sector is expected to shed jobs in the near future as a result of Palabora Mining Company stopping copper mining and the resultant closure of other related operations in the area. The decline of the mining industry has somewhat forced the municipality to venture into other economic sectors. The geographic position of Ba-Phalaborwa and the abundance of wildlife in the KNP present an opportunity for diversification into tourism. Tourism is the economic sector with the most potential for development in the municipality as a result of the municipality's ideal location and climate. Ba-Phalaborwa is a popular tourist destination and many opportunities exist to expand the income generated from the sector.

2.2.2.2 Greater Giyani Local Municipality

Greater Giyani Local Municipality is the second largest local municipality in the Mopani District Municipality, and covers an area of approximately 4 170 km², which constitutes 21% of the Mopani District. The municipality is bordered by Ba-Phalaborwa Local Municipality to the south, Greater Tzaneen and Greater Letaba Local Municipalities to the west, Makhado and Thulamela Local Municipality to the north and Mozambique to the east.

Figure 2.6 below indicates the location of the Greater Giyani Local Municipality.



Source: Kayamandi Development Services, 2012

Figure 2.6: Greater Giyani Local Municipality

The only semi-urban node in the municipality is Giyani. The municipality is very rural in nature, and has 10 traditional authority areas comprising of approximately 91 villages. The spatial development pattern in the municipality is marked by apartheid legacy with the majority of people confined to rural areas with limited economic activities and access to urban infrastructure. Rural communities are situated far apart which makes it difficult to access basic services. In addition to this, significant areas of land are under the custodianship of traditional authorities, and vast tracts of land are under land claims which pose a very serious challenge when it comes to development.

The following nodes were identified as growth points:

- Provincial growth point:
    - Giyani
- District growth point:
    - Ndhambi
- Municipal growth points:

  - Xawela
  - Nkomo
  - Xikhumba
- Local service points:
  - Mavalani
  - Thomo
  - Homu
  - Ngove
  - Xikukwani

The number of local service points is an indication of the rural nature of the municipality. The vast majority of retail activities in the municipality are concentrated in Giyani town and CBD, and informal trading is more prevalent in the taxi ranks. There are however no foreseen commercial or shopping centre developments in Giyani.

Similarly to the Ba-Phalaborwa Local Municipality is the influx of people from rural areas to Giyani town, which is perceived to offer employment opportunities and basic services. Illegal land occupation is also a very serious challenge for the municipality, as land belonging to the municipality and traditional leaders is often illegally occupied, which has serious implications in terms of proper planning. Further exacerbating the situation is the Hluphekani informal settlement in the eastern portion of the municipal area which lack basic services, and where large numbers of Mozambican immigrants and South African nationals stay.

The town of Giyani is the largest centre of population concentration, employment opportunities, shopping and recreational facilities. The economic activity (both formal and informal) that takes place in Greater Giyani Local Municipality is small-scale agriculture (maize, vegetables, tomatoes, beef, etc.), services, transport and retail development. A considerable percentage of land comprises of rivers, grazing land, subsistence farming, irrigation schemes and natural resources, and large tracts of high potential agricultural land are being utilised for intensive and/or extensive farming activities.

The municipality's geographical location (distance to markets), shortage of skills, poor infrastructure, climatic conditions and diseases (HIV/AIDS and Malaria) are just a number of the issues which impact negatively on the area's economic growth. The municipality however has potential for tourism and conservation development due to the existing natural heritage sites through the area, mining, abandoned farming schemes and processing of natural products (Mopani worm and marula fruit).

With the remarkable natural landscape and close proximity to KNP, Greater Giyani Local Municipality is located in a favourable position to be a tourism destination of choice. Middle Letaba and Nsami dam offers opportunities for water sports and fishing. This area is also situated in the

Ivory Route, which has been identified as a marketing tool for tourism in Limpopo. The Pafuri Gate can be accessed via this route, although it has not proved successful and other attractions along the route are needed.

The agriculture sector currently plays a small role in the municipality, but can be a major contributor to the local economy if climatic difficulties can be overcome. The municipality has vast tracks of arable land and irrigation schemes, and the area is mostly known for the production of citrus, tomatoes and subtropical fruit, albeit on a smaller scale than in the south.

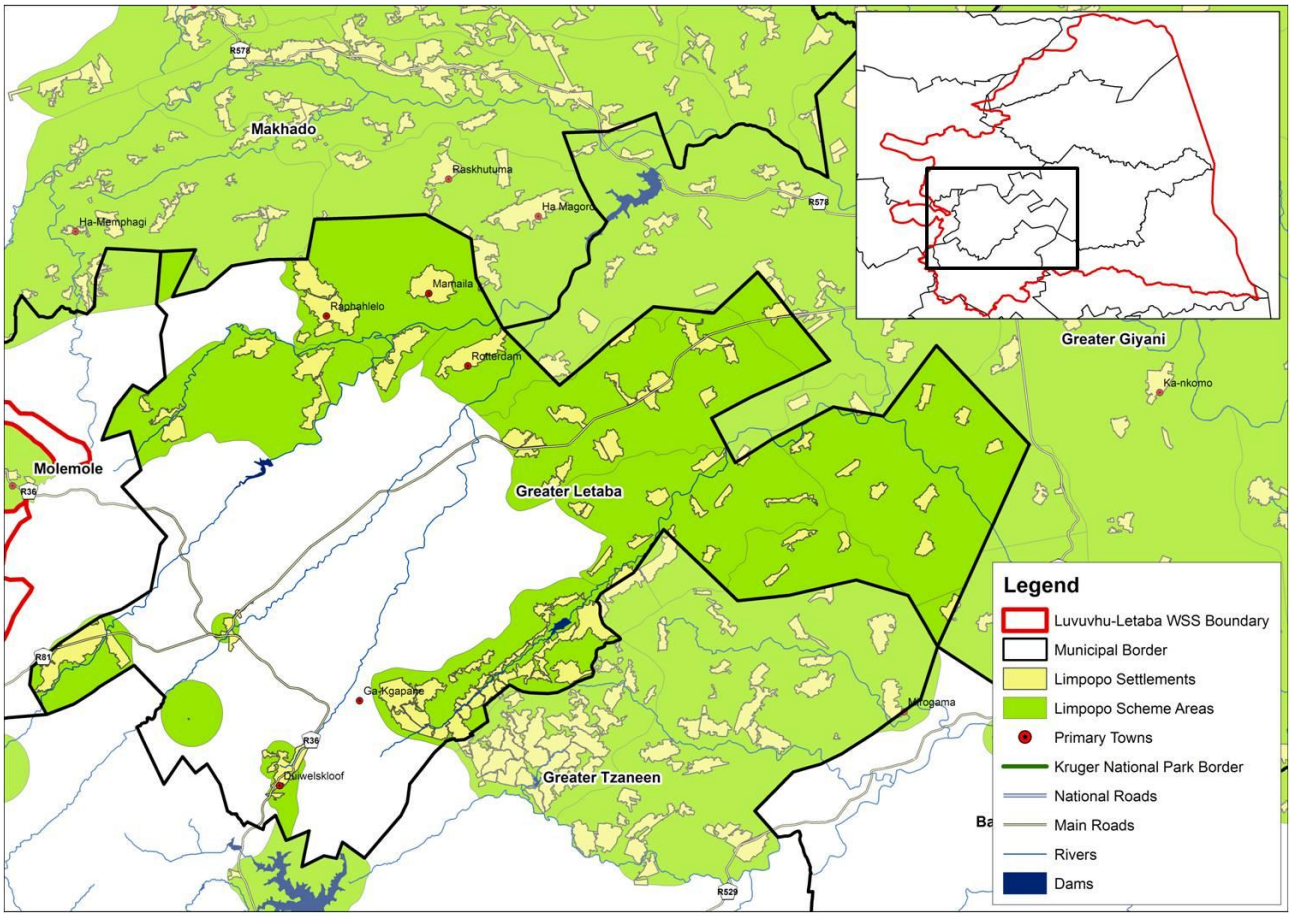
There are no major industrial or mining activities in the municipality. A large tract of unserviced land exists in the industrial area in Giyani, and approximately 40% of industrial land is vacant.

2.2.2.3 Greater Letaba Local Municipality

Greater Letaba Local Municipality is the smallest local municipality included in the Mopani District Municipality, and covers an area of approximately 1 890 km², which constitutes 9% of the Mopani District. The municipality is bordered by Greater Tzaneen Local Municipality to the south, Molemole Local Municipality to the west, Makhado Local Municipality to the north, and Greater Giyani Local Municipality to the east.

The municipal area is characterised by contrasts such as varied topography and varied population densities (low in the south, relatively dense in the north-east). A large area of the land in Greater Letaba Municipality is taken up by agricultural activity, while a small portion of the land area is covered by residential development, mainly rural settlements. There are three proclaimed towns within the greater Letaba Municipal area, namely Modjadjiskloof, Ga-Kgapane, and Senwamokgope and approximately 127 villages.

Figure 2.7 below indicates the location of the Greater Letaba Local Municipality in relation the Luvuvhu Letaba WSS.



Source: Kayamandi Development Services, 2012

Figure 2.7: Greater Letaba Local Municipality

The following nodes were identified as growth points:

- Provincial growth point:
    - Modjadjiskloof
- District growth point:
    - Ga-Kgapane
- Municipal growth points:
    - Senwamokgope

- Local service points:
    - Mooketsi
    - Thakgalane
    - Nakampe

A large percentage of the municipality's road infrastructure is old, rapidly deteriorating and in some cases, past its functional life. As a result, major rehabilitation is required to surface roads in the urban areas where road infrastructure has had little or no maintenance in the past. Annual increases in maintenance budgets have not kept pace with the escalation rates associated with this activity.

Almost half the land area is registered in the name of the state, under the custodianship of traditional authorities, while the other half is in private ownership. A large number of land claims cover the area, and according to the 2011/2012 draft IDP, approximately 48% of the total area of the municipality is subject to land claims. No development can take place on land that has been claimed until the claim is settled, hampering development.

Small businesses and new retail developments have been the focal point of new developments in Modjadjiskloof, Ga-Kgapane and Senwamokgope in recent years. Corporate businesses have moved away to the adjacent towns of Tzaneen and Giyani, and a lack of private investment in urban areas of the municipality has led to the deterioration of these areas. Modjadjiskloof has a large residential estate, with a very low residential vacancy rate. A township establishment of 1 500 sites are proposed in Modjadjiskloof, but there are no clear indications as to when it will be developed.

The retail activities in the rural areas are mostly general dealers, supermarkets, with some liquor stores, welding services and food outlets also being present. While these activities are formal in nature, they are extremely small scale, with businesses being scattered throughout the rural areas. Some services are also provided from within people's homes. Two shopping complexes are proposed in Modjadjiskloof, but there are no clear indications as to when, and if, they will be developed. A shopping complex is also proposed in Kgapane, which will be developed in the next 2 or 3 years.

Traders in the municipality currently buy their stock from wholesalers in the larger activity centres such as Tzaneen and Polokwane, as there is a shortage of wholesalers in the area. A limiting factor to the development of further wholesale activities in the southern parts of the municipal area is the proximity and easy access to the well-established trade sector in Tzaneen, which would generate a high level of competition. However, the remainder of the municipal area is quite remote and far removed from larger activity centres, making it more difficult and expensive to obtain goods from wholesalers in Tzaneen.

Large portions of the municipality have land capabilities of moderate potential arable land, concentrated mainly in the central parts of the municipality. Much of this land is currently in private ownership and is already utilised for cultivation. The northern and north-western parts of the municipality mainly have land capabilities of marginal potential arable land and non-arable to moderate potential grazing land. These parts are almost extensively under tribal authority custodianship and may possibly be available for further development. However, given the largely limited potential for cultivation, further development potential in these parts of the municipality are fairly limited, allowing mainly for grazing purposes.

Commercial farming in Greater Letaba Municipality comprises mainly mangoes, citrus and avocados, with litchis and nuts also being farmed in the regions surrounding the Municipality on a commercial scale. The largest tomato farm in Southern Africa, ZZ2, is located in the Mooketsi valley within Greater Letaba Municipality. Timber production and game and cattle farming are also important agricultural activities in the municipality.

The location of forestry plantations in the southern parts of the municipality creates opportunities for the beneficiation of timber products from these plantations. Forestry plantations in the municipality are mainly owned by Mondi, Montina and the Hans Merensky Trust, with these companies largely undertaking processing enterprises themselves. Other existing processing undertaken in the municipality includes sawmills and the dipping and production of electrification poles. Further value-adding activities could include timber beams and trusses, window and door frames, wooden flooring etc.

The most important factor limiting agricultural production and development in Greater Letaba Municipality is the availability of water. This is also true for the majority of the Limpopo province, which is located in the dry savannah sub-region. Most of the small-scale farmers and manufacturers do not have access to the larger markets outside of the municipal area, or even their respective villages. This forces them to sell their products to the local communities and prevents the expansion of their businesses. Access to markets for small-scale farmers is further constrained by accessibility issues and the poor condition of roads in the remote rural areas.

In terms of manufacturing, a major constraining factor is the lack of a defined industrial area in the municipality, with some manufacturing plants being located among the business premises in Modjadjiskloof. Due to good transport linkages, easy access and close proximity of Tzaneen, large and well-established suppliers and support services are within easy reach of farmers and other industries creating the perception that there is no further need for the development of these facilities locally.

In the Greater Letaba Municipality, the manufacturing sector is to a large extent linked to the existing agricultural products produced in the region, with manufacturing focusing on the beneficiation of these products. In this respect, the existing presence of sub-tropical fruit and vegetables, as well as timber, are important inputs that currently feed the manufacturing sector in the municipality.

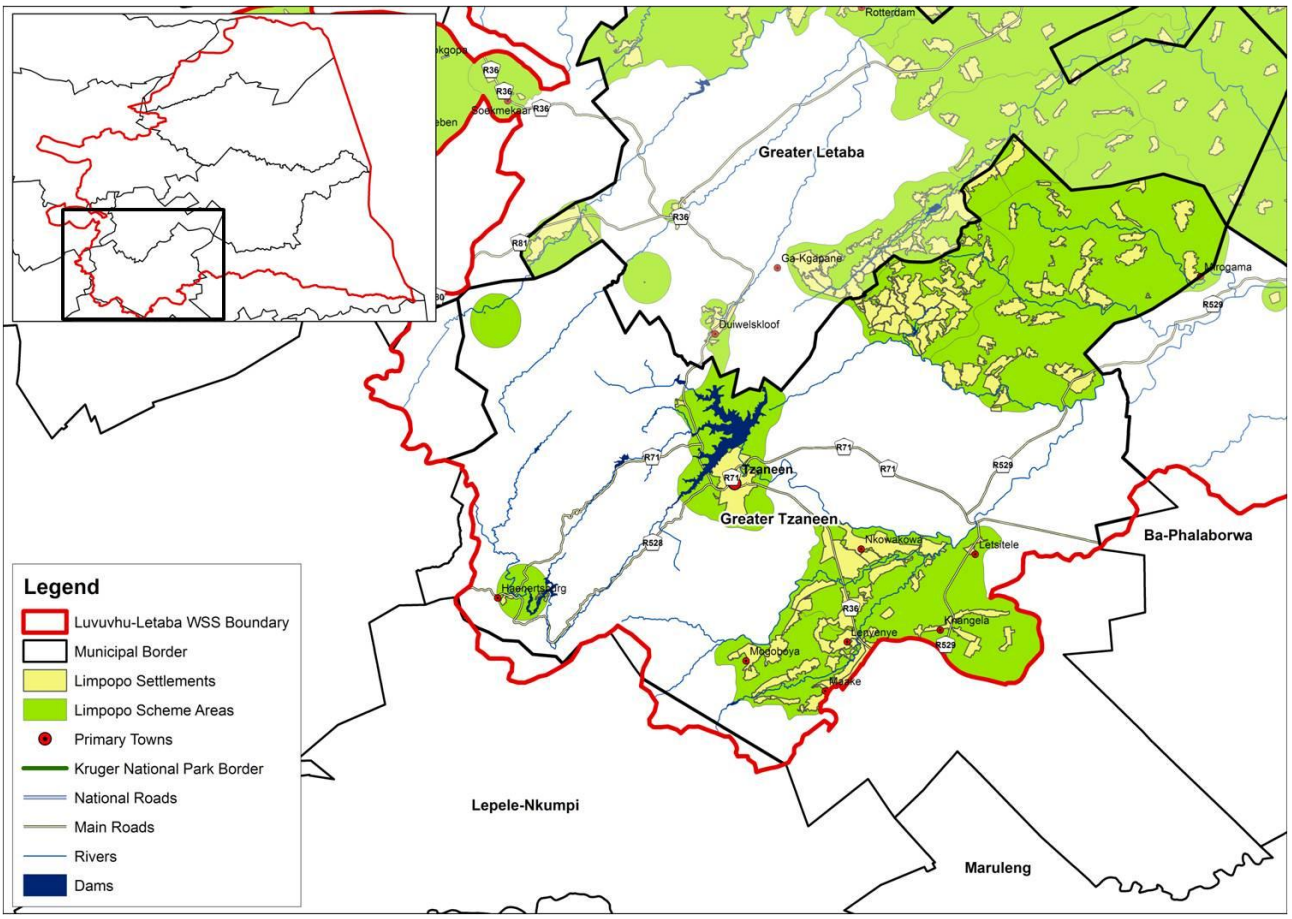
The tourism industry in the municipality is not particularly strong, and the Greater Letaba Local Municipality does not currently have a large range of accommodation, conference or tourism facilities, nor any significant tourism attractions.

2.2.2.4 Greater Tzaneen Local Municipality

Greater Tzaneen Local Municipality is the second smallest local municipality included in the Mopani District Municipality, and covers an area of approximately 3 240 km², which constitutes 16% of the Mopani District. The municipality is bordered by Maruleng and Lepelle-Nkumpi Local

Municipalities to the south, Polokwane Local Municipality to the west, Molemole and Greater Letaba Local Municipalities to the north and Ba-Phalaborwa Local Municipality to the east.

The figure below indicates the location of the Greater Tzaneen Local Municipality.



Source: Kayamandi Development Services, 2012

Figure 2.8: Greater Tzaneen Local Municipality

The Greater Tzaneen Municipality consists of a fragmented formal urban component comprising Tzaneen, Nkowankowa and Lenyenye, which have developed along a major arterial route, and two service nodes, being Haenertsburg and Letsitele, at opposite ends of the municipal area. In addition, there are approximately 125 rural villages, concentrated mainly in the south-east and north-west of the municipal area. The municipality is further characterised by extensive and intensive farming activities, mountainous, inaccessible terrain in the west and south, and gentle sloping topography to the north and east. The following nodes were identified as growth points:

- Provincial growth point:
    - Tzaneen
- District growth point:

  - Nkowankowa
  - Lenyenye
- Municipal growth points:
  - Burgersdorp
  - Letsitele
  - Haenertsburg
- Local service points:
  - Rikhotso
  - Senopelwa
  - Ga-Mokgwathi
  - Runnymede
  - Serololo
  - Nkambako

A well-developed network of primary and secondary arterial routes cover the area, the Phalaborwa SDI transverses the Greater Tzaneen municipal area, while one of the major road links between Gauteng and the KNP also passes through the area. The Phalaborwa SDI main road link will run from Phalaborwa to Nelspruit in the Mpumalanga province, where the SDI will join the Maputo Development Corridor. The corridor aims to create better access between the port of Maputo and the mining potential around Phalaborwa in Limpopo province and the agricultural projects near Xenon also in the Limpopo Province. There is however limited accessibility to most villages due to inadequate access roads and internal street networks.

A very large area of land is in private ownership, ranging from smallholdings to extensive farms, used mainly for commercial farming activities, while the remainder of land is under the custodianship of six traditional authorities. Similarly to the rest of the local municipalities in the Mopani District Municipality is the accelerated migration of people to Tzaneen, which is perceived to offer employment and basic services, and the unplanned settlement of people especially along arterial routes. Tzaneen has a large residential component, but there is currently an oversupply of residential erven, with 3 extensions standing vacant. Due to this, township establishment applications are slowing down. In addition to this, there is a vacancy rate of approximately 30% in the residential areas in Tzaneen.

Steep slopes along the western and southern boundaries of the municipality which gradually dissipate into undulating hills in the central areas to virtually flat ground in the eastern parts of the area of jurisdiction focus development in certain areas. Environmentally sensitive areas largely coincide with steep slopes, which assure that these areas are protected from overexploitation.

Business and industrial development is concentrated in the town of Tzaneen. The town boasts a full complement of financial and banking institutions and facilities and an extended office zone. Tzaneen offers a wide variety of goods and services, variety of choice, and competition, and since

2006, there has been a clear need for retail shopping centres. Two shopping centres are proposed in Tzaneen, one of which is busy being developed, without clear indication as to when the other will be developed. The demand was supported by the more than 200% increase in residential development experienced in Tzaneen town. Nkowankowa is regarded as the primary industrial node and Tzaneen as the secondary industrial node in the municipal area.

According to the Tzaneen municipal SDF, the Limpopo Department of Economic Affairs has programmes for the resuscitation of collapsing industrial areas like Nkowankowa. The department has identified opportunities in meat abattoir and processing, Marula fruit production, brick making, cold storage facility and packing plant and taxidermist and tannery. The provision of industrial premises to promote the development of SMMEs is one of the viable projects. Currently, approximately 200ha unserviced, proclaimed industrial land exists in Tzaneen, but the water quota restricts further development. The existing residential area to the south of the town has a 50% vacancy rate.

The business node in Nkowankowa Unit A has also attracted a considerable informal sector component, and several business and office functions have established on the periphery of the designated business area. Haenertsburg is well served by business development when considered in relation with the number of people resident in the town. The type of business (mainly restaurants and curio shops), indicate that business is aimed at tourist trade as well as serving the resident population.

The municipal area is comprised of large tracts of high-potential agricultural land, which are being utilised for both intensive and extensive farming activity. The agricultural sector is contributed to by two sub-sectors being the commercial and the small-scale sub sectors. The latter is also referred to as subsistence. The commercial sub sector in the Greater Tzaneen Municipality is run on a larger scale, and predominantly by white people. It is well-established and contributes significantly to the agricultural sector and to the economy. The main products produced are commercial timber, cash crops, tropical and citrus fruit.

Agriculture in historically disadvantaged communities is largely confined to subsistence farming, and many farmers in the Greater Tzaneen area are engaged in small-scale agricultural farming. This sector has a high growth potential, but better utilisation of state land is required for small-scale farming to prosper. In addition to this, a lot of raw produce is transported out of the area for external processing due to a lack of processing facilities within the municipal area. The lack of processing facilities hinders the area's economic growth as a considerable amount of money is spent on transporting raw goods, some of which eventually come back to the area in processed form and more expensive.

Whilst the municipal area has tremendous natural and heritage potential for development, this is still largely untapped. There appears to be some indication that the tourism sector has grown fairly considerably in the past five years, although general consensus is that tourism demand is still well below what could be expected from an area with such outstanding natural potential. The area has abundant natural resources in the form of rivers and streams, forestry, indigenous citrus plantations and other attractions.

There is limited mining activity within the Greater Tzaneen municipal area, with mining activity

being restricted to mainly quarrying and excavation of clay and sand. There is nevertheless considerable prospecting activity within the municipal boundaries at Mohlaba (metalliterous ore), Josephine area (precious and base metals), Leydsdorp townlands (gold), Teenspruit (gold), Goede Hoop (diamonds), Taolome (all minerals excluding gas and oil) and Mafarana Mohlaba Cross and Lenyenye (base minerals such as fluorspar and vermiculite). An open ore mine has been in the pipeline for a number of years close to Lenyenye. Prospecting rights exist, but the mine has not yet been developed, as the proposed land is located on tribal land.

The main types of developments envisaged by the Greater Tzaneen Local Municipality during the next five years, as per the SDF, are the construction of a provincial by-pass road, infrastructural development, residential (including social housing), business and industrial development, tourism development, the formalisation of informal settlements, and various community facilities.

2.2.3 Vhembe District Municipality

Vhembe District Municipality is situated in the northern part of the Limpopo province, and shares its borders with two district municipalities:

- Capricorn District Municipality to the southeast
- Mopani District Municipality to the southwest

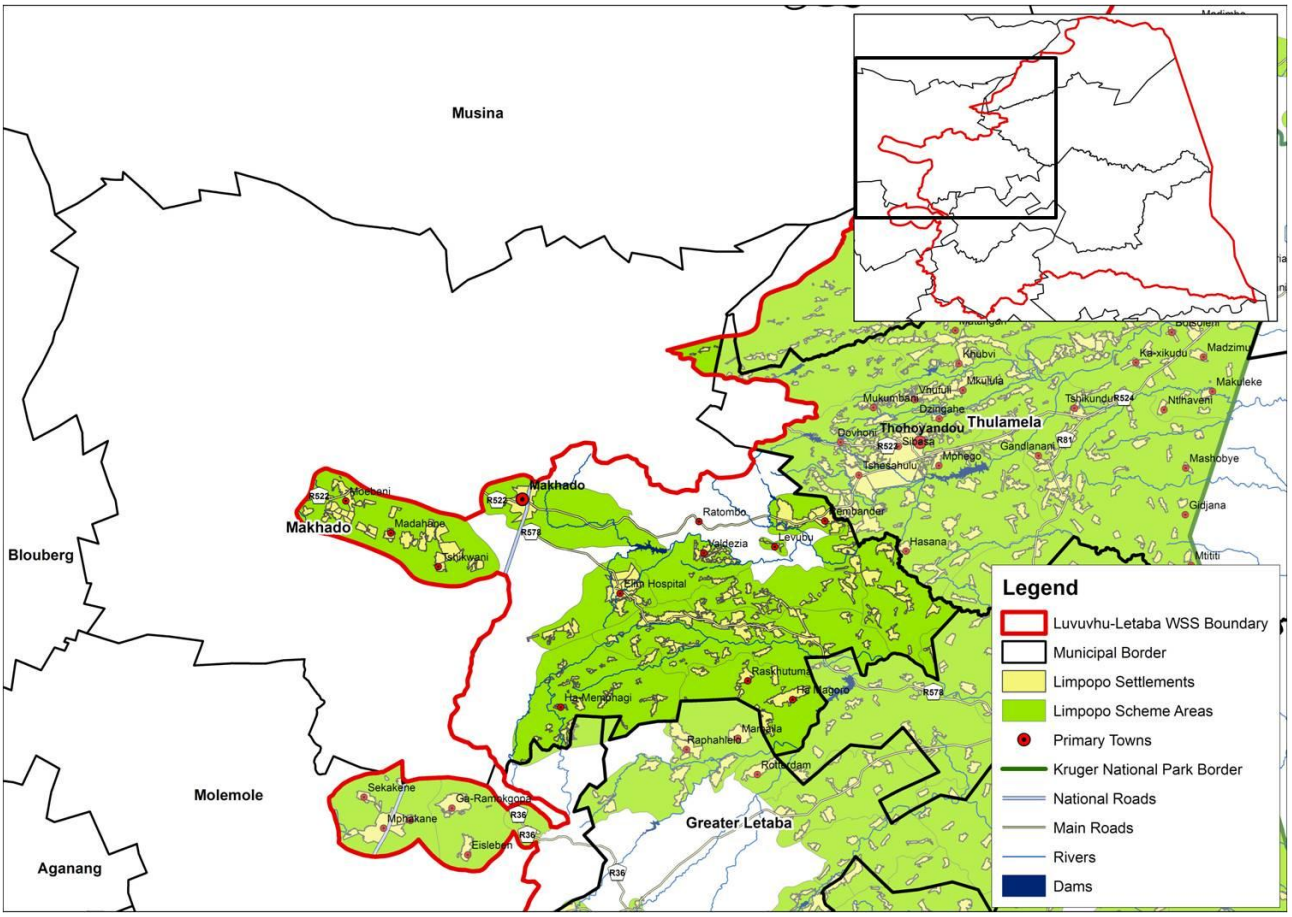
The district is furthermore bordered by Botswana to the northwest, Zimbabwe to the north and Mozambique to the east.

The district is situated in the northern part of the Limpopo province, 70 km east of Polokwane. The District Municipality covers an area of 25 598 km², and has parts of the two Trans Frontier Parks that involve four countries. The KNP of South Africa, Gonarezhou of Zimbabwe and Limpopo National Park of Mozambique form the Great Limpopo Trans frontier. Mapungubwe National Park of South Africa, Tuli Circle Safari Area in Zimbabwe, and Northern Tuli Game Reserve of Botswana are integrated to form Limpopo-Shashe Trans frontier Park. The District has four local municipalities under its jurisdiction, namely, Musina, Mutale, Makhado and Thulamela, of which all except Musina Local Municipality are included in the study area.

2.2.3.1 Makhado Local Municipality

Makhado Local Municipality is the largest local municipality included in the Vhembe District Municipality, and covers an area of approximately 8 300 km², which constitutes 32% of the Mopani District. The municipality is bordered by Greater Letaba and Molemole Local Municipalities to the south, Blouberg Local Municipality to the west, Musina Local Municipality to the north and Mutale and Thulamela Local Municipalities to the east.

The figure below indicates the location of the Makhado Local Municipality.



Source: Kayamandi Development Services, 2012

Figure 2.9: Makhado Local Municipality

Makhado Municipality is situated 100 km from the Zimbabwean border, and forms part of the Maputo corridor. The municipality is comprised of 5 formal towns, namely Makhado (formerly known as Louis Trichardt), Vleifontein, Vuwani, Waterval and Dzanani, and approximately 280 villages which are mostly scattered along the eastern half of the municipality. The majority of the population live in the rural areas, which is also the most underdeveloped areas of the municipality. The following nodes have been identified as growth points:

- Provincial growth points:
    - Makhado
    - Tshikota
- District growth point:
    - Elim/Waterval
- Municipal growth points:
    - Vuwani
    - Dzanani

  - Nkuzana
  - Madombidzha
- Population concentration points:
  - Midoroni
  - Gogobole
  - Bungeni
  - Tshino
  - Tshakhuma
  - Tshafhasi
  - Njakanjaka
- Local service growth point:
  - Vleifontein
  - Valdezia
  - Buysdorp
  - Tshimbupfe
  - Vivo
  - Manyii
  - Olifantshoek
  - Waterpoort

Makhado Local Municipality is located next to the N1 highway, which is the main access route to and from South Africa and other countries in Southern Africa such as Zimbabwe. The Trans-Limpopo SDI runs through the Makhado municipal area, and the Phalaborwa sub-corridor will link up with the N1 highway via Soekmekaar. The north-south railway line to Zimbabwe runs through the area with a station in Makhado, which carries both passengers and goods.

The local population is concentrated in certain areas, specifically in the rural villages along the eastern portion of the municipality. Due to the dispersed nature of settlements most of the municipality's services are costly to develop and maintain. Villages generally have an inadequate economic base and serve as dormitories for people working elsewhere, be it within or outside of the region. Most of the areas in-between settlements are utilised for extensive farming purposes resulting in these areas being under constant threat of environmental degradation. The town of Makhado mainly has a large middle to high income population.

The size of the municipality has brought about a situation where there are villages that are fairly well developed in contrast with other rural areas, which have developed very slowly. In addition to

this there are villages which have over time proven themselves as natural growth centres, where larger populations and better infrastructure is evident, but have not yet received township proclamation. A continued migration of people from the rural areas to the urban areas is evident, and the presence of immigrants is an ever-growing challenge. Two township establishments of 1,000 and 600 erven respectively are in the pipeline in Makhado. In addition to this, there are a large number of land claims in the Makhado Local Municipality.

Large areas and many rural villages within the study area, especially the rural areas to the south-east of the study area, are known to be land owned or entrusted to traditional authorities. The possibilities of development of land assigned to traditional authorities is an issue, and many controlling authorities and municipalities regard land under control of traditional authorities as "sterilised" or land "blocked" for development and therefore refrain from planning for these areas. There is limited space to expand Makhado, but the municipality wishes to expand the town towards the east.

Makhado, Elim, Vleifontein, Vuwani, Levubu, Dzanani and surrounding farms comprise mainly formal activities, where the economies of surrounding townships and rural areas comprise mostly of informal activities with weak access to support facilities. The informal activities largely serve the immediate consumption needs of the local population, and weak economic and transport linkages exist between activity centres. Due to the rural nature of the municipality, people from the municipal area usually utilise the activity centres of Polokwane, Makhado, Thohoyandou and Giyani. Future planning for the municipal area highlights the need for urban development between rural settlements in the east (linkages between municipal growth points, population concentration points and local service points).

The Soutpansberg mountain range runs through the central area of the municipality in an east-west direction. Sloping topography can be found in the eastern portion of the municipality, and several nature reserves and game farms are to be found in the area. Areas to the east are mainly used for small-scale farming and subsistence farming, and greatly correspond with traditional authority areas. On the other hand, the farming areas to the west of the municipal area have pivot irrigation and high agricultural activity. According to the municipal SDF, only 8.5% of the total land of the study area is highly suited to arable agriculture where climate permits, and 32.2% is intermediate suitability for arable agriculture where climate permits.

The commercial farming areas to the north-west of the study area are much more sensitive for encroachment of undesired development, due to its nature and resources required to ensure sustainable farming practices, whilst the areas earmarked for small-scale/subsistence farming can be incorporated and integrated with rural settlements much easier, simply because of the nature thereof. It is easier to create smaller pockets of land between the settlements, which also goes hand in hand with community practices associated with this type of farming.

Soil and vegetation resources are under severe stress due to overgrazing, bush encroachment, high rural population densities, and poorly planned settlements. The Soutpansberg mountain range has significant natural beauty with a number of registered heritage sites, and numerous areas of environmental sensitivity and nature conservation areas exist across the municipality. The natural

resources of the Makhado Local Municipality have not been developed fully resulting in an under-utilisation of natural assets in terms of conservation, recreation and tourism. Local tourism is not developed to its full potential, and poor infrastructure discourages potential tourists from visiting or touring the study area.

The Makhado CBD is the primary activity node in the municipal area, and plays an important role in the district, serving the local and regional communities. Apart from the CBD, which is the primary activity node of the municipality, (especially in providing specialised and expensive goods and services) secondary nodes are proposed at the district and municipal growth points, which is aimed at serving the local community. A shopping centre with 30 shops is currently under construction in Elim, and shopping centres have been approved in Dzanani and Vuwani. In addition to this, a new shopping centre and hotel is proposed in Makhado, but there is no clear indication of when this will be developed.

Industrial activity is mainly centred in Makhado, and it is proposed that the bulk of industrial uses, especially noxious industrial uses as well as manufacturing etc., be located in the provincial and district growth points. Currently, the industrial area in Makhado has a vacancy rate of approximately 10%, and there is a proposed proclamation in the industrial area. Although the study area is not characterised by any major form of mining activity, the potential for mining exists, especially to the north of the Soutpansberg. In terms of the mentioned mining potential, the Mopane coal field occurs in the study area, and stretches in an east-west direction to the north of the Soutpansberg. The north-western parts of the potential mining area overlap with commercial farming activities, whilst it also overlaps with environmental sensitive areas in the north-eastern parts of the study area.

The following SDAs have been identified in the municipal area:

- Makhado cluster:
    - SDA 1: Western parts of the Makhado cluster and adjacent to Tshikota; and
    - SDA 2: South to south-east of the Makhado cluster with the intention to expand this cluster towards Elim.
- Madombidzha cluster:
    - SDA 3: Area between Tshikhwani and Ha-Magau;
    - SDA 4: South of Tshiozwi and east of Haramahantsha;
    - SDA 7: East of Moebani towards Ravele (links to SDA 8); and
    - SDA 8: Area north of Ravele (Links to SDA 7).
- Vuwani cluster:
    - SDA 5: Area west of Vuwani and north of Vyeboom;
    - SDA 9: Northwest of Tshino and south of Tshivhazwaulu along the northern banks of the Luvuvhu River; and

- SDA 10: Area west of and adjacent to Vleifontein.

- Elim cluster:
  - SDA 6: South of the R578 between Elim and Giyani;
  - SDA 11: Between Vleifontein and Elim/Waterval; and
  - SDA 12: Area northwest of Magoro between Hlanganani, Masakona and Ha-Ribunggwani.

- Rabali cluster:
  - SDA 13: Area north of the R523 between Tshituni and Rabali;
  - SDA 14: Southeast of Rabali along the Mudshedzi River; and
  - SDA 15: Northwest of Mauluma.

The Madombidzha and Rabali clusters however fall outside of the study area boundary. In addition to the SDAs, three development corridors are proposed in the municipal area:

1. The Trans Limpopo Development Corridor;
2. Moebani-Hlanganani Development Corridor; and
3. Elim-Vuwani Development Corridor.

The Trans Limpopo Development Corridor starts in the municipal area in the most southern border and ends at its most northern border. Passing through the municipal area, Makhado is the most important node where several other provincial routes intersect with it. This corridor is ideal for the development of commercial land uses such as shopping centres and industrial uses, as well as tourism related uses.

The Moebani-Hlanganani Development Corridor includes the R522-route from Moebani (Madombidzha cluster) running into an eastern direction towards Makhado CBD, where it intersects with the N1, from there it turns south and then into an eastern direction again along the R578-route between Makhado and Elim settlement in the Elim cluster. From Elim it proceeds eastwards up to the Ka-Majosi settlement in Hlhanganani municipal growth point. Along this corridor there are several intersections within the delineated urban edge which may form ideal opportunities for the establishment of activity zones. It is ideal for the location of commercial land uses such as shopping centres and social amenities and welfare services, since it can serve a large percentage of the urbanised population.

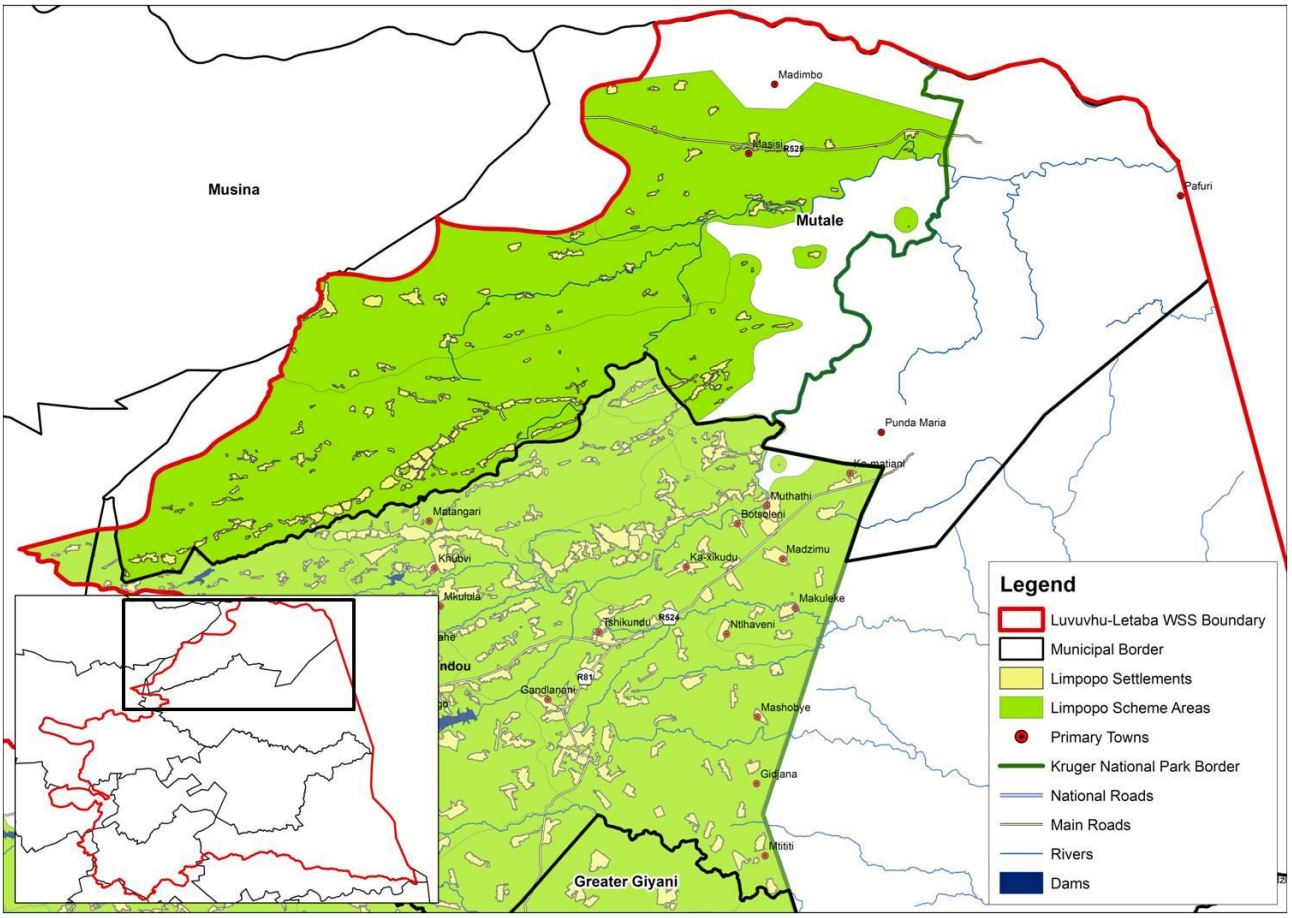
The Elim-Vuwani Development Corridor originates where the upgraded Vleifontein/Elim road starts at the intersection with the N1. From there it proceeds into a north-eastern direction passing through Vleifontein up to Elim, from where it proceeds up to Vuwani. This corridor holds potential for a mixture of tourism activity zones as well as retail activity zones along this route, which can

serve the local communities living in the growth points such as Vuwani. This development corridor should be regarded as a strategic link for visitors from the south who travel through the municipal area and visit areas such as Thohoyandou and the KNP in the north.

2.2.3.2 Mutale Local Municipality

Mutale Local Municipality is the smallest local municipality included in the Vhembe District Municipality, and covers an area of approximately 3 890 km², which constitutes 15% of the Mopani District. The municipality is bordered by Thulamela Local Municipality to the south, Makhado and Musina Local Municipalities to the west, Zimbabwe to the north, and Mozambique to the east.

The figure below indicates the location of the Mutale Local Municipality.



Source: Kayamandi Development Services, 2012

Figure 2.10: Mutale Local Municipality

The KNP forms the eastern boundary of Mutale Local Municipality, with the Limpopo River forming the northern boundary with Zimbabwe. The Mutale Municipality is mostly rural with high poverty and illiteracy rates, but despite this the municipality is the fastest economic growing municipality in the district. The population of the Mutale Local Municipality is spread over former homeland areas, commercial farms, towns and semi-urban centres. The settlement pattern is dispersed in terms of size, function, services and population. The area largely consists of communally occupied land and

includes a large number of rural settlements administered by tribal authorities. Towns and rural service centres exist in the Mutale local municipality, with Mutale and Masisi being the most prominent.

The following nodes have been identified as growth points:

- Municipal growth point:
    - Mutale
    - Masisi
    - Muswodi
- Population concentration points:
    - Rambuda
    - Folovhodwe
    - Mulodi
- Local service points:
    - Makuya
    - Tshixwadza/Dzamba
    - Tshipise

The municipality is accessed through R525 linking the KNP to other local municipalities within Vhembe District. It can also be accessed through P277/1 linking Thohoyandou and Mutale. Overall, the roads within the jurisdiction of the municipality are in a poor condition and in dire need of upgrading. Apart from the main provincial and regional roads, most of the rural access routes are gravelled and not being maintained properly. Within the urban areas, the main roads are old and deteriorating rapidly, whilst most of the distributor roads are gravelled.

Mutale Local Municipality consist of proclaimed and surveyed areas, and the majority of land is owned by tribal authorities. The bulk of land in the Mutale Municipality is categorised as un-surveyed state land occupied by traditional communities. Only about 20% of the land has been surveyed for townships and mines within the area. Mutale Local Municipality is not severely affected by land claims. Only about 20% of the land is under gazette claims. There is however issues with regards to illegal occupation in land in the municipal area.

The municipality is faced with the following challenges in terms of spatial development:

- Uneven social development;
- Infrastructure disparities and deterioration;
- Skewed and scattered settlement patterns;
- Demographic imbalances (high poverty and illiteracy rates);

- Environmental deterioration; and
- High levels of international migration, and large number of cross-border immigrants.

The Mutale growth point is regarded as the economic hub of the municipality, and together with Masisi serve as the main areas of attraction in the municipality with few business opportunities. The Rambuda population concentration point is proposed by the municipal SDF because of the high population which has concentrated there. Because there are only a few services, the area needs further development. Small to medium sized enterprises within the municipality operate in isolation and without some sense of common purpose, and the majority of services and retail outlets are centred in Mutale. Large sums of money however flow out of the local economy as residents make their purchases at Thohoyandou, Musina and Makhado.

No major developments are underway in the municipality, and slow-paced residential growth is the norm. A township establishment of approximately 1 000 erven aimed at the medium income market is in the pipeline in Makuya, while a new shopping centre is under construction in Tshilamba. A new residential extension has been developed in Mutale aimed at the middle to high income category. All sites have been sold, but there is a very high vacancy rate. Low residential vacancy rates exist in rest of residential areas in Mutale.

The municipality has been identified as having potential in the mining, agriculture and tourism sectors. The Mutale Local Municipality is noted to have good agriculture potential, but very little value-adding takes place locally. The municipality has a weak manufacturing sector, and no industrial area exists in the municipality. Extensive farming (crop and livestock) is more prevalent in the eastern areas, and irrigation schemes can be found in Rambuda, Folovhodwe and Tshipise. Agricultural development is however restricted by the distance to markets, suppliers and market information, and tomato producers have to travel more than 80km to Musina or Makhado to get to processing plants. No major industrial developments are taking place in Mutale. The promotion of agri-processing plants and other value adding industries should be encouraged in order to diversify the economy of the area. Currently there is an established facility available for the development arts and crafts.

The municipality's strategic location affords it many opportunities for tourism development, and is situated along the African ivory route, which is a major tourism development corridor. The northernmost portion of the KNP is also included in the municipal area, together with two access gates, namely Pafuri and Punda Maria. There are numerous nature reserves and other tourism attractions in the municipality, with the biggest tree in South Africa, the Sagole baobab which is located near the Tshipise village being the most significant. Access to these attractions is however restricted by poor road infrastructure and road networks.

Mutale Local Municipality is rich in mineral resources, with copper reserves close to Makuya; diamond reserves near Mangwele; coal reserves at Sanari, Mukomawabani and Pafuri; and magnesite in Tshipise. The Tshikondeni coal mine is the most significant mine in the area, and is located in the Tshipise coal field which stretches from east to west along the northern half of the municipal area. Promising coal reserves are however located directly south of the Tshikondeni

mine, but no conclusive expansions are in the pipeline. There is however a number of diamond and coal mines that have closed down in the area. Three development corridors are proposed in the municipal area:

1. Masisi development corridor;
2. Tshipise development corridor; and
3. Shadani-Makuya development corridor.

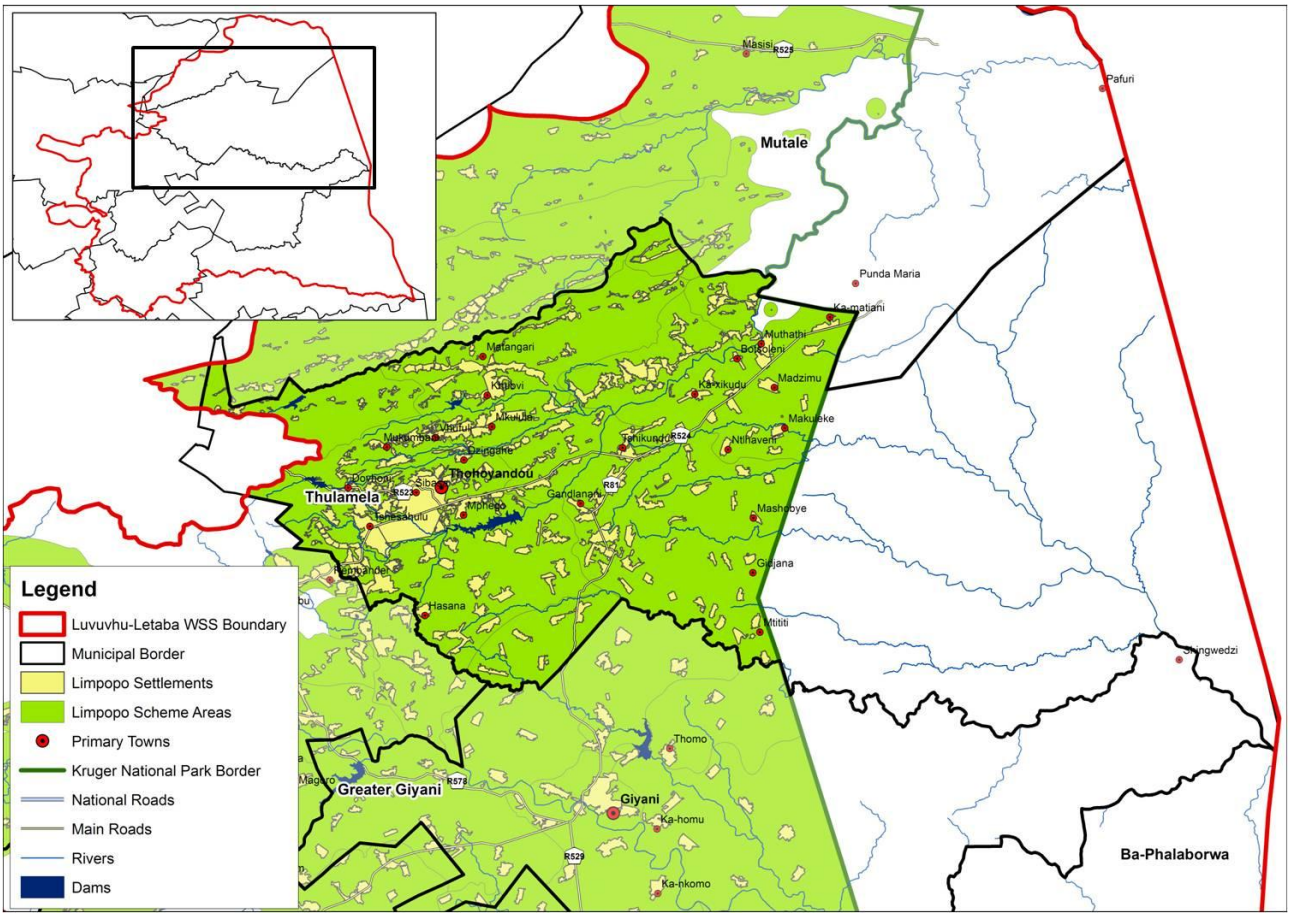
The Masisi development corridor will serve the villages of Madangani, Tshikuyu, Nkotswe, Bendmutale, Tshenzhelani, Gumbu and Sigonde, and will also serve tourists to the KNP as well as the Tshikondeni mine. The Tshipise development corridor will the serve the following villages of Zwigodini, Muraluwe, Tshivhongweni, Matatani, Muswodi, Shakadza, Tshirunzini and Dambale, as well as tourists visiting the Sagole baobab tree. The Shadani Makuya development corridor will serve the villages of Ha-Makuya, Guyuni, Musunda, Hawillie and Dotha, as well as tourists to Makuya Park which lies adjacent to the KNP.

2.2.3.3 Thulamela Local Municipality

Thulamela Local Municipality is the second smallest local municipality in the Vhembe District Municipality, and covers an area of approximately 5 835 km², which constitutes 23% of the Mopani District. The municipality is bordered by Greater Giyani Local Municipality to the south, Makhado Local Municipality to the west, Mutale Local Municipality to the north, and Mozambique to the east.

Figure 2.11 below indicates the location of the Thulamela Local Municipality.

Thulamela Local Municipality covers vast tract of land mainly owned by tribal authorities, and Thohoyandou is its political, administrative and commercial centre. The municipal area is one of the most dene local municipalities in the district in terms of population and activities, and is an economical active municipality with many rural settlements scattered across the municipal area. There is currently no spatial rationale for the provision of community services and facilities within the municipal area as community facilities are randomly scattered across the entire municipal area.



Source: Kayamandi Development Services, 2012

Figure 2.11: Thulamela Local Municipality

The following nodes have been identified as growth points:

- Provincial growth point:
    - Thohoyandou
- District growth points:
    - Malamulele
    - Sibasa
- Municipal growth points:
    - Mhinga
    - Makonde
    - Tshaulu
    - Khalavha
    - Saselemane

  - Lwamondo
- Population concentration points:
  - Mukula-Makhuvha
  - Kangela-Tshikomelo
  - Mafanele-Mavambe
- Local service points:
  - Dzwerani
  - Phaphazela
  - Tshitereke
  - Xikundu

The transportation network in Thulamela comprises three main routes running through the area. The first and most prominent road is the R524 which runs through the municipal area in an east-west direction, linking Thohoyandou to Makhado and the KNP. The second major route, the R523 links Sibasa to Khalavha from where it runs in a westerly direction towards Waterpoort where it also links to the N1. It thus primarily serves the north-western parts of the municipality. The third major provincial route serving the Thulamela Municipality is the R81 in the central-southern parts of the municipal area which functionally links Giyani and Malamulele to the R524. Apart from these major routes there is a relatively dense network of lower order (mostly gravel) roads serving the various rural settlements in the area.

The majority of the Thulamela Local Municipality falls under the jurisdiction of 13 traditional authorities, with only the central-southern and central-eastern parts of the municipal not falling under traditional authority. In addition to this, large tracts of land in the area are subject to land claims. The majority of the land claims are located in the central-western parts of the Thulamela municipal area with all land parcels around Thohoyandou, Sibasa and Malamulele (which are the areas experiencing the greatest pressure for urban expansion) being under claims. Virtually all the land between Makonde, Lwamondo, Malamulele and the southern border of the municipal area are subject to land claims. This spatial trend coincides with the major concentrations of villages and people, as well as with the more productive agricultural land in the municipality.

The Thulamela Local Municipality is faced with the following challenges regarding development:

- Previously disadvantaged areas and the need to redevelop rapidly deteriorating areas;
- Integrating urban areas and introducing higher density developments and mixed uses;
- Prevention of illegal occupation of land;
- Relocation and prohibiting of informal settlements in flood line areas; and
- Addressing the issue of land ownership.

The town of Thohoyandou serves as a trade hub to the surrounding tribal communities and is an important regional business and services centre, while the town of Malamulele is a second order centre. Virtually all the land within the immediate area of Thohoyandou is fully developed. Almost all the land which is still vacant at this stage actually comprises regional open space systems and flood plains of major rivers and streams running through the area.

Formal and informal retail and trade are fairly strong economic sectors in the municipal area, and the main concentration of retail and trade facilities and services is firstly at Thohoyandou, and secondly at Sibasa and Malamulele. There is a proposal for a new shopping centre of 6 000m² in Thohoyandou, which might be developed in 2013. Most of the national brands and franchises in commodities such as food, clothing, and furniture have outlets in Thohoyandou, while the majority of smaller shops in tribal areas buy their goods from the wholesale depots in Thohoyandou. Informal sector street trading is one of the popular business ventures in Thohoyandou, Sibasa and Malamulele Central Business Areas. Most of the products that are sold in the streets are fruit and vegetables. There are also five informal business associations registered with the municipality. Most of the informal businesses have organised themselves and they belong to these associations.

It is interesting to note that there are no prominent nodal points serving the rural communities located to the south of the Nandoni Dam. There are, however, several smaller activity nodes serving surrounding rural communities throughout the Thulamela area. The most prominent of these rural nodes include:

- Khalavha in the far north-western parts of the municipal area which primarily serves the rural community to the west of the Vondo Dam and the surrounding forests;
- Lwamondo to the south-west of Thohoyandou which serves the surrounding high density rural community adjacent to the north and south of the R524;
- Saselemani which is located on the opposite side of Lwamondo (the eastern end of the R524) and which serves as a central place to the far-eastern extents of the municipal area;
- Tshaulu which serves the surrounding rural communities located along the Luvuvhu River;
- Makonde, Khubvi and Mukula which act as a linear strip of small nodal points which serve the surrounding rural communities as well as the rural communities located in the mountainous north-eastern parts of the municipality;
- Vhufuli/Tshitereke which serves the central-western parts and the rural communities; and
- The node at Dovhoni which could serve the rural communities between Sibasa and the Vondo Dam.

It is evident that large parts of the area surrounding the Sibasa CBD comprise formalised/surveyed residential townships. The Lwamondo node comprises a mixture of formal and informal towns and townships in the area. There is no major prominent activity node within the area although

economic activities take place all along the alignment of route R524 which runs through the central part of Lwamondo.

The proclaimed town area of Malamulele is surrounded by large tracts of vacant land (of which virtually all is subject to land claims), as well as a number of informal settlements to the north, south, and south-east. The Malamulele CBD area comprises two main elements: a range of community facilities and services; and a number of retail facilities and services which include, amongst others, three shopping centres. Saselemani comprises a number of retail facilities located on both sides of route R524 and which includes, amongst others, a taxi rank located near the intersection.

In the central part of the Thulamela municipality there occurs a wide range of community facilities and services as well as economic activities. These activities are mainly concentrated around a number of smaller nodal areas. The Makonde, Kubyi, Vondwe, Khalavha and Mukula nodal areas comprise a few business sites and some retail facilities. The Phaphazela area is earmarked as a nodal point and holds a fairly large rural community with a formalised town with some minor formal and informal retail activities located along the road towards Gumbani. As a node the area holds potential not only to serve Phaphazela itself, but also the surrounding communities, including, amongst others, Gumbani and Mukhomi.

The climatic and soil conditions in the Thulamela Local Municipality are suitable for agricultural activities such as livestock, crop and fruit farming. The forest area between Lake Funduzi and Vondo Dam is classified as only suitable for forestry, or grazing as an alternative. The central-northern areas (around Khubvi) and the south-eastern parts (between Malamulele and the KNP) are classified as soils of intermediate potential for arable agriculture, while the areas around Saselemani are classified as being of poor suitability for such purposes. According to this information there is virtually no occurrence of high potential arable land in the municipal area. The agricultural potential of the Thulamela area essentially decreases from west (which also has the higher annual rainfall) to east. Incidentally the area with the highest agricultural potential is also the area experiencing the highest urbanisation pressure which represents a conflicting demand on the land.

Agricultural products produced in the area comprise the following:

- Vegetables such as potatoes, spinach, cabbage, maize meal, onions, tomatoes, beetroot, carrots, etc.;
- Nuts such as macadamia;
- Fruit such as mangoes, avocadoes, bananas, citrus fruit, etc.; and
- Livestock such as cattle, goats, chicken, etc.

The Levubu valley, which borders Thulamela on its western side, is a highly successful commercial agricultural production area where a range of high value produce is produced, such as avocado pear and macadamia nuts. Very little of the Thulamela production is processed and is mostly sold locally, with a very small percentage being sold on the larger fresh produce markets in Gauteng.

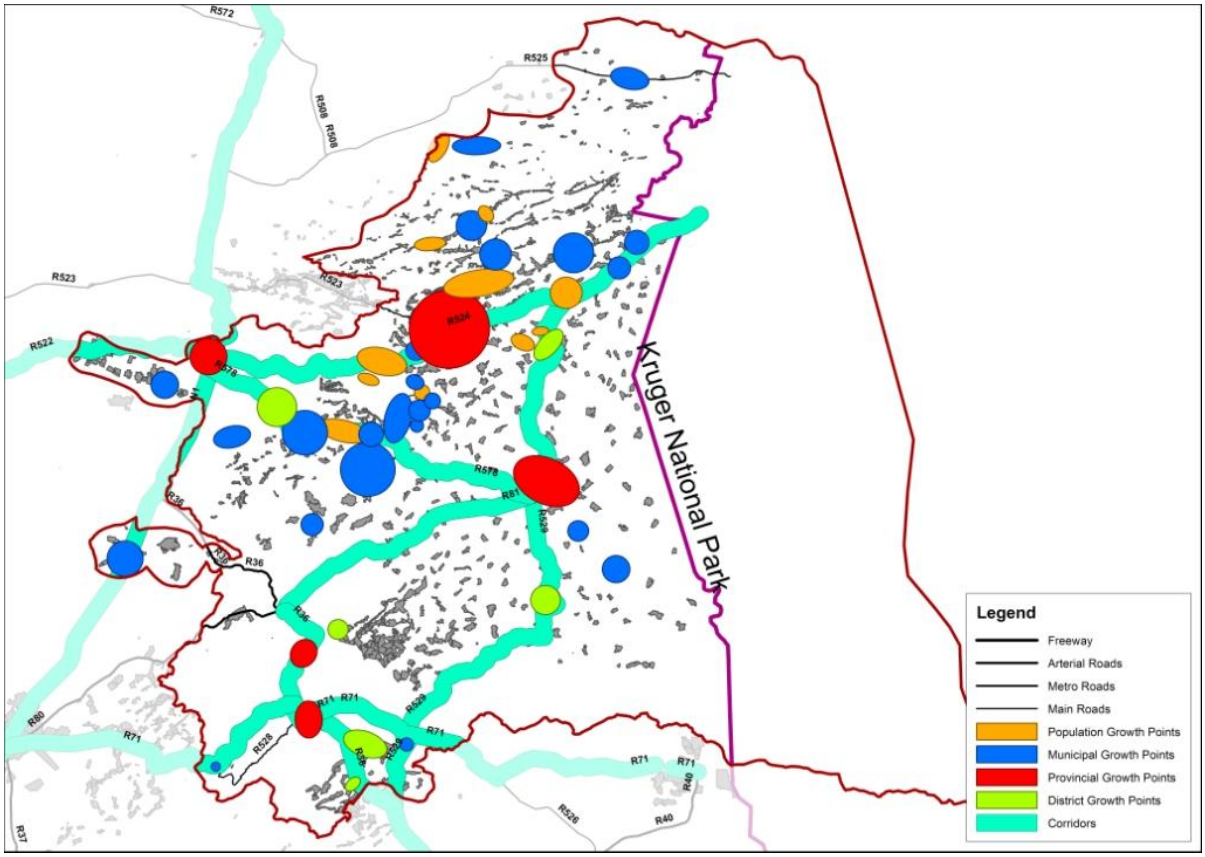
Only a few irrigated areas are operational, while large sections of the southern parts of the municipal area are only used for grazing purposes. Cultivated land and subsistence farming occurs intermittently around virtually all the rivers and streams in the remaining parts of the municipal area, but with the main concentration being located along the floodplain of the Luvuvhu River which runs from west to east through the northern parts of the municipal area.

Little manufacturing and other industrial activities take place in the Thulamela Local Municipality, and the Shayandima industrial area is the only manufacturing node in the municipality. The phasing-out of an incentive scheme aimed at the supply side however resulted in most of the industries becoming uneconomical and having to close down. Plans are however underway to revitalise the industrial area, which currently has a 30% vacancy rate. The Thulamela area does not have any major or significant mineral deposits, with some minor gold deposits occurring in the Sutherland Greenstone belt. Two mines namely Fumani and Osprey have in the past exploited the local deposits. Both have become unprofitable due to the marginal nature of the deposits and increased production cost. However, plans are underway to revive Fumani Gold Mine, of which the first phase will involve refining the dumps, with phase two involving the re-commissioning of the mine.

The Thulamela Local Municipality has a unique profile of tourism attractions that include the Lake Fundudzi, the Thathe Vondo Forest and Tshatshingo Potholes, to name but a few. The setting and nature of these attractions render them suitable to cater for a range of tourist market segments including cultural, and adventure. These attractions however do not represent sufficient critical mass to render Thulamela a tourism end-destination in its own right, and access to these attractions are made difficult by poor road conditions.

2.3 SUMMARY OF STUDY AREA OVERVIEW

Figure 2.12 below provides a spatial representation of where development is foreseen to be concentrated based on information sourced from municipal documents and discussions with municipal officials.



Source: Kayamandi Development Services, 2012

Figure 2.12: Spatial development

As can be seen above, growth points are mainly concentrated in the north-western portion of the study area, and are mostly located on or near transport routes.

3 BASE POPULATION ESTIMATE AND GROWTH SCENARIOS

This section deals with the socio-economic components of the study area and provides an overview of the social composition of the Luvuvhu and Letaba WSS. In addition to this, this section provides an indication of how the base population was determined, as well as how the base population was taken forward and applied into future growth scenarios for the area.

3.1 HISTORIC PERSPECTIVE

To be able to understand the study area and all its components, reference is made to factors which impact on the area from a historical perspective. The information presented provides an indication of the trends and impacts which inform future population growth. For the purposes of this discussion, data from StatsSA and the DWA settlements database has been used.

3.1.1 Population size and growth

The size of population and the growth thereof plays a significant role in the impacts created by the population on the surrounding environment, as well as the need for residential options, commercial and industrial activities, employment and the impacts on service delivery and natural resources.

Table 3.1 below presents population values for 2001 and 2007 baesd on 2001 Census data and the 2007 Community Survey data. The growth in population is not provided, since the different data sets are not comparable and limited trends or patterns in historical growth were noted. For analysis purposes, only municipalities with 30% or more of the total municipal area inside the study area have been included.

Table 3.1: Population size of the municipalities within the Luvuvhu and Letaba WSS

Local Municipality	Population size	
	2001	2007
Greater Giyani Local Municipality	239 283	247 657
Greater Letaba Local Municipality	220 105	247 739
Greater Tzaneen Local Municipality	375 587	349 087
Ba-Phalaborwa Local Municipality	131 092	127 308
Mutale Local Municipality	82 655	108 215
Thulamela Local Municipality	580 828	602 819
Makhado Local Municipality	495 265	471 805

Local Municipality	Population size	
	2001	2007
TOTAL	**2 124 815**	**2 154 630**

Source: Stats SA, Census, 2001; and Stats SA Community Survey, 2007

As can be seen from the above table, the overall population per local municipality included in the study area have increased from approximately 2,124,000 people in 2001 to approximately 2,154,000 people in 2007.

According to the Stats SA Community Survey, the population of Greater Tzaneen, Ba-Phalaborwa and Makhado Local Municipalities declined between 2001 and 2007.

3.1.2 Number of households

Table 3.2 below presents the number of households for 2001, 2007 and 2008 based on 2001 Census data, 2007 Community Survey data and the 2008 DWA settlements database. For analysis purposes, only municipalities with 30% or more of the total municipal area inside the study area have been included.

As can be seen from the below table, the overall number of households included in the study area have increased from approximately 498,100 households in 2001 to approximately 513,700 households in 2007 or approximately 550,500 households in 2008, depending on the data source.

The number of households per local municipality included in the study area has increased from 2001 to 2007/8, with the exception of the Greater Tzaneen Local Municipality which, considering the Stats SA Community Survey data, showed a decline in the number of households.

Table 3.2: Number of households of municipalities within the Luvuvhu and Letaba WSS

Local Municipality	Number of households		
	2001	2007	2008
Greater Giyani Local Municipality	53 294	57 537	60 655
Greater Letaba Local Municipality	53 745	59 539	60 775
Greater Tzaneen Local Municipality	97 425	89 831	99 272
Ba-Phalaborwa Local Municipality	33 571	33 792	37 022
Mutale Local Municipality	18 445	21 075	23 223

Local Municipality	Number of households		
	2001	2007	2008
Thulamela Local Municipality	128 447	137 852	144 792
Makhado Local Municipality	113 218	114 060	124 827
TOTAL	**498 144**	**513 686**	**550 566**

Source: Stats SA, Census, 2001; Stats SA Community Survey, 2007; and DWA settlements database

Table 3.3 below presents average household sizes per local municipality for 2001, 2007 and 2008 based on 2001 Census data, 2007 Community Survey data and the 2008 DWA settlements database. For analysis purposes, only municipalities with 30% or more of the total municipal area inside the study area have been included.

The average household size in the study area was approximately 4.2 people per household during 2001. Both Greater Tzaneen and Ba-Phalaborwa local municipalities had average household sizes below 4 people per household.

When considering the Stats SA Community Survey data, the average household size for all the municipalities within the study area increased to 4.3 people per household. In nearly all the municipalities, household size fluctuated, with slight decreases or increases being evident. Household size increased marginally from 2001 to 2007 in the Greater Letaba and Mutale Local Municipalities, and in Greater Tzaneen Local Municipality, the household size stayed constant. The other municipalities showed slight decreases in household size.

The DWA Settlements database revealed that household sizes have either remained constant or showed slight increases, when compared with the Stats SA 2001 household size.

Table 3.3: Household size per local municipality in the Luvuvhu and Letaba WSS

Local Municipality	Household size		
	2001	2007	2008
Greater Giyani Local Municipality	4.5	4.3	4.4
Greater Letaba Local Municipality	4.1	4.2	4.3
Greater Tzaneen Local Municipality	3.9	3.9	4.3
Ba-Phalaborwa Local Municipality	3.9	3.8	4.4

Local Municipality	Household size		
	2001	2007	2008
Mutale Local Municipality	4.5	5.1	4.4
Thulamela Local Municipality	4.5	4.4	4.4
Makhado Local Municipality	4.4	4.1	4.4
AVERAGE	**4.2**	**4.3**	**4.4**

Source: Stats SA, Census, 2001; Stats SA Community Survey, 2007; and DWA settlements database, 2008

3.1.3 Household income

Table 3.4 below, based on values from Census 2001 and Community Survey 2007, provides an indication of annual household income per local municipality for 2001 and 2007 for each of the municipalities within the Luvuvhu and Letaba WSS. The income categories used are:

- Category 1: No income
- Category 2: R1 – R4 800
- Category 3: R4 801 – R9 600
- Category 4: R9 601 – R19 200
- Category 5: R19 201 – R38 400

(Low income)

- Category 6: R38 401 – R76 800
- Category 7: R76 801 – R153 600

(Middle income)

- Category 8: R153 601 and more

(High income)

Table 3.4: Distribution of average annual household income, 2007)

Local Municipality	Cat 1	Cat 2	Cat 3	Cat 4	Cat 5	Cat 6	Cat 7	Cat 8	Total
	Low					Middle		High	

Greater Giyani	10%	12%	18%	22%	18%	11%	5%	4%	100%
Greater Letaba	8%	12%	21%	27%	19%	6%	4%	2%	100%
Greater Tzaneen	5%	8%	16%	29%	24%	9%	5%	4%	100%
Ba-Phalaborwa	6%	7%	14%	23%	21%	10%	7%	12%	100%
Mutale	3%	12%	21%	29%	18%	11%	3%	2%	100%
Thulamela	2%	10%	19%	29%	21%	9%	7%	3%	100%
Makhado	5%	9%	16%	28%	23%	10%	5%	4%	100%
TOTAL	**5%**	**10%**	**18%**	**27%**	**21%**	**9%**	**5%**	**4%**	**100%**

Source: Stats SA, Census, 2001; and Stats SA Community Survey, 2007

From the table above it can be deduced that a clear shift exists in the average annual income of households between 2001 and 2007. In 2001, nearly a quarter of households in the study area had no income, whereas in 2007, only 5% of all households had no income. Furthermore, in 2001, approximately 90% of all households within the study area fell within the low income earning category earning between R0 and R38,400 per annum per household. However, in 2007, only approximately 80% of households within the study area fell within the low income earning category.

In 2001, 8% of households earned middle household incomes between R38,401 and R153,600 income per household per annum. While in 2007, the middle income earning households increased to 14% of all households. High earning income households also increased from a low of 2% in 2001 to 4% in 2007.

3.2 BASE POPULATION CALCULATIONS

Based on available statistics, a 2008 base figure was determined to form the starting point for the demographic modelling. The number of households per settlement from the 2008 DWA settlements database was used to determine the base, as this correlates with the 2008 Spot Building Count data. Household sizes were refined for each area based on Census 2001 information and updated knowledge on changes in socio-economic circumstances. The population

per settlement was then calculated based on the number of households from the 2008 DWA settlements database and refined household sizes. Calculations were done on a low (settlement) level to enable grouping of settlements into different water schemes. Although possible inaccuracies exist on settlement level due to limited up-to-date data, the information becomes more accurate when grouped on a higher level.

Table 3.5 provides the calculated population size per local municipality for 2010.

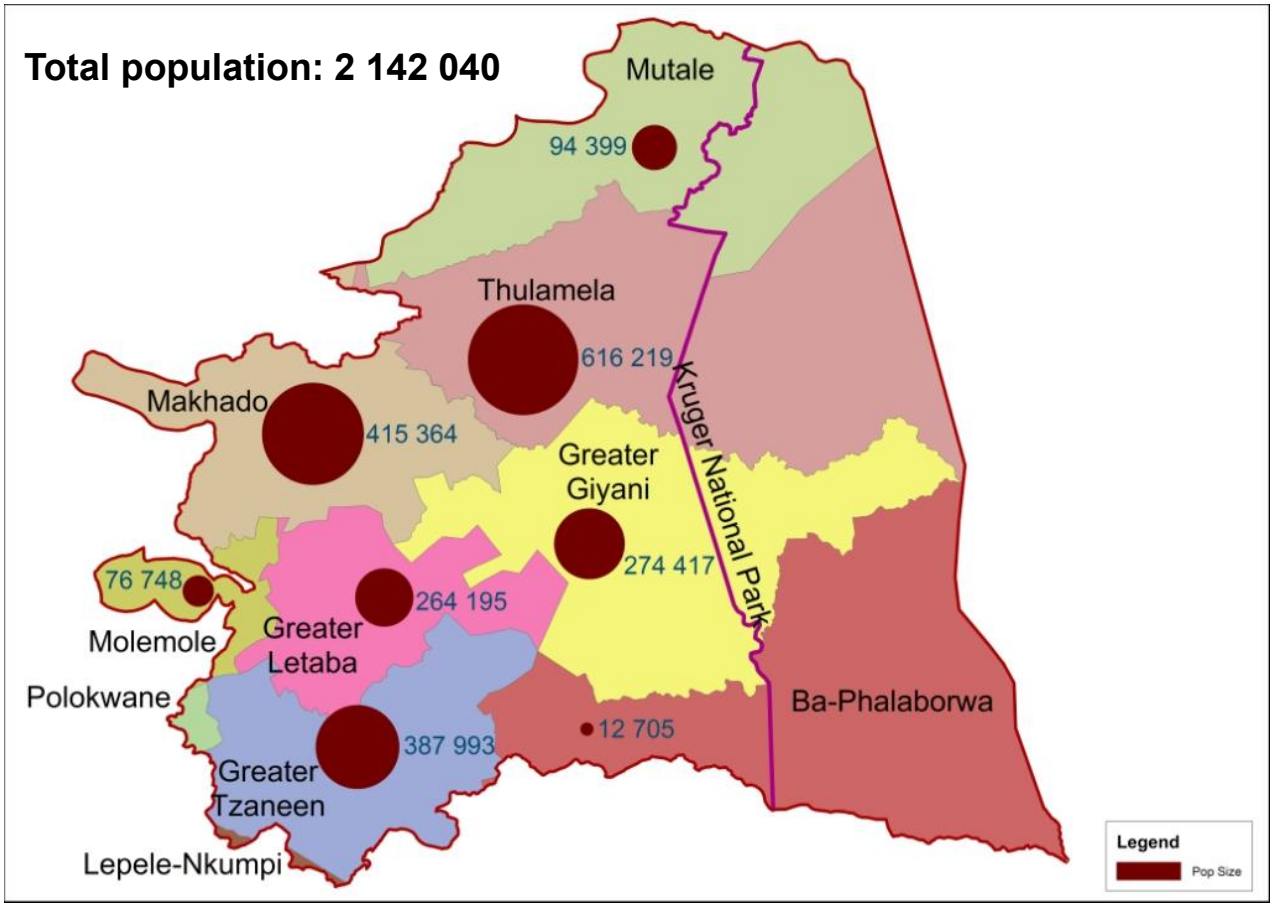
Table 3.5: Base population per local municipality, 2010

Local municipality	2010
Greater Giyani Local Municipality	274 417
Greater Letaba Local Municipality	264 195
Greater Tzaneen Local Municipality	387 993
Ba-Phalaborwa Local Municipality	12 705
Mutale Local Municipality	94 399
Thulamela Local Municipality	616 219
Makhado Local Municipality	415 364
Molemole Local Municipality	76 748
TOTAL	**2 142 040**

Source: DWA 2008 settlements database and Kayamandi calculations

Figure 3.1 below provides an indication of the spatial representation of the base population.

As can be seen from the below figure and above table, the largest portions of people are concentrated in the Thulamela, Makhado and Greater Tzaneen Local Municipalities.



Source: Kayamandi Development Services, 2012

Figure 3.1: Based population size per local municipality, 2010

3.3 GROWTH SCENARIOS

Different growth scenarios for development was determined, as it is impossible for all the smaller settlements in the study area to grow at the same rate as larger nodes such as Tzaneen, Giyani, Thohoyandou and Makhado, since various factors affect each area according to their individual characteristics. Two scenarios have been developed (moderate and high growth) to take into account various development determinants or push and pull factors that could bring about alterations in the projected growth and resultant population size. The following demographic development determinants have been identified as likely factors to cause different water resource responses:

- Migration,
- Mortality,
- Fertility,
- HIV/AIDS, etc.

There are indications of large amounts of immigrants into South Africa who place enormous pressure on already over-extended and under-supplied social services (e.g. schools, clinics) and

infrastructural services (e.g. water, electricity, etc.). Population predictions thus need to take into account in-migration and determine what it could mean for future population distribution and resource needs.

Future population projections, however, also need to account for internal movement, which will ultimately lead to differences in population figures between areas in a local municipality due to inherent internal movement dynamics of population. Very little information is available about migration patterns on a municipal level, but it is however a fact that a lack of sufficient job opportunities to accommodate economically active population, together with apartheid policies of influx control, has entrenched a migratory labour pattern in the country.

This pattern is very much evident from Census information, which indicates a discrepancy in the gender structure. Male absenteeism is higher in many rural areas. There are also females that form part of the migrant labour pattern, although substantially less than males.

Other demographic alterations could result from changes in perceived fertility, mortality and HIV/AIDS rates. According to data from Stats SA, the fertility rate has declined slightly from an average of 2.92 children per woman in 2001 to 2.35 children in 2011. While still high, the infant mortality rate has declined from an estimated 53 in 2001 to 38 in 2011.

Life expectancy at birth had declined between 2001 and 2005 but has since increased steadily from 2005 onwards to 2011, partly due to the roll-out of antiretrovirals. The increase in life expectancy at birth is expected to continue due to breakthroughs in medical technologies, improved education, improved living conditions, etc.

The total number of persons living with HIV in South Africa increased from an estimated 4.21 million in 2001 to 5.38 million by 2011. For 2011 an estimated 10.6% of the total population is HIV positive. Approximately one-fifth of South African women in their reproductive ages are HIV positive. HIV prevalence is expected to increase going into the future.

The above demographic trends influencing population growth have been taken into account for both the growth scenarios designed for Luvuvhu and Letaba WSS, which will be discussed in more detail in the following subsections.

3.3.1 Moderate growth scenario

For the moderate growth scenario, it is expected that population growth in the study area will largely follow historical growth trends, and a decrease in the overall population growth rate will be evident. Fertility rates will reduce, and mortality rates will remain fairly high. In addition to this, there is continuing out-migration to large economic hubs such as Gauteng, and internal migration exists from rural areas to urban nodes as people try to access employment and better services. In the moderate growth scenario, economic growth remains relatively low.

3.3.2 High growth scenario

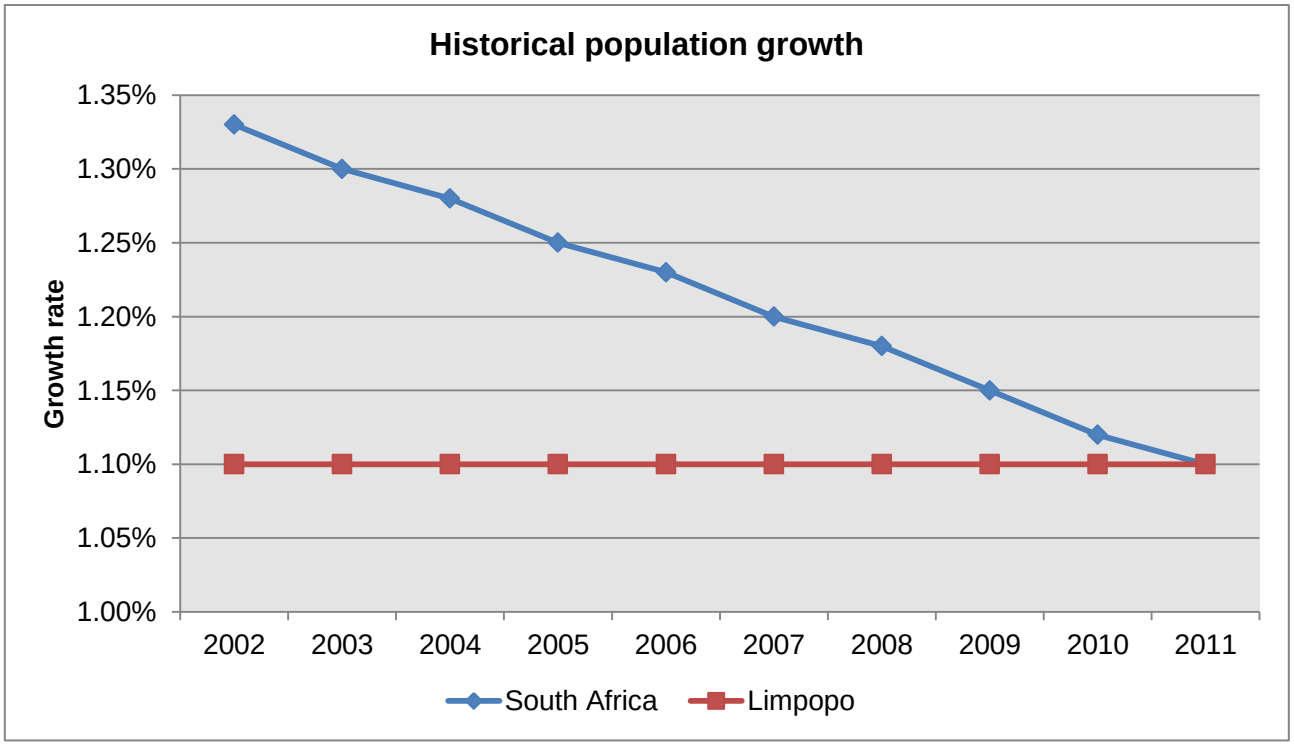
In the high growth scenario, economic growth will initially be low, but will peak in 20 years after which it will gradually flatten out. There is a large focus on the development of rural areas, and the

installation of infrastructure and services will result in declining out-migration to urban areas in search of improved services. Health services are expected to improve, which will result in declining mortality. Urbanisation levels within the study area are expected to decrease, and there is a focus on agriculture, mining and tourism development, especially in rural areas.

3.4 POPULATION GROWTH FORECASTS

This subsection focuses on the modelling results obtained for the growth and distribution of population within the Luvuvhu and Letaba WSS. Before one can undertake future population estimations, an analysis of historic growth patterns is required. Mid-year population estimates by Stats SA are one of the information sources which have been used to inform future growth scenarios for the area. These estimates are however only provided on a national and provincial level, and have only been used as a reference to overall growth tendencies.

Graph 3.1 below provides an indication of historical population growth for the country and the Limpopo Province. The calculations have been based on StatsSA mid-year population estimates and provincial distributions.



Source: Stats SA Mid-year population, 2002-2011 and Kayamandi calculations, 2012

Graph 3.1: Historical population growth

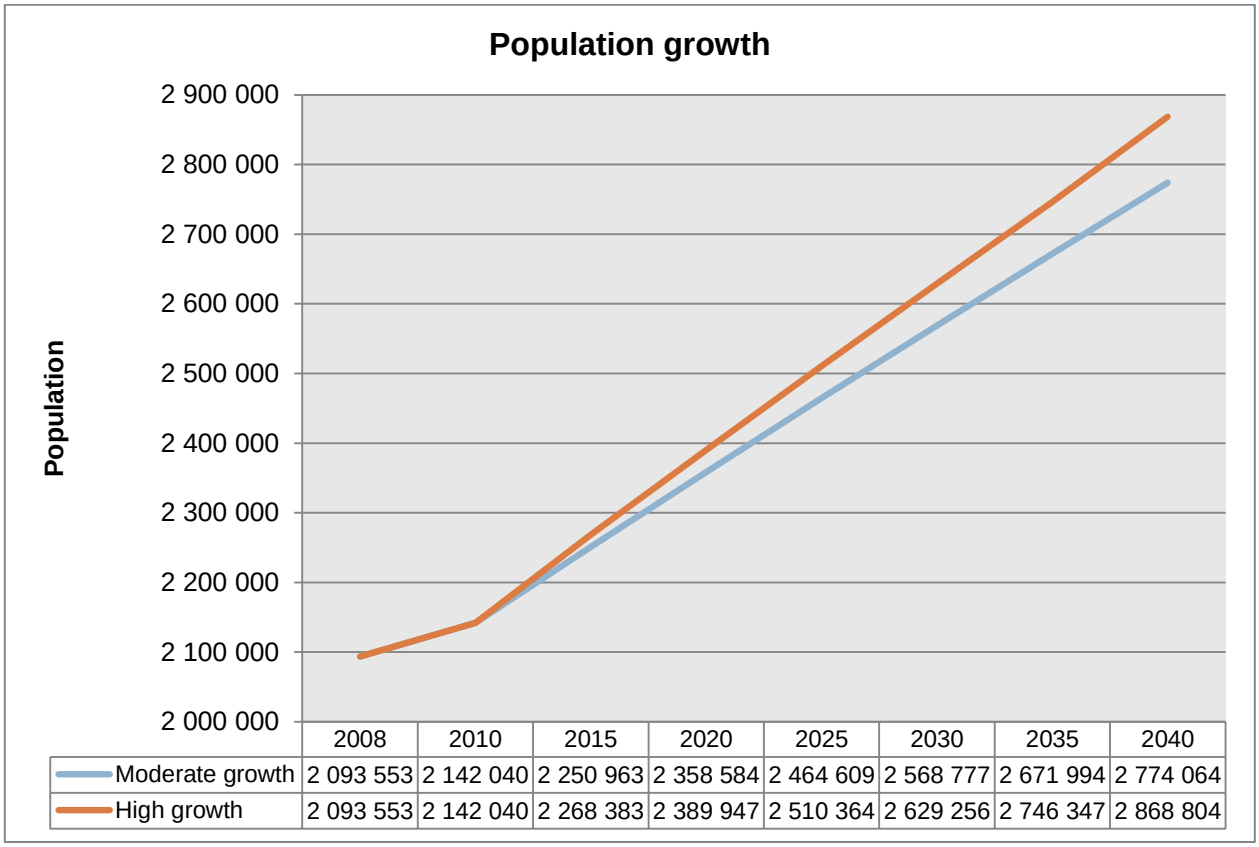
As can be seen from the above graph, the average annual population growth decreased on a national level from just above 1.3% to 1.1% between 2001 and 2011, while the average annual population growth for the Limpopo province stayed constant at 1.1%.

3.4.1 Population growth

Grap 3.2 below shows the projected growth of population for the Luvuvhu and Letaba WSS up to 2040 for the moderate and high growth scenarios.

From the below graph it is evident that the base 2008 population for the Luvuvhu and Letaba WSS was 2 093 553 people. The population for the Luvuvhu and Letaba WSS for 2010 was determined to be 2 142 040 people in both the moderate and the high scenarios, indicating a 1.2% growth between 2008 and 2010 in both growth scenarios. However, from 2015 onwards, there is a distinction in the rate of growth between the two scenarios.

In the moderate growth scenario, the population increased from 2008 to 2040 by 680 511 people with a projected population of 2 774 064 people in 2040. In the high growth scenario, the population increased from 2008 to 2040 by 775 251 people with a projected population of to 2 868 804 people in 2040. The total difference in population as at 2040 between the moderate and high growth scenario is 94 740 people.

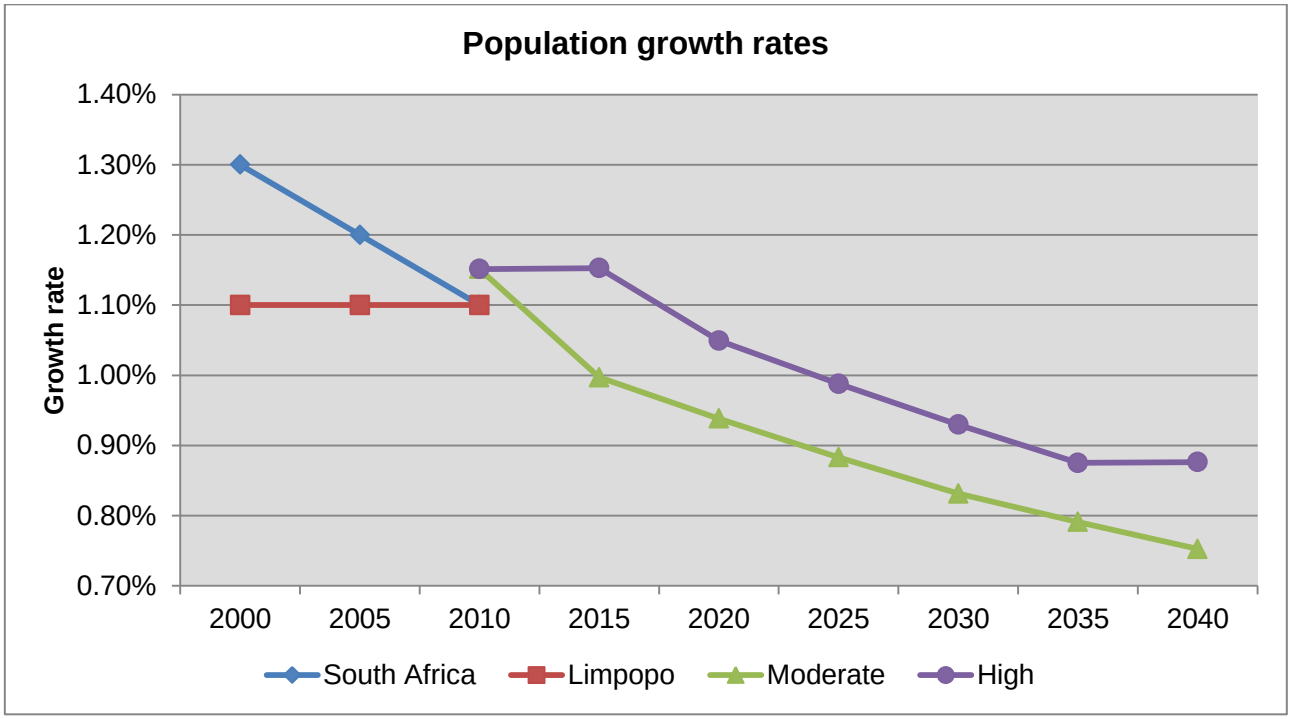


	2008	2010	2015	2020	2025	2030	2035	2040
Moderate growth	2 093 553	2 142 040	2 250 963	2 358 584	2 464 609	2 568 777	2 671 994	2 774 064
High growth	2 093 553	2 142 040	2 268 383	2 389 947	2 510 364	2 629 256	2 746 347	2 868 804

Source: Kayamandi calculations, 2012

Graph 3.2: Population growth in the Luvuvhu and Letaba WSS (2008 to 2040)

Graph 3.3 below provides an indication of historic growth rates (2000 to 2010) compared to foreseen population growth rates (2010 to 2040).



Source: Stats SA Mid-year population and Kayamandi Development Services, 2012

Graph 3.3: Population growth rates (historic and future)

From the graph it is evident that the moderate and high population growth rates are following the declining growth trend noted from historical national population growth. The average growth rate per 5 year interval over the 20 year period was 0.9% in the moderate growth scenario, and 1.0% for the high growth scenario, which means that an average of approximately 97 220 additional people have been added to the area per 5 year time-period in the moderate growth scenario, and approximately 110 750 people have been added to the area in the high growth scenario.

Table 3.6 below provides a summary of population growth per water scheme for the moderate growth scenario.

Table 3.6: Summary of moderate population growth per water scheme (2010-2040)

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Giyani System C/D WS	83 634	88 441	93 227	97 973	102 666	107 343	111 990
Giyani System D : South West WS	26 604	27 842	29 059	30 253	31 422	32 578	33 717
Giyani System A/B WS	51 773	54 369	56 929	59 443	61 905	64 339	66 736

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Giyani System F1 WS	23 588	24 749	25 894	27 023	28 129	29 225	30 306
Giyani System F2 WS	12 173	12 706	13 231	13 742	14 244	14 739	15 228
Tzaneen / Modjadjiskloof WS	12 904	13 496	14 080	14 653	15 217	15 784	16 352
Modjadji RWS	80 883	84 821	88 702	92 520	96 259	99 956	103 599
Sekgosese Individual Groundwater Scheme	20 634	21 619	22 589	23 543	24 480	25 405	26 318
Middle Letaba RWS : Bolobedu NW	40 011	42 036	44 035	46 002	47 932	49 838	51 721
Middle Letaba RWS : Magoro	71 785	75 375	78 903	82 385	85 798	89 167	92 496
Thabina RWS	57 455	60 638	63 773	66 862	69 889	72 890	75 852
Ritavi II RWS	111 904	118 467	125 008	131 502	137 927	144 329	150 699
Haenertsburg Individual Supply	1 616	1 668	1 719	1 768	1 814	1 861	1 909
Makhado RWS	15 004	15 458	15 898	16 323	16 733	17 153	17 584
Elim / Vleifontein RWS WS	53 324	56 467	59 584	62 665	65 703	68 724	71 726
Middle Letaba RWS : Majosi	84 157	88 430	92 672	96 857	100 986	105 091	109 156
Vondo Central RWS	249 327	264 467	279 546	294 547	309 429	324 291	339 102
Middle Letaba RWS : Vyeboom Masia	29 857	31 691	33 515	35 315	37 082	38 835	40 566
Sinthumule / Kutama RWS	78 141	81 788	85 370	88 888	92 331	95 725	99 066
Vondo South RWS	30 575	32 064	33 544	35 004	36 438	37 860	39 264
Tshakhuma RWS	37 013	38 878	40 708	42 498	44 245	45 970	47 668
Levubu CBD WS	638	708	781	857	934	1 014	1 095
Valdezia RWS	10 974	11 534	12 105	12 667	13 218	13 764	14 308

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Masisi RWS	12 645	13 260	13 865	14 460	15 044	15 625	16 195
Mutale Main RWS	60 514	63 447	66 334	69 163	71 940	74 683	77 385
Luphephe / Nwanedzi Main RWS	19 420	20 393	21 356	22 306	23 240	24 165	25 083
Mutale Mukuya RWS	8 608	9 010	9 408	9 800	10 184	10 563	10 932
South Malamulele East RWS	105 545	110 488	115 354	120 131	124 816	129 450	134 022
Tshifudi RWS	31 798	33 430	35 038	36 633	38 202	39 749	41 280
Damani RWS	67 398	70 465	73 508	76 492	79 407	82 302	85 154
North Malamulele East RWS	70 788	73 735	76 622	79 443	82 198	84 909	87 571
Malamulele West RWS	50 182	52 376	54 542	56 660	58 730	60 775	62 791
Eiland Supply	138	145	152	159	166	173	180
Siluwane - Nondweni Extended RWS	19 337	20 334	21 313	22 271	23 213	24 137	25 050
Prieska Supply	1 292	1 348	1 403	1 456	1 508	1 559	1 609
Ritavi / Letaba RWS	97 557	102 056	106 473	110 808	115 036	119 206	123 310
Thapane RWS	56 887	59 898	62 866	65 785	68 654	71 488	74 284
Greater Tzaneen LM Farms Supply	34 227	35 831	37 407	38 952	40 463	41 953	43 420
Tours RWS	14 409	14 893	15 368	15 830	16 281	16 725	17 162
Worcester / Mothobeki RWS	25 822	26 823	27 805	28 760	29 692	30 611	31 514
Nthabiseng GWS	4 150	4 315	4 482	4 647	4 810	4 970	5 131
Ramakgopa GWS	26 895	27 942	28 962	29 956	30 921	31 869	32 794
Botlokwa GWS	45 703	48 362	50 998	53 603	56 169	58 720	61 248
Lower Molototsi RWS	18 376	19 193	19 996	20 779	21 541	22 286	23 020

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Greater Letaba LM Farms Supply	12 483	13 037	13 579	14 109	14 628	15 139	15 641
Middle Letaba RWS : Babangu	56 231	58 904	61 529	64 106	66 624	69 104	71 547
Sekgopo Local GWS	20 669	21 576	22 466	23 336	24 183	25 016	25 834
Greater Giyani LM Farms Supply	2 459	2 534	2 606	2 675	2 742	2 811	2 879
Mapuve / System N RWS	17 207	17 963	18 698	19 413	20 112	20 803	21 480
Tshitale RWS	31 576	33 028	34 447	35 834	37 193	38 524	39 832
Middle Letaba RWS : Malamulele West	14 779	15 426	16 060	16 677	17 275	17 863	18 442
Thulamela LM Farms Supply	2 354	2 410	2 464	2 515	2 563	2 613	2 662
Vondo East RWS	16 511	17 597	18 664	19 709	20 728	21 721	22 695
Lambani RWS	6 661	7 246	7 828	8 405	8 969	9 532	10 086
Vondo North Rural RWS	4 443	4 761	5 072	5 377	5 673	5 957	6 240
Mutale LM Farms Supply	377	394	410	426	442	457	472
Tshikondeni Mine Supply	512	512	512	512	512	512	512
Letaba Individual Supply	113	119	125	131	137	143	149
TOTAL	**2142040**	**2250963**	**2358584**	**2464609**	**2568777**	**2671994**	**2774064**

Source: Kayamandi Development Services, 2012

Table 3.7 below provides a summary of population growth per water scheme for the high growth scenario.

Table 3.7: Summary of high population growth per water scheme (2010-2040)

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Giyani System C/D WS	83 634	89 343	94 889	100 429	105 942	111 414	117 177
Giyani System D : South West WS	26 604	28 053	29 439	30 806	32 154	33 475	34 854
Giyani System A/B WS	51 773	54 775	57 651	60 493	63 290	66 038	68 903
Giyani System F1 WS	23 588	24 922	26 203	27 466	28 710	29 934	31 212
Giyani System F2 WS	12 173	12 785	13 371	13 947	14 514	15 072	15 650
Tzaneen / Modjadjiskloof WS	12 904	13 646	14 364	15 081	15 794	16 500	17 244
Modjadji RWS	80 883	85 548	90 029	94 463	98 837	103 139	107 630
Sekgosese Individual Groundwater Scheme	20 634	21 827	22 977	24 116	25 239	26 352	27 517
Middle Letaba RWS : Bolobedu NW	40 011	42 510	44 921	47 310	49 676	51 999	54 432
Middle Letaba RWS : Magoro	71 785	75 971	79 969	83 925	87 826	91 671	95 711
Thabina RWS	57 455	61 082	64 553	67 993	71 378	74 700	78 170
Ritavi II RWS	111 904	119 794	127 481	135 175	142 854	150 493	158 567
Haenertsburg Individual Supply	1 616	1 678	1 736	1 792	1 846	1 899	1 953
Makhado RWS	15 004	15 525	16 015	16 490	16 950	17 395	17 851
Elim / Vleifontein RWS WS	53 324	56 859	60 271	63 661	67 017	70 328	73 798
Middle Letaba RWS : Majosi	84 157	89 142	93 958	98 755	103 506	108 191	113 106
Vondo Central RWS	249 327	266 362	282 921	299 463	315 927	332 252	349 447
Middle Letaba RWS : Vyeboom Masia	29 857	31 993	34 066	36 106	38 132	40 133	42 222

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Sinthumule / Kutama RWS	78 141	82 384	86 448	90 453	94 389	98 246	102 258
Vondo South RWS	30 575	32 285	33 937	35 580	37 199	38 802	40 471
Tshakhuma RWS	37 013	39 132	41 154	43 140	45 085	46 988	48 963
Levubu CBD WS	638	726	817	911	1 008	1 106	1 213
Valdezia RWS	10 974	11 605	12 223	12 837	13 441	14 035	14 654
Masisi RWS	12 645	13 325	13 976	14 616	15 243	15 857	16 499
Mutale Main RWS	60 514	63 766	66 867	69 918	72 924	75 871	78 931
Luphephe / Nwanedzi Main RWS	19 420	20 491	21 520	22 542	23 548	24 538	25 570
Mutale Mukuya RWS	8 608	9 061	9 495	9 923	10 341	10 752	11 175
South Malamulele East RWS	105 545	111 347	116 906	122 396	127 793	133 099	138 636
Tshifudi RWS	31 798	33 669	35 468	37 252	39 019	40 756	42 564
Damani RWS	67 398	70 930	74 312	77 659	80 952	84 178	87 559
North Malamulele East RWS	70 788	74 175	77 404	80 575	83 682	86 724	89 880
Malamulele West RWS	50 182	52 701	55 119	57 501	59 835	62 130	64 511
Eiland Supply	138	147	155	163	171	179	187
Siluwane - Nondweni Extended RWS	19 337	20 529	21 677	22 809	23 922	25 014	26 154
Prieska Supply	1 292	1 362	1 429	1 495	1 559	1 622	1 688
Ritavi / Letaba RWS	97 557	102 815	107 847	112 796	117 660	122 428	127 385
Thapane RWS	56 887	60 400	63 772	67 108	70 393	73 624	77 001
Greater Tzaneen LM Farms Supply	34 227	36 101	37 894	39 661	41 397	43 099	44 871
Tours RWS	14 409	14 972	15 515	16 048	16 571	17 086	17 612

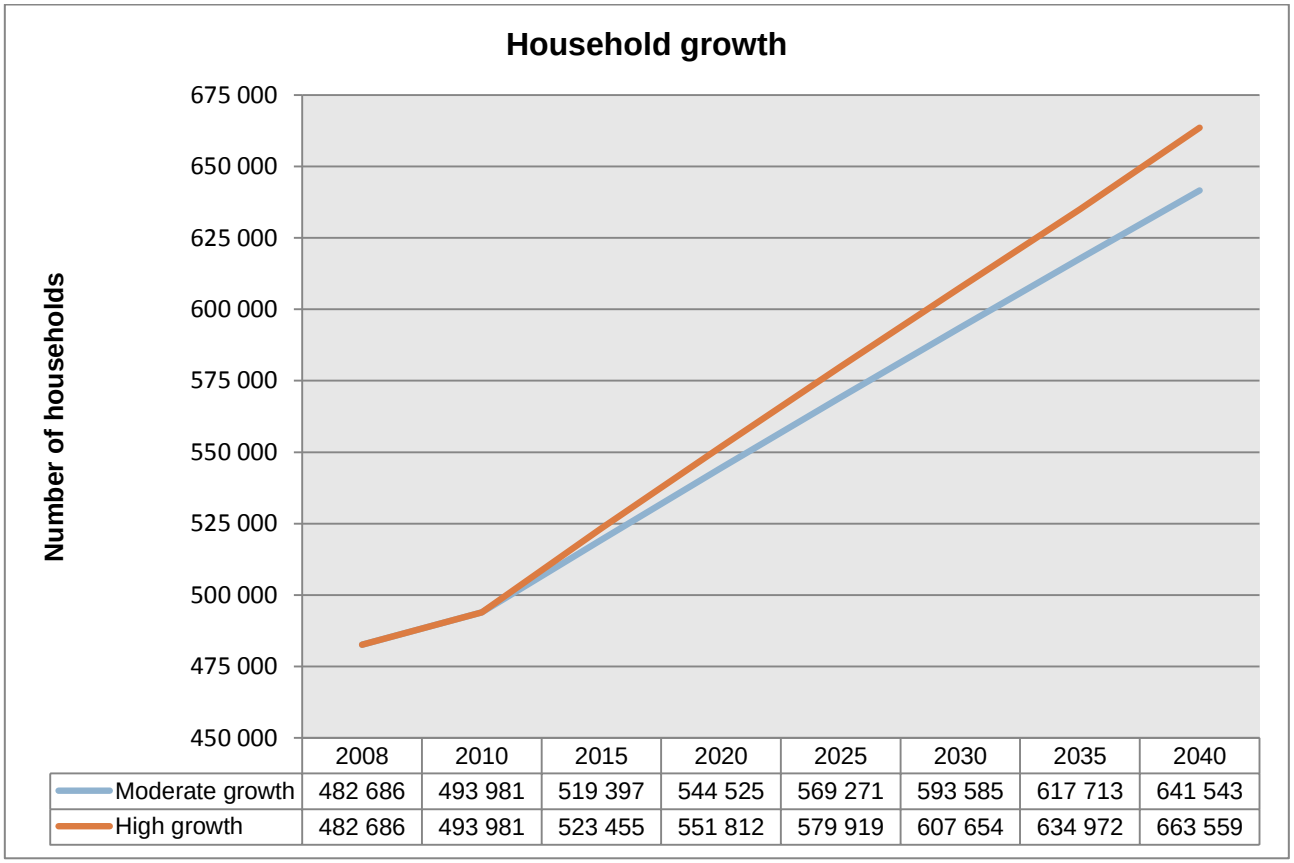
Water Scheme	2010	2015	2020	2025	2030	2035	2040
Worcester / Mothobeki RWS	25 822	26 985	28 091	29 173	30 235	31 269	32 341
Nthabiseng GWS	4 150	4 342	4 528	4 715	4 901	5 084	5 275
Ramakgopa GWS	26 895	28 125	29 291	30 430	31 542	32 625	33 745
Botlokwa GWS	45 703	48 738	51 666	54 574	57 454	60 296	63 273
Lower Molototsi RWS	18 376	19 335	20 251	21 153	22 034	22 893	23 790
Greater Letaba LM Farms Supply	12 483	13 132	13 751	14 361	14 958	15 542	16 150
Middle Letaba RWS : Babangu	56 231	59 366	62 366	65 322	68 225	71 071	74 038
Sekgopo Local GWS	20 669	21 732	22 746	23 742	24 719	25 674	26 665
Greater Giyani LM Farms Supply	2 459	2 549	2 631	2 714	2 796	2 877	2 960
Mapuve / System N RWS	17 207	18 091	18 930	19 755	20 562	21 352	22 169
Tshitale RWS	31 576	33 276	34 896	36 486	38 051	39 577	41 163
Middle Letaba RWS : Malamulele West	14 779	15 541	16 266	16 978	17 675	18 351	19 055
Thulamela LM Farms Supply	2 354	2 415	2 475	2 533	2 591	2 645	2 700
Vondo East RWS	16 511	17 805	19 040	20 254	21 439	22 601	23 817
Lambani RWS	6 661	7 357	8 022	8 688	9 343	9 996	10 677
Vondo North Rural RWS	4 443	4 830	5 199	5 560	5 912	6 258	6 620
Mutale LM Farms Supply	377	395	412	429	446	462	479
Tshikondeni Mine Supply	512	512	512	512	512	512	512
Letaba Individual Supply	113	119	125	131	137	143	149

Water Scheme	2010	2015	2020	2025	2030	2035	2040
TOTAL	2142040	2268383	2389947	2510364	2629256	2746347	2868804

Source: Kayamandi Development Services, 2012

3.4.2 Household growth

Graph 3.4 below shows the differentiation of growth in households up to 2040 for the Luvuvhu and Letaba WSS per the moderate and high growth scenarios.



	2008	2010	2015	2020	2025	2030	2035	2040
Moderate growth	482 686	493 981	519 397	544 525	569 271	593 585	617 713	641 543
High growth	482 686	493 981	523 455	551 812	579 919	607 654	634 972	663 559

Source: Kayamandi Development Services, 2012

Graph 3.4: Household growth in the Luvuvhu and Letaba WSS (2008 to 2040)

The total number of households in the Luvuvhu and Letaba WSS for the 2008 baseline was determined to be 482 686 in both the moderate and high growth scenarios. The number of households in the study area increased by 158 857 households between 2008 and 2040 to 641 543 households by 2040 in the moderate growth scenario. The number of households in the study area increased by 180 873 households between 2008 and 2040 to 663 559 households by 2040 in the high growth scenario. The total difference in number of households as projected at 2040 between the moderate and high growth scenario is 22 016 households.

The average growth rate per 5 year interval over the 20 year period was 0.9% in the moderate growth scenario, and 1.0% for the high growth scenario, which means that an average of

approximately 22 700 additional households have been added to the area per 5 year time-period in the moderate growth scenario, and approximately 25 840 households have been added to the area in the high growth scenario.

Table 3.8 below provides a summary of household growth per water scheme for the moderate growth scenario.

Table 3.8: Summary of projected moderate household growth per water scheme (2010-2040)

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Giyani System C/D WS	18 146	19 184	20 217	21 243	22 255	23 264	24 264
Giyani System D : South West WS	6 483	6 788	7 089	7 381	7 671	7 953	8 233
Giyani System A/B WS	11 659	12 251	12 829	13 403	13 961	14 517	15 062
Giyani System F1 WS	5 589	5 858	6 124	6 385	6 640	6 895	7 146
Giyani System F2 WS	2 877	3 007	3 135	3 261	3 384	3 507	3 627
Tzaneen / Modjadjiskloof WS	4 006	4 176	4 343	4 505	4 666	4 826	4 988
Modjadji RWS	19 478	20 438	21 386	22 318	23 230	24 134	25 023
Sekgosese Individual Groundwater Scheme	4 792	5 023	5 250	5 474	5 695	5 911	6 126
Middle Letaba RWS : Bolobedu NW	9 190	9 655	10 118	10 572	11 019	11 457	11 894
Middle Letaba RWS : Magoro	16 116	16 920	17 714	18 497	19 265	20 018	20 769
Thabina RWS	14 041	14 818	15 586	16 341	17 081	17 813	18 540
Ritavi II RWS	25 510	27 052	28 589	30 115	31 622	33 128	34 623
Haenertsburg Individual Supply	558	575	592	608	624	639	656
Makhado RWS	4 060	4 183	4 302	4 417	4 528	4 642	4 758
Elim / Vleifontein RWS WS	11 901	12 605	13 304	13 993	14 673	15 351	16 025
Middle Letaba RWS : Majosi	19 611	20 626	21 631	22 622	23 605	24 580	25 547

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Vondo Central RWS	58 259	61 901	65 533	69 152	72 740	76 324	79 894
Middle Letaba RWS : Vyeboom Masia	6 426	6 832	7 237	7 639	8 031	8 421	8 807
Sinthumule / Kutama RWS	17 667	18 491	19 302	20 095	20 876	21 646	22 399
Vondo South RWS	6 893	7 237	7 580	7 918	8 249	8 579	8 902
Tshakhuma RWS	8 350	8 774	9 188	9 594	9 989	10 382	10 766
Levubu CBD WS	141	156	173	189	206	224	242
Valdezia RWS	2 520	2 651	2 784	2 916	3 044	3 172	3 297
Masisi RWS	2 845	2 984	3 125	3 259	3 390	3 526	3 652
Mutale Main RWS	13 614	14 280	14 929	15 567	16 188	16 807	17 422
Luphephe / Nwanedzi Main RWS	4 402	4 624	4 845	5 063	5 271	5 486	5 696
Mutale Mukuya RWS	1 962	2 054	2 148	2 235	2 322	2 410	2 497
South Malamulele East RWS	23 210	24 292	25 356	26 404	27 427	28 444	29 448
Tshifudi RWS	6 937	7 294	7 643	7 995	8 334	8 676	9 008
Damani RWS	15 345	16 052	16 753	17 438	18 115	18 781	19 436
North Malamulele East RWS	16 357	17 055	17 737	18 403	19 058	19 701	20 334
Malamulele West RWS	11 827	12 360	12 889	13 404	13 907	14 405	14 894
Eiland Supply	30	32	33	35	36	38	39
Siluwane - Nondweni Extended RWS	4 351	4 577	4 802	5 022	5 237	5 449	5 656
Prieska Supply	287	299	312	323	335	346	357
Ritavi / Letaba RWS	22 670	23 735	24 775	25 796	26 798	27 783	28 751
Thapane RWS	13 069	13 761	14 442	15 112	15 770	16 420	17 059
Greater Tzaneen LM Farms Supply	7 606	7 962	8 313	8 656	8 992	9 323	9 649

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Tours RWS	3 252	3 362	3 468	3 571	3 672	3 772	3 871
Worcester / Mothobeki RWS	5 947	6 176	6 403	6 621	6 838	7 049	7 255
Nthabiseng GWS	1 495	1 555	1 616	1 675	1 734	1 793	1 850
Ramakgopa GWS	6 163	6 409	6 649	6 883	7 109	7 332	7 550
Botlokwa GWS	10 597	11 225	11 847	12 463	13 070	13 673	14 270
Lower Molototsi RWS	4 125	4 310	4 495	4 674	4 846	5 018	5 185
Greater Letaba LM Farms Supply	2 774	2 897	3 018	3 135	3 251	3 364	3 476
Middle Letaba RWS : Babangu	12 437	13 034	13 621	14 199	14 763	15 319	15 864
Sekgopo Local GWS	6 079	6 346	6 608	6 863	7 113	7 358	7 598
Greater Giyani LM Farms Supply	702	723	744	764	783	802	822
Mapuve / System N RWS	3 670	3 830	3 984	4 134	4 282	4 427	4 570
Tshitale RWS	6 811	7 132	7 446	7 752	8 054	8 351	8 639
Middle Letaba RWS : Malamulele West	3 367	3 515	3 658	3 798	3 934	4 069	4 200
Thulamela LM Farms Supply	523	535	547	559	569	581	591
Vondo East RWS	4 123	4 399	4 674	4 940	5 199	5 456	5 707
Lambani RWS	1 836	2 014	2 187	2 363	2 533	2 701	2 868
Vondo North Rural RWS	1 011	1 084	1 158	1 228	1 298	1 362	1 428
Mutale LM Farms Supply	84	88	91	95	98	102	105
Tshikondeni Mine Supply	176	176	176	176	176	176	176
Letaba Individual Supply	24	25	27	28	29	30	32
TOTAL	**493 981**	**519 397**	**544 525**	**569 271**	**593 585**	**617 713**	**641 543**

Source: Kayamandi Development Services, 2012

Table 3.9 below provides a summary of household growth per water scheme for the high growth scenario.

Table 3.9: Summary of projected high household growth per water scheme (2010-2040)

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Giyani System C/D WS	18 146	19 378	20 573	21 768	22 958	24 137	25374
Giyani System D : South West WS	6 483	6 840	7 183	7 518	7 850	8 175	8515
Giyani System A/B WS	11 659	12 341	12 998	13 645	14 282	14 908	15560
Giyani System F1 WS	5 589	5 898	6 196	6 489	6 777	7 060	7357
Giyani System F2 WS	2 877	3 027	3 172	3 314	3 453	3 590	3733
Tzaneen / Modjadjiskloof WS	4 006	4 214	4 411	4 610	4 805	4 997	5199
Modjadji RWS	19 478	20 617	21 712	22 795	23 858	24 911	26011
Sekgosese Individual Groundwater Scheme	4 792	5 072	5 343	5 611	5 875	6 137	6412
Middle Letaba RWS : Bolobedu NW	9 190	9 766	10 323	10 874	11 419	11 953	12513
Middle Letaba RWS : Magoro	16 116	17 054	17 956	18 844	19 722	20 584	21495
Thabina RWS	14 041	14 930	15 779	16 622	17 450	18 264	19114
Ritavi II RWS	25 510	27 352	29 144	30 941	32 726	34 510	36387
Haenertsburg Individual Supply	558	579	599	617	635	653	671
Makhado RWS	4 060	4 201	4 333	4 462	4 587	4 708	4830
Elim / Vleifontein RWS WS	11 901	12 693	13 459	14 218	14 969	15 710	16488
Middle Letaba RWS : Majosi	19 611	20 794	21 934	23 072	24 202	25 310	26480
Vondo Central RWS	58 259	62 358	66 349	70 331	74 299	78 229	82376
Middle Letaba RWS : Vyeboom Masia	6 426	6 902	7 360	7 816	8 268	8 715	9182

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Sinthumule / Kutama RWS	17 667	18 627	19 542	20 450	21 343	22 215	23121
Vondo South RWS	6 893	7 289	7 672	8 053	8 428	8 797	9184
Tshakhuma RWS	8 350	8 830	9 288	9 738	10 180	10 613	11060
Levubu CBD WS	141	160	181	201	223	244	268
Valdezia RWS	2 520	2 670	2 810	2 954	3 094	3 233	3378
Masisi RWS	2 845	3 000	3 148	3 295	3 437	3 577	3724
Mutale Main RWS	13 614	14 344	15 049	15 734	16 409	17 078	17771
Luphephe / Nwanedzi Main RWS	4 402	4 647	4 882	5 115	5 345	5 571	5809
Mutale Mukuya RWS	1 962	2 068	2 164	2 267	2 359	2 453	2551
South Malamulele East RWS	23 210	24 478	25 696	26 895	28 075	29 237	30448
Tshifudi RWS	6 937	7 347	7 738	8 130	8 520	8 897	9295
Damani RWS	15 345	16 164	16 944	17 717	18 478	19 226	20010
North Malamulele East RWS	16 357	17 156	17 919	18 667	19 403	20 122	20869
Malamulele West RWS	11 827	12 439	13 029	13 610	14 180	14 734	15315
Eiland Supply	30	32	34	35	37	39	41
Siluwane - Nondweni Extended RWS	4 351	4 622	4 885	5 144	5 398	5 646	5907
Prieska Supply	287	303	317	332	346	360	375
Ritavi / Letaba RWS	22 670	23 911	25 103	26 269	27 416	28 544	29715
Thapane RWS	13 069	13 878	14 648	15 416	16 169	16 910	17683
Greater Tzaneen LM Farms Supply	7 606	8 022	8 421	8 814	9 199	9 578	9971
Tours RWS	3 252	3 379	3 501	3 620	3 738	3 854	3972
Worcester / Mothobeki RWS	5 947	6 216	6 468	6 717	6 962	7 202	7449

Water Scheme	2010	2015	2020	2025	2030	2035	2040
Nthabiseng GWS	1 495	1 564	1 631	1 700	1 768	1 833	1902
Ramakgopa GWS	6 163	6 452	6 726	6 994	7 255	7 510	7773
Botlokwa GWS	10 597	11 314	12 006	12 695	13 377	14 049	14755
Lower Molototsi RWS	4 125	4 343	4 551	4 758	4 960	5 154	5358
Greater Letaba LM Farms Supply	2 774	2 918	3 056	3 191	3 324	3 454	3589
Middle Letaba RWS : Babangu	12 437	13 137	13 809	14 472	15 121	15 756	16421
Sekgopo Local GWS	6 079	6 392	6 690	6 983	7 270	7 551	7842
Greater Giyani LM Farms Supply	702	728	751	775	798	821	845
Mapuve / System N RWS	3 670	3 855	4 034	4 205	4 374	4 543	4714
Tshitale RWS	6 811	7 185	7 540	7 896	8 240	8 584	8933
Middle Letaba RWS : Malamulele West	3 367	3 540	3 706	3 868	4 026	4 178	4339
Thulamela LM Farms Supply	523	537	550	563	576	588	600
Vondo East RWS	4 123	4 455	4 773	5 083	5 388	5 687	5998
Lambani RWS	1 836	2 046	2 246	2 446	2 646	2 842	3047
Vondo North Rural RWS	1 011	1 102	1 185	1 270	1 353	1 432	1515
Mutale LM Farms Supply	84	88	92	96	99	103	107
Tshikondeni Mine Supply	176	176	176	176	176	176	176
Letaba Individual Supply	24	25	27	28	29	30	32
TOTAL	**493 981**	**523 455**	**551 812**	**579 919**	**607 654**	**634 972**	**663 559**

Source: Kayamandi Development Services, 2012

4 ECONOMIC BASE DATA AND GROWTH SCENARIOS

This section deals with the economic components of the Luvuvhu and Letaba WSS, and provides a overview of the Gross Geographic Product (GGP) growth as well as the growth and distribution of the sectoral share of economic functions. Together with the demographic overview of the municipal area as discussed in Section 3, this section provides a holistic picture of the composition, strengths and future possibilities within the Luvuvhu and Letaba WSS.

This section also provides an overview of economic growth scenarios specifically designed for the study area. These growth scenarios have been taken forward and an economic growth forecast has been done whereby take-up of the commercial and industrial developments proposed is modelled to show growth in the local economy.

4.1 HISTORICAL PERSPECTIVE

In order to understand the Luvuvhu and Letaba WSS and all its components, reference must be made to GGP figures, and sectoral GGP growth. This information provides a depiction of economic trends and impacts which could inform future growth and development in the area.

For the purposes of this discussion, standardised industry data from 2001 onwards per year has been reviewed. The annual data was categorised and analysed into two 5-year intervals, 2001-2005 and 2006-2010.

4.1.1 Total GGP and GGP growth

The total GGP per local municipality was extracted to indicate the contribution by each municipality to the national economy.

Table 4.1 below indicates the GGP contribution (in R million) per local municipality from 2001 to 2010 and Table 4.2 provides the GGP growth per annum.

For analysis purposes, only municipalities with 30% or more of the total municipal area inside the study area have been included.

Table 4.1: Total GGP per local municipality (R millions at constant 2005 prices)

Local Municipality	GGP (in R million) at constant 2005 prices									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Greater Giyani	2 365	2 498	2 618	2 782	3 019	3 313	3 584	3 832	3 911	4 024
Greater Letaba	1 835	1 918	1 952	2 022	2 187	2 301	2 420	2 558	2 573	2 638
Greater Tzaneen	5 165	5 219	5 187	5 218	5 402	5 572	5 702	5 784	5 575	5 710
Ba-Phalaborwa	6 812	7 079	7 007	6 848	6 698	6 605	6 499	6 218	5 643	5 906

Local Municipality	GGP (in R million) at constant 2005 prices									
	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
Mutale	991	1 077	1 175	1 231	1 263	1 348	1 503	1 627	1 941	2 140
Thulamela	6 307	6 585	6 793	7 071	7 518	8 083	8 593	9 023	9 138	9 424
Makhado	5 847	6 050	6 179	6 383	6 772	7 182	7 547	7 869	7 816	8 032

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

Table 4.2: GGP growth per local municipality (2001-2010)

Local Municipality	GGP Growth (constant 2005 prices)									
	01-02	02-03	03-04	04-05	05-06	06-07	07-08	08-09	09-10	01-10
Greater Giyani	5.6%	4.8%	6.3%	8.5%	9.7%	8.2%	6.9%	2.1%	2.9%	6.1%
Greater Letaba	4.5%	1.8%	3.6%	8.2%	5.2%	5.2%	5.7%	0.6%	2.5%	4.1%
Greater Tzaneen	1.0%	-0.6%	0.6%	3.5%	3.1%	2.3%	1.4%	-3.6%	2.4%	1.1%
Ba-Phalaborwa	3.9%	-1.0%	-2.3%	-2.2%	-1.4%	-1.6%	-4.3%	-9.2%	4.7%	-1.6%
Mutale	8.7%	9.1%	4.8%	2.6%	6.7%	11.5%	8.3%	19.3%	10.3%	8.9%
Thulamela	4.4%	3.2%	4.1%	6.3%	7.5%	6.3%	5.0%	1.3%	3.1%	4.6%
Makhado	3.5%	2.1%	3.3%	6.1%	6.1%	5.1%	4.3%	-0.7%	2.8%	3.6%

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

As is evident from the above tables, the Mutale Local Municipality experienced mixed growth spurts over the time period, with an average annual growth over the time period of 8.9% per year, which is the highest growth rate of all the local municipalities analysed. Greater Giyani Local Municipality experienced the second highest growth rate over the time period, with an annual growth rate of 6.1%. The other local municipalities all experienced positive economic growth between 2001 and 2010, except for Ba-Phalaborwa Local Municipality, which had a growth rate of -1.6% per annum over the time period.

The following information per local municipality is contained within the next sub-sections:

- Sectoral GGP
- GGP growth, and
- Contribution per sector to GGP.

4.1.2 Sectoral GGP and GGP growth

Table 4.3 indicates the GGP figures and the growth in GGP per sector in the Greater Giyani Local Municipality.

Table 4.3: Greater Giyani Local Municipality GGP and GGP growth per sector (R millions at constant 2005 prices)

Greater Giyani Local Municipality	GGP per sector			Growth per sector	
	2000	2005	2010	2000-2005	2005-2010
Agriculture, forestry and fishing	28	50	75	12.3%	8.4%
Mining and quarrying	87	135	142	9.2%	0.9%
Manufacturing	36	67	121	12.9%	12.8%
Electricity, gas and water	84	124	145	8.1%	3.1%
Construction	57	54	66	-0.8%	3.9%
Wholesale and retail trade, catering and accommodation	324	464	643	7.4%	6.8%
Transport, storage and communication	137	230	286	10.9%	4.4%
Finance, insurance, real estate and business services	413	666	1 021	10.0%	8.9%
Community, social and personal services	193	235	290	3.9%	4.3%
General government	901	994	1 235	2.0%	4.4%
TOTAL	**2 261**	**3 019**	**4 024**	**6.0%**	**5.9%**

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

As highlighted in the preceding section, Greater Giyani Local Municipality experienced the second highest growth rate out of all the local municipalities included in the economic analysis. Average annual growth for the Greater Giyani Local Municipality during the first growth period (2000-2005) was 6% per annum. The only decline in GGP growth in the first growth period (2000-2005) occurred in the construction sector, where the sector declined by 0.8% per annum. During the same growth period, the manufacturing sector grew by approximately 13% per annum, and the agriculture, forestry and fishing sector had an annual growth of 12%.

Average annual growth for the Greater Giyani Local Municipality during the second growth period (2005-2010) was 5.9% per annum. The decline in the construction sector is turned around in the second growth period (2005-2010), with a growth of 3.9% per annum. Growth in the electricity, water and gas sector and mining and quarrying sector slowed down substantially to 3.1% per annum and 0.9% per annum respectively.

The finance, insurance, real estate and business services sector became increasingly stronger with a contribution of 25% to GGP in 2010 up from 18% in 2000. The highest contributors to GGP in 2010 was wholesale and retail trade, catering and accommodation (16%), finance, insurance, real estate and business services (25%), and general government (31%).

Table 4.4 indicates the GGP figures and the growth in GGP per sector in the Greater Letaba Local Municipality.

Table 4.4: Greater Letaba Local Municipality GGP and GGP growth per sector (R millions at constant 2005 prices)

Greater Letaba Local Municipality	GGP per sector			Growth per sector	
	2000	2005	2010	2000-2005	2005-2010
Agriculture, forestry and fishing	135	252	312	13.4%	4.3%
Mining and quarrying	24	36	43	8.2%	3.7%
Manufacturing	83	115	161	6.8%	7.0%
Electricity, gas and water	68	32	1	-13.9%	-53.5%
Construction	46	44	58	-0.6%	5.6%
Wholesale and retail trade, catering and accommodation	490	483	421	-0.3%	-2.7%
Transport, storage and communication	130	194	226	8.2%	3.2%
Finance, insurance, real estate and business services	233	381	563	10.3%	8.1%

Greater Letaba Local Municipality	GGP per sector			Growth per sector	
	2000	2005	2010	2000-2005	2005-2010
Community, social and personal services	137	172	225	4.7%	5.5%
General government	418	477	628	2.7%	5.6%
TOTAL	**1 763**	**2 187**	**2 638**	**4.4%**	**3.8%**

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

Greater Letaba Local Municipality experienced economic growth of 4.4% per annum from 2000 to 2005 with a slight decline in growth between 2005 and 2010 at 3.8% per annum.

A slight decline in annual GGP growth in the first growth period (2000-2005) is evident in the construction sector (-0.6%) and the wholesale and retail trade, catering and accommodation sector (-0.3%). A larger decline is however evident in the electricity, gas and water sector, which declined by 13.9% per annum. During the same growth period, the agriculture, forestry and fishing sector grew substantially by 13.4% annually, and the finance, insurance, real estate and business services sector grew by 10.3% per year.

In the second growth period (2005-2010), a significant decline is evident in the electricity, gas and water sector (-53.5%), and a smaller decline is evident in the wholesale and retail trade, catering and accommodation sector (-2.7%). The finance, insurance, real estate and business services sector continued to grow in the second growth period by approximately 8% per annum, but growth in the agriculture, forestry and fishing sector slowed down to approximately 4% per annum.

The finance, insurance, real estate and business services sector became stronger with the contribution of 13% to GGP in 2000 rising to 21% in 2010. The highest contributors to GGP in 2010 was the government sector (24%), finance, insurance, real estate and business services sector (21%) and the wholesale and retail trade, catering and accommodation sector (16%). A decline in the contribution made to GGP from 2000 to 2010 is evident in the electricity, gas and water sector, the construction sector and the wholesale and retail trade, catering and accommodation sector.

Table 4.5 indicates the GGP figures and the growth in GGP per sector in the Greater Tzaneen local municipality.

Greater Tzaneen Local Municipality experienced economic growth of 1.7% per annum from 2000 to 2005 with a slight decline in growth between 2005 and 2010 at 1.1% per annum.

Table 4.5: Greater Tzaneen Local Municipality GGP and GGP growth per sector (R millions at constant 2005 prices)

Greater Tzaneen Local Municipality	GGP per sector			Growth per sector	
	2000	2005	2010	2000-2005	2005-2010
Agriculture, forestry and fishing	291	360	301	4.3%	-3.5%
Mining and quarrying	358	210	88	-10.1%	-16.0%
Manufacturing	422	415	340	-0.3%	-3.9%
Electricity, gas and water	165	224	265	6.4%	3.4%
Construction	103	119	185	2.9%	9.2%
Wholesale and retail trade, catering and accommodation	903	906	835	0.1%	-1.6%
Transport, storage and communication	386	568	689	8.0%	4.0%
Finance, insurance, real estate and business services	1 065	1 286	1 550	3.8%	3.8%
Community, social and personal services	312	345	379	2.0%	1.9%
General government	971	970	1078	0.0%	2.1%
TOTAL	**4 976**	**5 402**	**5 710**	**1.7%**	**1.1%**

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

The only decline in GGP growth in the first growth period (2000-2005) occurred in the mining and quarrying sector (-10.1%) and the manufacturing sector (-0.3%). During the same growth period, the electricity, gas and water sector grew by 6.4% per annum, while the transport, storage and communication sector grew by 8% annually. The general government sector and wholesale and retail trade, catering and accommodation stayed stagnant.

In the second growth period (2005-2010), a further decline is evident in the mining and quarrying sector (-16%) and the manufacturing sector (-3.9%). In addition to this, the wholesale and retail trade, catering and accommodation sector started to decline by 1.6% per annum and an annual decline of 3.5% is evident in the agriculture, forestry and fishing sector. Growth in the construction sector however picked up, and an annual growth rate of 9.2% is evident in the second time period.

The finance, insurance, real estate and business services sector became a stronger contributor to the economy with its 21% contribution to GGP in 2000 increasing to 27% in 2010. The highest contributors to GGP in 2010 was the finance, insurance, real estate and business services sector

(27%), the general government (19%) and the wholesale and retail trade, catering and accommodation sector (15%). A decline in the contribution made to GGP from 2000 to 2010 is evident in the agriculture, forestry and fishing sector, mining and quarrying sector, manufacturing sector, trade sector and the general government sector.

Table 4.6 indicates GGP and the growth thereof per sector in Ba-Phalaborwa Local Municipality.

Table 4.6: Ba-Phalaborwa Local Municipality GGP and GGP growth per sector (Rand millions at constant 2005 prices)

Ba-Phalaborwa Local Municipality	GGP per sector			Growth per sector	
	2000	2005	2010	2000-2005	2005-2010
Agriculture, forestry and fishing	50	47	29	-0.9%	-9.6%
Mining and quarrying	3 791	3 880	2 660	0.5%	-7.3%
Manufacturing	284	293	245	0.6%	-3.5%
Electricity, gas and water	88	149	227	11.0%	8.8%
Construction	67	67	90	0.1%	6.1%
Wholesale and retail trade, catering and accommodation	343	404	413	3.3%	0.5%
Transport, storage and communication	212	428	705	15.1%	10.5%
Finance, insurance, real estate and business services	529	569	601	1.4%	1.1%
Community, social and personal services	122	138	148	2.4%	1.5%
General government	700	723	789	0.6%	1.8%
TOTAL	**6 186**	**6 698**	**5 906**	**1.6%**	**-2.5%**

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

Ba-Phalaborwa Local Municipality experienced economic growth of 1.6% per annum from 2000 to 2005 with negative growth between 2005 and 2010 at -2.5% per annum. As highlighted in section 4.1.1, Ba-Phalaborwa Local Municipality was the only local municipality of the 7 municipalities analysed that experienced a decline in economic growth.

The only decline in GGP growth in the first growth period (2000-2005) occurred in the agriculture, forestry and fishing sector, which declined by approximately 1% annually. The only sectors that grew at a rate worth taking note of is the electricity, gas and water sector and the transport storage

and communication sector, which grew annually at 11% and 15% respectively. The other sectors all experienced a positive growth trend, but at an annual rate of between 0.1% and 3.3%.

In the second growth period (2005-2010), a further decline is evident in the agriculture, forestry and fishing sector (-9.6%), as well as in the mining and quarrying sector (-7.3%) and the manufacturing sector (-3.5%). The electricity, gas and water sector and the transport storage and communication sector, continued to grow at an annual rate of 8.8% and 10.5% respectively.

The transport, storage and communication sector became significantly stronger with its contribution of 3% to GGP in 2000 increasing to 12% in 2010. The highest contributors to GGP in 2010 was the mining and quarrying sector (45%), general government sector (13%) and the transport, storage and communication sector (12%). Despite the fact that the mining and quarrying sector is the largest contributor to the GGP of Ba-Phalaborwa Local Municipality, the sector contribution declined significantly from 2000 to 2010. A decline in the contribution made to GGP from 2000 to 2010 is also evident in the agriculture, forestry and fishing sector and the manufacturing sector.

As indicated previously, the Mutale Local Municipality experienced the highest economic growth from 2000 to 2010. Table 4.7 indicates the GGP figures and the growth in GGP per sector in the local municipality.

Table 4.7: Mutale Local Municipality GGP and GGP growth per sector (R millions at constant 2005 prices)

Mutale Local Municipality	GGP per sector			Growth per sector	
	2000	2005	2010	2000-2005	2005-2010
Agriculture, forestry and fishing	8	20	40	20.2%	15.2%
Mining and quarrying	296	338	741	2.7%	17.0%
Manufacturing	11	21	41	12.7%	14.7%
Electricity, gas and water	17	22	22	4.8%	0.4%
Construction	25	32	49	4.7%	8.8%
Wholesale and retail trade, catering and accommodation	81	162	278	14.8%	11.4%
Transport, storage and communication	41	85	128	15.7%	8.6%
Finance, insurance, real estate and business services	96	181	285	13.4%	9.5%

Mutale Local Municipality	GGP per sector			Growth per sector	
	2000	2005	2010	2000-2005	2005-2010
Community, social and personal services	50	67	92	6.2%	6.5%
General government	271	335	464	4.3%	6.7%
TOTAL	**898**	**1 263**	**2 140**	**7.1%**	**11.1%**

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

Mutale Local Municipality experienced economic growth of 7.1% per annum from 2000 to 2005 with a continued rise in growth between 2005 and 2010 at 11.1% per annum.

The Mutale Local Municipality, together with the Makhado Local Municipality are the only local municipalities which did not experience decline in GGP in any of its economic sectors. Sectoral growth in the first growth period is generally quite high, with the sectors experiencing the highest annual growth being the agriculture, forestry and fishing sector (20%), the transport, storage and communication sector (16%) and the wholesale and retail trade, catering and accommodation sector (15%).

In the second growth period (2005-2010), a significant growth spurt is evident in the mining and quarrying sector (17%). Growth generally slowed down in most of the economic sectors, except for the manufacturing sector, the construction sector, the community, social and personal services sector and the general government sector.

The mining and quarrying sector and the wholesale and retail trade, catering and accommodation sector became stronger contributors to Mutale Local Municipality's GGP from 2000 to 2010. The highest contributors to GGP in 2010 were mining and quarrying (35%), general government (22%), and both wholesale and retail trade and finance and business services (both at 13%). A decline in the contribution made to GGP from 2000 to 2010 is only evident in the electricity, gas and water sector, the construction sector, the community, social and personal services sector and the general government sector.

Table 4.8 indicates the GGP figures and the growth in GGP per sector in the Thulamela local municipality.

Table 4.8: Thulamela Local Municipality GGP and GGP growth per sector (R millions at constant 2005 prices)

Thulamela Local Municipality	GGP per sector			Growth per sector	
	2000	2005	2010	2000-2005	2005-2010
Agriculture, forestry and fishing	43	84	142	14.6%	10.9%
Mining and quarrying	68	125	297	13.0%	19.0%
Manufacturing	221	305	409	6.6%	6.1%
Electricity, gas and water	283	313	223	2.0%	-6.6%
Construction	162	153	179	-1.0%	3.2%
Wholesale and retail trade, catering and accommodation	861	1 261	1 703	7.9%	6.2%
Transport, storage and communication	467	704	812	8.5%	2.9%
Finance, insurance, real estate and business services	1 184	1 478	1 875	4.5%	4.9%
Community, social and personal services	510	600	731	3.3%	4.0%
General government	2 317	2 495	3 054	1.5%	4.1%
TOTAL	**6 115**	**7 518**	**9 424**	**4.2%**	**4.6%**

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

Thulamela Local Municipality experienced economic growth of 4.1% per annum from 2000 to 2005 with a continued rise in growth between 2005 and 2010 at 4.6% per annum.

The only decline in annual GGP growth in the first growth period (2000-2005) occurred in the construction sector (-1%). During the same growth period, the agriculture, forestry and fishing sector and the mining and quarrying sector each grew annually by 14.6% and 13% respectively.

In the second growth period (2005-2010), only the electricity, gas and water sector declined (-6.6%). The mining and quarrying sector grew substantially at a rate of 19% per annum in the second growth period, and the agriculture, forestry and fishing sector grew by approximately 11% annually.

The sectoral contribution stayed fairly constant between 2000 and 2010. The contribution by the general government sector however decreased from 38% in 2000 to 32% in 2010, and the contribution by the wholesale and retail trade, catering and accommodation sector increased from

14% in 2000 to 18% in 2010. The highest contributors to GGP in 2010 was general government (32%), finance, insurance, real estate and business services (20%), and wholesale and retail trade, catering and accommodation (18%).

Table 4.9 indicates the GGP figures and the growth in GGP per sector in the Makhado local municipality.

Table 4.9: Makhado Local Municipality GGP and GGP growth per sector (R millions at constant 2005 prices)

Makhado Local Municipality	GGP per sector			Growth per sector	
	2000	2005	2010	2000-2005	2005-2010
Agriculture, forestry and fishing	160	242	303	8.7%	4.6%
Mining and quarrying	36	86	148	18.9%	11.3%
Manufacturing	220	274	357	4.4%	5.4%
Electricity, gas and water	143	186	190	5.3%	0.5%
Construction	158	186	285	3.2%	8.9%
Wholesale and retail trade, catering and accommodation	950	1 175	1 399	4.3%	3.5%
Transport, storage and communication	480	807	1 064	10.9%	5.7%
Finance, insurance, real estate and business services	1 157	1 449	1 769	4.6%	4.1%
Community, social and personal services	395	431	453	1.8%	1.0%
General government	1 917	1 936	2 065	0.2%	1.3%
TOTAL	**5 617**	**6 772**	**8 032**	**3.8%**	**3.5%**

Source: Quantec standardised regional indicators, 2012 and Kayamandi calculations, 2012

Makhado Local Municipality experienced economic growth of 3.8% per annum from 2000 to 2005 with a slight decline in positive growth between 2005 and 2010 at 3.5% per annum.

None of the economic sectors in the Makhado Local Municipality showed a decline in GGP growth in the first growth period (2001-2005). The sectors that show the highest annual growth rate is the mining and quarrying sector (18.9%) and the transport, storage and communication sector (10.9%). The general government sector grew the least at 0.2% in the first growth period.

In the second growth period (2005-2010), continued growth is evident in the mining and

manufacturing sector (11.3%). The second highest annual growth occurred in the construction sector, which grew by approximately 9%. The remaining sectors grew by between 1% and 6% per annum.

The contribution by the general government sector declined from 34% in 2000 to 26% in 2010. The remaining sector contributions stayed fairly constant. The highest contributors to GGP in 2010 was general government (26%), finance, insurance, real estate and business services (22%) and wholesale and retail trade, catering and accommodation (17%). A slight decline in the contribution made to GGP from 2001 to 2010 is evident in the electricity, gas and water sector, the community, social and personal services sector and the general government sector.

4.1.3 Historic growth

Before the growth scenarios and estimated future commercial and industrial development can be discussed, it is necessary to provide a snapshot of historical economic growth in the study area. As is evident from the above discussions on sectoral GGP growth, and sectoral contribution to GGP, the agriculture sector plays a less significant role in the majority of the economies of local municipalities included in the study area, and has in fact been declining in the past years. The dominant economic sectors in the majority of local municipalities are trade, business services, and government sectors. The larger economic nodes in the study area serve the surrounding rural areas, which are often poorly serviced. As these rural areas expand, more services have been required, which has necessitated development, especially retail development, in the larger nodes.

The mining sector on the other hand plays a very significant role in the Ba-Phalaborwa Local Municipality and the Mutale Local Municipality. In 2010, the sector contributed 45% and 35% of the total GGP in each of the local municipalities respectively. Despite the fact that this is a large contribution in both cases, the sectoral contribution declined by 16% from 61% in 2000 to 45% in 2010 in the Ba-Phalaborwa Local Municipality, and declined by 6% from 33% to 27% from 2000 to 2005, after which the sectoral contribution increased by 8% to 35%. Mining, especially coal (Mutale Local Municipality) and copper (Ba-Phalaborwa Local Municipality) mining has made a significant contribution to the growth of these two municipalities. Despite this, a number of diamond and coal mines have closed down in Mutale Local Municipality.

Table 4.10 below provides a snapshot of existing land use (commercial and industrial) in the major economic centres in the study area.

Table 4.10: Economic land use per town in the Luvuvhu and Letaba WSS, 2010

Town	Economic land use (ha)	
	Commercial	Industrial
Giyani	160.19	45.95
Haenertsburg	4.2	4.9
Makhado	111.12	211
Modjadjiskloof	26.7	14.6
Thohoyandou	227.28	61.16
Tzaneen	98.97	234.25

Source: Satellite imagery, 2010 and Kayamandi calculations, 2012

4.2 GROWTH SCENARIOS

A growth scenario for economic development has been developed, as it is impossible for all the smaller settlements and service areas in the study area to grow at the same rate as larger economic nodes such as Tzaneen, Thohoyandou, Giyani and Makhado, as various factors affect each area according to their individual characteristics. The following economic development determinants have been identified as likely factors to cause different water resource responses:

- Gross Domestic Growth (GDP) growth;
- Employment per sector;
- Growth relative to other areas.

In addition to the above, strategic processes and forces such as political, administrative and spatial manifestations, anchor projects, etc. can influence water demand, and need to be taken into account.

The economy could grow faster in line with government policies, economic interventions and major projects, or it could show slower growth rates if policy directives and major interventions are not put into action.

It is thus important to have a perspective on relevant factors that presently have an impact and those that may have an impact on the economic activities practised. This perspective is important for the purpose of this study as these economic activities together with their scale and the level of intensity determine the direction and the monetary value of the economy of areas. Economic factors determine (or influence) the economy in terms of its sectoral structure, monetary value and spatial locations.

South Africa is faced with the consequences of a ‘living’ case in point where policy factors such as

the former government policy of segregated development have given form and structure to the current spatial development pattern. Therefore, it is clear that political and economic forces and processes, as in the past, could largely determine future settlement patterns. Decisions manifest in policies and implementation thereof enforced by means of legislation promulgated by national government. These development determinants could assist in identifying higher growth areas (with a resultant lower growth in other areas) than would have occurred naturally due to economic interventions in the form of growth points, nodes, corridors, etc.

The stimulation of fewer but larger growth points, nodes, corridors and population concentrations (in line with policy directives) would inevitably result in the concentration of consumer spending power, which could in turn stimulate economic development in these priority development nodes, corridor routes, strategic development areas and flagship projects with regards to tourism, mining, agriculture, industry, etc. In other words the premise of this determinant is that economic policy and interventions (at national, provincial, and local levels) could alter the flow of people.

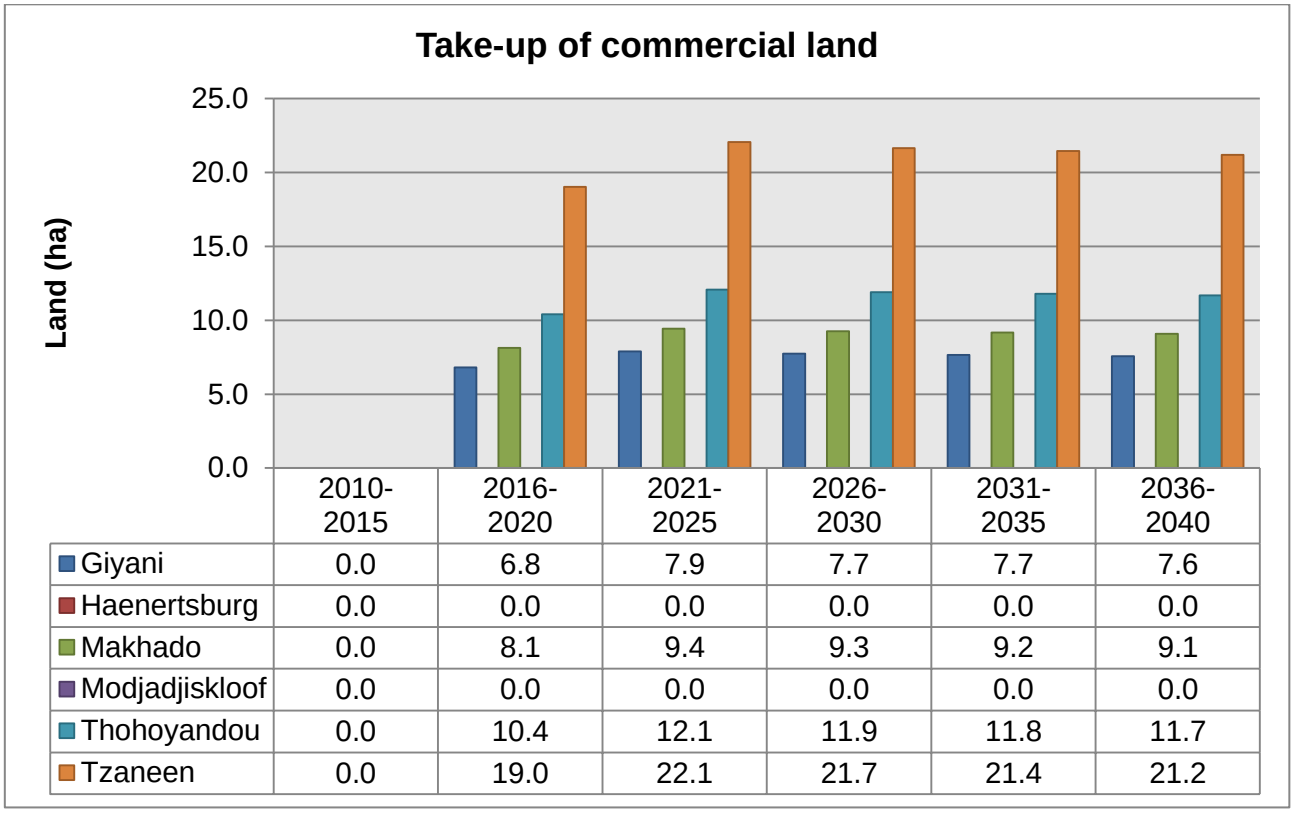
4.3 ECONOMIC GROWTH FORECASTS

This section provides information concerning the economic growth within the Luvuvhu and Letaba WSS based on results obtained from the modelling process. The economic growth results are focussed on providing information and an overview of the proposed commercial and industrial land in the study area, as well as the determined take-up and utilisation of this land. This growth forecast provides an indication of the required future land for economic growth and the expected take-up rate and location of developments.

4.3.1 Take-up of commercial land

Graph 4.1 below provides an indication of the expected take-up of commercial land in the major economic centres in the study area up to 2040.

Modelling results indicate that no commercial land will be developed up to 2015 in any of the major economic centres in the study area. Between 2016 and 2020, approximately 44 ha of commercial land will be developed in the major economic centres in the study area. Between 2021 and 2025, approximately 51.5 ha of commercial land will be developed, while approximately 50 ha of commercial land will be developed in the period 2026-2030. Approximately 50 ha of commercial land will be developed during 2031-2035, while approximately 49.5 ha of commercial land will be developed in the time period between 2036 and 2040. In all cases, the majority of commercial land developed per 5-year interval is located in the town of Tzaneen, followed by Thohoyandou, Makhado, and Giyani.



	2010-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
Giyani	0.0	6.8	7.9	7.7	7.7	7.6
Haenertsburg	0.0	0.0	0.0	0.0	0.0	0.0
Makhado	0.0	8.1	9.4	9.3	9.2	9.1
Modjadjiskloof	0.0	0.0	0.0	0.0	0.0	0.0
Thohoyandou	0.0	10.4	12.1	11.9	11.8	11.7
Tzaneen	0.0	19.0	22.1	21.7	21.4	21.2

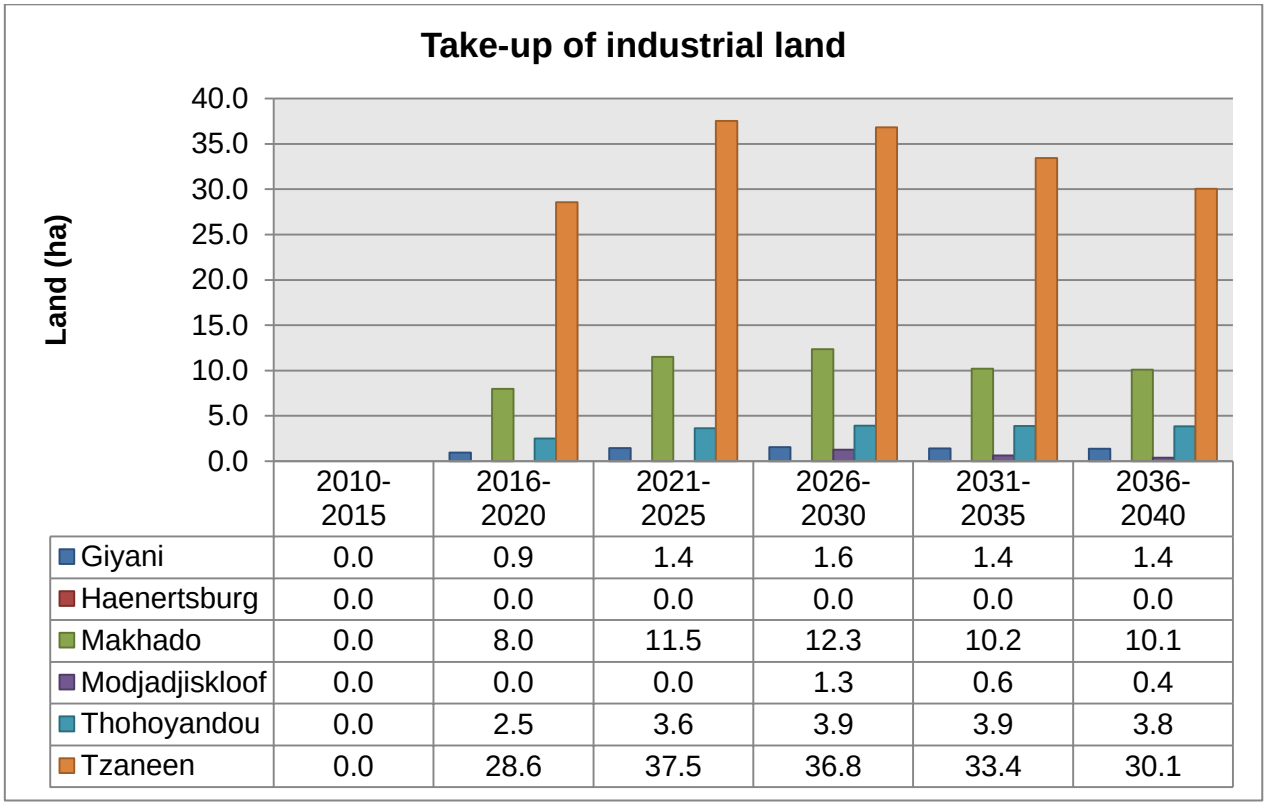
Source: Kayamandi Development Services, 2012

Graph 4.1: Take-up of commercial land in the Luvuvhu and Letaba WSS

Economic modelling has been done in the towns of Haenertsburg and Modjadjiskloof, but no commercial growth is foreseen in these areas during 2010 and 2040. Approximately 37.6 ha of commercial land is foreseen to be developed in Giyani up to 2040, while 45.1 ha of commercial land is expected to be developed in Makhado up to 2040. In Thohoyandou, 57.9 ha of commercial land is expected to develop up to 2040, while 105.4 ha of commercial land is foreseen to develop in Tzaneen up to 2040.

4.3.2 Take-up of industrial land

Graph 4.2 below provides an indication of the expected take-up of industrial land in the major economic centres in the study area up to 2040.



	2010-2015	2016-2020	2021-2025	2026-2030	2031-2035	2036-2040
Giyani	0.0	0.9	1.4	1.6	1.4	1.4
Haenertsburg	0.0	0.0	0.0	0.0	0.0	0.0
Makhado	0.0	8.0	11.5	12.3	10.2	10.1
Modjadjiskloof	0.0	0.0	0.0	1.3	0.6	0.4
Thohoyandou	0.0	2.5	3.6	3.9	3.9	3.8
Tzaneen	0.0	28.6	37.5	36.8	33.4	30.1

Source: Kayamandi Development Services, 2012

Graph 4.2: Take-up of industrial land in the Luvuvhu and Letaba WSS

Modelling results indicate that no commercial land will be developed up to 2015 in any of the major economic centres in the study area. Between 2016 and 2020, 40 ha of industrial land will be developed in the major economic centres in the study area. Between 2021 and 2025, approximately 54 ha of industrial land will be developed, while approximately 56 ha of industrial land will be developed in the period 2026-2030. Approximately 49.5 ha of industrial land will be developed in 2031-2035, while approximately 46 ha of commercial land will be developed in the time period between 2036 and 2040. In all cases, the majority of industrial land developed per 5-year interval is located in the town of Tzaneen.

Economic modelling has been done in the town of Haenertsburg, but no industrial growth is expected to take place there. Approximately 6.7 ha of industrial land is foreseen to be developed in Giyani up to 2040, while approximately 52.1 ha of industrial land is expected to be developed in Makhado up to 2040. In Modjadjiskloof, approximately 2.3 ha of industrial land is expected to develop up to 2040, while approximately 17.7 ha of industrial land is foreseen to develop in Thohoyandou up to 2040. In Tzaneen, approximately 166.4 ha of industrial land are expected to be developed up to 2040.

Table 4.11 below provides a summary of the take-up of all proposed commercial and industrial land represented in hectares within the major economic centres in the study area up to 2040.

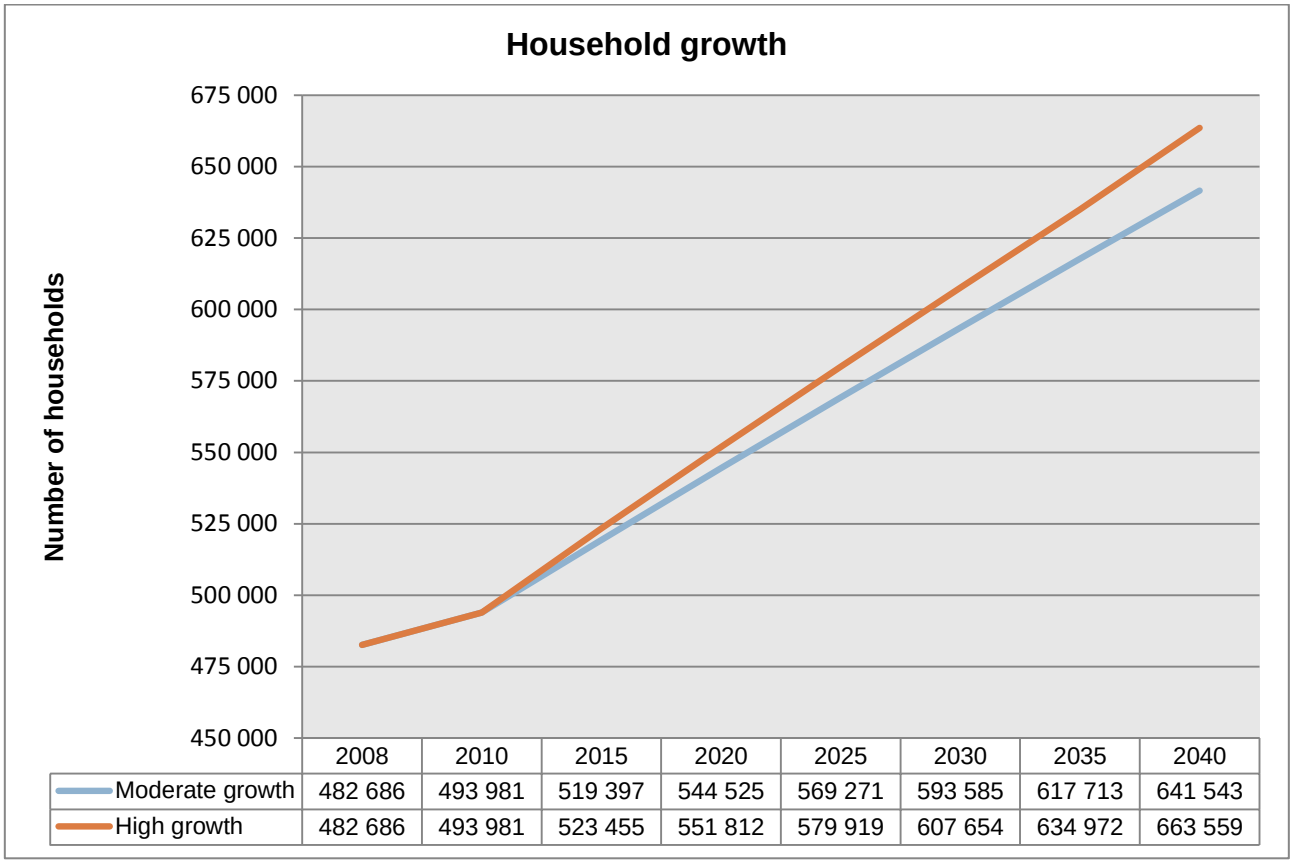
Table 4.11: Summary of the take-up of all proposed commercial and industrial land in the Luvuvhu and Letaba WSS up to 2040

Town	Use zone (ha)		TOTAL (ha)
	Commercial	Industrial	
Giyani	37.6	6.7	**44.4**
Haenertsburg	0	0	**0**
Makhado	45.1	52.1	**97.2**
Modjadjiskloof	0	2.3	**2.3**
Thohoyandou	57.9	17.7	**75.6**
Tzaneen	105.4	166.4	**271.8**
TOTAL	**246.0**	**245.3**	

Source: Kayamandi Development Services, 2012

5 CONCLUSION

The total number of households in the Luvuvhu and Letaba WSS are anticipated to increase to 641 543 households by 2040 in the moderate growth scenario and 663 559 households by 2040 in the high growth scenario. See below graph.



	2008	2010	2015	2020	2025	2030	2035	2040
Moderate growth	482 686	493 981	519 397	544 525	569 271	593 585	617 713	641 543
High growth	482 686	493 981	523 455	551 812	579 919	607 654	634 972	663 559

Source: Kayamandi Development Services, 2012

Graph 5.1: Household growth in the Luvuvhu and Letaba WSS (2008 to 2040)

Table 5.1 below provides a summary of the take-up of all proposed commercial and industrial land represented in hectares within the major economic centres in the study area up to 2040.

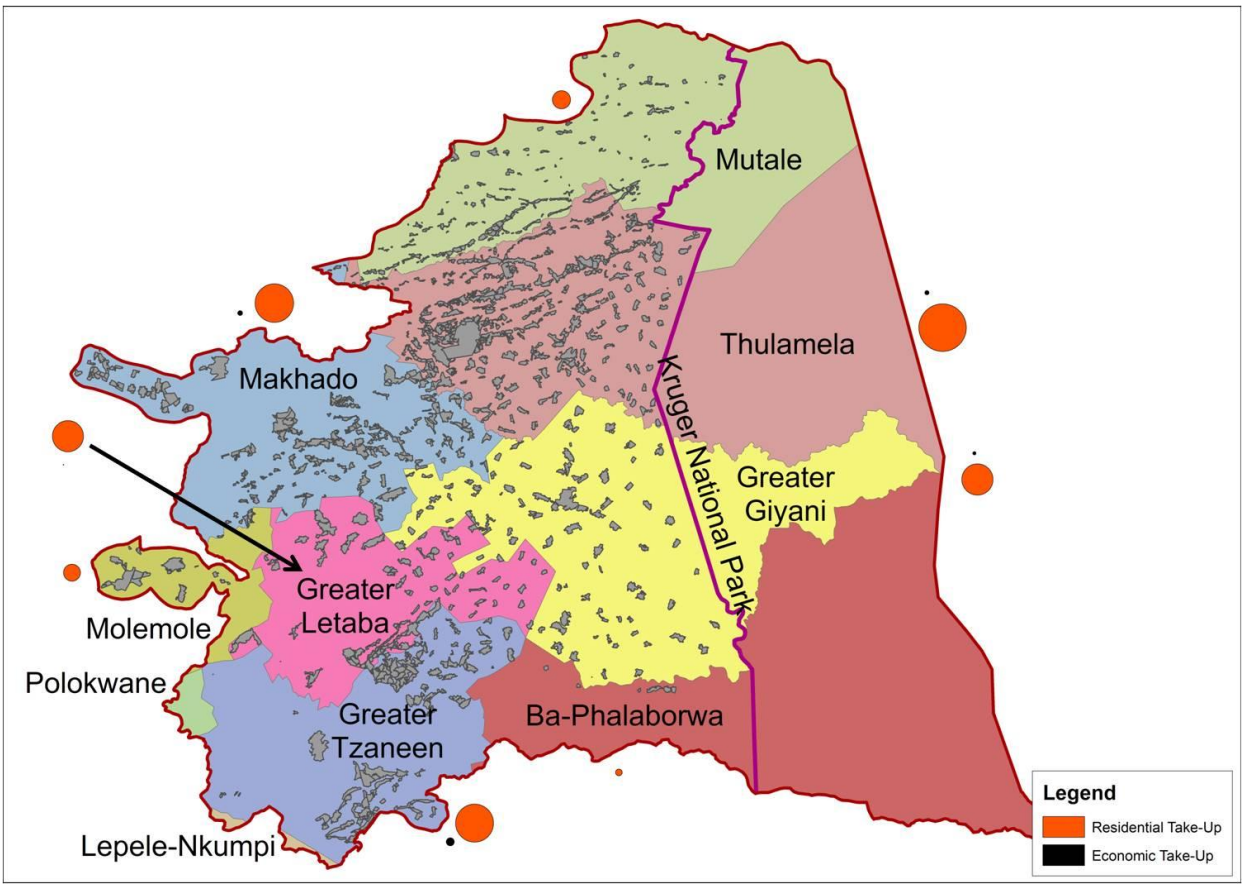
It is evident that approximately 246 hectares of commercial and 245 hectares of industrial land will be taken up by 2040 within the study area, the majority of which will be taken up in Tzaneen. See below Table.

Based on the modelling undertaken and the projected future growth in population (and related residential take-up) as well as projected economic growth and economic take-up (comprised of commercial and industrial), the below spatial representation of anticipated future growth is shown. Evidently, economic and residential growth and development in the Luvuvhu and Letaba WSS is concentrated in the main economic nodes, such as Tzaneen, Thohoyandou, Makhado, Greater Giyani, Greater Letaba, etc.

Table 5.1: Take-up of commercial & industrial land in Luvuvhu & Letaba WSS up to 2040

Town	Use zone (ha)		TOTAL (ha)
	Commercial	Industrial	
Giyani	37.6	6.7	**44.4**
Haenertsburg	0	0	**0**
Makhado	45.1	52.1	**97.2**
Modjadjiskloof	0	2.3	**2.3**
Thohoyandou	57.9	17.7	**75.6**
Tzaneen	105.4	166.4	**271.8**
TOTAL	**246.0**	**245.3**	

Source: Kayamandi Development Services, 2012



Source: Kayamandi Development Services, 2012

Figure 5.1: Spatial indication of future land take-up per use, 2010-2040

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