

2015-2036

MMM – City Wide Integrated Public Transport Plan



VOLUME 2A



INTEGRATED
PUBLIC
TRANSPORT
NETWORK

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ABBREVIATIONS

Abbreviation	Full Description
ACSA	Airports Company South Africa
ADN	Airport Development Node
ADP	Airport Development Plan
AFC	Automated Fare Collection
AFCA	Automated Fare Collection Agent
APTMS	Advanced Public Transport Management System
ATC	Adaptive Traffic Control
BATHA	Botshabelo Amalgamated Taxi Association
BEPP	Built Environment Performance Plan
BOC	Bus Operating Company
BRT	Bus Rapid Transit
CBD	Central Business District
CBO	Community-based Organization
CCC	Centralized Control Centre
CCTV	Closed-circuit Television
CITP	Comprehensive Integrated Transport Plan
CM	Carbon Monoxide
CNG	Compressed Natural Gas
COGTA	Cooperative Governance and Traditional Affairs
CPI	Consumer Price Index
CPTR	Current Public Transport Record
CRM	Customer Relationship Management
DETEA	Department of Environmental Tourism Economic Affairs
ECE	Economic Commission of Europe
EM	Executive Mayor
EMF	Environmental Management Framework
EMV	Euro-Mastercard-VISA
FINMOD	Financial Model
GBTA	Greater Bloemfontein Taxi Association
GIS	Geographic Information System
GPRS	General Packet Radio Service
GPS	Global Positioning System
ha	Hectare
HC	Hydrocarbons
HHS	Household Survey
HOD	Head of Department
HR	Human Resources
ICE	Internal Combustion Engine
IDP	Integrated Development Plan
IEM	Integrated Environmental Management
IMC	Integrated Marketing and Communication
IPTN	Integrated Public Transport Network
IRPTN	Integrated Rapid Public Transport Network
ITP	Integrated Transport Plan
ITS	Intelligent Transport System
IVT	In-Vehicle Time (IVT) (in Minutes)
JOC	Joint Organizing Committee
JSC	Joint Steering Committee
km	Kilometre
LAN	Local Area Network
LED	Light Emitting Diode

ABBREVIATIONS

Abbreviation	Full Description
LIM	Linear Induction Motor
MFMA	Municipal Financial Management Act
MITP	Mangaung Integrated Transport Plans
MMC	Member of Mayoral Committee
MMM	Mangaung Metropolitan Municipality
MOU	Memorandum of Understanding
MRE	Municipal Regulatory Entity
MSA	Municipal Systems Act
NATMAP	National Transport Master Plan
NDOT	National Department of Transport
NDP	National Development Plan
NEMA	National Environmental Management Act
NGO	Non-governmental Organization
NLTA	National Land Transport Act
NLTTA	National Land Transport Transition Act
NMT	Non-Motorised Transport
NOX	Nitrogen Oxide
NT	Number of Transfers (NT)
OCR	Optical Character Recognition
OD	Origin-Destination
OLS	Operating Licenses Strategy
OOP	Office of the Premier
PDM	Patronage Demand Model
PDOT	Provincial Department Of Transport
PDP	Professional Driver Permit
PLTF	Provincial Land Transport Framework
PM	Particulate Matter
PMU	Project Management Unit
POS	Point of Sale
PRASA	Passenger Rail Agency of South Africa
PT	Public Transport
PTIG	Public Transport Infrastructure Grant
PTIS	Public Transport Infrastructure and Systems Grant
PTNOG	Public Transport Network Operational Grant
PTOG	Public Transport Operational Grant
PTZ	Pan-Tilt-Zoom
PvT	Private Transport
RoW	Right of Way
RTPI	Real-time Passenger Information
SABS	South African Bureau of Standards
SAC	Schedule Adherence and Controlling
SANRAL	South African National Road Agency Limited
SANS	South African National Standards
SANTACO	South Africa National Taxi Council
SDA	Service Delivery Agreement
SDF	Spatial Development Framework
SIP	Strategic Integrated Projects
SMME	Small Medium and Micro Enterprise
SP	Stated Preference
SVMS	Strategic Variable Message Signs
SWOT	Strength Weakness Opportunity Threat

ABBREVIATIONS

Abbreviation	Full Description
THALSDDTA	Thaba Nchu Long and Short Distance Taxi Association
TIMS	Traffic Management and Information System
TIS	Traveller Information System
TOM	Ticket Operating Machines
TSP	Traffic Signal Priority
ULSD	Ultra Low Sulphur Diesel
UTC	Urban Traffic Control
VDM	Vehicle Docking Manager
VMS	Variable Message Sign
VOC	Vehicle Operating Company
VOIP	Voice Over Internet Protocol
VTTS	Value of Travel Time Savings (VTTS) (in Rand/hour)
VWTS	Value of Waiting Time Savings (VWTS) (Rand/hour)
WAN	Wide Area Network
WP	Work Package
WT	Waiting Time (WT) (in Minutes)
WULA	Water Use License Application

1 Introduction

Volume 2A and 2B represent the existing situation relating to spatial structure of the city, demographic profile, public transport user profile (customer), public transport demand and supply and institutional structures relating to public transport and the regulation thereof.

Data was collected from 2014 to 2018 to develop a citywide plan to restructure the existing public transport services in MMM. The mentioned restructuring of the existing system aims to provide an integrated public transport system where the needs of, all categories of public transport users, public transport services providers; and other stakeholders within the public transport sphere, are balanced. This restructuring can not realise at once and the restructuring will be implemented through an incremental approach.

1.1 Purpose

The purpose of Volume 2A and Volume 2B is to provide detail on data collected to be analysed in Volume 3A and 3B of the report. The detail of data collected date and positions of surveys or areas surveyed are provided.

- **Volume 2A and 2B** – Status Quo (Public Transport Register | CITP):

This volume represents the existing situation relating to the spatial structure of the city, demographic profile, public transport user profile (customer), public transport demand and supply and institutional structures relating to public transport and the regulation thereof.

Data was collected from 2014 to 2018 to develop a citywide plan to restructure the existing public transport services in MMM. The mentioned restructuring of the existing system aims to provide an integrated public transport system where the needs of, all categories of public transport users, public transport services providers; and other stakeholders within the public transport sphere, are balanced. This restructuring cannot realise at once and the restructuring will be implemented through an incremental approach.

The volume is structured according to the design methodology adopted for the MMM IPTN. The approach and data incorporated in the development of the citywide integrated public transport network are:

- Contextualise the spatial orientation of the city including the City's demographic profile (population density, income levels, car ownership etc.);
- Demographic- and economic forecasts (2025, 2036);
- Land Use Model (2015, 2025, 2036), that stem from the SDF, BEPP and IDP;
- Obtain regional and local travel patterns and modes use within Mangaung Metropolitan Municipality (MMM) through the Household Travel survey 2018 analysis,
- Obtain public transport service providers operational areas and extent of operations through surveys and engagement with operators and regulating authority.
- Obtain status quo relating to air transport in MMM.
- Present existing public transportation demand from classified public transport link counts, public transport facility surveys and bus and taxi on-board surveys.
- Determine urban traffic control-, intelligent transport-, road-, rail infrastructure and public transport facility status.
- Institutional arrangement relating to public transport and transport planning.

2 Spatial Structure

2.1 Background

The purpose of this chapter is to deal with the land use characteristics of Mangaung MM, and more specifically with the existing and future spatial distribution of human settlement and job opportunities – hereafter called the Spatial Transformation Perspective.

The services of a specialist in the field of demographic- and economic forecasts were contracted to set the tone for the scenario development and forecasts for the Mangaung MM, which was also calibrated with projections for the Free State Province and South Africa.

Following from the above the Land Use Model was calibrated with the inputs from the local planners regarding the vision for Mangaung MM, existing and future projects, and the abovementioned Spatial Transformation Perspective. The demographic- and economic forecasts were used as control totals in the Land Use Model.

2.2 Land Use Planning and Spatial Transformation Perspective

2.2.1 Regional Context

The Mangaung Metropolitan Municipality as illustrated in Figure 2-1 covers approximately 6863 km² and comprises three prominent urban centres surrounded by an extensive rural area. The urban areas include Bloemfontein, Botshabelo and Thaba Nchu. Bloemfontein is the judicial capital and one of the largest cities in South Africa. Furthermore, it is the administrative capital of the Free State Province and also represents the economic hub of the provincial economy.

The Municipality is centrally located within the Free State Province and is accessible via several national and provincial routes serving the town. Due to the central place function of Bloemfontein in the context of Free State Province, most of the provincial and national road network converge at the town resulting in the radial network evident in Figure 2-1. The most prominent routes include the N1 (which is the primary north-south corridor in South Africa), the N6 (which links Bloemfontein to the Eastern Cape via Aliwal North), and the N8 (which links Lesotho in the east with Kimberley in the west via Bloemfontein). Other prominent routes converging in the town include R702 to Dewetsdorp, R706 to Jagersfontein, R64 to Warrenton, R700 to Bultfontein and R30 to Virginia/Welkom.

The area is also serviced by an east/west and north/south railway line (serving the same movement desire lines of routes N1 and N8) and the Bram Fischer National Airport. An airport was historically developed outside Thaba Nchu but is currently no longer in operation.

Botshabelo is located about 55km to the east of Bloemfontein along route N8 and represents the largest single township development in the Free State. It was established as a decentralised residential township in the early 1980s and was intended to provide the much-needed labour in Bloemfontein without the inconvenience of having labour at the employers’ doorstep.

Another 12km further to the east of Botshabelo is the third urban node, Thaba Nchu. It used to be part of the Bophuthatswana homeland area and is surrounded by a large expanse of rural settlements on trust (communal) land as clearly visible in the far eastern parts of the Mangaung municipal area (refer to Figure 2-1).

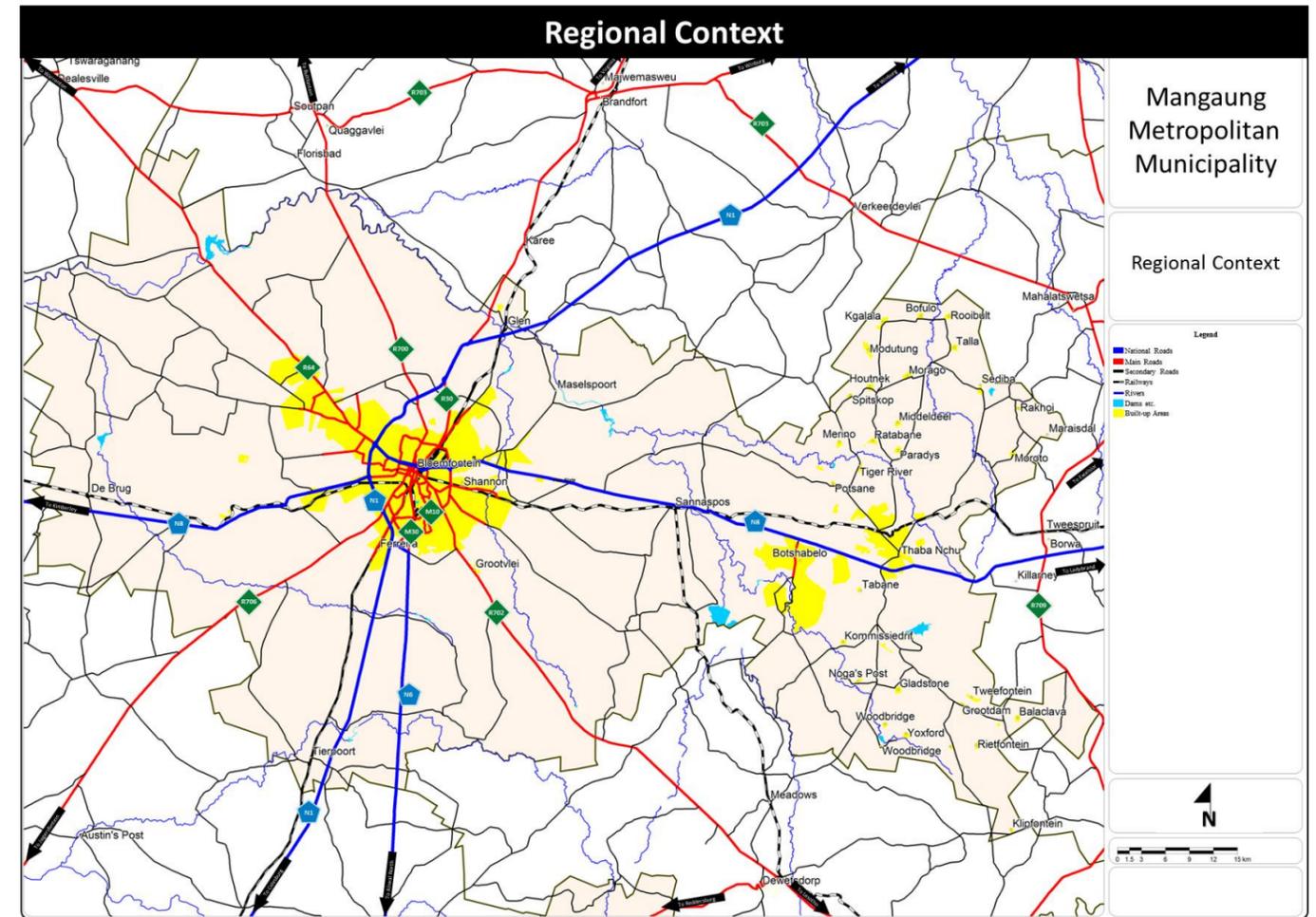


Figure 2-1: Regional Context

The surrounding rural areas of Mangaung accommodate extensive commercial farming in the west and communal commercial/subsistence farming in the east around Thaba Nchu.

Mangaung MM is the largest contributor to the GDP of the province and boasts a fairly diverse economy. There is, however, a disturbing downturn in the Gross Value Added by the region substantiated by the fact that the majority of economic sectors have declined during the period 1996 – 2011. The exceptions in this regard are mining and quarrying, and general government services where a modest increase of 0.0% to 0.1% and 2.7% to 2.8% was attained during this period.

2.2.2 Existing Land Use and Spatial Structure

a) Bloemfontein

Figure 2-2 illustrates the major land uses and spatial structure of Bloemfontein. The road network of the town represents a classic radial-concentric form of which the concentric network is not fully developed yet – see route M10 (red) which forms a partially completed inner ring and route N1 (blue) which represents the western half of an imaginary outer ring to the City.

For more than a century the town was planned and developed around the Central Business District⁽¹⁾ as the primary activity node, and supported by a number of industrial areas (Hamilton⁽²⁾, Hilton⁽³⁾ and Ooseinde⁽⁴⁾) in close proximity to the rail network and the Transnet rail yard⁽⁵⁾. The radial road network served this central cluster of economic activity very effectively as a common destination.

The city gradually developed around the central business district (CBD) in a sectoral form, with the railway line creating a functional barrier between the western and eastern parts of the city. The areas to the west of the railway line were reserved for the middle and high-income communities (white communities before 1994), while the majority of the poor and previously disadvantaged communities were established in the area to the east, and more specifically in the Mangaung township area⁽²²⁾ to the south-east of the railway line. This approach isolated the poor from a large percentage of the economic opportunities and community facilities which are mainly located to the west of the railway line. Except for the industrial areas which flank these settlements, the previously disadvantaged areas offer very few job opportunities and some of these people need to travel up to 15 kilometres to access the CBD.

Since 1994 the situation has been exacerbated as there has been a major relocation of services from the Bloemfontein CBD to a number of smaller, decentralised nodes along the major traffic routes in the western and north-western suburbs of the City. This phenomenon is particularly evident along Nelson Mandela Drive, Church Street and Currie Avenue and around intersections along to the N1 freeway which provides access and visual exposure to regional traffic. This has led to under-utilised office space and general urban decay in the central business district while manufacturing, which is the dominant economic activity to the east of the railway line, has also been in decline over the past two decades.

Residential areas like Brandwag⁽⁶⁾, Willows and Universitas adjacent to the CBD have also experienced land-use change with a mixed land use character establishing along the major traffic routes where these traverse the residential areas. This has given rise to typical ribbon developments along the main arterials which in some cases have led to a decline in the level of service provided.

Extensive retail development also exists at the Loch Logan Waterfront⁽¹⁴⁾ while strategic land uses like the provincial sports stadiums⁽¹⁵⁾, University of the Free State⁽¹⁶⁾ and Tempe military base⁽¹⁷⁾ also exist in the area immediately adjacent to the west of the CBD.

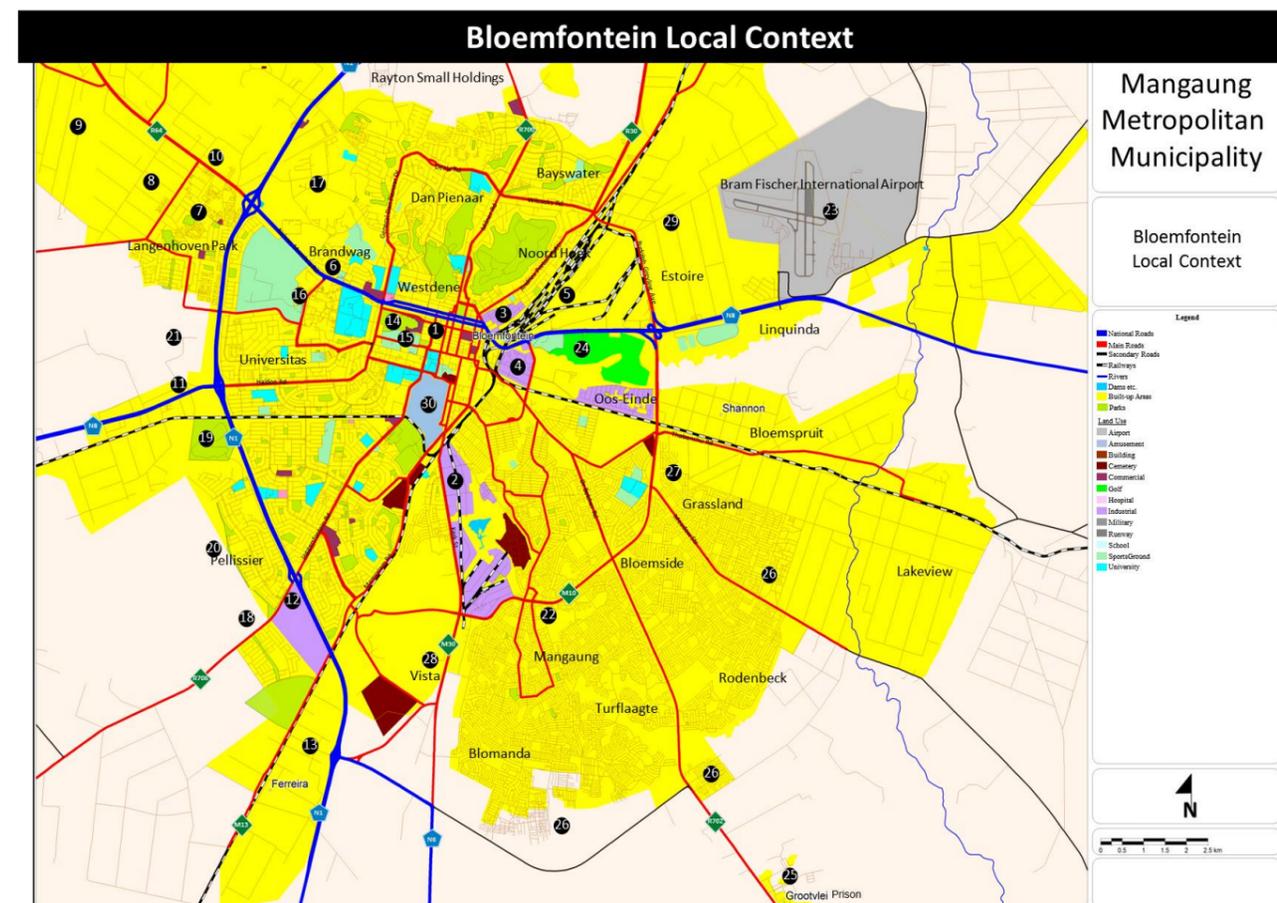


Figure 2-2: Bloemfontein Local Context

The far western areas of Bloemfontein (west of route N1) have also experienced rapid growth during recent years with extensive development in the Langenhovenpark area⁽⁷⁾ in the vicinity of the N1-N8 interchange, while numerous new developments are still being planned around Langenhovenpark and towards Spitskop⁽⁸⁾ and Bainsvlei⁽⁹⁾. Non-residential uses – especially business – also tend to favour land to the west of the N1 freeway at each of the four access intersections onto the N1. This includes land adjacent to the following four intersections depicted on Figure 2-2 N1-R64⁽¹⁰⁾; N1-N8⁽¹¹⁾; N1-R706⁽¹²⁾; and N1-M13⁽¹³⁾. The most prominent in this regard is the casino complex⁽¹²⁾ which was developed at the N1-R706 intersection.

In line with the municipality’s “7 land parcels” initiative, several areas to the west of the N1 freeway have been identified for future inclusionary housing projects, including Brandkop⁽¹⁸⁾, Brandkop race track⁽¹⁹⁾, the western extents of Pellissier⁽²⁰⁾ and Cecelia⁽²¹⁾.

There has also been an upsurge in guesthouses and the amount of student accommodation, particularly in the area surrounding the University of the Free State⁽¹⁶⁾ and Vista University⁽²⁸⁾ further towards the south.

To the east of the railway line, the township of Mangaung⁽²²⁾ is wedged between rail and road infrastructure in the south-eastern parts of the City. To the east and north-east the land is predominantly zoned for industrial use and small scale farming in the Bloemspruit/Shannon and Estoire areas. Three other prominent land uses in this area include the Bram Fischer National Airport⁽²³⁾, the Schoemanpark sports and recreation facility⁽²⁴⁾, and the Grootvlei Prison⁽²⁵⁾ further to the south.

As noted above the spatial growth pattern in the south-eastern residential areas is wedge shaped, with development progressively extending further away from the economic and social benefits of the city centre.

An internal investigation by the Municipality during 2010 revealed that the housing backlog at the time stood at approximately 53 820 houses in the municipal area, the bulk of which were located in the Mangaung Township in Bloemfontein. This figure has increased to 58 820 during 2011, with the demand mainly found in the RDP, affordable (GAP), and the rental markets.

A large percentage of this demand is derived from the illegal occupation of land in the form of informal settlement which mainly occurs along the south-eastern periphery of Mangaung⁽²⁶⁾ where the majority of the 28 informal settlements in the metropolitan area are located. This stimulates urban sprawl as there is continuous pressure to formalise these settlements in-situ. This contradicts the principle of promoting medium to high-density development closer to work opportunities which is one of the strategic objectives of the city. In turn, current trends of development along the edge of the urban footprint lead to longer travelling distances and the dislocation of poor people on the fringe of the City. It also increases travel demand which results in the congestion experienced on Dr Belcher Road which is the main link between Mangaung township and the CBD.

Recently there has been extensive new residential township development in the Grasslands⁽²⁷⁾, Woodland Hills and Vista Park⁽²⁸⁾ areas surrounding Mangaung township, and mixed land use development in the Estoire area⁽²⁹⁾ to the north-east between the Spoornet land and Bram Fisher National Airport.

According to the Mangaung IDP it is expected that approximately 65% of the total population of Mangaung by 2016 will reside in the Bloemfontein urban area.

Figure 2-3 shows the distribution of industrial/commercial uses and retail/shopping centres throughout the city. It is evident that the majority of retail facilities are concentrated in and around the CBD, along Nelson Mandela Drive to the west of the CBD; and along Curie Avenue (R706) to the south-west. The remainder of retail facilities are located around intersections between main roads, or within residential neighbourhoods.

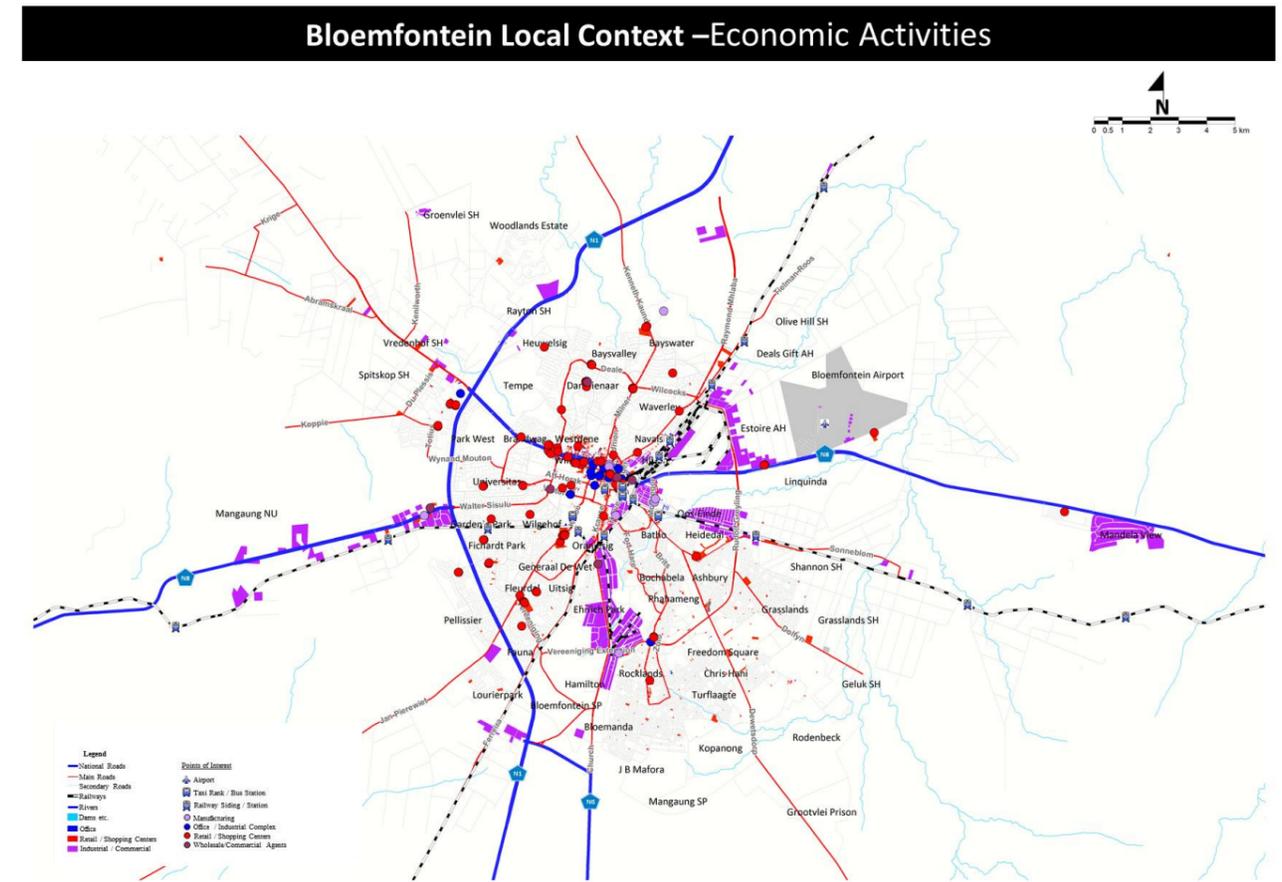


Figure 2-3: Bloemfontein Local Context – Economic Activities

Two community size shopping centres are found in the Mangaung area e.g. Twin City Mall and the recently built Lemo Mall. The remainder of the retail facilities are relatively small and found mainly along Moshoeshoe Street.

Figure 2-4 provides a consolidated perspective of the spatial distribution of economic activity areas noted above as well as all community facilities and areas of medium to high-density residential development. The prominence of the activity area extending from the CBD up to the University of the Free State is evident from this image.

b) Botshabelo Land Use and Spatial Structure

As noted earlier, Botshabelo is located about 55 kilometres to the east of Bloemfontein (see Figure 2-5). It was spatially designed along a major access route that runs in a north/south direction through the centre of the area and which links into route N8 to the north. This gave rise to a linear north-south oriented urban form which creates a problem to the most southern communities as they need to travel as far as 8 kilometres to access the economic opportunities and public transport facilities which have developed in the northern parts of the town closer to route N8. The town was originally planned with a CBD in the central section, about 4 kilometres to the south of route N8, and an industrial area at the northern entrance of the town from route N8. Both these areas are only partially developed.

There has been a decline in the manufacturing sector of Botshabelo over the past two decades largely due to subsidy cuts to the industries established in Botshabelo. As a result, Botshabelo offers very limited employment opportunities resulting in almost 13 000 commuters having to commute daily between Botshabelo and Bloemfontein. Approximately R80 million is annually spent on transport

subsidies for bus transport in the Mangaung area of which the larger part is for bus transport between Botshabelo, Thaba Nchu and Bloemfontein.

At the moment there is no functional interaction between Botshabelo and the railway line which is located a few kilometres to the north thereof.

c) Thaba Nchu Land Use and Spatial Structure

Thaba Nchu has a more fragmented development pattern with 37 villages surrounding the urban centre, some as far as 35 kilometres from the Thaba Nchu core area. The area is characterised by vast stretches of communal subsistence farming that surround the urban centre (see Figure 2-5).

The majority of new urban developments have developed towards the west along Station Road, while the central business district has developed to the east of these extensions. Some residents centred around the Thaba Nchu urban core reside as far as 8 kilometres from these economic opportunities. The area has two industrial areas, one to the west of the railway station (which is fairly viable) and another located to the east of the CBD. These industrial areas are presently only 65% occupied.

Thaba Nchu has always been a major service centre to the Eastern Free State with many government departments establishing regional offices in this area. However, recently many of these offices and amenities including the sanatorium, the military base, the college and the reformatory school, have closed down, thus leaving the town crippled in terms of economic investment. This leads to fewer visits from outsiders and a decrease in spending in town which, in turn, contributes to the outflow of manufacturing and business activities from the area.

Botshabelo and Thaba Nchu – Economic Activities

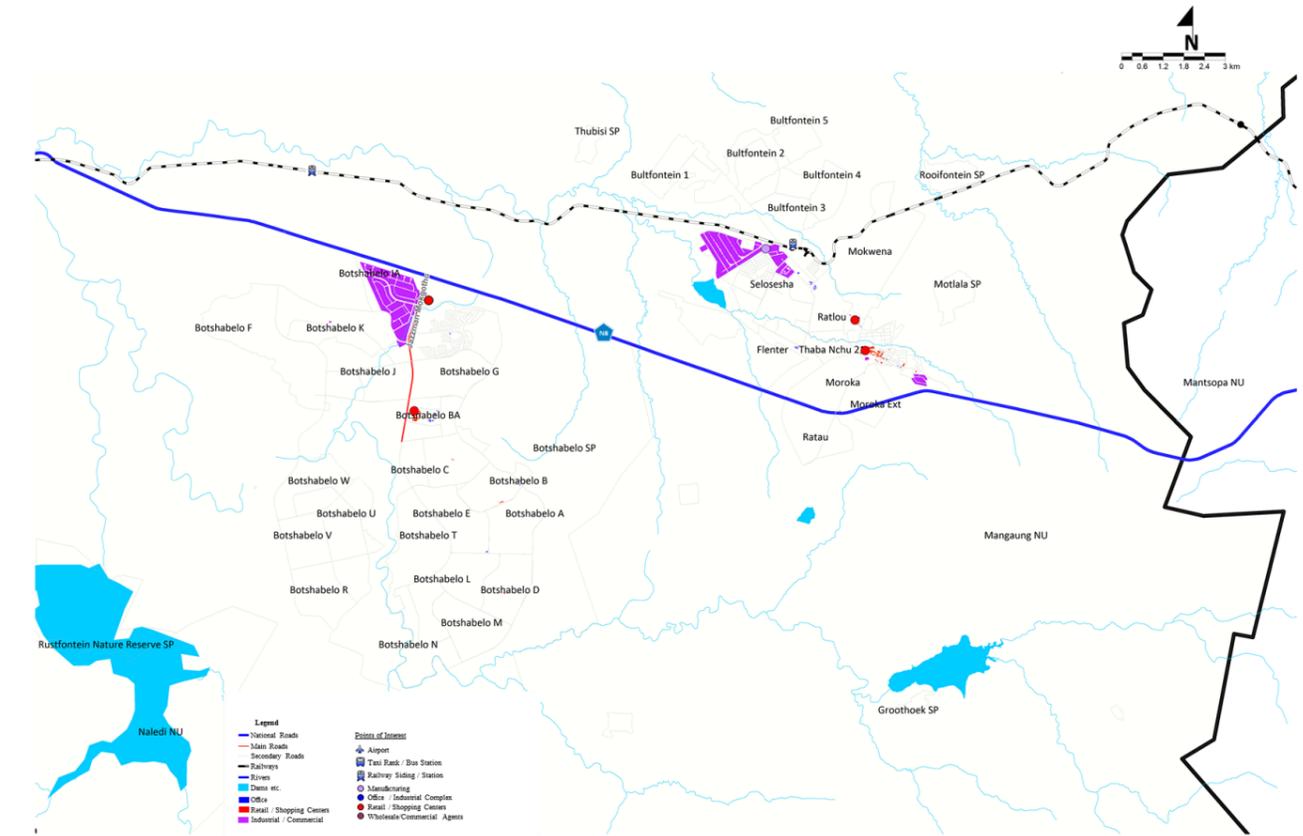


Figure 2-5: Botshabelo and Thaba Nchu – Economic Activities

Table 2-1 following represents the total size of each of the three urban areas in Mangaung Municipality, as well as a breakdown of the extent of the three Central Business Districts and industrial areas in each.

Table 2-1: Mangaung MM: Total Land Area and Primary Land Use Breakdown

Node Description	Land Use Description	Area (ha)*
Bloemfontein	Urban Area	24 840
	Central Business District	228
	Industrial	1 152
Botshabelo Urban Node	Urban Area	7 260
	Central Business District	100
	Industrial	206
Thaba Nchu Urban Node	Urban Area	5 000
	Central Business District	46
	Industrial	56

* Denotes approximate values

d) Key Considerations: Land Use and Spatial Structure

In summary, the following represent the main features and key considerations associated with the land use and spatial structure of the Mangaung Metropolitan Municipality:

- i) The municipality consists of three Urban Nodes of which Botshabelo and Thaba Nchu are located approximately 55km and 67km respectively to the east of Bloemfontein.

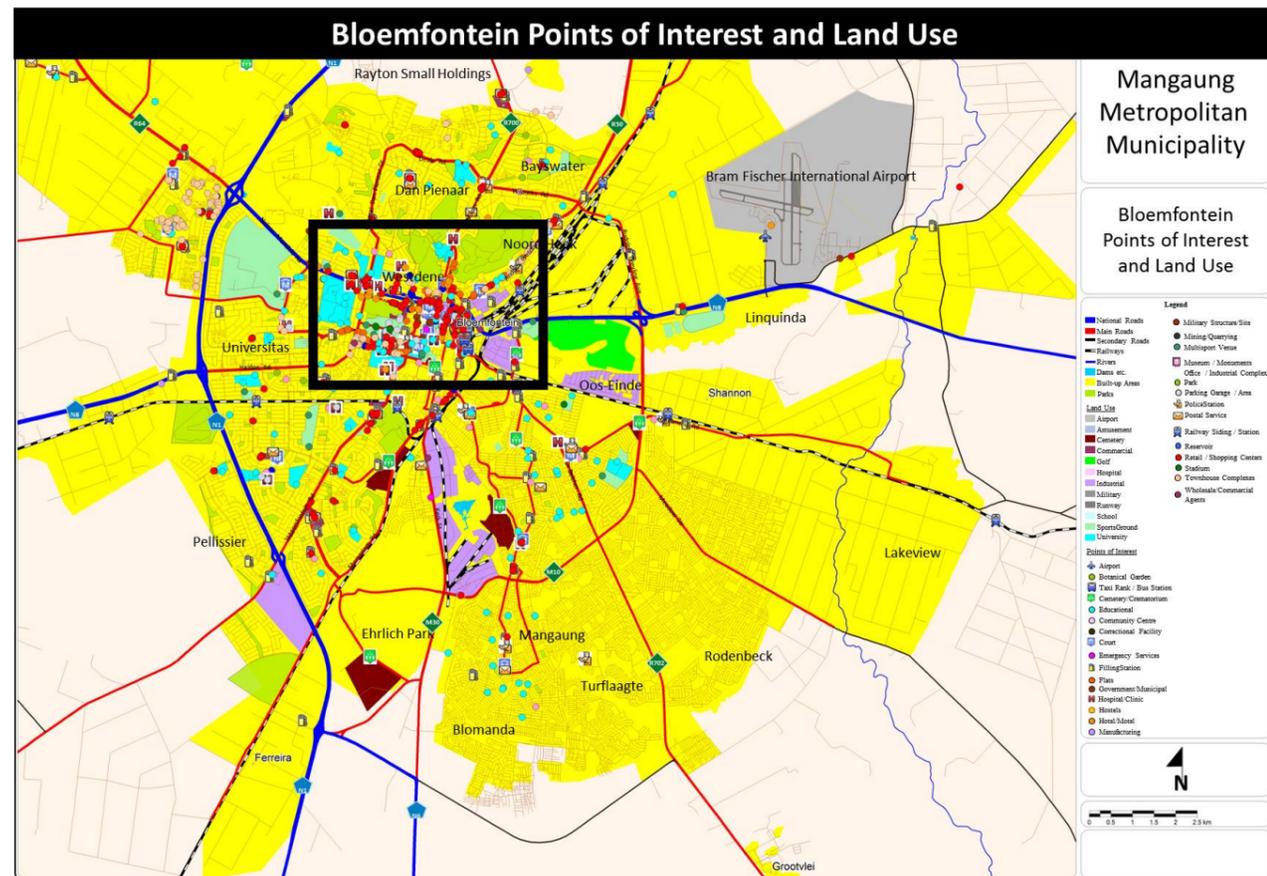


Figure 2-4: Bloemfontein Points of Interest and Land Use

- ii) Bloemfontein is the primary activity node in Mangaung (and Free State Province) and holds a range of retail, office, commercial and industrial activities clustered in a central core area around the CBD.
- iii) The dominant movement pattern in Bloemfontein is radial with all the major routes converging in the central core area which comprises the CBD, several industrial and commercial areas, as well as some of the highest order community facilities/institutions e.g. the university and regional sports and recreational facilities.
- iv) However, the CBD is in decline with many economic activities locating and relocating towards the west. Although limited at present, there is also a trend for new economic activities to cluster around the four access interchanges along the N1 freeway where it runs through the western parts of the City.
- v) Similarly, middle and high-income residential development gradually expands towards the west, and more specifically the north-west, while low-income residential development continues towards the south-east.
- vi) This growth pattern in opposite directions perpetuates the Apartheid spatial structure of Bloemfontein and the relocation of economic activity towards the north-west and west marginalise the disadvantaged communities to the south-east even more.
- vii) As a result, average travel distance and travel times of these communities increase continuously while the combination of regional traffic on the N1 and surrounding middle and high-income residential development continue to favour investment in this part of the City.
- viii) Job creation opportunities around Botshabelo and Thaba Nchu and between these areas and Bloemfontein have also had very limited success to date and would require significant interventions to reverse this trend.

2.2.3 Mangaung Spatial Development Framework and Built Environment Performance Plan (BEPP)

The main statutory document which guides and directs development towards achieving the future spatial vision of Mangaung is the Mangaung Spatial Development Framework (2016) (see Figure 2-6 and Figure 2-7).

The MSDF aims to address the spatial and socio-economic inefficiencies of the metropolitan area and to achieve a spatial structure which complies with the norms and principles of the Spatial Planning and Land Use Management Act (SPLUMA), including Spatial Justice, Spatial Efficiency, Spatial Sustainability, Spatial Resilience and Good Governance.

In order to achieve this, the MSDF suggests an integrated approach comprising a number of significant interventions summarised as follow:

- Improving the functional integration and relationship between Bloemfontein, Botshabelo and Thaba Nchu by enhancing development along the N8 corridor and/or the railway line running parallel to it;
- Stimulating economic growth and mixed-use development in the eastern and south-eastern parts of Bloemfontein which would create a more balanced city structure for the town (refer to Figure 2-6), and benefit communities in Mangaung Township, Botshabelo and Thaba Nchu;
- Strengthening the city core through CBD regeneration and consolidating the urban structure by way of an Urban Edge;
- Enhancing local economic development in Bothsabelo and Thaba Nchu and between these two areas by way of corridor development (refer to Figure 2-7). This includes the establishment of a labour based manufacturing hub/IDZ at Botshabelo, and reinforcing Thaba Nchu as a rural market town; and

- Improving access from the surrounding rural communities to these areas.

The MSDF states that this approach will reduce the competing pressures between the different areas, reinforce the soundness and inherent strengths and efficiency of the compact basic city structure, and optimise use of limited public and private sector resources.

The Mangaung Development Concept and Approach as noted above is confirmed in the Mangaung Urban Network and Integration Zone Plan (Figure 2-8) which was submitted to National Treasury as part of the Mangaung Built Environment Performance Plan (BEPP) report. The following key findings and proposals as illustrated on Figure 2-8 are important to note:

- The N8 corridor linking three secondary nodes (Airport Node, Botshabelo and Thaba Nchu) is identified as an activity corridor focused on integrating these secondary nodes through several development initiatives. This corridor consists of road (National Route N8) and rail infrastructure and is earmarked as a strategic corridor initiative in the National Development Plan (NDP) as part of the Strategic Integrated Projects (SIP) group 7.
- The Botshabelo-Thaba Nchu Integration Zone/Corridor linking the Botshabelo CBD with the Thaba Nchu CBD, consisting of the following links:
 - Botshabelo main road linking the Botshabelo CBD to the N8 Corridor;
 - N8 Corridor from Botshabelo up to Thaba Nchu;
 - Brand Street in Thaba Nchu linking into the core of Thaba Nchu; and
 - Possible integration of surrounding land uses with the Thaba Nchu railway station.

As part of a major intervention to stimulate economic development in the eastern parts of Bloemfontein, the proposed Airport Development Node has been identified as a key secondary node to be developed. The node is schematically illustrated to the south of the Bram Fisher Airport and route N8 on Figure 2-6, but it is intended to be developed as two distinct phases as shown on Figure 2-9.

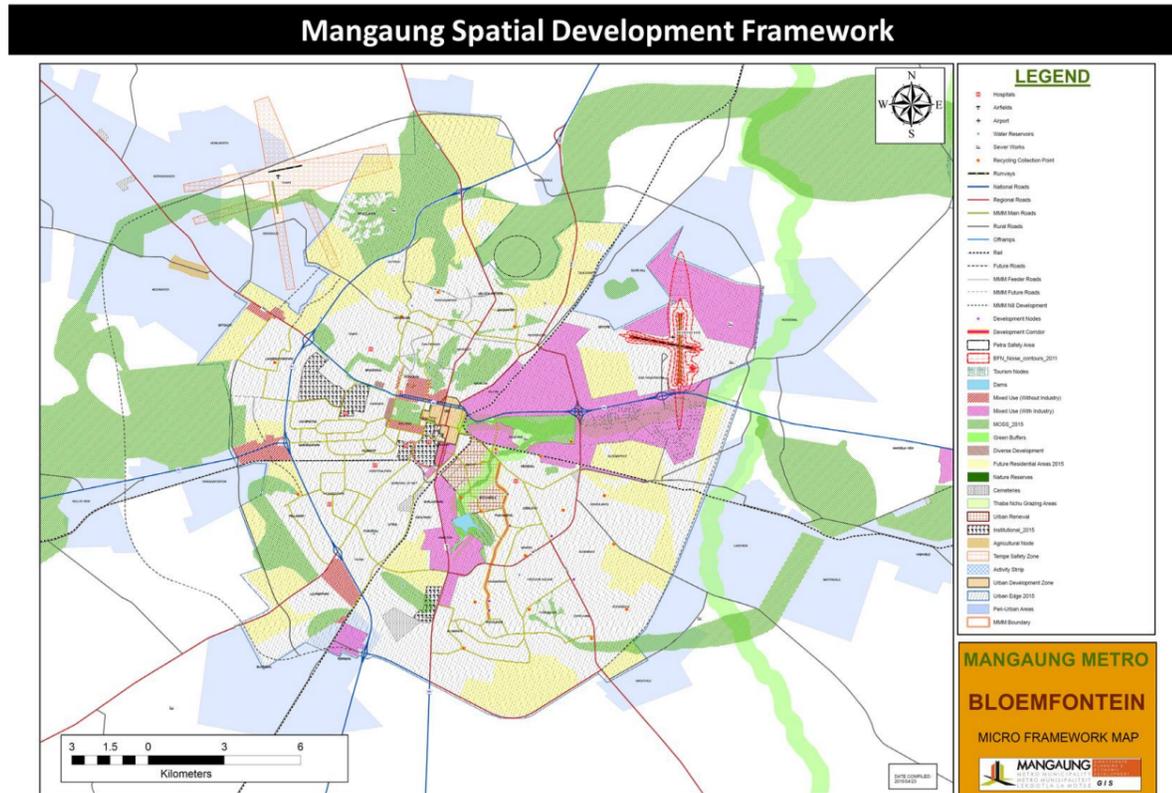


Figure 2-6: Mangaung Spatial Development Framework

Botshabelo and Thaba Nchu Spatial Development Framework

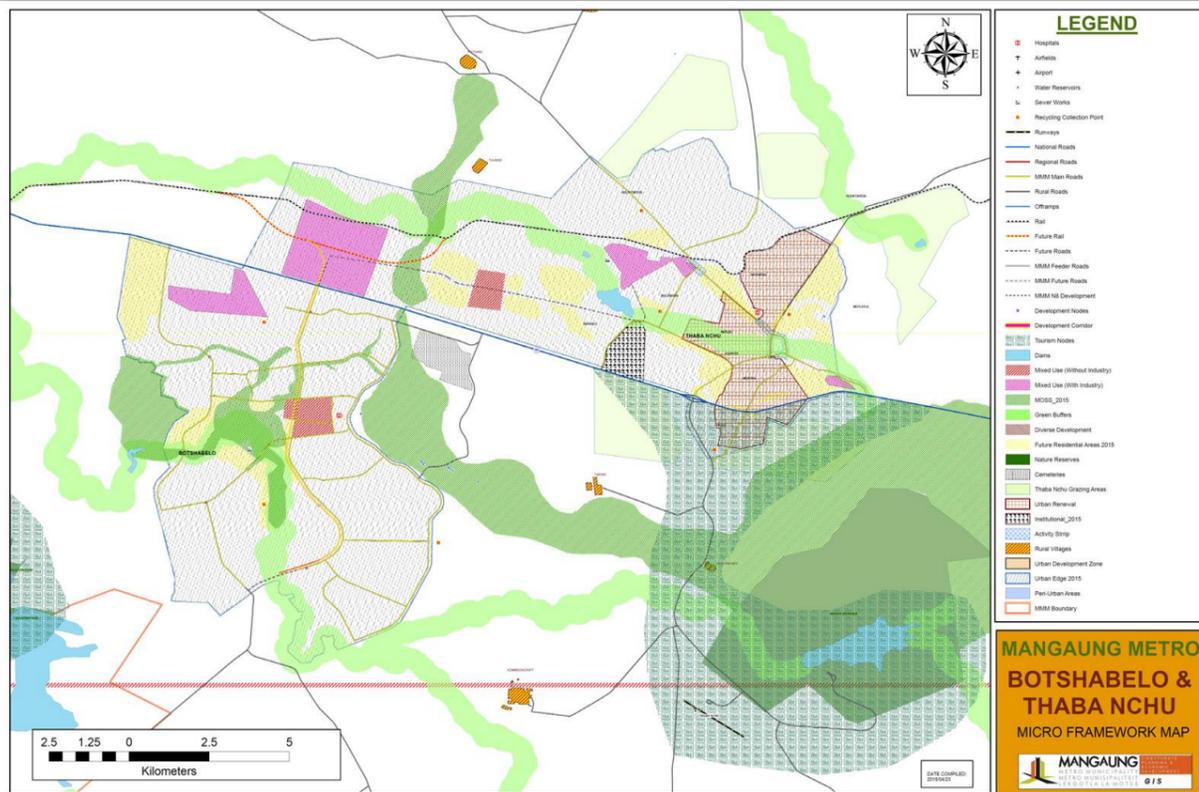


Figure 2-7: Botshabelo and Thaba Nchu Spatial Development Framework

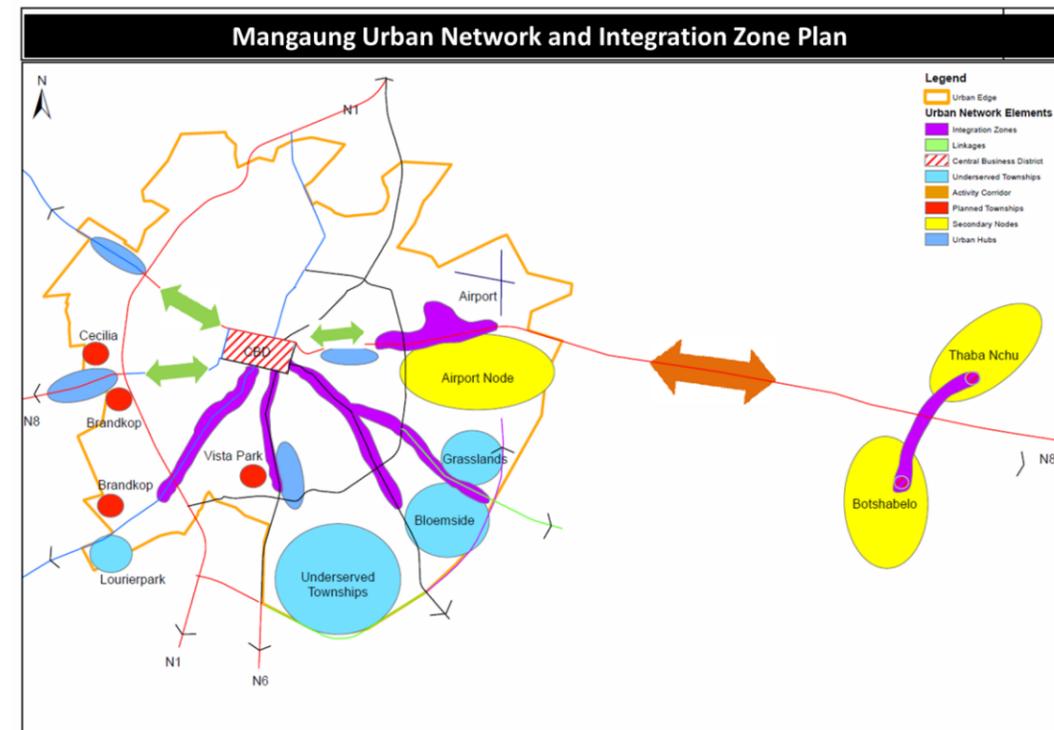


Figure 2-8: Mangaung Urban Network and Integration Zone Plan

Figure 2-9 Phase 1 comprises land (700 ha) to the south of route N8 and covers the areas of Shannon and Bloemspruit. The area to the north of route N8 (1100 ha) is intended to be developed as Phase 2 and will cover the area east of the Bram Fisher National Airport up to the alignment of the proposed eastern bypass route, as well as land to the north and north-west of the airport.

A critical factor to the successful development of this node would be the construction of the eastern bypass route through Bloemfontein which links to the N1 freeway to the north and south of the town. This route will provide regional access to the Airport Node for north-south moving national and local traffic, and will enhance the total viability of the proposal as the local economy of Bloemfontein will not be sufficient to sustain the development of this magnitude.

- The Mangaung Built Environment Performance Plan also identified a number of underserved townships earmarked for upgrading, consolidation and infill development. As illustrated on Figure 2-8 these include the Grasslands area to the east; Bloemside Phase 1, 2 and 3 to the south thereof; a number of underserved townships representing the southern parts of Mangaung (including Batho, Bochabela, Phahameng, Namibia, Freedom Square, Rocklands, JF Mafora and Kopanong); and Lourierpark to the south-west.
- Development in these areas includes the upgrading of infrastructure and amenities, promotion of local economic development, and the upgrading/formalisation of informal settlements.
- Several mixed-income and mixed housing typology project areas were also identified – the so-called “7 Land Parcels” initiative, including Brandkop 702 north of Lourierpark, Brandkop Race Track to the north thereof adjacent to the south of route N8 west, Cecilia directly to the north of N8 west, Pellissier infill development, Vista Park Phase 2 and Phase 3 which are located to the west of Church Street, and Hillside View located to the east of Church Street (see Figure 2-10).
- The Mangaung Built Environment Performance Plan also identified five “urban hub” areas earmarked to consolidate mixed economic activities. In the western parts of the City, it includes the areas surrounding route N8 in Schoemanpark immediately west of the N1-N8 intersection, as well

as the area surrounding route R64 north of Langenhovenpark and west of the Nelson Mandela Road/R64-N1 interchange.

- The remaining two urban hubs reflected in the Built Environment Performance Plan are the Mangaung Township to the east of the Hamilton-Vista economic activity area and the Schoemanpark (Ooseinde-Transwerk Industrial cluster) located to the east of the CBD along N8 East.
- Figure 2-10 also indicates five Integration Zones intended to enhance the functional integration and linkages between disadvantaged communities and the Bloemfontein CBD (the sixth Integration Zone is between Botshabelo and Thaba Nchu – see Figure 2-11).

2.2.4 Conclusion

The Mangaung Metropolitan Municipality is committed towards addressing the spatial inefficiencies in its spatial structure through a number of priority interventions. This was confirmed in the inaugural speech of the Mayor of the City when it was stated that “As from now, new industrial and human settlements will predominantly be taking cause towards the east of Bloemfontein, especially along the vicinities of N8 Development zone”.

N8 Airport Node: Master Plan Proposal

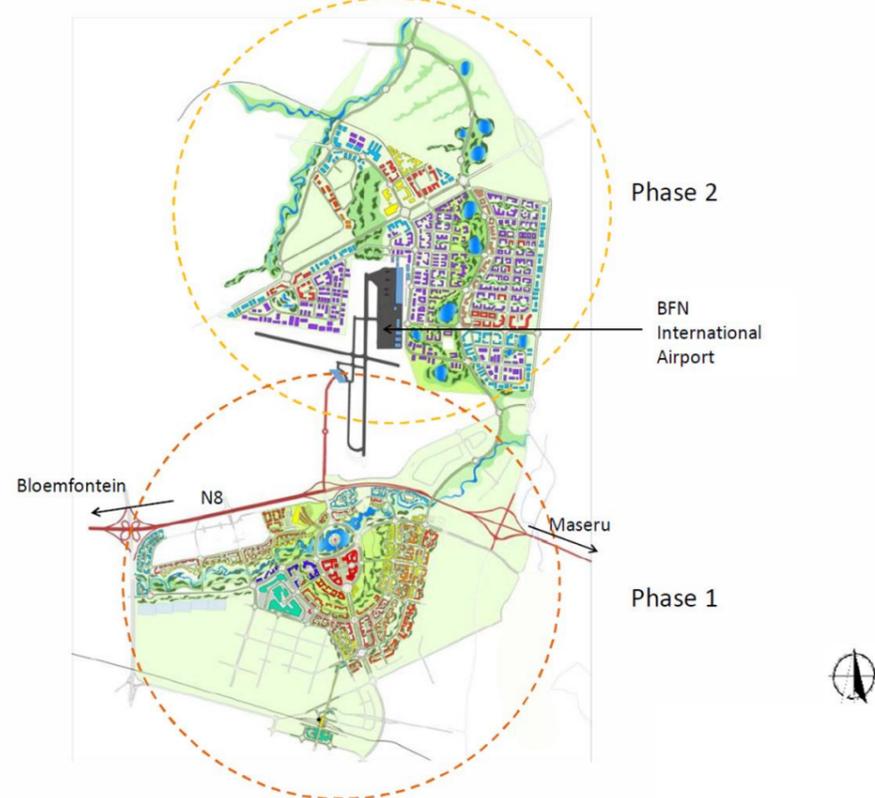


Figure 2-9: N8 Airport Node: Master Plan Proposal

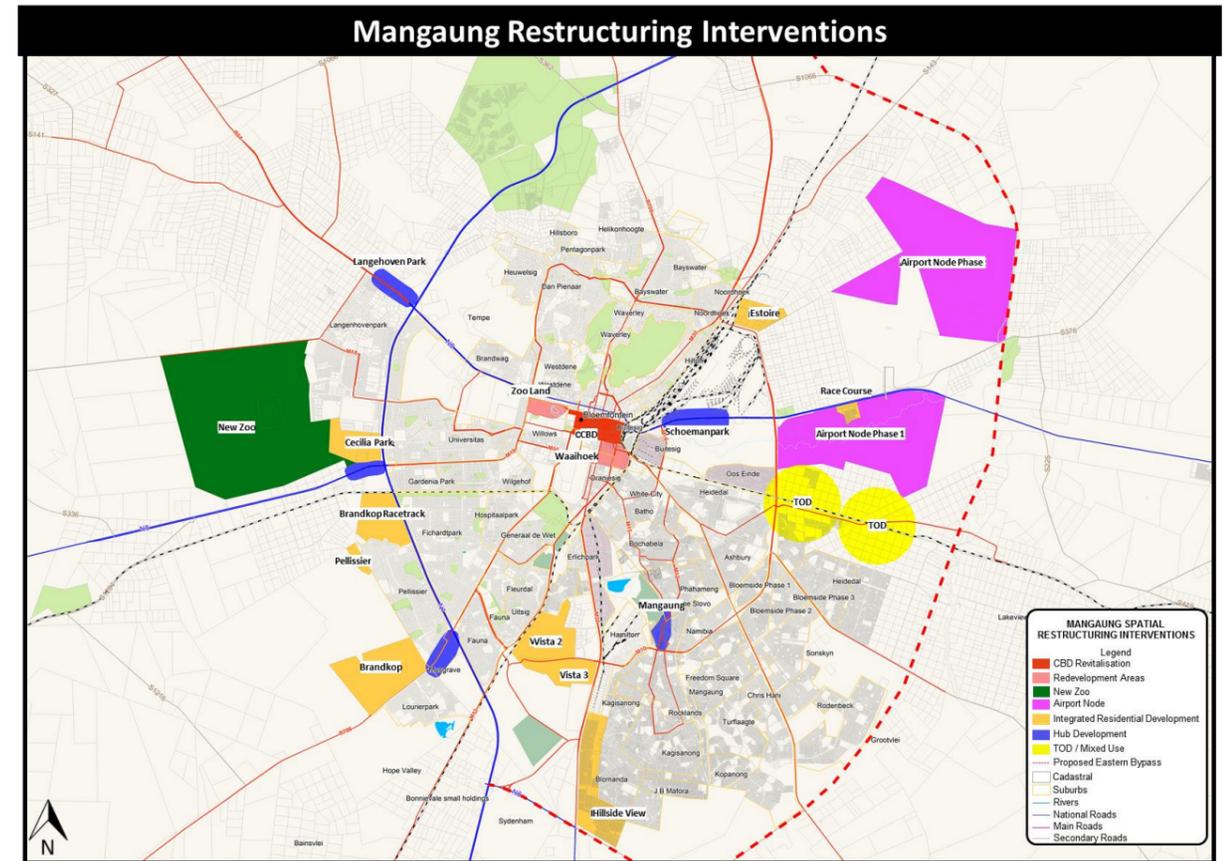


Figure 2-10: Mangaung Restructuring Interventions

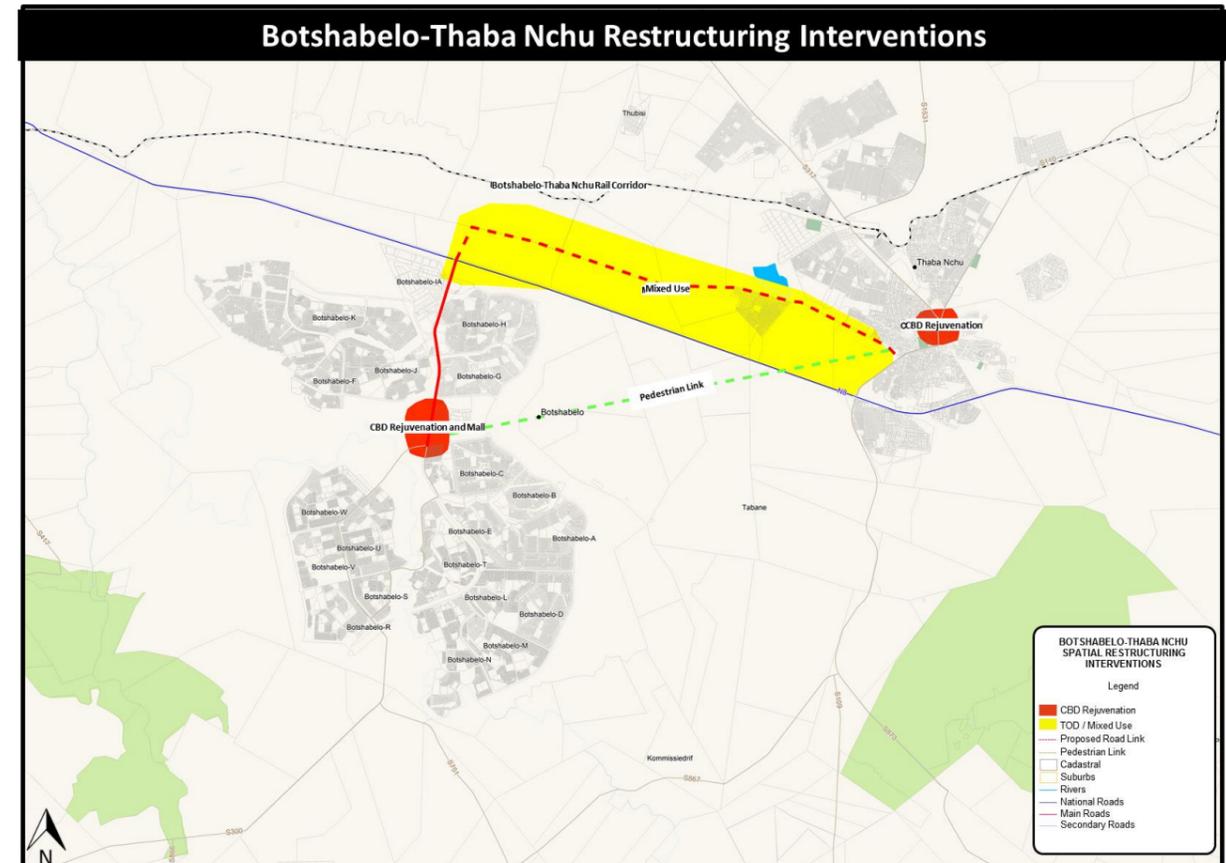


Figure 2-11: Botshabelo-Thaba Nchu Restructuring Interventions

The City intends to develop a new Airport Node to the east of town which will not only counter the current westward trend of development, but also enhance the functional integration of Botshabelo and Thaba Nchu with the economy of Bloemfontein. The construction of an eastern bypass route will be critical to the successful implementation of this initiative.

Botshabelo and Thaba Nchu are to be consolidated via an Integration Zone/Corridor while the disadvantaged communities in Mangaung Township and Lourierpark will also be consolidated with the economic core of Bloemfontein (CBD and surrounding industrial/commercial areas) by way of a number of Integration Zones/Corridors.

A tight Urban Edge will consolidate the spatial structure of Bloemfontein and provide for densification and infill development within the existing urban footprint.

Several inclusionary housing projects are earmarked for the western parts of the City while limited economic development will be allowed around the access interchanges along route N1.

Land uses around the CBD will be consolidated and intensified as part of a comprehensive revitalisation programme to strengthen the CBD and surrounds as the major destination and centre of job opportunities in the metropolitan area.

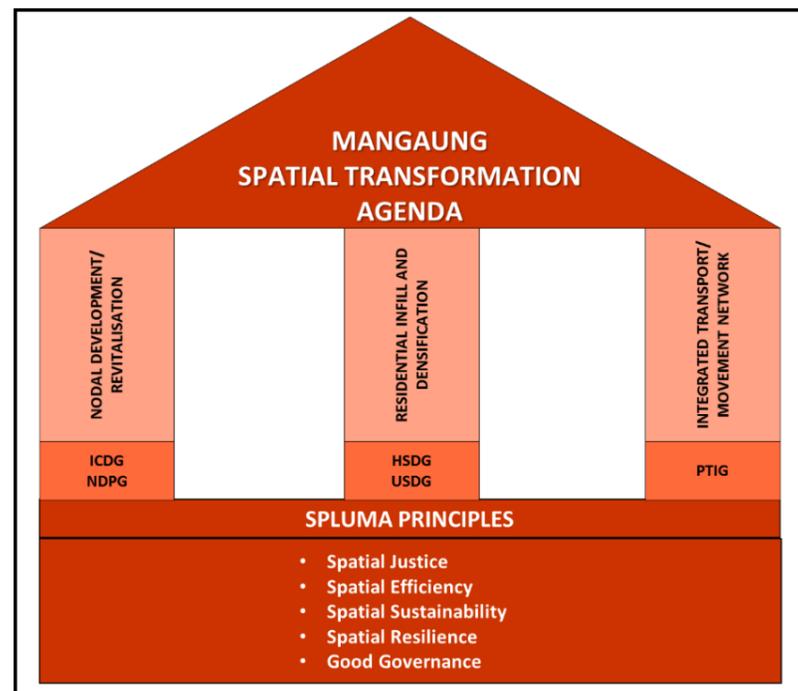
2.2.5 Spatial Transformation/ Restructuring Strategy

Diagram 2-1 conceptually summarise the Mangaung Spatial Transformation Agenda as contained in the Mangaung SDF and Built Environment Performance Plan (BEPP). Essentially the Spatial Transformation Agenda stands on three pillars:

- Nodal Development and Revitalisation (Supported by ICDG and NDPG grants).
- Residential Infill and Densification (Supported by HSDG and USDG grant funding).
- Integrated Transport/ Movement Network (Supported by PTIG Grant funding).

All the above are in pursuance to achievement of the five norms and principles as contained in the Spatial Planning and Land Use Management Act (2013).

Diagram 2-1: Mangaung Spatial Transformation Agenda



Following from the Mangaung Spatial Development Framework and Built Environment Performance Plan (BEPP), the Mangaung Integrated Development Plan identified five key focus areas/ objectives towards achieving a balanced city structure as summarised in Table 2-1 below and briefly discussed in the section following:

Table 2-2: Restructuring Objectives and Strategy

Restructuring Objectives and Strategy	
• Promote Economic Development	• 3 Central Business District • N8 Corridor (Airport Node) • Industrial Development Nodes/ SDZ's • Other Nodes (Waaioek, New Botshabelo Node, Soutpan, disadvantaged communities)
• De-racialising the built environment	• 7 Land Parcels (Cecilia/ New Zoo, Pellissier infill, Brandkop, Vista X2, 3, Hillside View X34, 35, Estoire)
• Promote Intensification/ Densification	• IRPTN Corridor (Phase 1 & CBD) • Existing Urban Area
• Prevent/ Curb Spatial Fragmentation	• Limit expansion • Promote spatial integration
• Support Rural Development	• Enhance rural development in identified nodes

• **Promote Economic Development**

This objective is to be achieved firstly by focusing on initiatives to revitalise the Central Business Districts of Bloemfontein, Botshabelo and Thaba Nchu respectively as illustrated in red on Figure 2-12.

Secondly, the focus will be on the phased development of the N8 Corridor Node located to the east of town towards Botshabelo.

The next priority as far as economic development is concerned is the existing industrial nodes including: Transwerk, Hilton, Oosteinde, Hamilton, Thaba Nchu and Botshabelo.

Similarly, economic development will be strengthened in local business nodes in the disadvantaged areas; at Waaioek and New Zoo area; as well as smaller nodes in rural areas like Soutpan and the area between Botshabelo and Thaba Nchu (refer to Figure 2-12).

• **De-Racialising the Built Environment**

The main focus of this objective will be the seven strategic land parcels identified for mixed income residential development and which include the following areas as illustrated on Figure 2-13: Cecilia, Brandkop, Pellissier, Vista Park 2 and 3, Hillside View, Estoire and the Old Zoo premises. (See **Annexure A** for detail maps and layouts of new developments).

• **Promote Intensification and Densification**

Apart from general densification in the existing urban footprint by way of subdivision and/ or redevelopment of land, special measures are to be put in place to promote densification and a better mix of land uses along the proposed Phase 1: IRPTN Corridor serving Mangaung Township, as well as the future CBD extension areas to the west of the CBD as graphically illustrated on Figure 2-14.

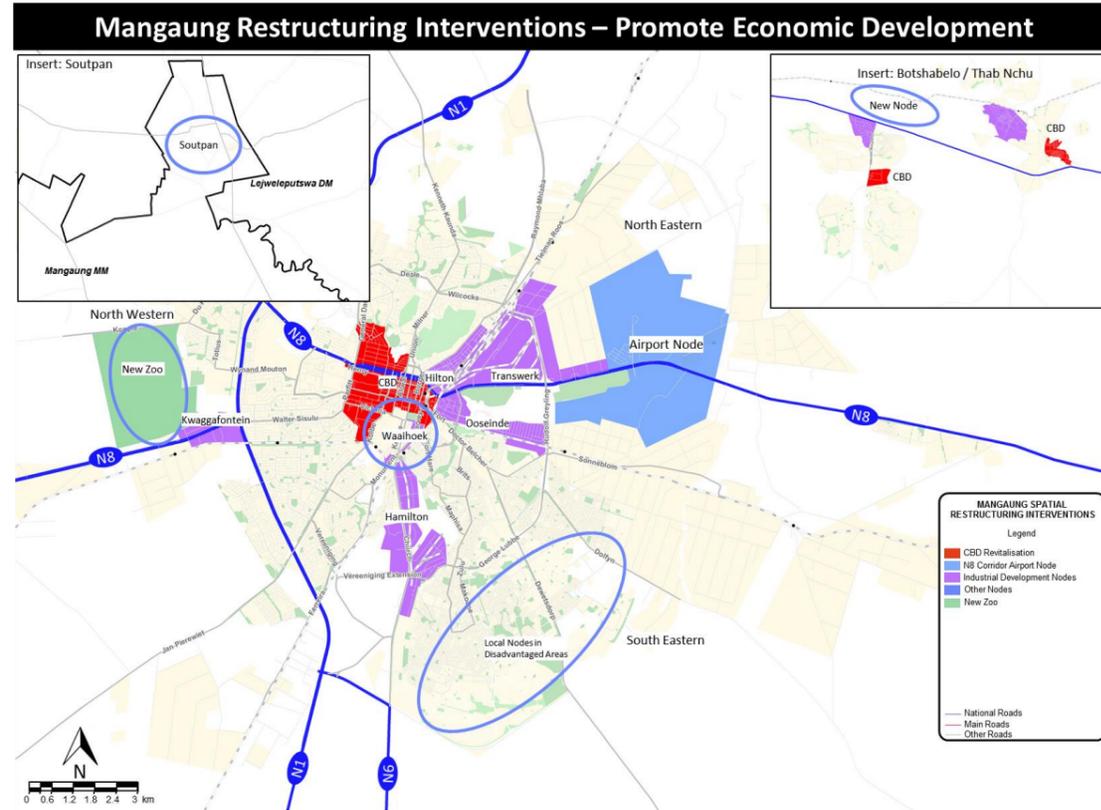


Figure 2-12: Mangaung Restructuring Interventions – Promote Economic Development

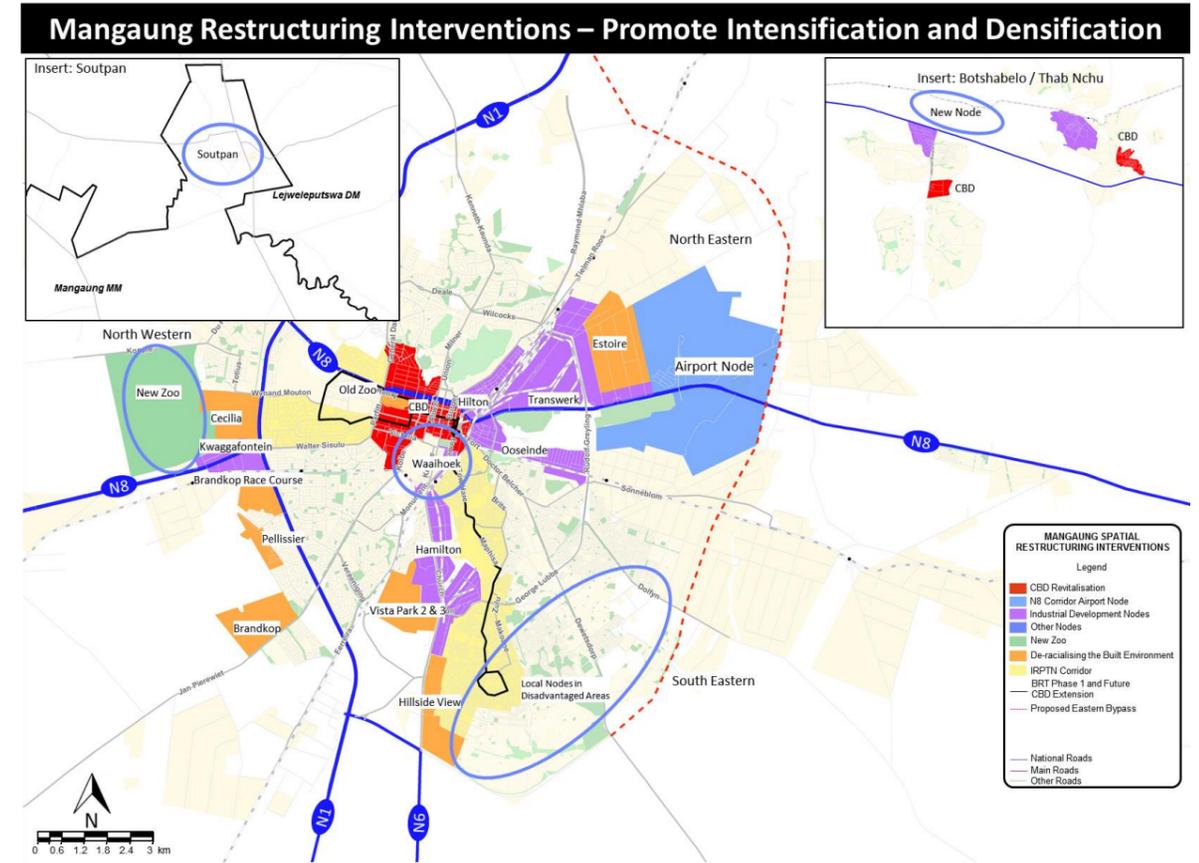


Figure 2-14: Mangaung Restructuring Interventions – Promote Intensification and Densification

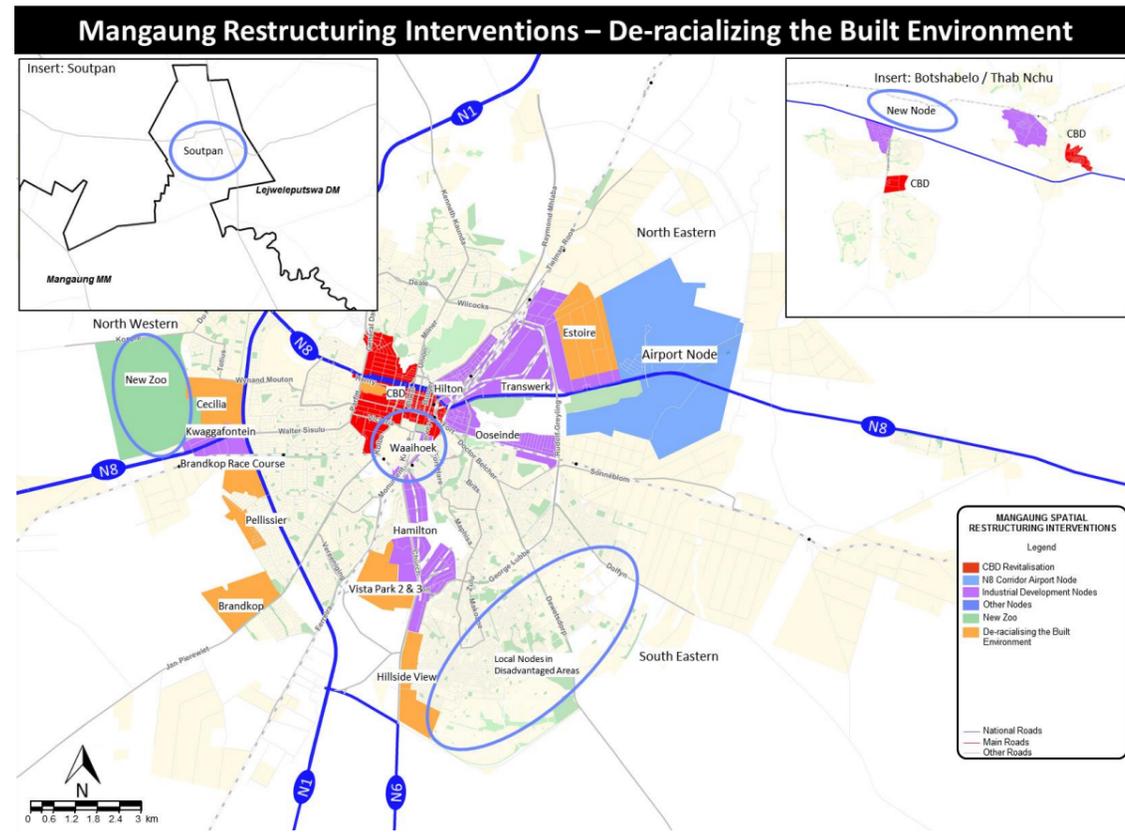


Figure 2-13: Mangaung Restructuring Interventions – De-racializing the Built Environment

- **Prevent/ Curb Spatial Fragmentation**

The outward expansion of the urban fabric of Mangaung will be limited by way of growth management measures like the urban edge as demarcated on the Mangaung SDF. Expansion of the urban footprint over the next decade will be limited to the light green areas shown on Figure 2-14.

- **Support Rural Development**

Apart from supporting agriculture, tourism and mining in rural areas with appropriate resources, the municipality will also consolidate rural development in a number of rural nodes to be determined in the municipal Spatial Development Framework.

From the above it is evident that the Mangaung IDP, SDF and BEPP provide a strong set of directives towards the future spatial transformation and development of the municipal area.

Hence, the Land Use Model for Mangaung for future years 2025 and 2036 has to simulate the current and future land use distribution and characteristics of different areas in the municipal area in line with these directives in order to correctly predict future movement patterns and demand for infrastructure.

The Land Use Modelling process is described in Volume 3A.

3 Movement Patterns – MMM Household Travel Survey 2017

The technical survey report prepared as part of the household travel survey is provided in Annexure WW. The results of the survey are presented per main area of the household travel survey.

3.1 Household Characteristics Results

In the household section of the questionnaire, information was collected about the following household characteristics from a responsible adult in the household:

- Dwelling type
- Household size
- Household income
- Vehicle ownership
- Access to services and amenities
- Expenditure on public transport
- Transport problems
- Factors influencing mode choice

The results of these questions are provided below.

3.1.1 Number of Households and Population

The weighted number of households and people living in the Mangaung municipality is provided in Table 3-1 below.

More than a third of the households and population reside in the Mangaung reporting zone and as expected, small numbers live in the central and outlying rural areas.

Table 3-1: Number of households and population

Reporting zone	Number of households	Population
Central	1,600	3,300
Oranjesig	600	1,600
Mangaung	106,200	322,500
Airport/Estoire	1,300	4,000
Naval Hill/Bayswater	6,400	16,600
Tempe/Dan Pienaar	11,400	26,900
Langenhoven Park/Woodlands	7,100	16,200
Universitas	11,600	22,600
Pellissier/Fichardt-Ehrlich Park	11,600	34,200
Thaba Nchu	33,300	96,500
Botshabelo	67,300	222,300
N-E Rural	4,600	11,100
N-W Rural	17,900	52,200
S-W Rural	11,900	40,700
S-E Rural	10,100	28,600
Naledi	10,900	31,200
Mangaung Municipality	313,800	930,500

3.1.2 Dwelling Type

As can be seen in Table 3-2 below, the vast majority of the people in the survey area, live in houses on separate stands. That is also the case in most of the reporting zones – exceptions are Oranjesig

and Universitas, where about half of the households live in flats and townhouses and the Central zone, where flats dominate. The only area with a significant proportion of informal dwellings is Naledi.

Table 3-2: Dwelling type

Reporting zone	Dwelling on separate stand	Flat in block	Townhouse	Backyard dwelling	Informal dwelling	Other
Central	18.3%	80.7%	1.0%			
Oranjesig	42.9%	33.3%	19.1%	4.6%		
Mangaung	92.3%		0.3%	2.5%	4.3%	0.6%
Airport/Estoire	91.4%	1.7%	0.8%	6.2%		
Naval Hill/Bayswater	56.9%	28.8%	8.2%	6.1%		
Tempe/Dan Pienaar	68.7%	10.9%	16.1%	4.3%		
Langenhoven Park/Woodlands	57.3%	1.9%	37.9%	2.8%		
Universitas	50.8%	33.5%	9.8%	5.9%		
Pellissier/Fichardt-Ehrlich Park	87.5%	1.4%	10.5%	0.6%		
Thaba Nchu	93.6%			1.5%	3.7%	1.2%
Botshabelo	92.6%				5.8%	1.6%
N-E Rural	93.3%			4.2%		2.5%
N-W Rural	89.7%		2.8%		4.6%	3.0%
S-W Rural	88.2%			1.1%	2.1%	8.6%
S-E Rural	96.9%			1.9%	1.2%	
Naledi	87.0%			2.6%	10.3%	
Mangaung Municipality	87.6%	2.8%	2.7%	1.9%	3.8%	1.2%

3.1.3 Household Size

Information about household size can be found in Table 3-3 and Figure 3.1. The table shows that the majority of households have between 2 and 4 household members (almost 70 % of the households in the survey area), but that almost 20 per cent of the households are single person households. Even in the rural areas, the multiple member households account for less than 20 per cent of the households.

The mean household size in the different areas ranges between 1.7 and 3.1, with a mean of 2.9 members in the survey area as a whole.

Table 3-3: Household size

Reporting zone	1	2	3-4	5-6	7+
Central	51.9%	31.7%	13.8%	2.7%	
Oranjesig	53.9%	29.8%	14.2%	2.0%	
Mangaung	16.7%	24.4%	41.8%	15.5%	1.5%
Airport/Estoire	44.8%	12.3%	26.0%	14.4%	2.5%
Naval Hill/Bayswater	31.6%	25.7%	33.1%	8.5%	1.0%
Tempe/Dan Pienaar	34.2%	34.5%	29.4%	1.7%	0.1%
Langenhoven Park/Woodlands	44.7%	21.8%	25.6%	7.9%	
Universitas	39.8%	33.2%	24.7%	2.1%	0.2%
Pellissier/Fichardt-Ehrlich Park	24.8%	29.6%	36.8%	7.1%	1.6%
Thaba Nchu	16.5%	23.3%	46.3%	12.4%	1.4%
Botshabelo	12.4%	31.4%	48.1%	7.3%	0.9%
N-E Rural	40.7%	18.0%	31.0%	8.1%	2.2%
N-W Rural	16.9%	42.2%	25.3%	12.6%	3.0%
S-W Rural	16.2%	26.5%	42.0%	9.8%	5.4%
S-E Rural	15.1%	28.3%	46.0%	9.6%	1.0%
Naledi	22.0%	29.0%	34.5%	9.6%	4.9%
Mangaung Municipality	19.3%	27.9%	40.4%	10.8%	1.6%

On the map, the paler colours represent small household sizes and the darker colours larger household sizes. The areas with a mean household size of under 2 are the Central, Oranjesig and Universitas, and Mangaung is the only zone with a mean household size of 3 and over.

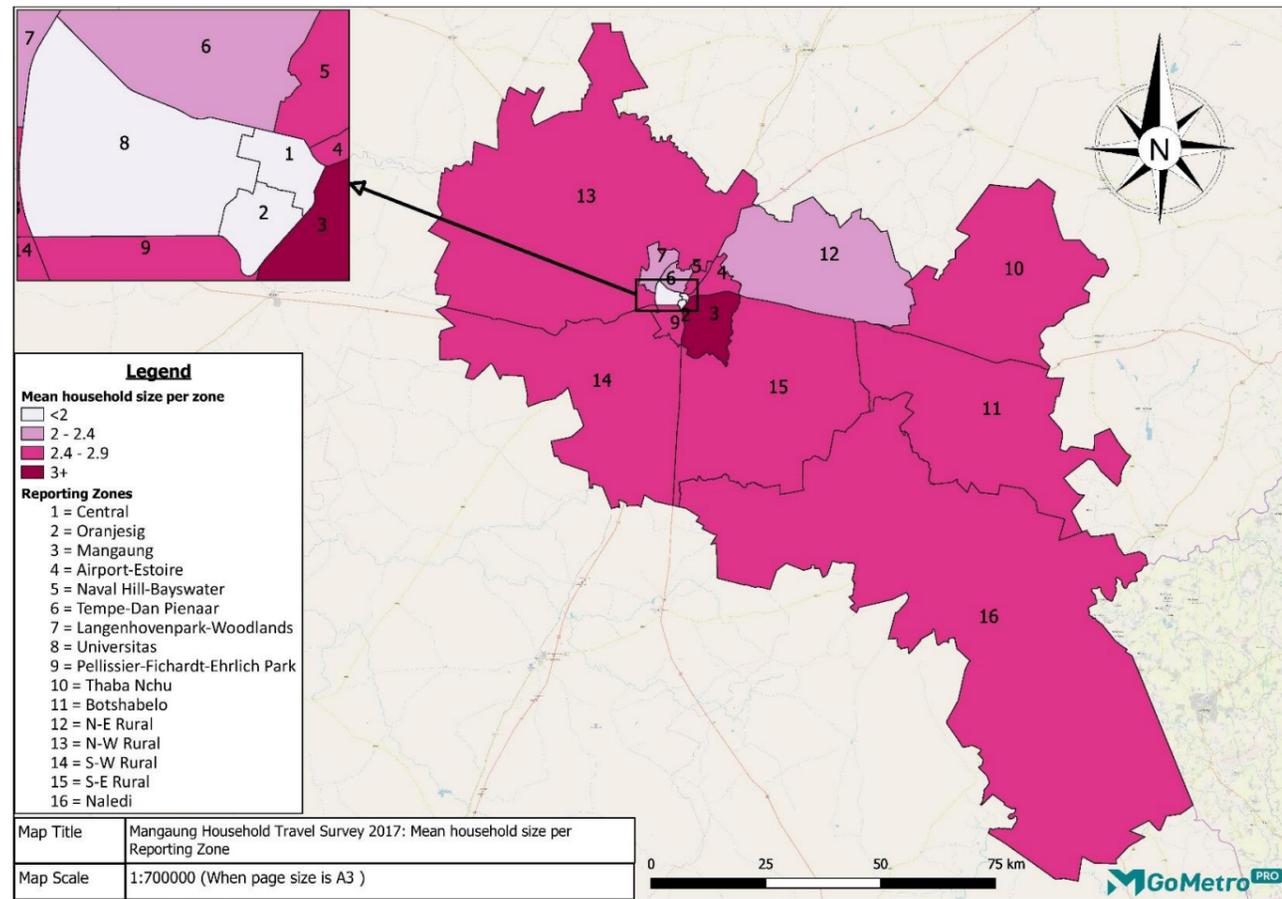


Figure 3-1: Mean household size

3.1.4 Household Income

3.1.4.1 Main source of household income

Respondents were asked about the sources of income for the household and also which of those sources provided the most money for the household.

The results portrayed in Table 3-4 indicate that salaries are the main source of income for the majority of households in the survey area. The other important source of income is grants, especially Thaba Nchu and Botshabelo. In some areas with an ageing population such as Tempe/Dan Pienaar and Pellissier/Fichardt-Ehrlich Park, a significant proportion of households rely on pensions.

Table 3-4: Main source of household income

Reporting zone	Salaries	Business	Pensions	Grants	UIF_remittances	Other
Central	44.5%	5.7%	3.0%	3.6%	17.6%	25.7%
Oranjesig	42.5%	1.4%	10.7%	10.4%	8.5%	26.6%
Mangaung	60.9%	1.9%	11.5%	16.9%	2.8%	6.0%
Airport/Estoire	68.9%	4.3%	16.9%	7.2%	1.8%	0.9%
Naval Hill/Bayswater	57.1%	5.8%	13.2%	7.4%	4.0%	12.4%
Tempe/Dan Pienaar	62.5%	3.9%	17.0%	1.6%	4.8%	10.2%
Langenhoven Park/Woodlands	67.8%	5.6%	8.9%	1.5%	5.3%	11.0%
Universitas	56.8%	3.0%	11.4%	3.3%	3.2%	22.3%

Reporting zone	Salaries	Business	Pensions	Grants	UIF_remittances	Other
Pellissier/Fichardt-Ehrlich Park	74.6%	1.8%	16.6%	5.9%	0.8%	0.3%
Thaba Nchu	40.6%	3.5%	8.5%	39.1%	1.3%	7.0%
Botshabelo	35.7%	1.4%	8.1%	41.5%	3.1%	10.2%
N-E Rural	76.9%		5.8%	9.4%	1.2%	6.7%
N-W Rural	59.6%	5.4%	9.9%	21.2%	1.4%	2.6%
S-W Rural	84.0%	1.1%	3.3%	8.4%	2.1%	1.1%
S-E Rural	71.3%	3.1%	8.4%	4.7%	9.6%	2.9%
Naledi	46.3%	3.4%	13.5%	25.8%	3.1%	7.9%
Mangaung Municipality	54.6%	2.5%	10.3%	22.2%	3.0%	7.5%

3.1.4.2 Household income

It is becoming more and more of a challenge to obtain reliable income from respondents and the matter has to be approached with skill and sensitivity. Unfortunately, for whatever reason, more than half of the survey respondents, and in some areas as many as 80 per cent, refused to provide the necessary information (as can be seen in Figure 3-2). The lack of information has serious implications, as it prevents the calculation of valuable indicators, such as the relationship between household income and household expenditure on public transport.

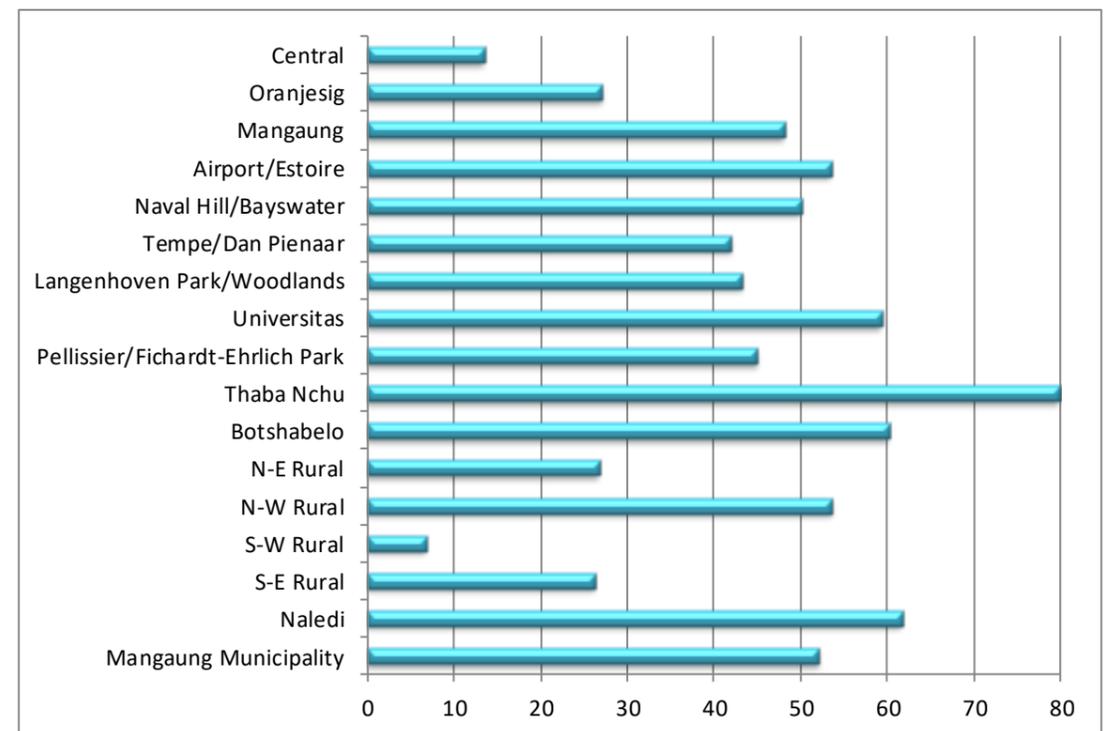


Figure 3-2: Percentage of households that did not provide income information

Table 3-5 provides an indication of the household incomes in the area, based on the information provided by the respondents that were willing to answer the question. In the area as a whole, about 42 per cent of the households reported a monthly income of lower than R4 500. In Naledi and Thaba Nchu, the proportion of low-income families is 57 and almost 80 per cent respectively. However, in Naledi the households are relatively evenly spread over the different groups. Only 16 per cent of the households have an income of more than R16 000 per month.

Table 3-5: Monthly household income

Reporting zone	R201 - R1 500	R1 501 - R4 500	R4 501 - R8 000	R8 001 - R11 000	R16 001 +
Central		48.3%	22.2%	25.5%	4.0%
Oranjesig	4.4%	42.3%	34.9%	15.6%	2.7%
Mangaung	14.1%	23.3%	19.3%	21.7%	21.5%
Airport/Estoire	4.5%	17.7%	10.8%	17.1%	49.8%
Naval Hill/Bayswater	9.3%	24.8%	15.8%	28.3%	21.8%
Tempe/Dan Pienaar	0.9%	15.4%	14.5%	31.7%	37.6%
Langenhoven Park/Woodlands	1.2%	25.3%	11.4%	33.8%	28.4%
Universitas	0.8%	19.7%	20.5%	28.1%	31.0%
Pellissier/Fichardt-Ehrlich Park	10.6%	17.1%	11.1%	23.6%	37.5%
Thaba Nchu	34.8%	42.9%	12.0%	7.8%	2.5%
Botshabelo	21.6%	29.7%	31.3%	15.8%	1.6%
N-E Rural	16.0%	53.9%	13.6%	12.1%	4.5%
N-W Rural	15.6%	49.9%	11.0%	20.1%	3.5%
S-W Rural	9.1%	32.0%	19.9%	24.7%	14.3%
S-E Rural	4.1%	23.5%	32.6%	28.4%	11.3%
Naledi	27.4%	29.2%	22.1%	12.1%	9.2%
Mangaung Municipality	14.2%	27.9%	20.6%	21.2%	16.1%

The mean monthly household income of those that provided income information is displayed in

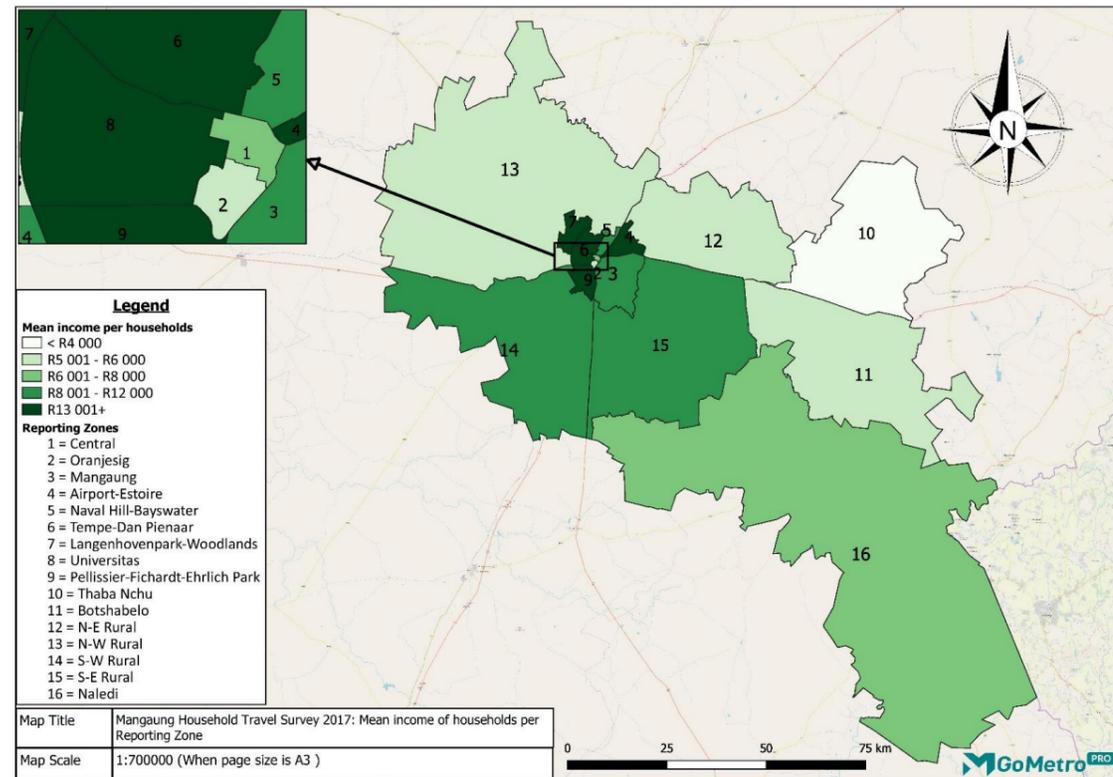


Figure 3-3 – the darker the shading, the higher the income. The incomes range between a low of R3 700 in Thaba Nchu and a high of R16 000 in the Airport/Estoire area. The mean income of the municipality is R9 000.

Please note that this picture is based on a small proportion of the sample in each area (in Thaba Nchu only 20 % and in Naledi 38% of the achieved sample) and should, therefore, be interpreted with circumspection.

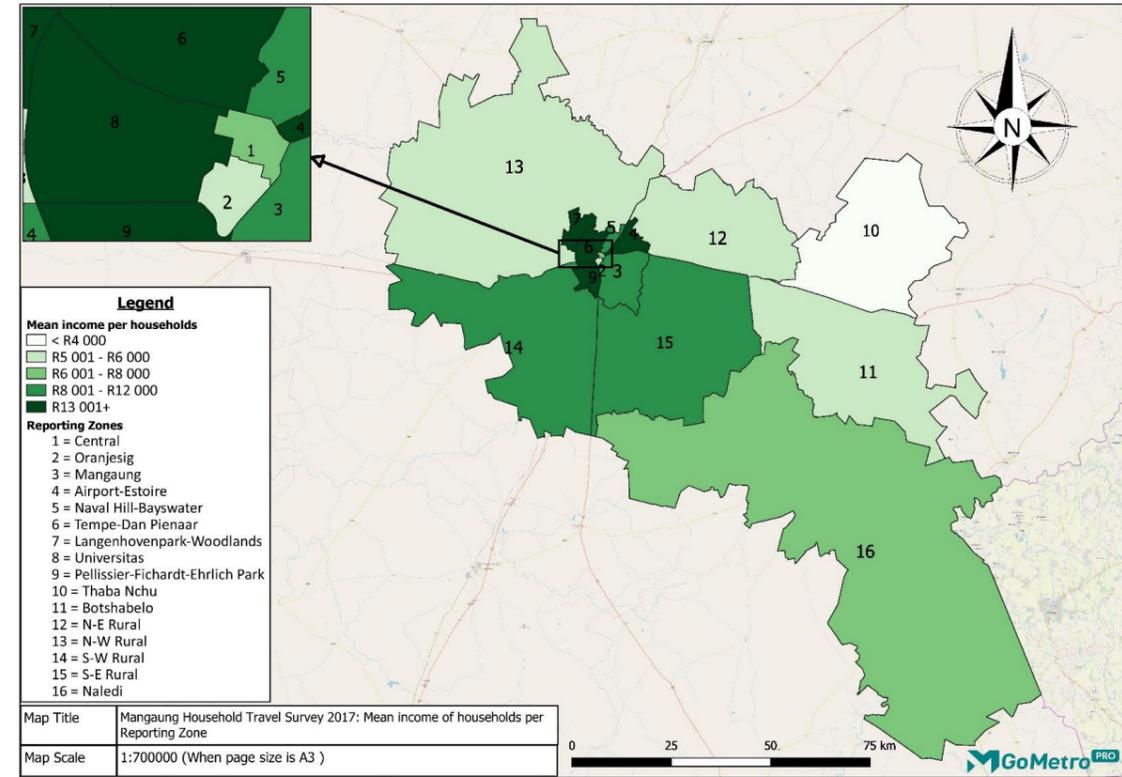


Figure 3-3: Mean Monthly Household Income

3.1.5 Vehicle Ownership and Availability

Respondents were asked to provide information about the different types of vehicle owned by or available to the household for private use. Table 3-6 shows that the ownership of animal-drawn vehicles (with the exception of the S-E rural zone) and motor-cycles is negligible. Bicycle ownership is higher, and on average, eight per cent of households own bicycles. Access to employer-owned vehicles remain relatively low, and as can be expected, car ownership is high (between 80 and 90%) in the established urban areas at the western side of the central zone. More detailed information about the availability of motor vehicles can be seen in Table 3-7.

Of the car-owning households, almost half have more than one vehicle available to the household. However, in the more affluent areas such as the Dan Pienaar and the Langenhoven Park zones and the N-W rural area, car-owning households are likely to have two or more cars available.

Figure 3-4 portrays the information about motor vehicle availability graphically. As can be expected, the darker-shaded areas (indicating a higher proportion of car-owning households) coincide to a great extent with the darker shades in the income map. In Thaba Nchu and Botshabelo, less than 20 per cent of households owns a car.

Table 3-6: Vehicle ownership and availability - % of households and mean number of vehicles

Reporting zone	Bicycles		Motorcycles/ scooters		Motor vehicles owned by employer		Motor vehicles owned by household		Animal-drawn vehicles	
	%	Mean	%	Mean	%	Mean	%	Mean	%	Mean
Central	0.5	0.0	0.0	0.0	0.5	0.0	28.2	0.3	0.0	0.0
Oranjesig	2.0	0.0	2.5	0.0	2.5	0.0	59.3	0.7	0.0	0.0
Mangaung	6.3	0.1	0.0	0.0	3.2	0.0	25.1	0.4	0.0	0.0
Airport/Estoire	12.8	0.2	4.9	0.1	9.8	0.1	73.0	1.2	1.1	0.0
Naval Hill/Bayswater	11.4	0.2	2.4	0.0	12.0	0.1	66.6	1.0	0.0	0.0
Tempe/Dan Pienaar	21.1	0.3	1.8	0.0	9.1	0.1	84.2	1.3	0.0	0.0
Langenhoven Park/Woodlands	15.5	0.3	2.8	0.0	9.2	0.2	84.2	1.4	0.8	0.0
Universitas	12.8	0.2	2.5	0.0	10.8	0.1	58.6	0.9	0.0	0.0
Pellissier/Fichardt-Ehrlich Park	22.7	0.3	3.1	0.0	12.2	0.2	89.3	1.3	0.3	0.0
Thaba Nchu	1.4	0.0	0.0	0.0	2.5	0.0	13.0	0.1	0.4	0.0
Botshabelo	1.2	0.0	0.0	0.0	1.8	0.0	9.8	0.1	0.6	0.0
N-E Rural	5.6	0.1	1.1	0.0	11.9	0.2	59.7	0.7	0.0	0.0
N-W Rural	20.9	0.2	0.0	0.0	11.7	0.1	40.9	0.6	1.0	0.0
S-W Rural	26.6	0.4	3.3	0.0	14.8	0.3	57.3	0.7	1.1	0.0
S-E Rural	9.5	0.1	0.0	0.0	11.0	0.2	67.4	0.8	5.3	0.1
Naledi	5.2	0.1	0.0	0.0	3.1	0.0	34.2	0.4	0.0	0.0
Mangaung municipality	8.0	0.1	0.6	0.0	5.3	0.1	33.1	0.5	0.5	0.0

Table 3-7: Availability of motor vehicles

Reporting Zone	Percentage of households			
	0	1	2	3
Central	71.8%	26.3%	1.4%	0.5%
Oranjesig	40.7%	49.4%	5.2%	4.6%
Mangaung	74.3%	15.1%	9.5%	1.2%
Airport/Estoire	27.0%	35.3%	28.1%	9.6%
Naval Hill/Bayswater	31.3%	34.8%	28.1%	5.7%
Tempe/Dan Pienaar	15.8%	40.6%	32.1%	11.5%
Langenhoven Park/Woodlands	15.0%	37.4%	33.0%	14.6%
Universitas	40.9%	26.5%	28.0%	4.6%
Pellissier/Fichardt-Ehrlich Park	10.7%	48.5%	26.9%	13.9%
Thaba Nchu	85.7%	11.2%	3.1%	
Botshabelo	90.2%	8.0%	1.8%	
N-E Rural	40.3%	40.9%	10.3%	8.5%
N-W Rural	57.0%	17.7%	18.3%	7.0%
S-W Rural	42.7%	35.3%	4.8%	17.2%
S-E Rural	32.6%	43.1%	16.6%	7.8%
Naledi	65.8%	24.0%	9.3%	0.9%
Mangaung Municipality	66.4%	19.4%	10.8%	3.5%

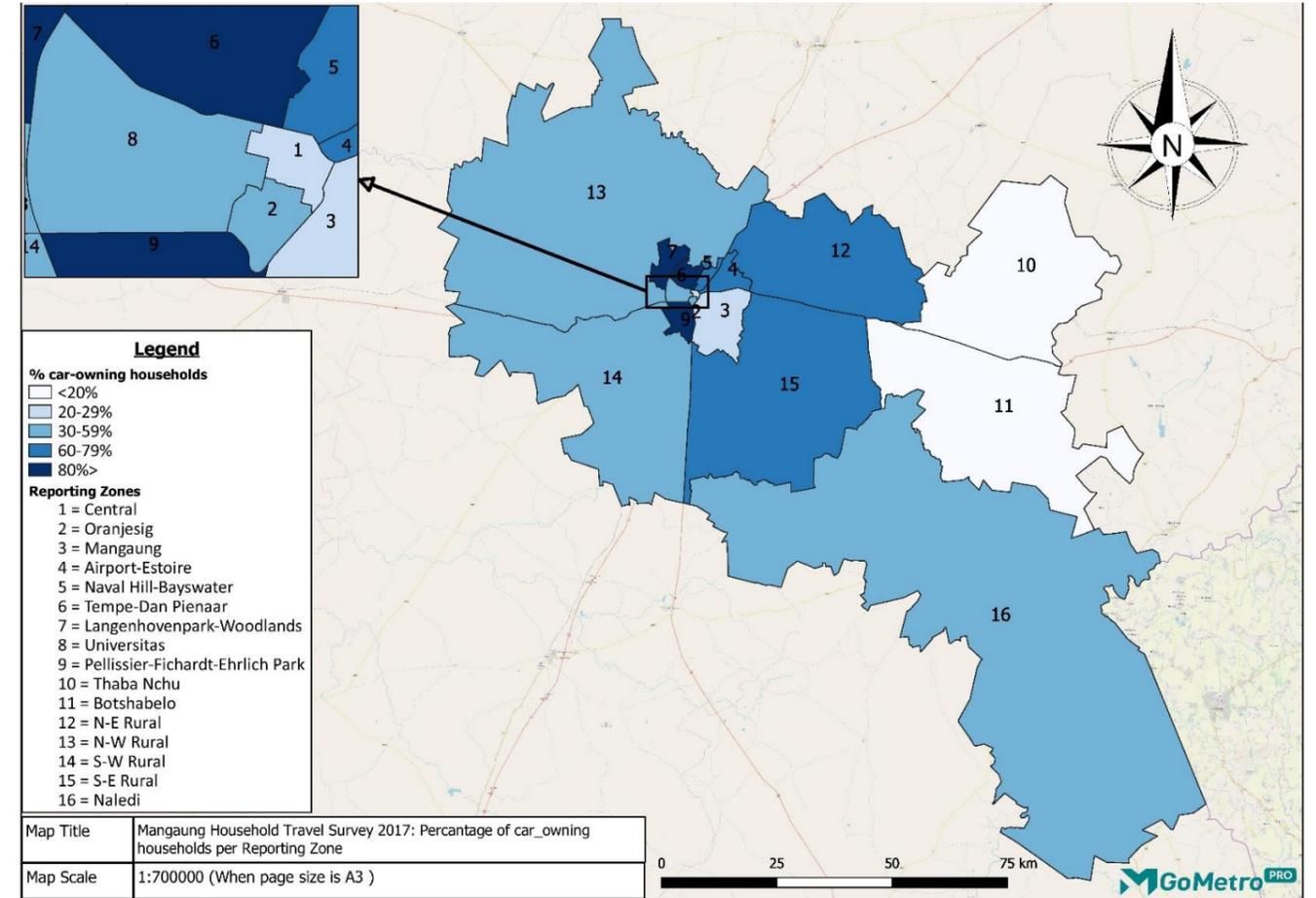


Figure 3-4: Percentage of car-owning households

3.1.6 Access to Public Transport Services

Respondents were asked how long it would take them to walk from their homes to the closest bus stop and taxi service. The information given by the respondents gives an indication of residents of an area’s perception about their access to public transport, but it does not imply that the respondents actually use the service. These perceived walking times are tabulated in Table 3-8 and Table 3-9 below.

The information shows that a range of between three and almost 80 per cent of respondents and 28 per cent on average, reported that there was no bus service in the area or that they were not aware of a service. Areas with very low accessibility to bus services are the Airport/Estoire and Naledi zones.

Table 3-8: Perceived walking times to bus stops

Reporting zone	Percentage of households				
	1 - 5 mins	6 - 10 mins	11 - 20 mins	21+ mins	Don't know/No service
Central	41.3%	20.0%	5.1%		33.6%
Oranjesig	29.7%	6.8%	6.3%		57.2%
Mangaung	42.4%	18.7%	6.8%	2.5%	29.7%
Airport/Estoire	2.9%	8.9%	9.5%	1.1%	77.6%
Naval Hill/Bayswater	31.5%	13.1%	4.1%	2.0%	49.4%
Tempe/Dan Pienaar	23.9%	15.1%	7.3%	1.0%	52.8%
Langenhoven Park/Woodlands	23.3%	29.9%	7.6%	1.7%	37.6%
Universitas	33.0%	15.6%	1.9%	2.2%	47.3%
Pellissier/Fichardt-Ehrlich Park	32.7%	16.0%	8.2%	4.3%	38.8%
Thaba Nchu	32.3%	21.0%	34.7%	7.2%	4.7%
Botshabelo	49.3%	25.6%	19.0%	3.5%	2.6%
N-E Rural	1.1%		18.8%	25.5%	54.6%
N-W Rural	21.9%	6.9%	8.1%	13.3%	50.0%
S-W Rural	3.3%	5.7%	5.0%	29.4%	56.5%
S-E Rural	2.7%	26.9%	15.2%	8.3%	46.9%
Naledi	9.7%	15.2%	9.7%	1.5%	64.0%
Mangaung Municipality	34.9%	18.9%	12.8%	5.3%	28.2%

Taxi services appear to be accessible with between 2 and 55 per cent of the respondents reporting that taxis were unavailable. The most badly-provided areas are the Airport/Estoire and Tempe/Dan Pienaar zones. In the municipality overall, 15 per cent perceived that there was no taxi service available to them.

Table 3-9: Perceived walking times to taxi services

Reporting zone	Percentage of households				
	1 - 5 mins	6 - 10 mins	11 - 20 mins	21+ mins	Don't know/No service
Central	51.0%	22.9%	6.9%	1.4%	17.8%
Oranjesig	32.9%	10.5%	9.4%		47.2%
Mangaung	55.2%	25.7%	12.7%	1.8%	4.7%
Airport/Estoire	8.1%	15.8%	20.2%	1.1%	54.8%
Naval Hill/Bayswater	48.2%	8.4%	7.9%	1.3%	34.1%
Tempe/Dan Pienaar	31.6%	16.3%	6.8%		45.3%
Langenhoven Park/Woodlands	21.7%	33.8%	7.8%	2.9%	33.7%
Universitas	35.4%	18.5%	7.3%	1.1%	37.7%
Pellissier/Fichardt-Ehrlich Park	29.7%	20.5%	10.6%	1.7%	37.5%
Thaba Nchu	48.1%	17.3%	29.6%	1.3%	3.7%
Botshabelo	48.2%	34.6%	14.2%	0.6%	2.4%
N-E Rural	3.4%	2.3%	28.4%	28.0%	37.8%
N-W Rural	22.0%	13.8%	16.2%	14.1%	33.8%
S-W Rural	3.3%	14.9%	22.8%	18.3%	40.6%
S-E Rural	8.4%	25.7%	17.7%	6.7%	41.4%
Naledi	43.1%	21.4%	20.5%	6.0%	8.9%
Mangaung Municipality	42.7%	24.1%	15.3%	3.4%	14.5%

Figure 3-5 displays the percentage of households that are within a 10-minute walk to a bus and taxi service respectively. Not unexpectedly, taxis are perceived to be available by more respondents than are buses. Botshabelo, the Central zone and Mangaung are relatively accessible to both public transport modes.

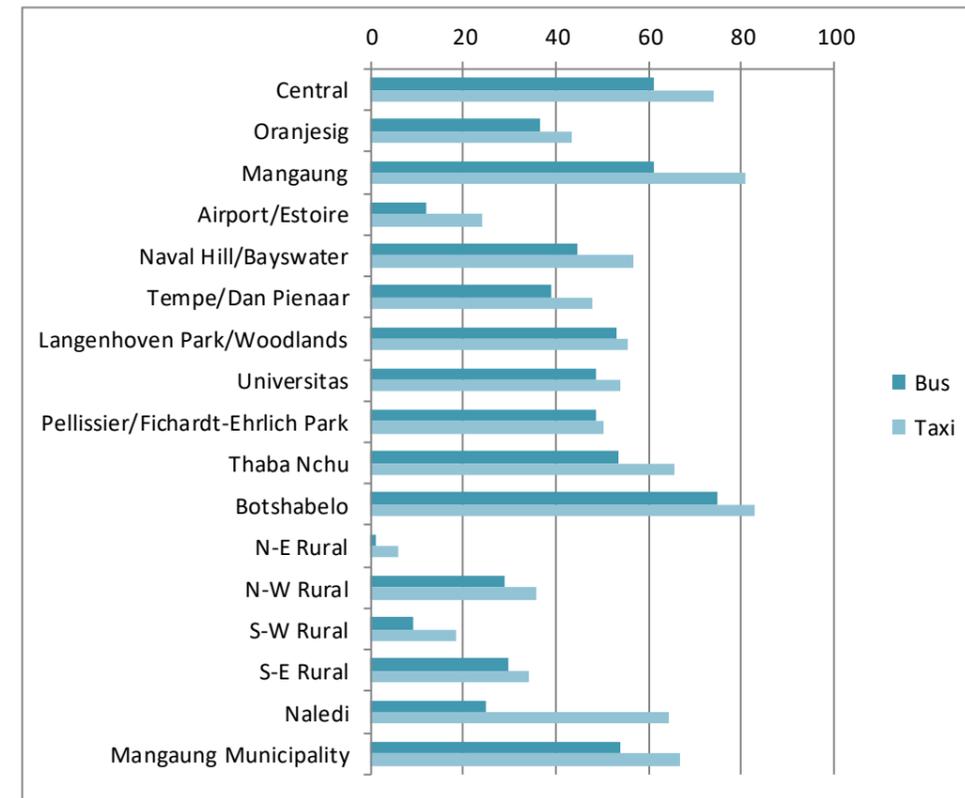


Figure 3-5: Percentage of households that are within a 10-minute walk to public transport

3.1.7 Access to services and amenities

The responses to the questions about modes to services and amenities are shown in Table 3-10 and Table 3-11. According to the results, walk is the dominant mode for travel to the nearest food and other shops, while taxi is the most-used mode for travel to other services and amenities. Very small proportions of households can't get to the services or don't go there. Understandably, 38 per cent of the households do not visit tribal authorities.

Table 3-10: Modes to services and amenities

Service	Percentage of households					
	Walk	Taxi	Car/bakkie/truck/lorry	Metered taxi/Bicycle/Motorcycle	Can't get there/Do not know	Don't go there
Food shop	47.6	31.7	20.0	0.4	0.1	0.2
Other shops	41.2	36.7	21.5	0.5	0.1	0.0
ATM/Bank	18.6	57.4	23.3	0.7	0.1	0.0
Medical services	20.8	53.4	25.0	0.7	0.1	0.0
Post Office	16.0	59.0	24.0	0.4	0.3	0.2
Welfare offices	11.2	57.6	22.8	0.2	4.3	3.9
Police station	21.9	52.6	24.2	0.5	0.7	0.1
Municipal offices	15.1	58.9	24.8	0.6	0.5	0.1
Tribal Authority	26.6	25.5	9.3	0.0	0.8	37.8

The majority of households who do so, are able to travel to all the services and amenities listed in the table below within 20 minutes: 68 per cent to a food shop, 75 per cent to other shops, 60 per cent to an ATM, 59 per cent to medical services, 58 per cent to a post office, 52 per cent to a welfare office, 58 per cent to a police station, 53 per cent to municipal offices and 65 per cent to their Tribal authority. The vast majority can get there within 30 minutes.

Table 3-11: Travel time to services and amenities

Service	Percentage of households				
	5 mins	6 - 10 mins	11 - 20 mins	21 - 30 mins	31+ mins
Food shop	25.4	18.0	25.1	24.0	7.6
Other shops	18.7	26.2	30.6	15.5	8.9
ATM/Bank	8.3	12.8	38.5	29.3	11.0
Medical Services	3.6	8.9	46.1	29.4	12.1
Post Office	5.8	10.3	41.6	30.9	11.4
Welfare Office	1.8	6.9	43.7	31.5	16.2
Police Station	4.5	14.0	39.3	30.4	11.8
Municipal Offices	3.0	7.2	42.5	31.6	15.7
Tribal Authority	7.8	13.5	43.3	21.4	13.9

Public Transport Expenditure Table 3-12 shows the percentage of households that spend money on public transport to work for different purposes. The majority of households have no expenditure on transport to work and 73 per cent do not spend money on travel to education. For other purposes, however, the majority of households have some public transport expenditure.

Table 3-12: Monthly household expenditure on public transport

Purpose	Percentage of households					
	R0	R1 - R200	R201 - R400	R401 - R600	R601 - R1 000	R1 001+
Work	56.9	3.5	13.2	11.5	12.1	2.8
Education	73.0	2.8	9.1	7.8	7.0	0.4
Other	29.7	27.3	22.9	11.4	6.6	2.1

Only 20 per cent of households in the Mangaung municipality do not spend any money on public transport – see Table 3-13. The proportion of households obviously differs from area to area, ranging from a low of 10 per cent in Botshabelo and 65 per cent in the Airport/Estoire zone, where the majority of households reported that they did not have access to public transport. On the other side of the picture, the same proportion of households (20%) spend more than R1 000 per month on public transport.

Table 3-13: Total monthly household expenditure on public transport

Reporting Zone	All households	Those who spend on PT
Central	996	1130
Oranjesig	496	742
Mangaung	700	804
Airport/Estoire	272	767
Naval Hill/Bayswater	600	860
Tempe/Dan Pienaar	607	1079
Langenhoven Park/Woodlands	598	911
Universitas	603	826
Pellissier/Fichardt-Ehrlich Park	744	1012
Thaba Nchu	402	597
Botshabelo	655	724
N-E Rural	634	945
N-W Rural	536	702
S-W Rural	669	1064
S-E Rural	476	811
Naledi	470	623
Mangaung municipality	622	784

The graph in Figure 3-6 shows clearly in which areas the households spend at least R1 000 per month on public transport – namely, the Central zone, Tempe/Dan Pienaar, Pellissier/Fichardt-Ehrlich Park and the S-W Rural zone. The mean monthly expenditure of all respondents (including those who do not spend anything on public transport) is R620 and those who do spend on public transport, R780 per month.

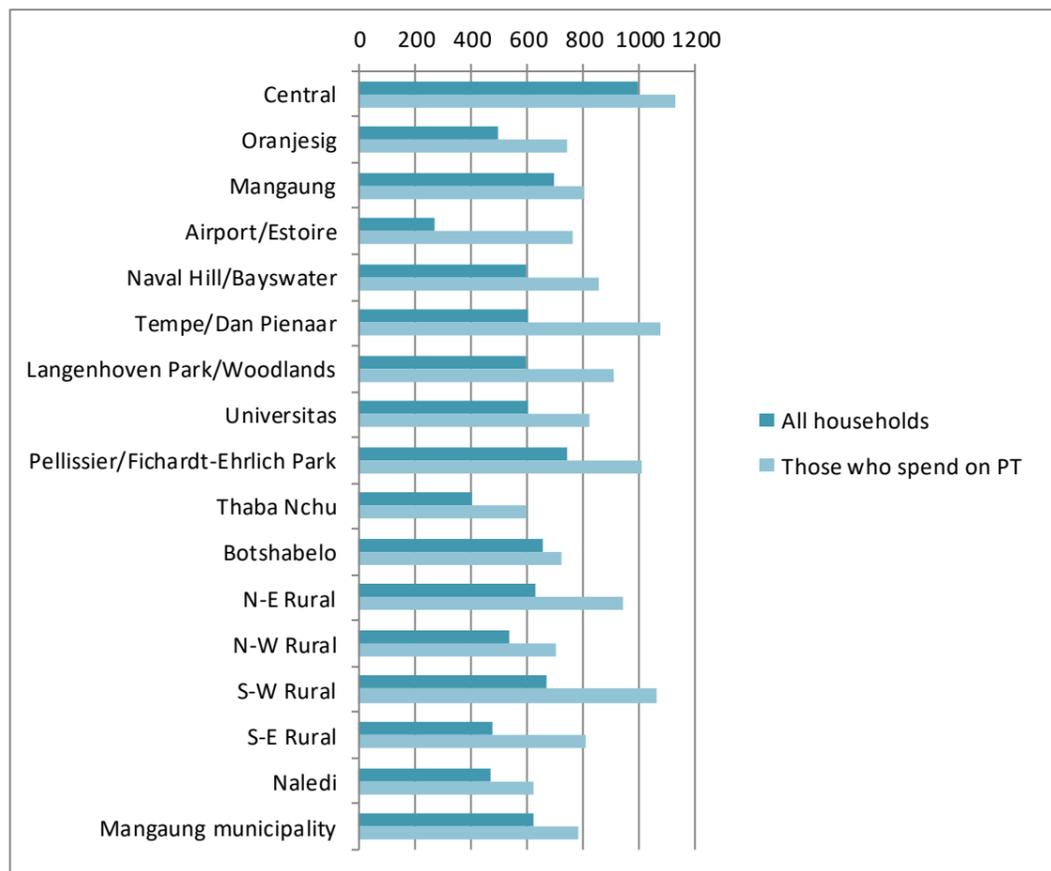


Figure 3-6: Mean expenditure on public transport (R per month)

3.1.8 Transport Problems

Relatively early in the interview, before other questions could introduce bias, respondents were asked what the most important transport-related problem was that the household experienced. The answers to that question are portrayed in Figure 3-7. It is obvious that the residents experience many problems, but the poor condition of roads and the lack of availability of buses were mentioned most often. In fact, three of the top four problems are related to the bus service.

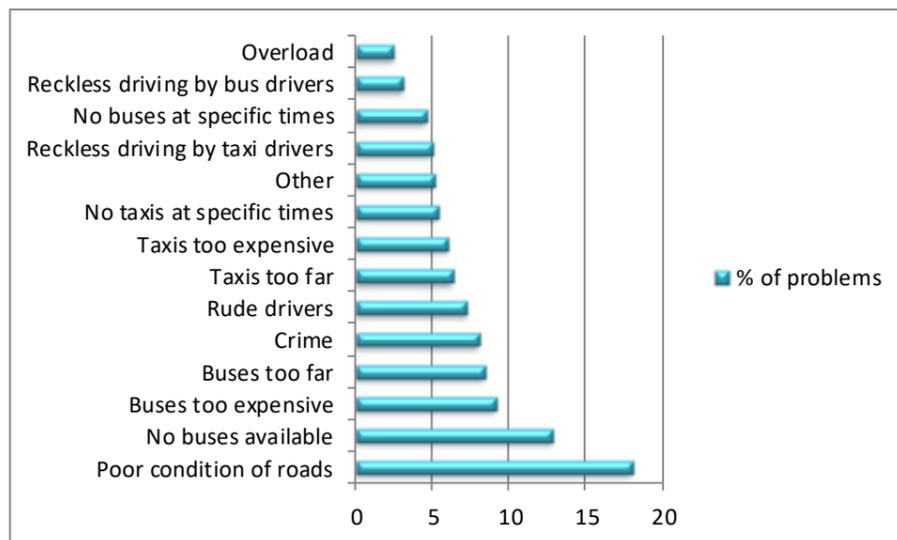


Figure 3-7: Problems mentioned by respondents

The problems mentioned obviously varied between the zones and the two problems that were mentioned most often in the different zones, are listed in Table 3-14. In seven of the zones, the poor condition of the road emerged as the top problem and in six other zones as the second. The lack of availability of buses was mentioned as the top problem in seven zones and as second in four other zones. Crime was mentioned most often in the Pellissier/Fichardt-Ehrlich Park zone, and the distance to buses in Thaba Nchu. Other secondary problems are crime, the distance to buses and the cost of bus travel in two zones each.

Table 3-14: Transport problems experienced by households in the different zones

Reporting Zone	Factors	% of problems
Central	Poor condition of roads	54.4
	No buses available	16.1
Oranjesig	Poor condition of roads	39.5
	No buses available	11.9
Mangaung	Poor condition of roads	18.4
	No buses available	11.7
Airport/Estoire	No buses available	39.2
	Poor condition of roads	25.0
Naval Hill/Bayswater	No buses available	17.2
	Poor condition of roads	16.2
Tempe/Dan Pienaar	Poor condition of roads	34.4
	Crime	21.9
Langenhoven Park/Woodlands	Poor condition of roads	33.9
	Crime	13.6
Universitas	Poor condition of roads	26.8
	No buses available	10.2
Pellissier/Fichardt-Ehrlich Park	Crime	25.3
	Poor condition of roads	17.3
Thaba Nchu	Buses too far	25.2
	Buses too expensive	17.2
Botshabelo	Poor condition of roads	19.9
	Buses too expensive	19.4
N-E Rural	No buses available	41.4
	Poor condition of roads	14.8
N-W Rural	No buses available	27.5
	Poor condition of roads	13.8
S-W Rural	No buses available	41.6
	Buses too far	23.9
S-E Rural	No buses available	41.4
	Buses too far	12.5
Naledi	No buses available	32.5
	Poor condition of roads	17.9
Mangaung Municipality	Poor condition of roads	17.9
	No buses available	12.7

3.1.9 Factors influencing mode choice

Respondents were also asked what the most important factor was that they considered when choosing a mode of transport. The results are displayed in Figure 3-8 in order of frequency of mention. Travel time was responsible for 27 per cent of the mentions, and comfort and flexibility for a further 23 per cent.

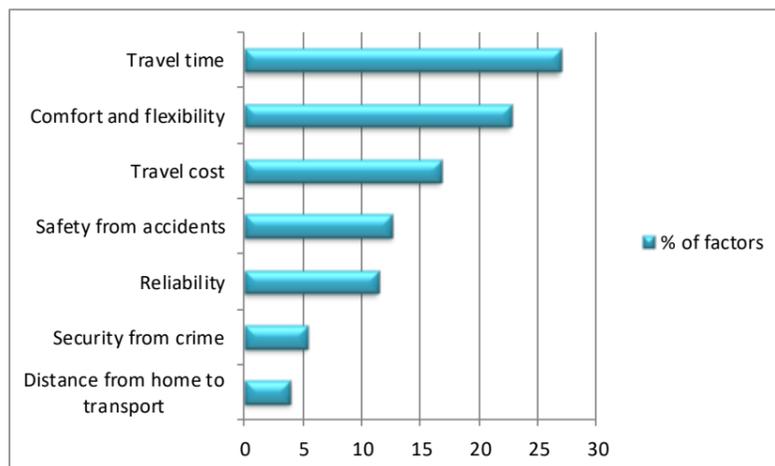


Figure 3-8: Most important factor for mode choice

When studying the results by reporting zone in Table 3-15, it is evident that those were the factors mentioned most often or second most often in most of the zones, with the exception of Naledi where travel cost and safety from accidents were the two relevant factors. Travel cost also featured in four other zones and safety from accidents and reliability in four.

Table 3-15: Most important factors influencing mode choice

Reporting Zone	Factors	% of factors
Central	Reliability	32.8
	Comfort and flexibility	26.7
Oranjesig	Safety from accidents	23.4
	Comfort and flexibility	21.4
Mangaung	Travel time	26.9
	Travel cost	16.2
Airport/Estoire	Travel time	36.8
	Safety from accidents	31.3
Naval Hill/Bayswater	Travel time	25.8
	Reliability	24.5
Tempe/Dan Pienaar	Safety from accidents	26.6
	Travel time	26.2
Langenhoven Park/Woodlands	Reliability	26.3
	Travel time	26.2
Universitas	Travel time	26.8
	Safety from accidents	17.2
Pellissier/Fichardt-Ehrlich Park	Travel time	30.4
	Comfort and flexibility	23.1
Thaba Nchu	Travel time	37.2
	Comfort and flexibility	32.0
Botshabelo	Comfort and flexibility	46.7
	Travel time	20.0
N-E Rural	Travel time	44.6
	Travel cost	21.3
N-W Rural	Travel time	32.1
	Travel cost	17.4
S-W Rural	Travel time	25.1
	Travel cost	25.0
S-E Rural	Travel time	35.2
	Reliability	17.6
Naledi	Travel cost	23.2
	Safety from accidents	18.4
Mangaung Municipality	Travel time	26.8
	Comfort and flexibility	23.9

3.2 Population Characteristics - Results

It is important to collect and report on demographic variables, as these influence travel needs and behaviour.

3.2.1 Age

The age structure of the population is shown in Table 3-16. Because of the weighting process, the proportions reflect those of the 2017 population estimates. In the survey area as a whole, 27 per cent of the population is under 15 years of age. In some zones, such as the Langenhoven Park/Woodlands and Mangaung zones, that proportion rises to over 30 per cent. Fifty percent of the municipality's population lies in the productive 25 – 64 age group. Overall, 7 per cent of the population is older than 64, while that figure rises to 12 per cent in the Oranjesig and Tempe/Dan Pienaar zones.

Considering the sample row at the bottom of the table, it shows that the younger age groups were underrepresented in the achieved sample, and the older age groups overrepresented. *This anomaly can be explained by a misunderstanding between the client and the survey team, who understood that personal details of household members under 6 years of age need not be recorded.*

Table 3-16: Population age

Reporting Zone	Percentage of all persons						
	0 - 4	5 - 14	15 - 24	25 - 34	35 - 44	45 - 64	65+
Central	4.3%	5.9%	46.6%	19.8%	9.5%	12.2%	1.8%
Oranjesig		5.8%	23.8%	17.0%	18.3%	22.8%	12.3%
Mangaung	12.8%	19.7%	17.1%	19.4%	12.2%	14.4%	4.3%
Airport/Estoire	3.1%	13.8%	9.0%	16.0%	17.1%	38.5%	2.5%
Naval Hill/Bayswater	6.9%	12.3%	17.9%	19.9%	17.8%	18.5%	6.7%
Tempe/Dan Pienaar	2.1%	15.0%	16.1%	9.8%	23.2%	21.5%	12.2%
Langenhoven Park/Woodlands	19.1%	15.8%	15.6%	18.4%	13.9%	13.4%	3.9%
Universitas	0.8%	6.1%	35.0%	18.6%	16.2%	16.4%	6.8%
Pellissier/Fichardt-Ehrlich Park	6.3%	10.2%	13.8%	11.3%	17.6%	32.9%	7.8%
Thaba Nchu	9.5%	20.8%	10.5%	17.0%	17.0%	19.0%	6.2%
Botshabelo	6.6%	21.7%	18.0%	14.9%	11.4%	17.5%	9.9%
N-E Rural	15.3%	5.0%	11.0%	29.7%	11.4%	22.3%	5.4%
N-W Rural	3.6%	7.8%	10.0%	33.0%	17.7%	23.0%	4.8%
S-W Rural	7.3%	16.7%	7.7%	21.9%	19.9%	22.1%	4.4%
S-E Rural	3.0%	22.1%	13.3%	20.3%	20.1%	18.5%	2.7%
Naledi	4.6%	22.7%	21.6%	14.7%	9.6%	17.8%	9.0%
Mangaung Municipality	8.7%	18.4%	16.1%	18.3%	14.1%	17.9%	6.5%
Sample	2.5%	12.8%	18.0%	19.2%	16.0%	22.4%	9.1%

3.2.2 Gender and Race

The sample information in the bottom row of Table 3-17 indicates that there was an underrepresentation of male respondents in the achieved sample. Similarly, there was an overrepresentation of white respondents at the cost of Blacks.

The rest of the table reflects the gender and age characteristics of the 2017 mid-year population estimates. In the rural areas of Naledi and Thaba Nchu, females dominate. With the exception of the zones to the western side of the central zone, Blacks form the majority of the population.

Table 3-17: Gender and race of the population

Reporting Zone	Percentage of all persons					
	Gender		Race			
	Male	Female	Black	Coloured	Asian/Indian	White
Central	60.6%	39.4%	94.7%	1.2%	0.7%	3.4%
Oranjesig	54.2%	45.8%	39.2%	10.5%	0.1%	50.3%
Mangaung	47.9%	52.1%	91.1%	7.6%	0.9%	0.4%
Airport/Estoire	68.4%	31.6%	29.0%	20.2%	0.1%	50.7%
Naval Hill/Bayswater	51.7%	48.3%	40.1%	16.2%	0.4%	43.2%
Tempe/Dan Pienaar	56.4%	43.6%	22.6%	5.1%	0.6%	71.8%
Langenhoven Park/Woodlands	52.9%	47.1%	20.9%	0.9%		78.2%
Universitas	60.5%	39.5%	56.0%	2.8%		41.1%
Pellissier/Fichardt-Ehrlich Park	56.2%	43.8%	35.0%	5.5%	0.3%	59.2%
Thaba Nchu	39.8%	60.2%	100.0%			
Botshabelo	47.1%	52.9%	99.9%	0.1%		
N-E Rural	45.8%	54.2%	79.9%			20.1%
N-W Rural	47.8%	52.2%	80.5%	4.6%		14.9%
S-W Rural	63.2%	36.8%	62.9%	4.8%		32.4%
S-E Rural	65.2%	34.8%	91.9%	2.3%		5.8%
Naledi	41.4%	58.6%	88.1%	3.7%		8.2%
Mangaung Municipality	49.0%	51.0%	84.7%	4.2%	0.3%	10.8%
Sample	44.9%	55.1%	75.3%	4.2%	0.4%	20.1%

3.2.3 Education

Table 3-18 provides information about the educational levels of all members of the household. It is understandable that the zones with bigger than average proportions of young children, also have bigger than average proportions of people with no formal education. As might be expected, the zones to the west of the central zone have more people with degrees and other post Grade 12 education.

Table 3-18: Highest education level attained (all ages)

Reporting Zone	Percentage of all persons							
	None	Some primary school	Completed primary school	Some high school	Completed high school	NTC certificate	Other certificate or diploma	Degree
Central	4.3%	6.4%	1.5%	18.1%	56.3%	6.5%	2.8%	4.2%
Oranjesig		6.8%	2.5%	23.0%	57.1%	2.7%	4.8%	3.2%
Mangaung	14.1%	19.7%	3.1%	22.3%	32.1%	2.1%	4.7%	1.9%
Airport/Estoire	3.9%	9.9%	2.8%	18.0%	37.7%	2.3%	8.8%	16.5%
Naval Hill/Bayswater	7.9%	10.5%	3.1%	10.8%	45.1%	5.2%	9.2%	8.2%
Tempe/Dan Pienaar	2.4%	10.9%	0.8%	18.1%	31.0%	3.5%	11.7%	21.7%
Langenhoven Park/Woodlands	22.5%	13.4%	0.4%	13.7%	22.0%	3.5%	7.2%	17.3%
Universitas	1.9%	4.3%		11.1%	55.9%	5.7%	10.7%	10.4%
Pellissier/Fichardt-Ehrlich Park	7.4%	7.4%	2.5%	20.3%	34.6%	6.4%	9.5%	11.9%
Thaba Nchu	12.8%	20.6%	5.5%	29.5%	25.4%	1.2%	4.0%	1.0%
Botshabelo	11.2%	26.9%	6.1%	30.6%	21.5%	2.1%	0.8%	0.9%
N-E Rural	18.5%	11.6%	3.2%	43.1%	15.1%	0.5%	3.9%	4.1%
N-W Rural	10.9%	25.3%	4.2%	29.8%	18.1%		8.5%	3.3%
S-W Rural	12.5%	22.6%	3.9%	27.5%	21.9%	1.8%	6.3%	3.6%
S-E Rural	8.8%	22.3%	2.2%	27.0%	27.7%	6.1%	4.8%	1.1%
Naledi	7.6%	28.4%	4.5%	30.5%	22.7%	3.6%	1.3%	1.5%
Mangaung Municipality	11.8%	20.9%	4.0%	25.7%	27.7%	2.4%	4.4%	3.2%

It is worth mentioning that only two percent of the 15 and above group of the population has no formal education and those are mainly situated in the rural zones in the south of the city.

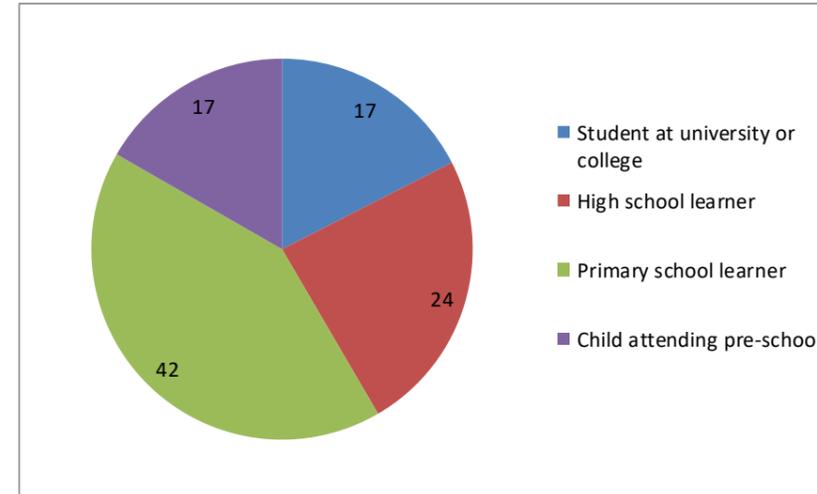


Figure 3-9: Student/learner types – a percentage of all

The different student types are displayed in Figure 3-9. Not surprisingly, the biggest proportion of the estimated 310 000 attends primary school (about 130 000), a quarter (about 74 000) attends high school, and 17 per cent are students at a college or university (54 000) and children attending pre-school (52 000).

All learners attend school five days a week, as well as the majority of students (83%) and pre-school attendees (73%).

Overall, 61 per cent of all students/learners attend an institution in the same zone as their homes – 74 per cent of primary school learners, 72 per cent of high school learners, 70 per cent of pre-school attendees, but not surprisingly, only 6 per cent of students.

3.2.4 Main occupation

Table 3-19 shows the occupational status of all persons – this obviously affects the individual’s need to travel. In the Mangaung Municipality, about one in four people work in a full-time capacity and almost the same proportion is unemployed. The proportion of unemployed is markedly higher in Botshabelo and N-W rural. Not surprisingly, a third of the people living in the Universitas are students.

Table 3-19: Occupational status – all persons

Reporting Zone	Percentage of all persons										
	Full-time worker	Part-time worker	Un-employed	Unable to work	Pensioner	Housewife/husband	Student	High school learner	Primary school learner	Pre-school/day-mother	Child staying at home
Central	29.8%	0.5%	16.7%	6.5%	3.5%	0.9%	26.9%	5.2%	5.1%	2.5%	2.6%
Oranjesig	26.3%	15.2%	14.8%	1.6%	12.5%	1.1%	19.8%	3.3%	5.4%		
Mangaung	25.3%	3.1%	17.9%	1.1%	7.0%	1.0%	8.2%	8.3%	13.9%	6.6%	7.7%
Airport/Estoire	45.3%	1.1%	11.0%	0.4%	11.3%	6.9%	2.6%	7.5%	10.3%	1.0%	2.5%
Naval Hill/Bayswater	35.4%	1.9%	16.4%	0.3%	7.3%	1.8%	13.8%	5.1%	10.8%	3.6%	3.7%
Tempe/Dan Pienaar	42.2%	1.8%	9.2%		14.4%	2.4%	8.5%	9.7%	9.7%		2.1%
Langenhoven Park/Woodlands	37.3%	0.8%	5.4%	0.3%	5.5%	2.0%	10.3%	8.0%	9.4%	10.5%	10.7%
Universitas	37.5%	1.1%	11.5%	0.2%	8.5%	1.4%	32.4%	3.0%	2.7%	1.7%	
Pellissier/Fichardt-Ehrlich Park	43.0%	2.7%	10.4%		16.3%	2.0%	5.7%	5.8%	7.1%	5.3%	1.6%
Thaba Nchu	24.1%	2.1%	24.7%	0.5%	11.7%	0.4%	1.6%	9.0%	15.5%	9.3%	1.1%
Botshabelo	11.6%	0.8%	35.3%	0.2%	13.0%	0.2%	3.3%	10.0%	18.5%	5.5%	1.6%
N-E Rural	34.3%	3.8%	26.2%	3.4%	6.9%	3.3%	0.6%	2.5%	2.9%		16.0%
N-W Rural	28.9%	11.2%	33.2%		9.8%	2.4%	1.6%	1.9%	7.3%	0.9%	2.7%
S-W Rural	38.6%	6.4%	16.3%	1.0%	7.2%	4.2%	1.2%	3.0%	14.8%	3.2%	4.1%
S-E Rural	36.5%	0.5%	17.7%	2.0%	5.5%	4.1%	1.2%	7.5%	16.7%	5.7%	2.7%
Naledi	20.4%	10.7%	21.9%	2.1%	9.6%	2.5%	0.9%	14.2%	11.3%	3.5%	2.9%
Mangaung Municipality	24.9%	3.1%	22.8%	0.7%	9.7%	1.3%	5.8%	8.0%	13.9%	5.6%	4.3%

Figure 3-10 displays the occupational status of those who are 15 years or older. Of this group, 40 per cent work full time and a further 5 per cent part-time. More than a third is unable to work. The very small proportion of homemakers (2%) is noteworthy.

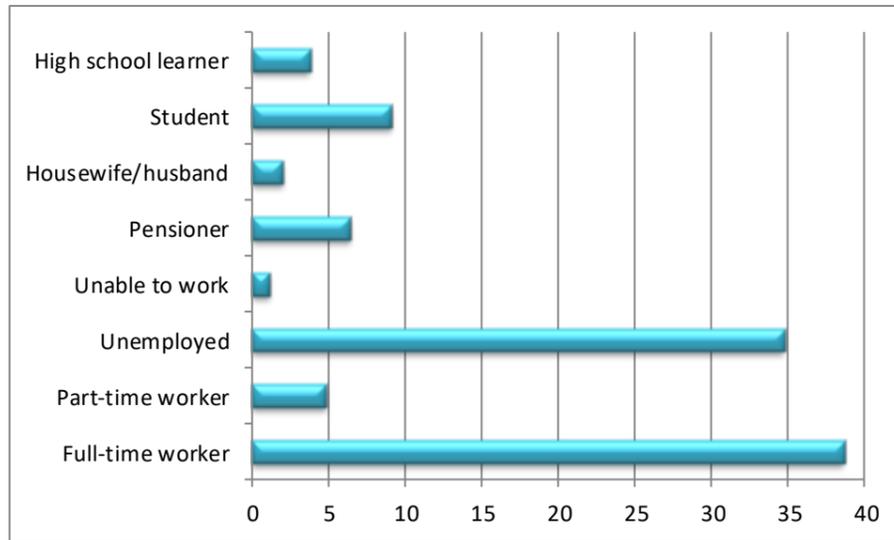


Figure 3-10: Occupational status of those 15 years and older

3.2.5 Possession of a driver’s licence

Possession of a driver’s licence and the different types are listed in Table 3-20. In the municipality, two per cent have a motorcycle licence, five per cent have a heavy vehicle licence and 22 per cent a motor vehicle licence – in total 28 per cent of those 18 years and over, have a driver’s licence of some sort. The areas where more than 70 per cent have a driver’s licence (Tempe/Dan Pienaar, Langenhoven Park/Woodlands and Pellissier/Fichardt-Ehrlich Park) are also the areas where car ownership is over 80 per cent.

Table 3-20: Possession of a driver’s licence among people 18 years and over

Reporting Zone	Percentage of persons 18 years and over			
	Driver’s licence	Motorcycle licence	Passenger vehicle	Heavy vehicle
Central	37.5%		31.2%	6.3%
Oranjesig	52.6%		42.5%	11.1%
Mangaung	23.0%	0.1%	20.5%	2.7%
Airport/Estoire	72.9%	4.7%	48.9%	24.7%
Naval Hill/Bayswater	64.6%	6.6%	51.8%	10.5%
Tempe/Dan Pienaar	76.9%	3.9%	64.9%	13.0%
Langenhoven Park/Woodlands	79.4%	2.3%	70.8%	8.3%
Universitas	57.2%	3.9%	46.9%	7.3%
Pellissier/Fichardt-Ehrlich Park	76.5%	4.3%	62.8%	11.4%
Thaba Nchu	15.6%	4.1%	7.3%	4.0%
Botshabelo	7.5%	0.8%	5.0%	1.7%
N-E Rural	27.3%	1.6%	22.3%	6.8%
N-W Rural	27.6%	1.3%	23.2%	5.4%
S-W Rural	45.4%	2.1%	30.0%	14.1%
S-E Rural	49.7%	3.9%	43.1%	5.4%
Naledi	23.2%		14.6%	8.6%
Mangaung Municipality	28.0%	1.6%	22.3%	4.9%

3.3 People with Categories of Special Needs

The Department of Transport in South Africa recognizes and emphasise the accommodation of people with categories of special needs. The following groups are recognised as people with categories of special needs:

- **People with disabilities:** defined in the Act like people with a physical, sensory or mental disability; which may be permanent or temporary.
- **The aged:** or elderly people. People over the age of 55 usually fall in this category.
- **Pregnant women:** usually taken as women in their last three months of pregnancy.
- **Young children:** this is usually defined as children between the ages of 0-14.
- **Those who are limited in their movements by children:** men and women accompanying young children.
- **Signage passengers:** People who are unable to read or who are unable to understand the language used on the signage. Tourists are also included as signage passengers.
- **Female passengers:** whilst safety and security affect all passenger groups and both genders, it should be noted that female passengers (together with People with Disabilities) are particularly at risk of crime and abuse.
- **Load-carrying passengers:** people carrying bags, luggage, or goods of a size that means that they benefit from accessibility features. This bare important for people on low incomes in South Africa. People travelling with bicycles are generally also included in this category.

In this section of the report detail is provided pertaining to information obtained as part of the household travel survey pertaining to “people with disabilities”. Given the accepted norm of a sample size of 1% of the population for household travel surveys, it is acknowledged that additional surveys are required to attain accurate information related to people with special categories of need that need to inform the design of the integrated transport system of MMM.

Acknowledging the aforementioned, Census 2011 reported that 15% of the population could be regarded as young adults (119 336) and 44% is of working age (338 032), which means that a large number of people will be dependent on public transport to get to and from work and/or educational facilities each day.

Table 3-21 to Table 3-23 reflect the people with disabilities which could have a bearing on the provision of public transport are:

- Persons with degrees of walking and climbing difficulties are reported to be in the order of 11 746 people (3% of the population).
- Persons with assistive devices and medication (e.g. walking stick/frame) equals 8324 people (2% of the population).
- Persons with assistive devices and medication (e.g. wheelchair) equals 5904 people (2% of the population).

Table 3-21: Mangaung MM: Persons with Walking or Climbing Difficulties, Census 2011

Reporting Zones	No difficulty	Some difficulty	A lot of difficulty	Cannot do at all	Other	Total
Phase 1: Priority area	302,936	7,690	2,405	1,651	29,748	344,430
Bloemfontein Remaining	98,078	2,632	644	374	18,433	120,161
Botshabelo /Thaba Nchu	235,352	7,017	2,120	1,481	18,017	263,987
Rural	37,477	1,243	394	237	3,804	43,155
Mangaung MM	673,843	18,582	5,563	3,743	70,002	771,733
Reporting Zones	No difficulty %	Some difficulty %	A lot of difficulty %	Cannot do at all %	Other %	Total %
Phase 1: Priority area	88%	2%	1%	0%	9%	100%
Bloemfontein Remaining	82%	2%	1%	0%	15%	100%
Botshabelo /Thaba Nchu	89%	3%	1%	1%	7%	100%
Rural	87%	3%	1%	1%	9%	100%
Mangaung MM	87%	2%	1%	0%	9%	100%

Note: Other includes: Do not know, Undetermined, Unspecified, Not Applicable

Note: Other includes: Do not know, Undetermined, Unspecified, Not Applicable

Table 3-22: Mangaung MM: Persons with Assistive Devices and Medication – Walking Stick or Frame, Census 2011

Reporting Zones	Yes	No	Other	Total
Phase 1: Priority area	8,324	317,637	18,468	344,429
Bloemfontein Remaining	4,317	98,183	17,664	120,164
Botshabelo /Thaba Nchu	7,786	248,977	7,228	263,991
Rural	1,683	38,992	2,474	43,149
Mangaung MM	22,110	703,789	45,834	771,733
Reporting Zones	Yes %	No %	Other %	Total %
Phase 1: Priority area	2%	92%	5%	100%
Bloemfontein Remaining	4%	82%	15%	100%
Botshabelo /Thaba Nchu	3%	94%	3%	100%
Rural	4%	90%	6%	100%
Mangaung MM	3%	91%	6%	100%

Note: Other includes: Do not know, Unspecified, Not Applicable

Table 3-23: Mangaung MM: Persons with Assistive Devices and Medication – Wheelchair, Census 2011

Reporting Zones	Yes	No	Other	Total
Phase 1: Priority area	5,904	319,073	19,450	344,427
Bloemfontein Remaining	3,177	99,274	17,708	120,159
Botshabelo /Thaba Nchu	4,313	252,218	7,463	263,994
Rural	1,002	39,643	2,509	43,154
Mangaung MM	14,396	710,208	47,130	771,734
Reporting Zones	Yes %	No %	Other %	Total %
Phase 1: Priority area	2%	93%	6%	100%
Bloemfontein Remaining	3%	83%	15%	100%
Botshabelo /Thaba Nchu	2%	96%	3%	100%
Rural	2%	92%	6%	100%
Mangaung MM	2%	92%	6%	100%

Note: Other includes: Do not know, Unspecified, Not Applicable

Given the above, less than one per cent of the population (7 000 people) reported that they have a challenge, problem or disability that limit their ability to travel stemming from the household travel survey. It is noted that this percentage is low in comparison to the Community Survey 2016 where 11% of the population recorded disability prevalence. This difference between the Census 2011,

Community Survey 2016 and the Household travel Survey responses call for focus group surveys to attain the barriers to entry to the public transport system.

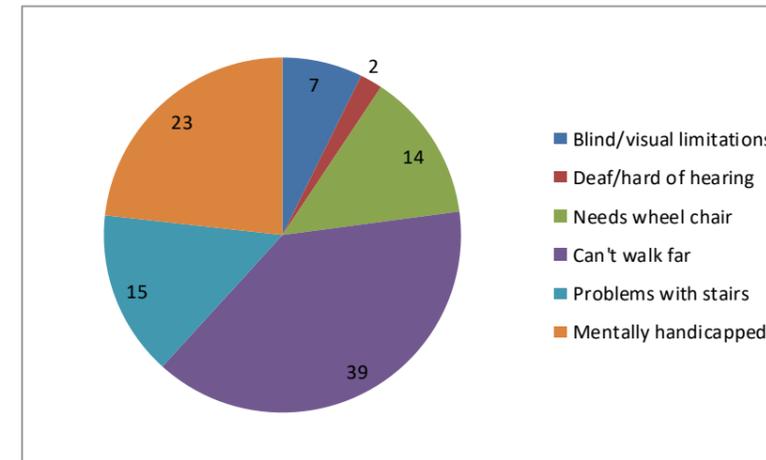


Figure 3-11: Percentage of Physical disability

Acknowledging the shortcoming of the data the HTS survey reported the major problem seems to be an inability to walk far, followed by being mentally handicapped.

Only one per cent of the households have a vehicle that has been adapted for disability, but seven per cent of households have at least one wheelchair or other walking aid in the house.

The main respondent in each household was asked how important a number of problems are for the mobility of people with disabilities in their area – a rating of 1 being not important at all and a 10 being extremely important.

Table 3-24 provides the answer to that question. Unfortunately, when presented with a list of problems, respondents are inclined to rate everything as important. The column on the right of the table shows that the combination of ratings between 8 and 10 range between 49 and 56, which is not a significant difference.

Table 3-24: Ratings of problems

Problem	Percentage of respondents										
	1	2	3	4	5	6	7	8	9	10	8-10
Uneven or broken surfaces	9.9	3.5	4.7	4.5	7.2	8.7	6.9	11.8	11.9	30.9	54.6
Absence of pavements	10.0	5.7	5.4	5.6	7.4	6.0	9.3	10.6	11.3	28.8	50.7
High kerbs/deep stormwater drains	8.7	5.4	4.8	5.2	9.8	7.3	8.1	10.4	11.3	29.0	50.7
Danger from traffic	9.0	4.4	4.6	5.5	7.6	7.3	9.3	12.1	11.0	29.2	52.3
Inaccessible transport vehicles	9.6	4.8	6.5	6.3	6.2	6.9	8.2	12.6	10.2	28.9	51.7
Lack of door-to-door services	9.0	5.4	7.7	5.2	7.1	7.1	9.6	9.9	9.8	29.1	48.8
Cost of public transport	9.4	6.3	5.5	4.3	8.2	6.1	8.6	9.8	11.4	30.4	51.6
Availability of public transport in general	8.8	5.3	4.6	4.8	7.8	7.5	10.2	10.4	10.4	30.2	51.1
Attitude of drivers and staff	10.5	5.3	5.6	6.4	7.6	6.6	7.8	11.9	9.9	28.4	50.2
Lack of information	9.4	4.1	5.3	5.4	7.8	7.9	7.8	11.5	9.2	31.6	52.3
Lack of audible and visible information	8.8	4.2	4.7	5.8	8.1	7.8	8.2	10.8	11.9	29.7	52.4
Overcrowding of vehicles and terminals	8.9	4.0	3.9	5.7	7.5	7.2	7.1	10.8	11.9	33.2	55.8

Table 3-25 provides insight into the importance ratings of respondents in the different zones. It is evident that the residents of Thaba Nchu consistently gave all the problems higher importance ratings than the average for the municipality.

Table 3-25: Ratings of between 8 and 10

Reporting Zone	Percentage of respondents rating the problem between 8 and 10											
	Uneven or broken road surfaces	Absence of pavements	High kerbs/deep drains	Danger from traffic	Inaccessible vehicles	Lack of door-to-door services	Cost of public transport	Availability of public transport	Attitude of drivers and staff	Lack of information	Lack of audible and visible information	Crowded vehicles and terminals
Central	26.2%	13.2%	10.7%	25.1%	18.4%	16.3%	15.3%	19.1%	19.0%	25.5%	34.3%	14.9%
Oranjesig	32.3%	37.6%	26.4%	27.8%	28.7%	32.0%	28.4%	35.7%	30.9%	39.9%	19.3%	39.4%
Mangaung	56.6%	53.5%	53.7%	55.4%	53.5%	50.1%	54.4%	52.2%	51.7%	53.8%	57.5%	56.7%
Airport/Estoire	58.8%	56.8%	53.8%	54.2%	57.7%	50.7%	47.9%	52.4%	47.5%	47.1%	53.3%	56.0%
Naval Hill/Bayswater	46.6%	44.3%	41.1%	43.3%	41.4%	44.7%	44.0%	40.9%	40.6%	48.8%	46.7%	48.3%
Tempe/Dan Pienaar	53.8%	46.9%	45.8%	45.3%	46.9%	42.7%	46.1%	49.3%	44.1%	46.1%	46.6%	52.5%
Langenhoven Park/Woodlands	46.7%	46.7%	46.9%	54.0%	56.7%	48.6%	43.8%	46.0%	48.5%	47.6%	48.1%	53.6%
Universitas	40.4%	37.5%	37.1%	37.1%	34.1%	36.7%	34.9%	36.3%	37.5%	41.3%	33.5%	48.5%
Pellissier/Fichardt-Ehrlich Park	38.9%	38.1%	36.9%	33.5%	32.4%	33.2%	40.4%	36.6%	32.8%	37.8%	36.0%	37.6%
Thaba Nchu	71.6%	68.5%	68.3%	71.0%	75.1%	70.7%	69.6%	68.0%	71.2%	75.5%	73.3%	73.0%
Botshabelo	48.8%	40.5%	45.7%	48.9%	46.2%	43.9%	46.7%	47.3%	48.4%	49.7%	46.8%	51.0%
N-E Rural	60.1%	57.0%	54.0%	56.3%	50.5%	57.2%	63.5%	66.2%	54.5%	69.0%	54.0%	57.8%
N-W Rural	63.0%	61.0%	53.3%	51.6%	54.5%	49.5%	57.9%	57.5%	45.9%	54.0%	48.5%	60.1%
S-W Rural	52.7%	61.4%	52.1%	49.0%	45.3%	45.8%	49.9%	52.4%	46.6%	33.5%	48.2%	59.4%
S-E Rural	53.8%	50.1%	50.2%	47.8%	57.3%	47.4%	44.1%	42.2%	46.7%	46.8%	43.1%	51.9%
Naledi	52.7%	43.3%	42.3%	44.7%	46.1%	44.5%	44.9%	49.2%	46.3%	44.0%	46.5%	59.4%
Mangaung Municipality	54.6%	50.7%	50.7%	52.3%	51.7%	48.8%	51.6%	51.1%	50.2%	52.3%	52.4%	55.8%

3.3.1 Mode usage during the previous 7 days

Respondents of all ages were asked how many times they had used the different modes of transport during the preceding 7 days. It appears that some interviewers did not record '0' trips, and left the space blank, which resulted in 'missing values' of between 40 and over 90 per cent. The decision was made to treat the 'missing values' as '0s'.

Please note that the numbers in Table 3-26 are based on the assumption that blanks equalled zeroes and should, therefore, be interpreted as approximations.

The following are noteworthy:

- Fewer trips by all modes are made over weekends
- Most trips are made on foot
- Most motorised trips are made by minibus taxi, followed by car driver trips
- If car driver and car passenger trips are combined, however, and minibus taxi and bus trips, the numbers are relatively close
- During the course of the week (Monday to Friday) 1,3 million trips are made by minibus taxi and bus on the one hand and 1,4 million by private car. Over the weekend the difference is more marked, with 190 000 by public transport and 310 000 by car.

Table 3-26: Number of trips by different modes during the previous seven days

Trip mode	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Walk	559 000	530 000	531 000	545 000	488 000	197 000	207 000
Bus	50 000	44 000	46 000	51 000	57 000	22 000	17 000
School bus	73 000	71 000	72 000	75 000	70 000	2 000	3 000
Minibus taxi	236 000	215 000	229 000	216 000	225 000	76 000	72 000
Sedan taxi	10 000	7 000	6 000	9 000	7 000	8 000	6 000
Bakkie taxi	5 000	4 000	4 000	4 000	6 000	3 000	3 000
Car as driver	210 000	198 000	204 000	198 000	204 000	112 000	102 000
Car as passenger	83 000	82 000	86 000	78 000	85 000	43 000	57 000
Lift club	21 000	20 000	20 000	21 000	20 000	4 000	5 000
Company transport	15 000	15 000	16 000	15 000	13 000	4 000	2 000
Metered taxi	1 000	1 000	1 000	2 000	1 000	1 000	0
Motor cycle	1 000	1 000	2 000	1 000	1 000	2 000	0
Bicycle	5 000	33 000	11 000	11 000	11 000	8 000	1 000
Other modes	0	0	0	0	2 000	1 000	0

3.3.2 Employment

3.3.2.1 Number of employed per household

Table 3-27 provides information about the number of employed persons per household. Close to half of the households have nobody in employment (and in Botshabelo almost 70 per cent) and on the other hand, only 14 per cent of the households have two or more income-earners – in Langenhoven-Park/Woodlands almost a third of the households have more than one income earner.

Table 3-27: Number of employed persons per household

Reporting Zone	% of households		
	0	1	2+
Central	55.6%	33.7%	10.7%
Oranjesig	53.6%	43.0%	3.4%
Mangaung	39.6%	39.1%	21.3%
Airport/Estoire	28.1%	57.8%	14.1%
Naval Hill/Bayswater	44.1%	35.4%	20.5%
Tempe/Dan Pienaar	34.2%	51.5%	14.2%
Langenhoven Park/Woodlands	25.7%	44.3%	30.0%
Universitas	48.2%	40.5%	11.3%
Pellissier/Fichardt-Ehrlich Park	30.5%	49.1%	20.4%
Thaba Nchu	55.6%	37.5%	6.9%
Botshabelo	68.9%	26.1%	5.0%
N-E Rural	32.5%	64.1%	3.4%
N-W Rural	41.7%	45.8%	12.5%
S-W Rural	19.4%	65.5%	15.2%
S-E Rural	30.3%	45.5%	24.3%
Naledi	58.2%	38.3%	3.5%
Mangaung Municipality	46.8%	39.0%	14.2%

Figure 3-12 indicates the zones where more than half of the households have nobody in employment – Thaba Nchu, Botshabelo, Naledi to the East and Oranjesig and Central and Oranjesig in the centre of the city.

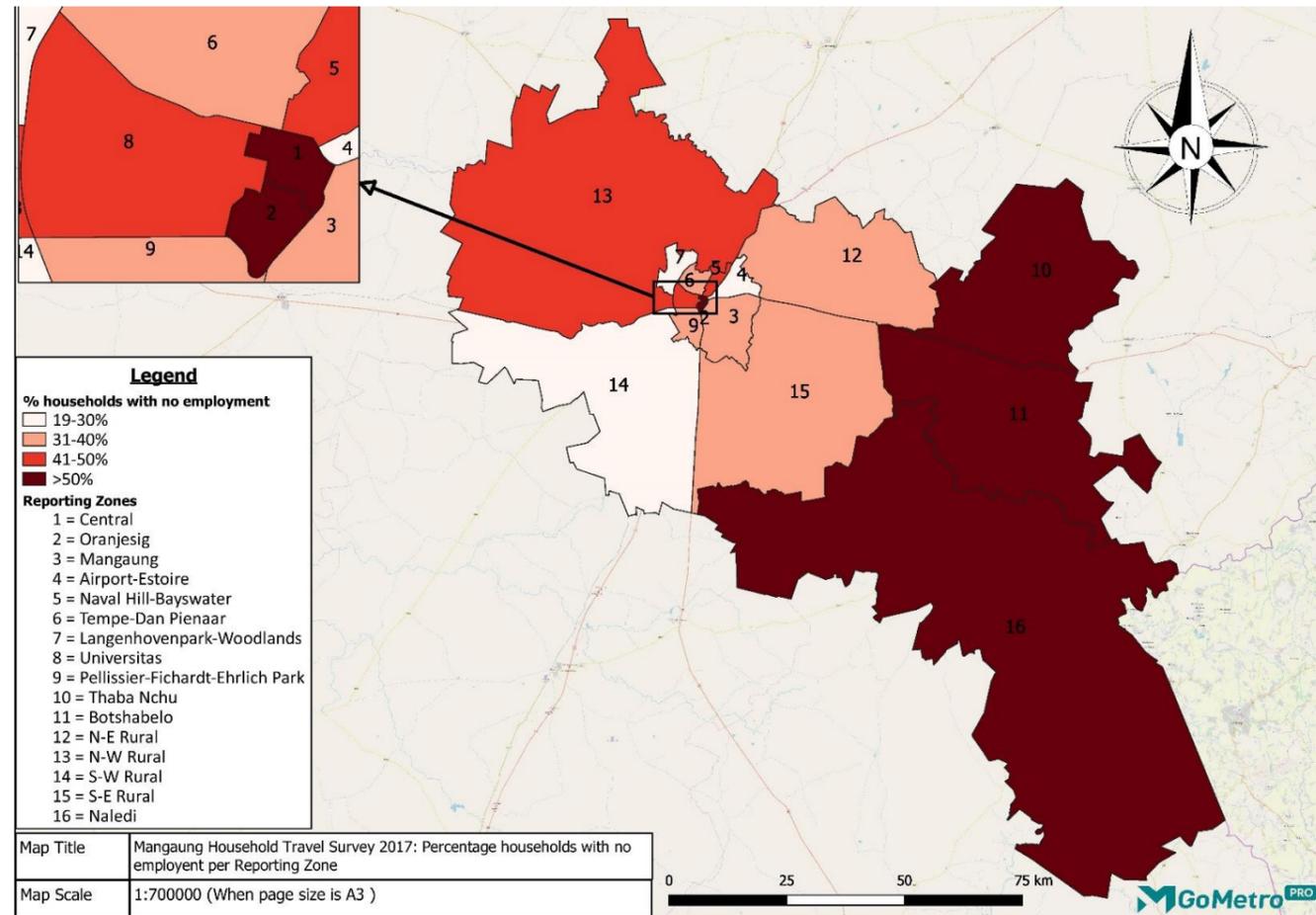


Figure 3-12: Percentage of households with no income earner

3.3.2.2 Unemployment

Another way of looking at unemployment is to do so at the relationship between the employed and the unemployed as a group. Figure 3-13 portrays the proportions of people in full-time employment, part-time employment and unemployment. The graph shows that in general, the employed outnumber the unemployed (albeit in by a very small margin in some areas) in the municipality as a whole and also in all the zones with the exception of Botshabelo. It also shows that only a small proportion of the group work part-time (6% overall) with the only significant part-time employment occurring in Oranjesig and Naledi, and to a lesser extent in the western rural areas.

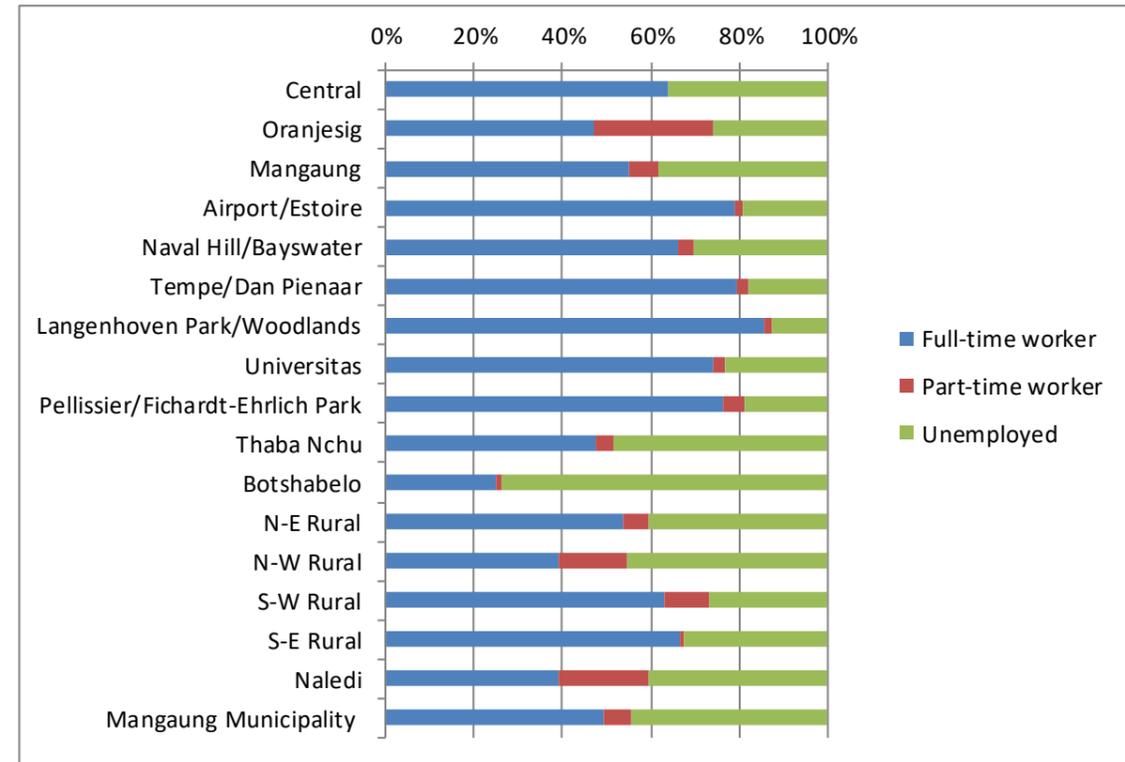


Figure 3-13: Relationship between the employed (full-time and part-time) and the unemployed

Figure 3-14 shows clearly that the higher the educational level, the higher the level of employment. The one anomaly is the group with no education, where more are employed than unemployed.

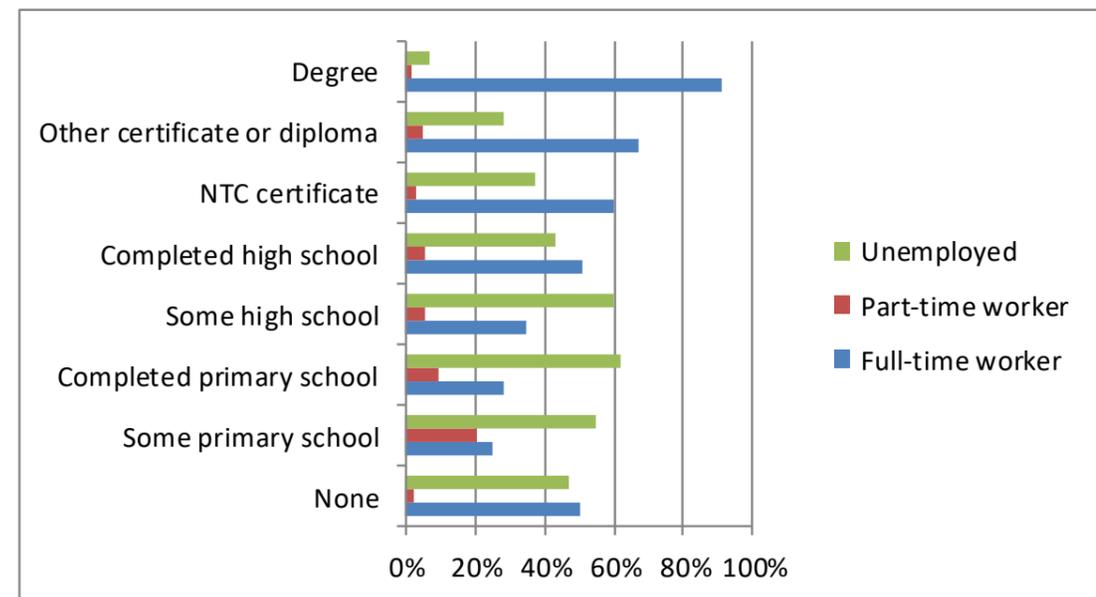


Figure 3-14: Relationship between education and employment

3.3.2.3 Employment in the formal and informal sectors

As Table 3-28 indicates, the vast majority of the workers in the municipality work in the formal sector. That is also the case in most of the zones, with the exception of S-W Rural, where informal workers are in the majority.

Table 3-28: Employed survey respondents in the formal and informal sectors

Reporting Zone	% of employed	
	Formal sector	Informal sector
Central	62.1%	37.9%
Oranjesig	100.0%	
Mangaung	89.2%	10.8%
Airport/Estoire	95.6%	4.4%
Naval Hill/Bayswater	92.9%	7.1%
Tempe/Dan Pienaar	89.4%	10.6%
Langenhoven Park/Woodlands	85.4%	14.6%
Universitas	96.5%	3.5%
Pellissier/Fichardt-Ehrlich Park	87.8%	12.2%
Thaba Nchu	81.6%	18.4%
Botshabelo	90.3%	9.7%
N-E Rural	79.7%	20.3%
N-W Rural	56.5%	43.5%
S-W Rural	41.4%	58.6%
S-E Rural	74.6%	25.4%
Naledi	89.9%	10.1%
Mangaung Municipality	82.0%	18.0%

3.3.2.4 *Employment sectors and occupation type*

Workers are often not aware of the industrial sector in which they are working, nor of their occupational type. Furthermore, interviewers alike find it difficult to place the information given to them in the correct category.

However, Table 3-29 and Table 3-30 provide information about these variables according to the information given by the respondents and interpreted by the interviewers. Twenty-five per cent of the employed work in the ‘Other services’ sector, followed by education and public administration (8% each), and Wholesale and retail and Agriculture (7% each).

Almost a quarter of the working population work as labourers, and almost the same number were classified as other, underscoring the difficulty of categorising this variable. Some 15 per cent work as professionals, 13 per cent as sales workers and ten per cent as managers.

Table 3-29: Employment industry

Industry	% of employed
Agriculture	6.5
Mining	1.3
Manufacturing	3.9
Electricity, gas and steam	3.3
Water supply	1.8
Construction	5.3
Wholesale and retail	7.0
Transport, storage and communication	4.3
Accommodation and food	3.8
Information and communication	1.8
Financial and insurance services	2.8
Real estate	0.8
Professional , scientific and technical	3.4
Admin support services	3.3
Public administration	8.2
Education	8.4
Human health and and social work	6.0
Arts and entertainment	0.4
Other service activities	24.8
Activities of households as employers	2.1
Activities of foreign organisations	0.8

Table 3-30: Occupation type

Occupation type	% of employed
Managers	9.6
Professionals	15.1
Technicians	3.5
Machine operators	1.3
Sales workers	13.3
Labourers	24.6
Community and personal service workers	5.9
Clerical and administrative workers	3.9
Other	22.8

3.3.3 **Employment characteristics and conditions of work**

Table 3-31 provides information about the worker’s employer, work location and whether they have flexible working hours. The table shows that only a tenth of the workers is self-employed, only nine per cent work from home but that almost a quarter enjoy flexible working hours. These proportions obviously differ from area – in the Central zone 28 per cent of workers are self-employed, in the Naval Hill/Bayswater area 22 per cent work from home and the S-W rural zone the majority enjoy flexible working hours.

Table 3-31: Employment characteristics of all workers

Reporting zone	Percentage of employed		
	Self employed	Work from home	Flexible working hours
Central	28.2%	11.2%	31.2%
Oranjesig	6.2%	7.3%	38.2%
Mangaung	9.5%	5.0%	16.1%
Airport/Estoire	8.3%	5.8%	11.9%
Naval Hill/Bayswater	18.7%	21.6%	24.2%
Tempe/Dan Pienaar	20.7%	16.4%	28.9%
Langenhoven Park/Woodlands	20.8%	18.8%	28.5%
Universitas	4.6%	8.5%	17.5%
Pellissier/Fichardt-Ehrlich Park	16.4%	12.4%	18.9%
Thaba Nchu	7.2%	8.2%	16.6%
Botshabelo	3.8%	3.1%	18.5%
N-E Rural	13.1%	7.4%	38.5%
N-W Rural	8.9%	13.9%	33.5%
S-W Rural	12.8%	14.0%	52.5%
S-E Rural	11.2%	12.5%	31.1%
Naledi	10.9%	10.0%	31.0%
Mangaung Municipality	10.3%	8.8%	23.3%

Other points worth noting are:

- 84 per cent work 5 days a week, eight per cent 6 days, four per cent 3 days a week, three per cent 4 days a week and one per cent two days a week;
- 36 per cent drive to work and of those, about half need their car at work, 13 per cent need to pick up passengers on their way to work and ten per cent need to drop off passengers on their way home from work;
- Only three per cent receive a travel allowance, ranging in value from R450 to R5 000 a month, with a mean of R2 500 per month.

3.3.3.1 Worker income

Unfortunately, as with household income, a large proportion of workers (42%) refused to give any information about their salaries. This obviously differs from zone to zone, ranging between a low of seven and a high of 82 per cent.

The reported salaries are between R600 and R30 000 per month, with almost half of the reported incomes being lower than R6 000 per month.

3.4 Results: Trips

Respondents six years and older were asked:

- Where they were at 3 am on the designated travel day;
- Whether they had left those premises any time on that day to go somewhere else, such as going to work, home school or shops or to visit a friend; and
- The reasons for not doing so if they had not travelled.

Virtually all (99%) reported that they were at home at that time and only 16 per cent said that they had not left the house.

The main reasons for not travelling are provided in Table 3-32 below. It is clear that over 90 per cent simply had no need to travel and 5 per cent were unwell. Less than three per cent of the non-travellers were prevented from travelling by transport-related reasons.

Table 3-32: Reasons for not travelling

Reasons for not travelling	% of those who did not travel
Did not need to travel	91.7
Usual transport not available	0.7
No available public transport	0.1
Disabled - transport inaccessible	0.1
Public transport too expensive	1.3
Public transport too far	0.2
Strike action/conflict in transport sector	0.3
Unwell	5.6

3.4.1 All reported trips

Respondents were asked to provide information about all the trips that they had made on the travel day. The results are described in the sections below.

3.4.2 Trip purpose

Table 3-33 lists the purpose of all trips. It makes sense that half of the trips were trips back to homes. The majority of outward trips were trips to education, followed by work trips. Eight per cent of all trips were shopping trips.

Table 3-33: Trip purpose – all trips

Trip purpose	% of all trips
Work at usual workplace	13.7
In the course of work	0.4
Visiting friends/relatives	3.0
Giving someone a ride	0.6
Educational	17.5
Shopping	8.4
Looking for work	1.1
Medical/health purposes	3.6
Visit Traditional healer	0.0
Visit welfare offices	0.1
Recreational	0.1
To go home	49.8
Worship	1.5
Other	0.2

3.4.3 Mode of travel

Table 3-34 lists the mode combinations of all trips. Transfers were made in less than one per cent of trips. Unfortunately, the walks sections too, between and after motorised trips were not consistently recorded and are therefore omitted from the mode combination list.

Table 3-34: Mode combinations

Mode combination	% of all trips
Walk all the way	22.6
Minibus-taxi	39.6
Bus	4.5
School bus	5.6
Company transport	1.1
Car driver	15.3
Car passenger	7.5
Lift club	2.8
Taxi-Taxi	0.1
Taxi-Bus	0.0
Bus-taxi	0.0
Bus-Bus	0.0
Other	0.9

Table 3-35 provides information at zone level about the main mode of transport of all trips. Minibus taxi is the mode used most often for trips in the Mangaung Municipality, followed by car and walking trips. Only ten per cent of the trips in the municipality is made by bus. The highest bus usage is by people living in Botshabelo, the highest taxi usage for people living in Mangaung and Thaba Nchu and the highest car usage by people living in Oranjesig, Tempe/Dan Pienaar and Pellissier/Fichardt-Ehrlich Park. The biggest proportion of walking trips per zone is made by Naledi residents.

Table 3-35: Main mode of transport – all trips

Reporting Zone	Percentage of all trips						
	Bus	Taxi	Company transport	Lift Club	Car	Walk all the way	Other
Central	5.6%	21.5%		0.6%	29.0%	42.1%	1.2%
Oranjesig	1.0%	7.5%		1.8%	73.6%	16.1%	
Mangaung	6.8%	54.7%	0.7%	4.3%	14.1%	18.6%	0.7%
Airport/Estoire	9.8%	19.2%	2.3%	1.8%	64.0%	2.5%	0.3%
Naval Hill/Bayswater	1.7%	13.9%	1.4%	2.6%	54.9%	25.0%	0.5%
Tempe/Dan Pienaar	6.3%	5.7%	1.5%	0.9%	78.0%	7.0%	0.6%
Langenhoven Park/Woodlands	12.7%	8.7%	0.5%	1.5%	71.1%	3.9%	1.6%
Universitas	3.6%	18.4%	0.2%		50.4%	26.6%	0.7%
Pellissier/Fichardt-Ehrlich Park	3.5%	8.9%	0.8%	2.0%	71.9%	10.8%	2.1%
Thaba Nchu	14.7%	60.0%	0.4%	3.7%	8.0%	12.8%	0.3%
Botshabelo	19.1%	35.9%	1.9%	1.6%	9.0%	31.6%	0.9%
N-E Rural	1.2%	23.0%	3.6%	3.6%	37.4%	30.1%	1.0%
N-W Rural	7.2%	29.1%	2.7%	0.8%	26.7%	33.5%	
S-W Rural	2.5%	22.2%	0.6%	4.2%	52.4%	17.0%	1.1%
S-E Rural	9.0%	28.3%		1.7%	39.5%	18.0%	3.5%
Naledi	5.9%	19.3%	0.6%	0.8%	17.7%	52.4%	3.3%
Mangaung Municipality	10.1%	39.6%	1.1%	2.8%	22.8%	22.6%	0.9%

Figure 3-15 provides a picture of the breakdown between trips made by public transport, private transport and walking all the way. About half of all trips made by residents of the Mangaung Municipality are made by public transport, twenty-seven per cent by all the private transport modes combined, and 23 per cent by walking.

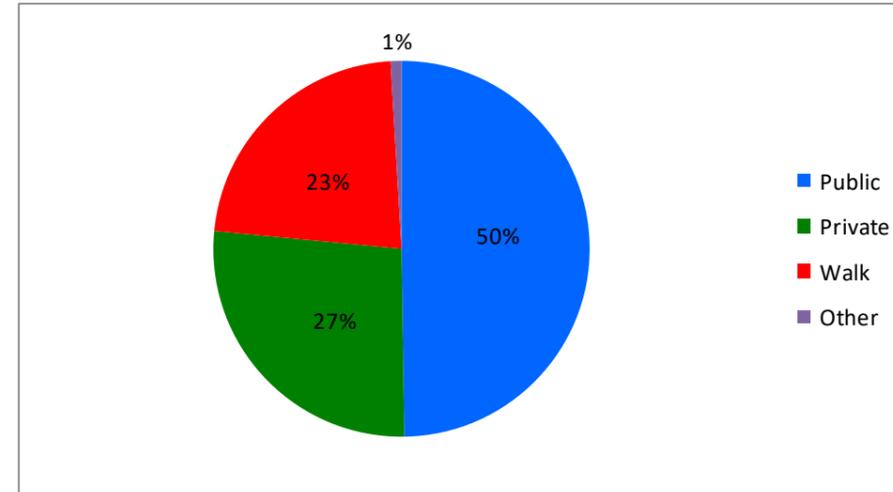


Figure 3-15: Mode of transport in the Mangaung Municipality – all trips

The pie charts in each of the zones in Figure 3-16 shows the same breakdown per zone. Private transport (large green slices) dominates in the central areas with the exception of the Central zone, public transport (blue slices) dominates in Mangaung and Thaba Nchu and walking (red slices) in Naledi and the Central zone.

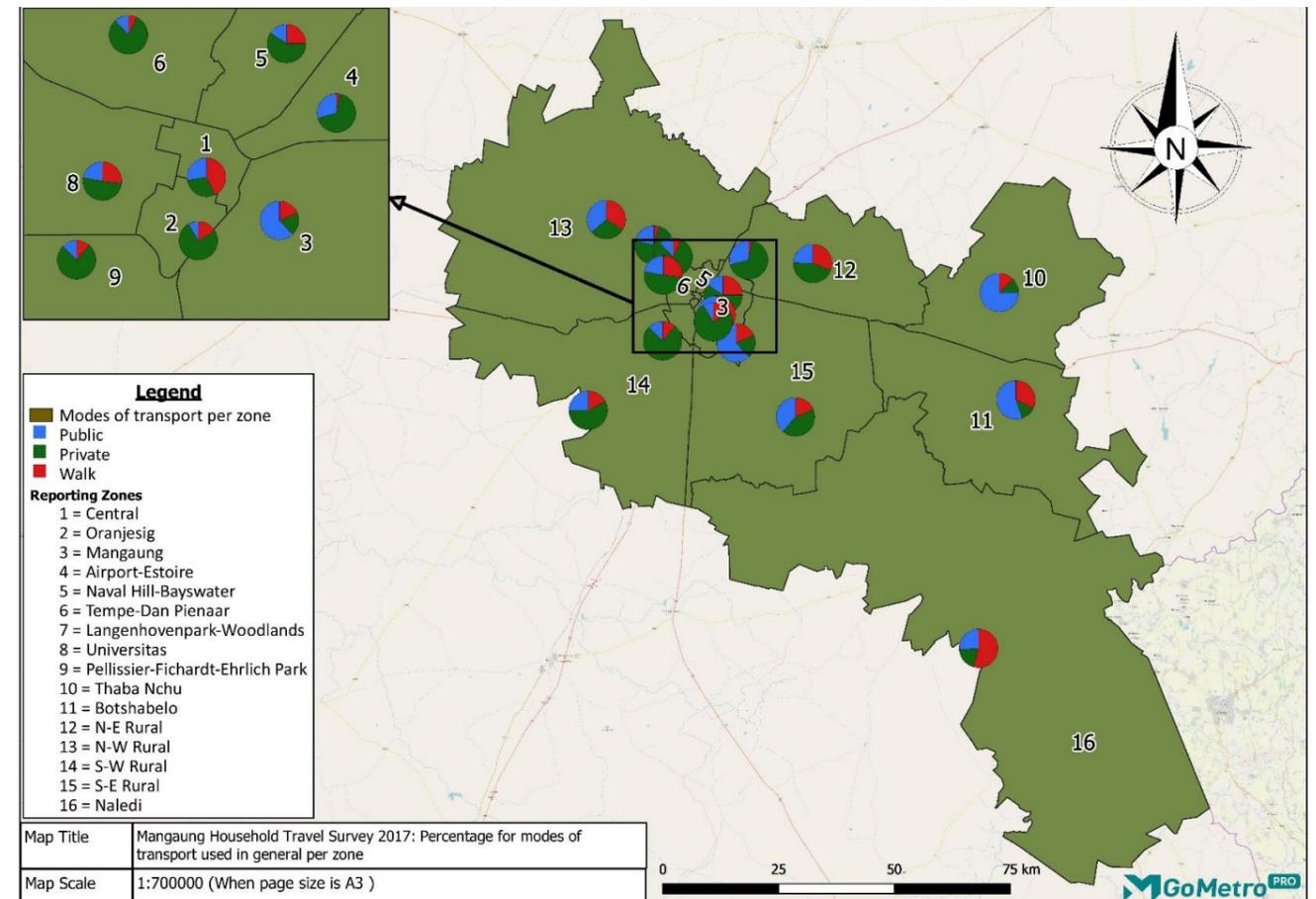


Figure 3-16: Mode of transport by zone – all trips

3.4.4 Travel time – all trips

The travel time categories for each zone are shown in Table 3-36. The largest proportion of the trips undertaken by people living in the Mangaung Municipality takes between 16 and 30 minutes, a third

of the trips take longer than 30 minutes and the rest are trips shorter than 16 minutes. Not surprisingly, the Central zone and Oranjesig have the largest proportion of short trips.

Table 3-36: Travel time by zone – all trips

Reporting Zone	Percentage of all trips				
	5 - 15 mins	16 - 30 mins	31-45 mins	46 - 60 mins	61 mins+
Central	47.4%	40.7%	5.7%	6.2%	
Oranjesig	46.7%	47.7%	1.9%	3.7%	
Mangaung	20.4%	50.0%	16.1%	9.7%	3.8%
Airport/Estoire	28.8%	58.0%	8.3%	5.0%	
Naval Hill/Bayswater	42.1%	45.2%	5.2%	6.9%	0.6%
Tempe/Dan Pienaar	52.5%	33.7%	5.1%	7.0%	1.7%
Langenhoven Park/Woodlands	29.0%	48.8%	12.5%	8.3%	1.4%
Universitas	34.6%	49.7%	12.0%	2.5%	1.1%
Pellissier/Fichardt-Ehrlich Park	45.8%	35.9%	10.2%	7.5%	0.7%
Thaba Nchu	13.4%	35.7%	19.9%	18.1%	13.0%
Botshabelo	17.3%	44.8%	12.7%	15.6%	9.6%
N-E Rural	29.2%	52.8%	7.6%	6.4%	3.9%
N-W Rural	19.0%	36.9%	15.4%	13.6%	15.1%
S-W Rural	23.4%	34.6%	23.1%	10.0%	8.8%
S-E Rural	13.7%	48.7%	21.1%	11.9%	4.6%
Naledi	28.0%	34.4%	9.6%	11.4%	16.6%
Mangaung Municipality	22.1%	44.2%	14.8%	11.8%	7.1%

Figure 3-17 shows the mean travel times by zone. Not surprisingly, the travel times are longer in distant areas and shorter in central areas. The mean travel time for all recorded trips is 32 minutes.

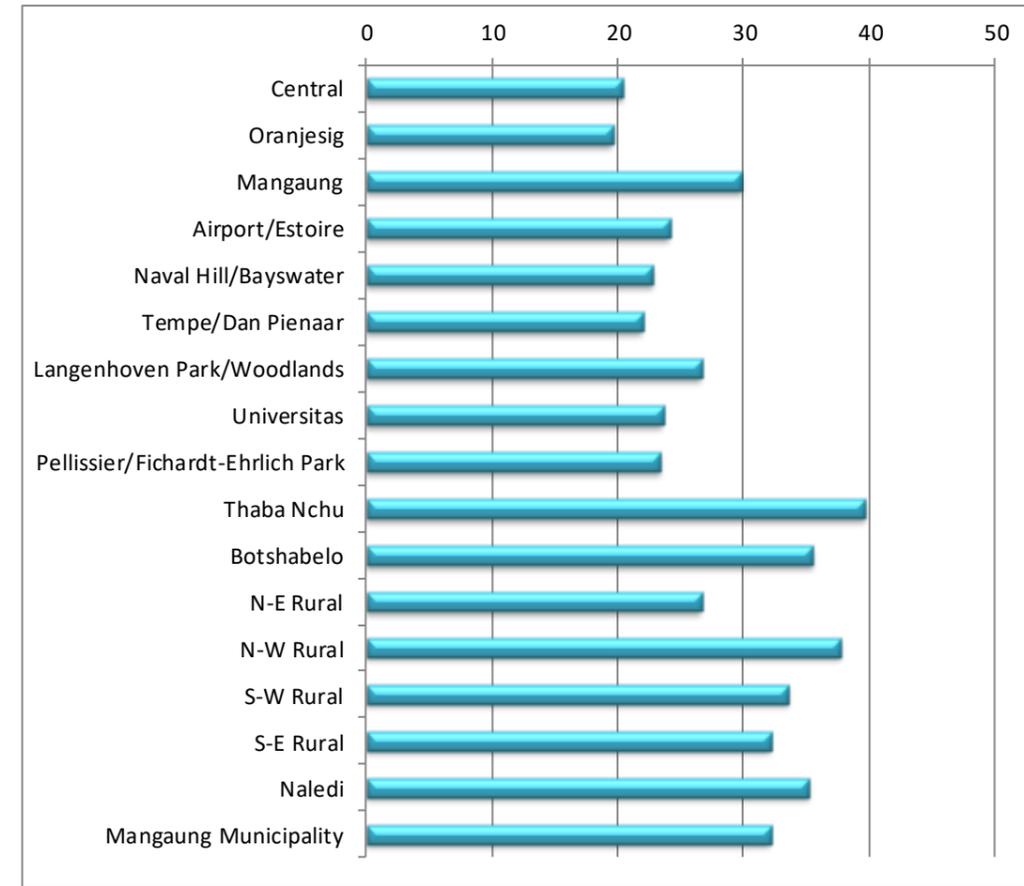


Figure 3-17: Mean travel time by zone – all trips

Table 3-37 provides information about travel times for trips made by different modes. The highest proportion of long trips are made by bus and company transport and the highest proportion of trips shorter than 16 minutes are made on foot and by private transport.

Table 3-37: Travel time by main mode - all trips

Main mode	Percentage of all trips				
	5 - 15 mins	16 - 30 mins	31-45 mins	46 - 60 mins	61 mins+
Bus	8.5%	37.5%	16.9%	18.0%	19.1%
Taxi	8.9%	45.9%	21.6%	15.9%	7.7%
Company transport	11.8%	31.8%	23.7%	20.7%	12.1%
Lift Club	27.2%	64.0%	4.5%	4.0%	0.3%
Car	33.8%	44.7%	11.1%	8.0%	2.4%
Walk all the way	39.7%	41.7%	6.7%	5.9%	6.0%
Other	12.5%	47.7%	11.4%	23.0%	5.5%

Figure 3-18 provides the mean travel times and mirrors the information in Table 3-37 – the mean travel times are shortest for trips made by lift club (22 minutes) and longest for bus trips (43 minutes).

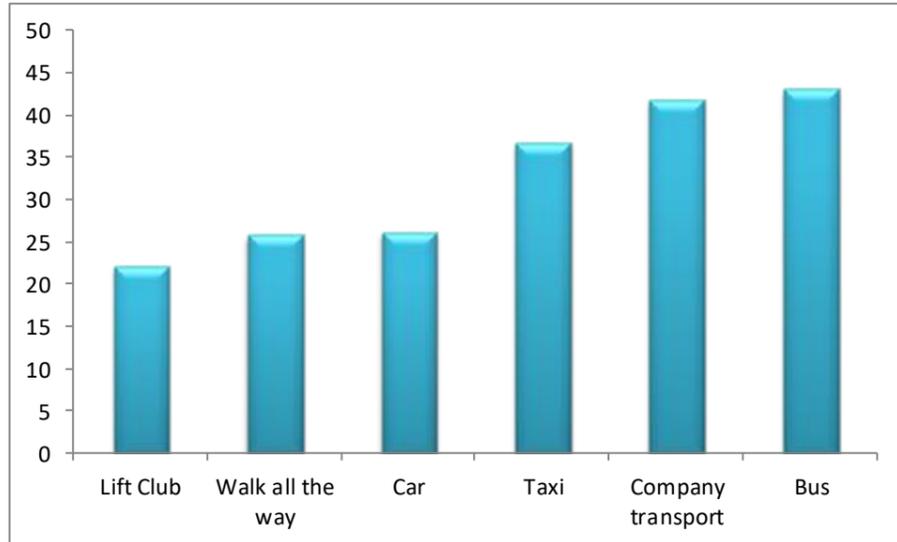


Figure 3-18: Mean travel time by mode – all trips

3.4.5 Walking time to and from modes

The proportions of walking times to public transport modes is provided in Figure 3-19 and those of the walking times from the public transport modes in Figure 3-20. It is clear in both graphs that a larger proportion of walks to taxi (about 65%) fall in the five-minutes group, than to bus (44%). The walks from the modes to destinations follow the same pattern, with 70 per cent of walks from taxis being five-minute trips and 47 per cent of walks from buses. At the other side of the spectrum, with walks of 15 minutes and longer, the reverse is true.

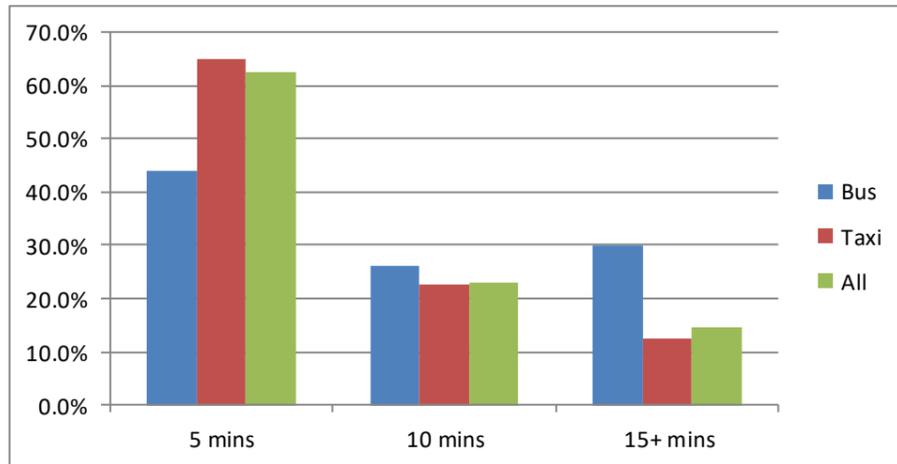


Figure 3-19: Walking times to public transport – all trips

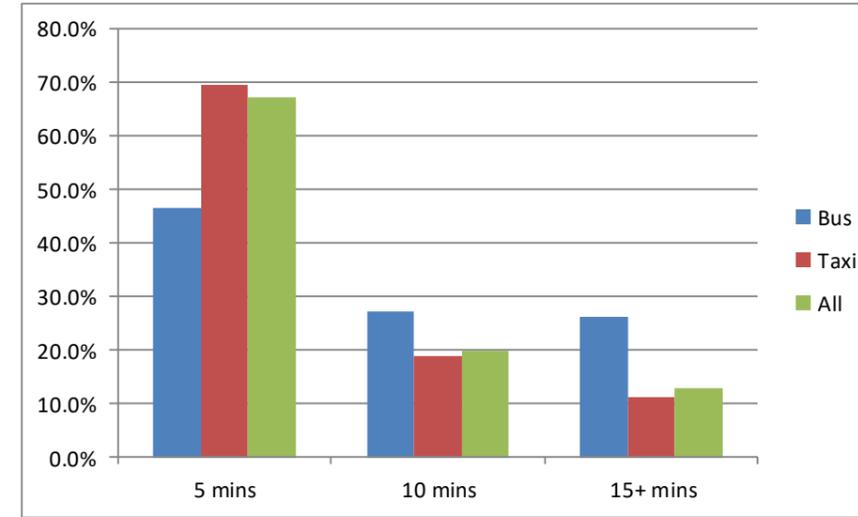


Figure 3-20: Walking times from public transport to destinations – all trips

3.4.6 Trips to work

The tables and figures in this section provide information about work trips.

3.4.6.1 Main mode of trips to work

Table 3-38 provides information about the main mode of work. In the case of work trips, the proportion of taxi and car trips are almost equal, and a smaller proportion of trips on foot. Car trips dominate in the central areas and in the southern rural areas, but are over 25 per cent in all zones with the exception of Thaba Nchu and Botshabelo where the proportion of car trips is below ten per cent. Taxi trips dominate in Mangaung, Thaba Nchu and Botshabelo. In the latter two areas, high proportions of work trips by bus were made. In Naledi and the N-W rural zone, walk trips dominate and in the N-E rural zone, the work trips are almost equally spread between taxi, car and walk trips.

Table 3-38: Main mode of work trips

Reporting Zone	Percentage of work trips						
	Bus	Taxi	Company transport	Lift Club	Car	Walk all the way	Other
Central	5.0%	12.3%			47.5%	35.2%	
Oranjesig		6.4%			84.6%	9.0%	
Mangaung	1.2%	61.4%	2.6%	1.1%	27.0%	6.4%	0.3%
Airport/Estoire	0.8%	21.7%	6.9%		62.4%	7.1%	1.1%
Naval Hill/Bayswater		17.4%	4.7%		70.7%	6.4%	0.8%
Tempe/Dan Pienaar	0.3%	5.0%	4.4%		87.4%	3.0%	
Langenhoven Park/Woodlands		2.6%	1.7%	0.7%	93.9%	1.1%	
Universitas	1.7%	9.9%	0.7%		77.5%	9.2%	1.0%
Pellissier/Fichardt-Ehrlich Park		8.7%	1.9%	2.1%	84.6%	1.2%	1.5%
Thaba Nchu	29.2%	51.5%	1.6%	2.2%	9.9%	5.6%	
Botshabelo	33.2%	38.3%	11.2%		6.9%	10.4%	
N-E Rural		30.8%	7.2%	0.9%	30.3%	30.9%	
N-W Rural	4.9%	14.0%	6.1%		24.4%	50.6%	
S-W Rural		22.6%	1.5%	5.8%	48.4%	21.0%	0.8%
S-E Rural	4.9%	21.5%		0.6%	59.4%	1.4%	12.2%
Naledi	0.9%	8.1%	0.5%		37.1%	46.3%	7.0%
Mangaung Municipality	9.0%	37.5%	4.0%	1.1%	34.2%	13.3%	0.9%

Figure 3-21 portrays the split between public, private and walk for work trips. Almost half of the work trips are made by public transport and only 13 per cent on foot.

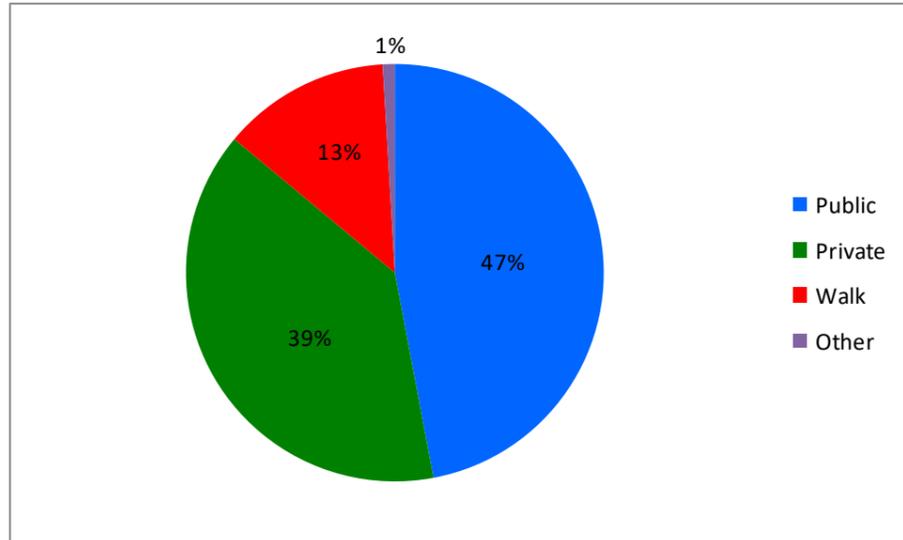


Figure 3-21: Mode of transport in Mangaung Municipality – work trips

Figure 3-22 shows the modal split between public, private and walking modes for work trips by people living in the different zones. Once again, the blue slices indicate public transport, the green slices private transport and the red slices walk trips. It is easy to see at a glance where the different modes dominate.

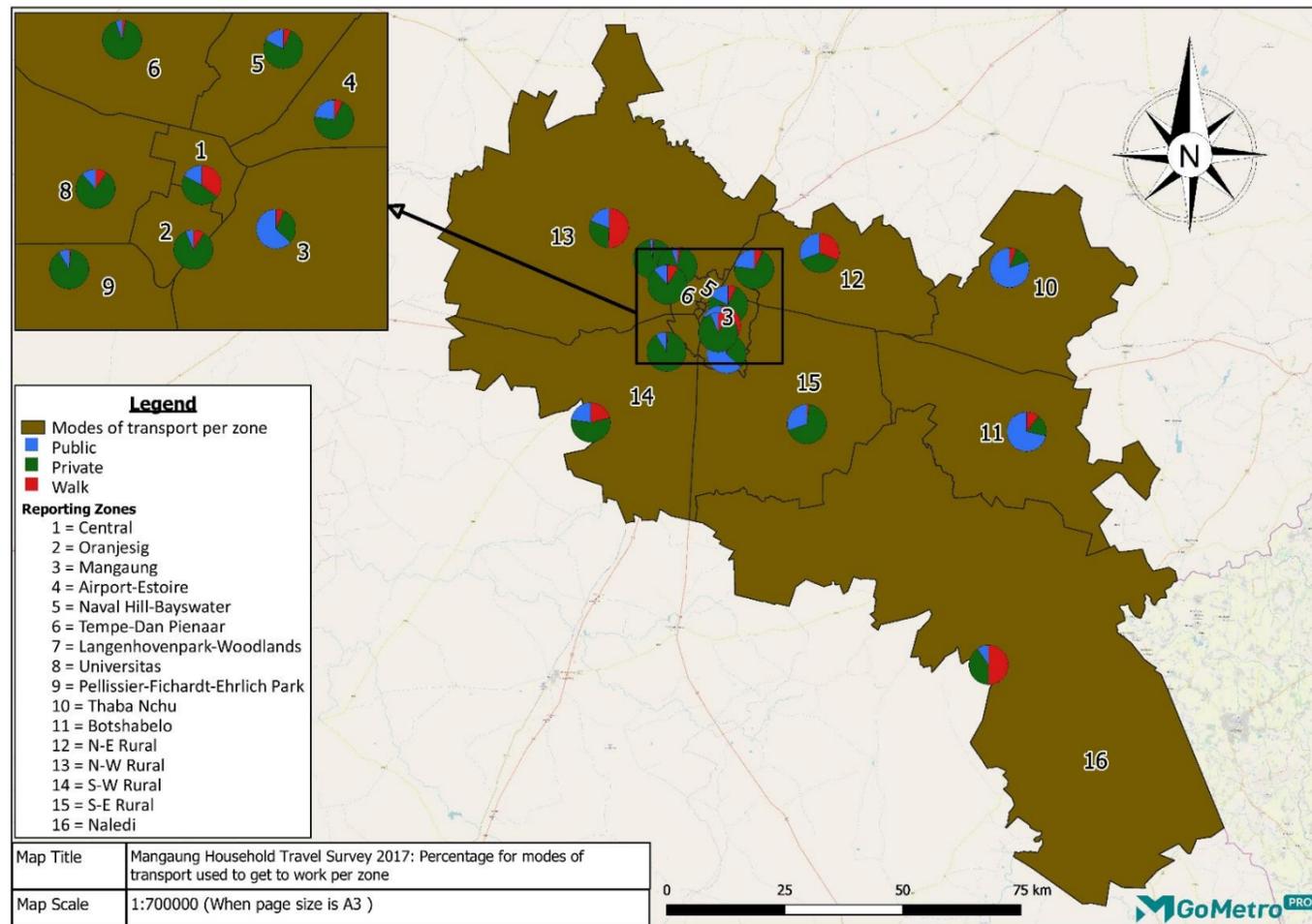


Figure 3-22: Mode of transport by zone – work trips

3.4.6.2 Travel time to work

Table 3-39 lists the travel time in categories for trips to work. The table shows that the largest proportion of work trips take between 16 and 30 minutes and only ten per cent take longer than an hour. Zones with the largest proportions of long travel times are Thaba Nchu and Botshabelo. On the other hand, the largest proportions of short travel times are found in Oranjesig, N-E Rural and Naledi.

Table 3-39: Travel time to work by zone

Reporting Zone	Percentage of work trips				
	5 - 15 mins	16 - 30 mins	31-45 mins	46 - 60 mins	61 mins+
Central	41.6%	51.5%	3.2%	3.7%	
Oranjesig	52.9%	42.6%	1.4%	3.1%	
Mangaung	9.7%	50.0%	18.5%	17.1%	4.8%
Airport/Estoire	32.4%	44.8%	14.9%	7.8%	
Naval Hill/Bayswater	34.0%	35.6%	3.1%	24.5%	2.7%
Tempe/Dan Pienaar	33.7%	35.2%	7.0%	22.7%	1.5%
Langenhoven Park/Woodlands	21.4%	60.5%	3.5%	14.6%	
Universitas	22.4%	60.8%	7.9%	8.2%	0.7%
Pellissier/Fichardt-Ehrlich Park	23.4%	54.2%	6.4%	13.9%	2.1%
Thaba Nchu	10.2%	21.9%	28.1%	18.6%	21.2%
Botshabelo	1.3%	27.1%	17.7%	29.5%	24.4%
N-E Rural	44.1%	29.6%	4.6%	8.5%	13.1%
N-W Rural	16.2%	44.1%	13.0%	14.6%	12.0%
S-W Rural	26.8%	26.2%	25.3%	11.9%	9.9%
S-E Rural	8.6%	45.6%	28.4%	14.7%	2.8%
Naledi	30.9%	25.2%	4.9%	20.7%	18.3%
Mangaung Municipality	14.7%	40.1%	16.7%	18.1%	10.4%

Figure 3-23 displays the mean travel times of work trips by zone and it clearly shows where the longer than average and shorter than average travelling times are. The mean travel time for all work trips starting in the municipality, is 38 minutes.

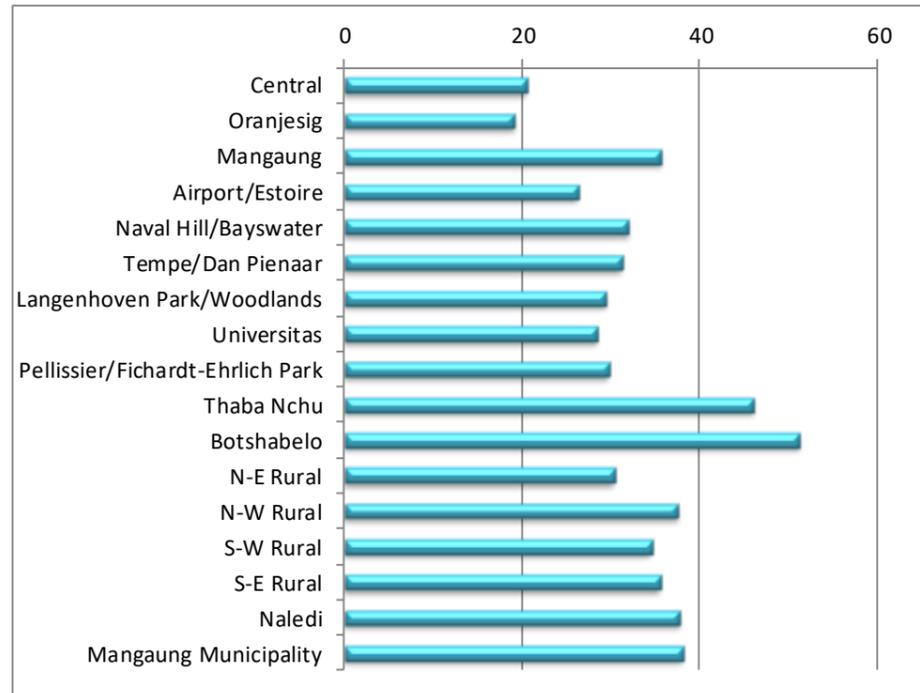


Figure 3-23: Mean travel time by zone – work trips

Table 3-40 provides information about the travel time to work by the main modes. Not surprisingly, more than 40 per cent of work trips on foot takes 15 minutes or less. On the other hand, more or less the same proportion of work trips takes longer than an hour.

Table 3-40: Travel time to work by main mode

Main mode	Percentage of work trips				
	5 - 15 mins	16 - 30 mins	31-45 mins	46 - 60 mins	61 mins+
Bus	0.8%	11.4%	16.0%	26.3%	45.5%
Taxi	4.5%	37.9%	24.0%	22.9%	10.8%
Company transport	9.8%	27.9%	25.4%	31.5%	5.4%
Lift Club	7.9%	44.8%	27.7%	14.6%	5.0%
Car	19.8%	51.1%	10.9%	14.7%	3.5%
Walk all the way	42.2%	37.9%	8.3%	5.7%	5.8%
Other	7.3%	82.0%	10.6%		

Figure 3-24 shows the mean travel times for work trips by different modes, ranging from 22 minutes for work trips on foot to 62 minutes for work trips by bus.

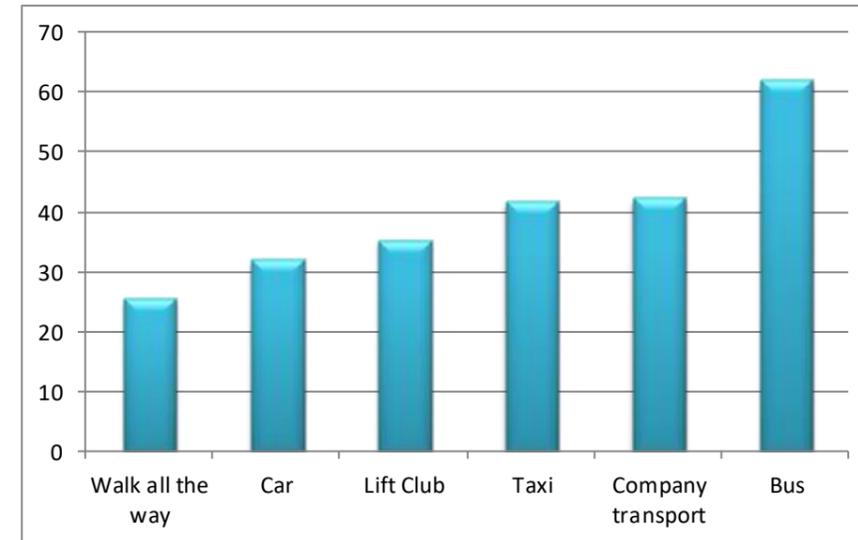


Figure 3-24: Mean travel time by main mode – work trips

3.4.6.3 Work trip destinations.

Table 3-41 shows that 45 per cent of work trips have destinations within the same reporting zone and 55 per cent in a different zone. In most zones, the minority of work trips are made to destinations within the same zone. Thaba Nchu, North West Rural and Naledi, where 85 per cent of work trips are made internally, are exceptions to this rule.

Table 3-41: Destination type for work trips

Reporting Zone	% of work trips	
	Internal	External
Central	28.4%	71.6%
Oranjesig	26.6%	73.4%
Mangaung	40.8%	59.2%
Airport/Estoire	38.3%	61.7%
Naval Hill/Bayswater	13.8%	86.2%
Tempe/Dan Pienaar	50.2%	49.8%
Langenhoven Park/Woodlands	16.1%	83.9%
Universitas	19.2%	80.8%
Pellissier/Fichardt-Ehrlich Park	14.4%	85.6%
Thaba Nchu	62.5%	37.5%
Botshabelo	52.3%	47.7%
N-E Rural	55.5%	44.5%
N-W Rural	71.9%	28.1%
S-W Rural	40.4%	59.6%
S-E Rural	3.0%	97.0%
Naledi	85.2%	14.8%
Mangaung Municipality	45.4%	54.6%

3.4.7 Trips to education

3.4.7.1 Main mode to education

Table 3-42 provides information about the modes used for trips to educational institutions. Overall, 38 per cent of these trips were made on foot, and in Naledi, as many as 74 per cent. Taxis account for

30 per cent of trips to education and in Thaba Nchu for almost half. School buses play an important role in scholar transport in the Mangaung Municipality, providing transport for 16 per cent of trips in the survey area, and in the Airport/Estoire area for 40 per cent of the trips. Car is significant in the central, higher car-owning zones, but also, and especially in the N-E rural zone. Lift clubs feature quite prominently in Thaba Nchu and the N-E Rural zone.

Table 3-42: Main mode to educational institutions

Reporting Zone	Percentage of educational trips						
	School bus	Bus	Taxi	Lift Club	Car	Walk all the way	Other
Central	10.3%		29.3%	1.4%	9.1%	46.9%	3.0%
Oranjesig	3.6%		11.8%	6.7%	36.4%	41.6%	
Mangaung	15.1%	1.0%	39.4%	9.4%	5.9%	29.1%	
Airport/Estoire	40.0%		9.7%	8.5%	41.7%		
Naval Hill/Bayswater	5.2%		16.6%	8.9%	37.6%	31.8%	
Tempe/Dan Pienaar	24.0%		14.9%	4.1%	42.4%	11.8%	2.7%
Langenhoven Park/Woodlands	33.3%	0.8%	9.1%	3.5%	52.4%	0.9%	
Universitas	6.9%	2.3%	26.5%		18.0%	46.3%	
Pellissier/Fichardt-Ehrlich Park	13.6%	1.1%	9.4%	2.2%	40.6%	30.3%	2.7%
Thaba Nchu	9.0%	10.5%	47.0%	16.3%		17.2%	
Botshabelo	17.4%	3.8%	23.9%	1.0%	1.6%	52.2%	
N-E Rural	7.9%	11.0%		17.0%	64.1%		
N-W Rural	21.5%		26.3%	3.6%	1.8%	46.7%	
S-W Rural	10.8%		18.9%	8.1%	29.7%	32.5%	
S-E Rural	23.1%	2.3%	22.1%	4.9%	26.8%	20.8%	
Naledi	16.8%	1.6%	5.5%		1.9%	74.2%	
Mangaung Municipality	16.0%	2.5%	29.5%	5.7%	8.6%	37.5%	0.1%

Figure 3-25 shows the split between trips made by public and private transport and on foot. Private transport plays a relatively small role in travel for educational purposes.

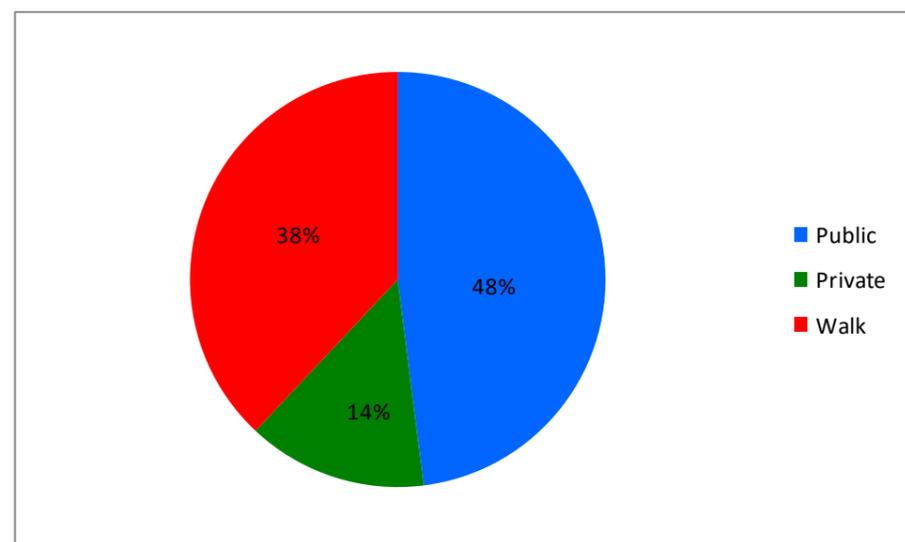


Figure 3-25: Mode of transport to education in Mangaung Municipality

Figure 3-26 displays the public-private-walk breakdown for each zone. It shows the dominance of trips on foot (red slices) in areas such as Naledi and Botshabelo on the one hand and on the other, the dominance of private transport (green slices) in N-E rural and the Airport/Estoire zone.

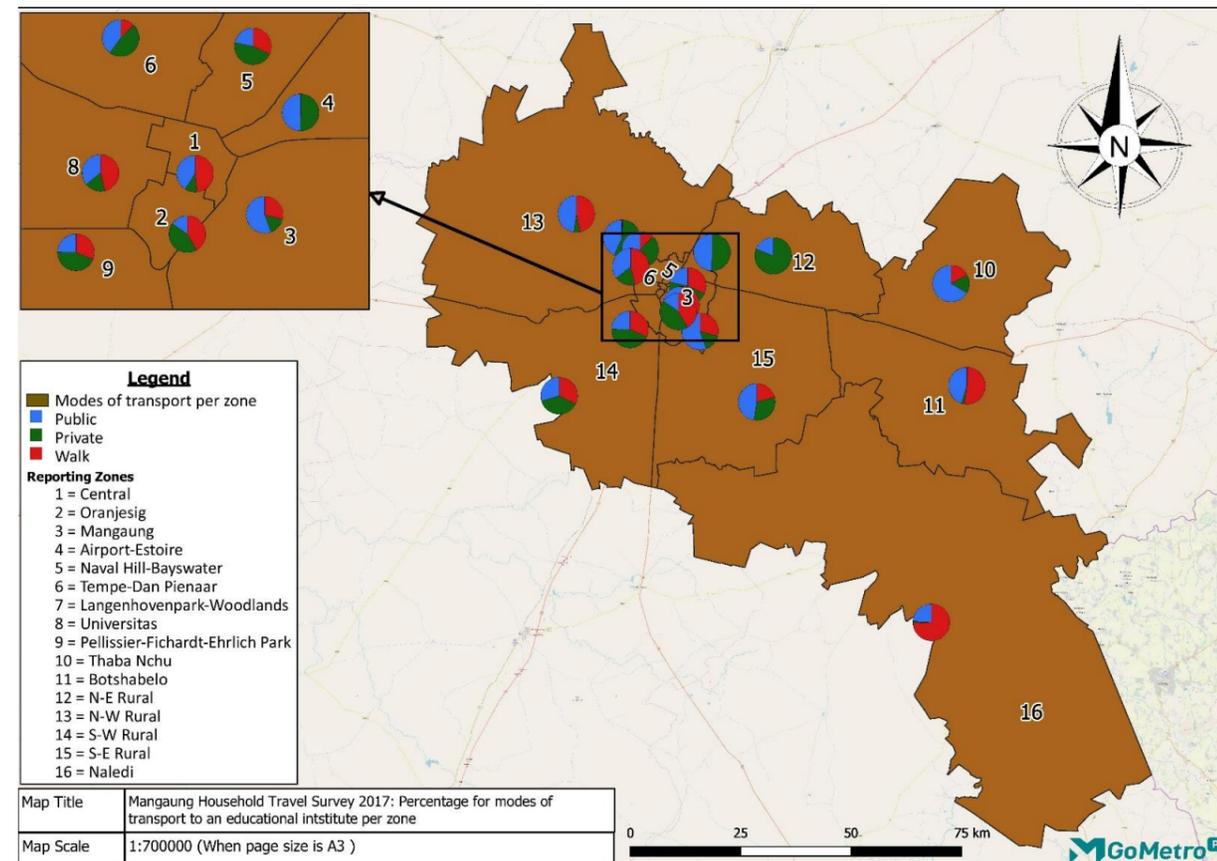


Figure 3-26: Mode to education by zone

3.4.7.2 Travel time to education

Table 3-43 lists the travel time breakdown by zone. Overall, almost half of the trips took between 16 and 30 minutes and 11 per cent longer than an hour. Unfortunately, a large proportion of very long trips occur in a few zones, such as N-W rural, Naledi and especially in S-W rural.

Table 3-43: Travel time to educational institutions

Reporting Zone	Percentage of educational trips				
	5 - 15 mins	16 - 30 mins	31-45 mins	46 - 60 mins	61 mins+
Central	58.6%	30.4%	5.5%	5.5%	
Oranjesig	42.4%	41.7%	1.3%	14.6%	
Mangaung	27.1%	51.2%	11.8%	6.0%	3.9%
Airport/Estoire	18.5%	60.4%	5.3%	15.8%	
Naval Hill/Bayswater	39.3%	45.7%	7.1%	7.9%	
Tempe/Dan Pienaar	41.3%	46.5%	1.9%	10.0%	0.2%
Langenhoven Park/Woodlands	22.6%	48.7%	13.7%	12.4%	2.6%
Universitas	39.2%	49.7%	9.2%	1.9%	
Pellissier/Fichardt-Ehrlich Park	61.6%	27.8%	6.2%	4.4%	
Thaba Nchu	15.9%	60.1%	8.6%	7.1%	8.4%
Botshabelo	14.9%	46.7%	7.9%	14.2%	16.4%
N-E Rural		56.2%	43.8%		
N-W Rural	21.7%	29.7%	19.5%	3.0%	26.1%
S-W Rural	5.4%	50.2%	1.8%		42.6%
S-E Rural	8.3%	45.9%	27.2%	9.5%	9.1%
Naledi	10.4%	38.9%	5.1%	14.6%	31.1%
Mangaung Municipality	22.1%	48.2%	9.9%	9.0%	10.7%

Figure 3-27 displays the mean travel time in different zones. The times range between a short of 18 minutes in the Central Zone and a long of 49 minutes in Naledi, with the mean travel time for the municipality at 32 minutes.

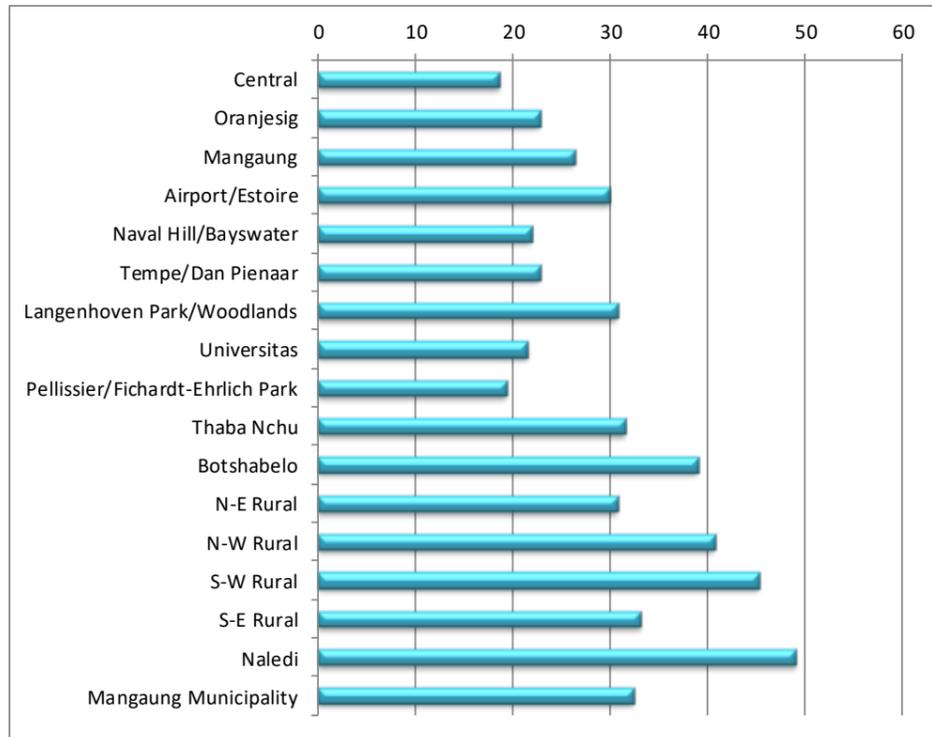


Figure 3-27: Mean travel time to education

Considering the travel times of walking trips to education, Table 3-44 reveals that 16 per cent of these trips take longer than an hour and a further 16 per cent between 46 minutes and an hour. The implication is that quite a large proportion of those who walk to school spend at more than 90 minutes a day walking to and from school. Rough estimates are that there are some 28 000 in this unfortunate situation – more than 20 000 in Botshabelo alone.

Table 3-44: Walking times to education

Reporting Zone	Percentage of walking trips to education				
	5 - 15 mins	16 - 30 mins	31-45 mins	46 - 60 mins	61 mins+
Central	96.6%	3.4%			
Oranjesig	39.0%	61.0%			
Mangaung	68.1%	31.9%			
Airport/Estoire					
Naval Hill/Bayswater	39.8%	60.2%			
Tempe/Dan Pienaar	66.2%	31.8%		2.0%	
Langenhoven Park/Woodlands		100.0%			
Universitas	36.3%	59.0%	4.6%		
Pellissier/Fichardt-Ehrlich Park	91.6%	8.4%			
Thaba Nchu		83.7%	3.4%		12.9%
Botshabelo	16.4%	41.3%	6.8%	12.3%	23.2%
N-E Rural					
N-W Rural	39.6%	26.1%			34.3%
S-W Rural	16.7%				83.3%
S-E Rural		100.0%			
Naledi	12.9%	48.1%	0.8%	16.1%	22.1%
Mangaung Municipality	34.6%	39.1%	3.5%	6.8%	16.0%

3.5 Use and Attitudes to Public Transport

The attitudinal section of the questionnaire was filled in by one adult in the household (preferably an adult in employment) and weighted to the number of households in the area - therefore the results are not representative of all adults, rather of a view at household level.

3.5.1 Bus usage

The proportion of respondents, who reported that they had used a bus service at least once in the preceding month, is tabled below. Table 3-45 reveals that on average, less than 20 per cent of respondents had used a bus. The only significant bus usage was in Thaba Nchu and Botshabelo, with a decreased usage of between ten and twenty per cent in Mangaung and the southern and northern rural areas, petering out to an insignificant minority in Naledi and the urban areas.

Table 3-45: Bus usage in the preceding month

Reporting Zone	% of respondents
Central	3.5%
Oranjesig	2.0%
Mangaung	10.2%
Airport/Estoire	3.6%
Naval Hill/Bayswater	2.1%
Tempe/Dan Pienaar	6.1%
Langenhoven Park/Woodlands	7.6%
Universitas	8.3%
Pellissier/Fichardt-Ehrlich Park	8.2%
Thaba Nchu	42.7%
Botshabelo	28.3%
N-E Rural	13.6%
N-W Rural	16.7%
S-W Rural	14.3%
S-E Rural	17.4%
Naledi	4.0%
Mangaung Municipality	17.5%

The respondents who were not bus users were required by the questionnaire to provide the reasons for not using the bus service. Unfortunately, this section appears to have been skipped by most interviewers and only two per cent of the non-users provided an answer. Of those, the majority (76%) gave the reason that there were no buses available and the rest that buses were not available often enough. There is, therefore, no information about other service-related issues that may discourage residents from using the bus service.

3.5.2 Satisfaction with and importance of attributes of bus service

Bus users were asked to rate their satisfaction with attributes of the bus service as very satisfied, satisfied, neither, dissatisfied and very dissatisfied. Similarly, they were asked to rate the importance of the attributes as very important, important and not important. The results are listed in Table 3-46 and graphed in Figure 3-28.

Table 3-46: Importance of and satisfaction with attributes of the bus service

Attributes of bus service	Percentage of bus users					
	Very important	Important	Total important	Dis-satisfied	Very dis-satisfied	Total dis-satisfied
Distance of bus stop from home	45.2	34.5	79.7	26.2	18.4	44.6
Distance of bus stop from work	47.9	37.3	85.2	27.2	19.5	46.7
Travel time in the bus	49.5	32.7	82.2	28.5	15.9	44.5
Security on walk to bus	42.6	44.3	86.9	27.8	15.5	43.3
Security at the bus rank or bus stops	46.3	38.8	85.1	23.7	14.6	38.3
Security on the bus	48.3	36.3	84.6	26.8	14.3	41.1
Level of crowding in the bus	46.3	36.6	82.9	28.2	19.8	48.0
Safety from accidents	50.2	35.9	86.1	28.2	20.2	48.4
Peak-period frequency of buses	48.3	36.9	85.2	23.1	18.9	42.0
Off-peak frequency of buses	47.4	40.2	87.7	29.6	21.3	50.9
Punctuality of buses	48.0	38.9	87.0	21.1	18.8	39.9
Bus fares	44.7	43.6	88.4	21.2	29.1	50.4
Facilities at bus ranks or bus stops	45.4	34.7	80.1	22.8	24.7	47.5
Roadworthiness of buses	48.9	35.6	84.5	24.1	22.3	46.5
Behaviour of bus drivers	46.7	37.9	84.7	22.3	14.9	37.2
Reliability of bus service	44.3	36.4	80.6	22.3	14.9	37.2
Bus service overall	40.3	39.6	79.9	21.4	20.5	41.9

The table shows that there are only very small differences between the importance and satisfaction ratings of the different attributes, ranging between 44 and 50 per cent very important and 33 and 44 per cent important. The combination of very important and important has a range of between 80 and 88 per cent.

The three highest very important scores are:

- Safety from accidents (50.2%)
- Travel time in the bus (49.5%)
- Roadworthiness of buses (48.3%)

The three highest *combined* importance scores are:

- Bus fares (88.4%)
- Off-peak frequency of buses (87.7%)
- Punctuality of buses (87.0%)

The satisfaction ratings show a similar spread between 38 and 50 per cent dissatisfied. Attributes with the highest dissatisfaction are:

- Off-peak frequency of buses (50.4%)
- Bus fares (50.4% dissatisfied)
- Safety from accidents (48.4%)

The figure, with the attributes ordered from least important to most important at the bottom, shows how similar the ratings are. It is interesting to note that the attributes with the highest importance ratings, also shows the highest proportion of dissatisfied customers. Forty per cent of the bus-using respondents expressed dissatisfaction with the bus service overall and the major issues seem to be bus fares, the off-peak frequency of buses and the safety from accidents.

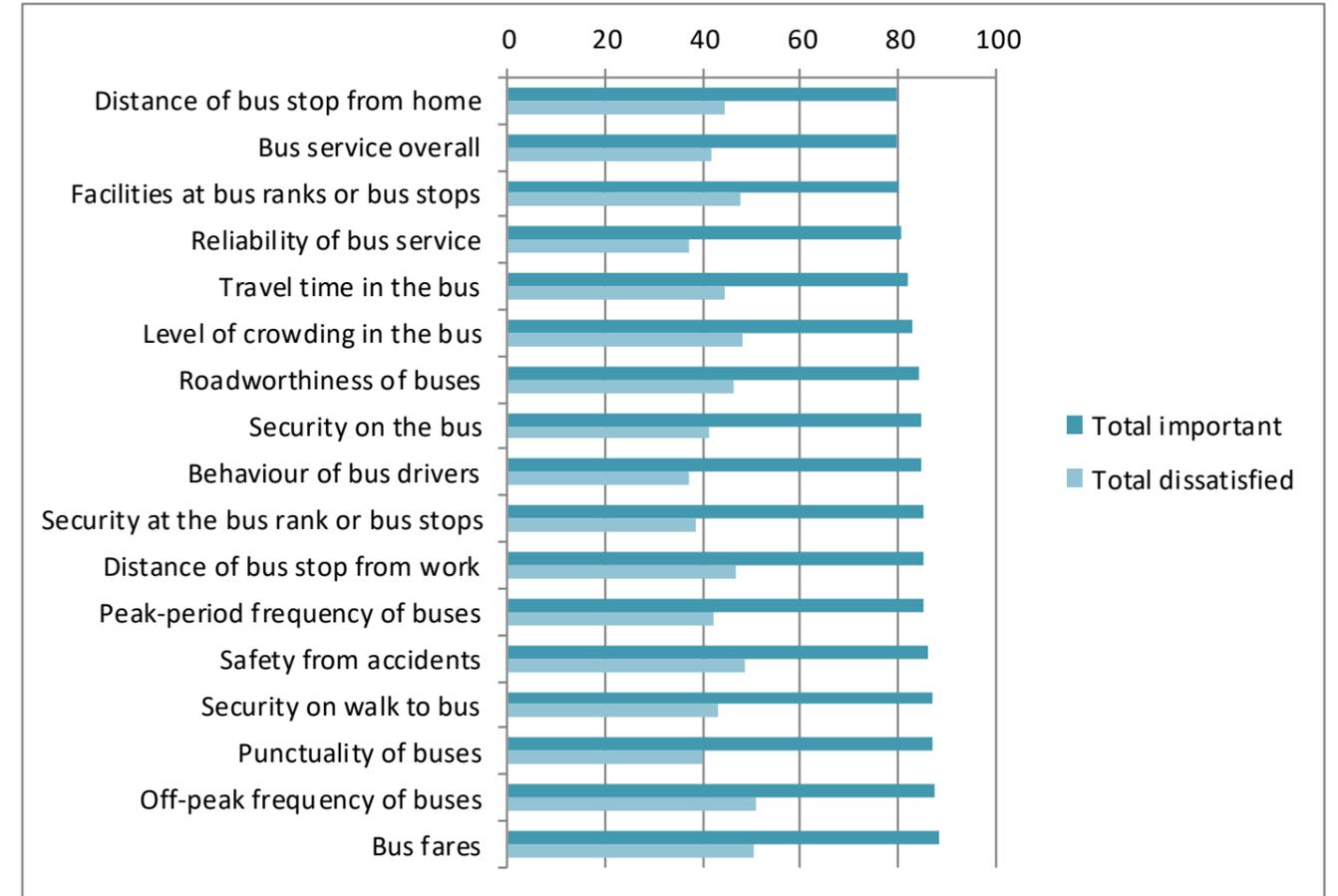


Figure 3-28: Importance of and satisfaction with attributes of the bus service

3.5.3 Taxi usage

The proportion of respondents reporting that they had used the taxi service in the previous month is listed in Table 3-47 below. It is obvious that that taxi usage in Mangaung is much higher than bus usage, with 75 per cent of the respondents in Mangaung municipality being taxi users. In Mangaung and Botshabelo, the proportion is over 90 per cent and in Thaba Nchu just under and even in Oranjesig and Tempe/Dan Pienaar almost 20 per cent.

As was the case with non-bus users, the respondents who did not use taxis, were (or should have been) asked about the reasons for not using taxis. Answers were, however, only obtained from 22 per cent of the non-users of which 56 per cent cited that there were no taxis available and the remaining 44 per cent that there were not enough taxis available.

3.5.4 Satisfaction with and importance of attributes of taxi service

Similar to bus users, taxi users were asked to rate their satisfaction with attributes of the taxi service as very satisfied, satisfied, neither, dissatisfied and very dissatisfied. Similarly, they were asked to rate the importance of the attributes as very important, important and not important. The results are listed in Table 3-48 and graphed in Figure 3-29.

Once again, the table shows that there are small differences between the importance and satisfaction ratings of the different attributes, ranging between 41 and 48 per cent very important and 35 and 43 per cent important. The combination of very important and important has a range of between 80 and 88 per cent.

The three highest very important scores are:

- Waiting time for taxis (48.4%)
- Reliability of taxi service (46.9%)
- Safety from accidents (46.3%)

The three highest *combined* importance scores are:

- Reliability of taxi service (84.4%)
- Peak period frequency of taxis (83.7%)
- Waiting time for taxis (83.6%)

Once again, the satisfaction ratings show a similar spread between 33 and 41 per cent dissatisfied. Attributes with the highest dissatisfaction are:

- Roadworthiness of taxis (41.0%)
- Waiting time for taxis (39.5% dissatisfied)
- Safety from accidents (48.4%)

Table 3-47: Taxi usage in the previous month

Reporting Zone	% of respondents
Central	32.2%
Oranjesig	18.2%
Mangaung	92.9%
Airport/Estoire	35.4%
Naval Hill/Bayswater	35.0%
Tempe/Dan Pienaar	18.9%
Langenhoven Park/Woodlands	25.7%
Universitas	40.1%
Pellissier/Fichardt-Ehrlich Park	28.0%
Thaba Nchu	87.8%
Botshabelo	94.3%
N-E Rural	44.2%
N-W Rural	65.7%
S-W Rural	48.7%
S-E Rural	51.5%
Naledi	68.4%
Mangaung Municipality	76.1%

Table 3-48: Importance and satisfaction with attributes of the taxi service

Attributes of bus service	Percentage of taxi users					
	Very important	Important	Total Important	Dis-satisfied	Very dis-satisfied	Total dis-satisfied
Distance of taxi service from home	43.9	37.6	81.5	20.4	15.4	35.9
Distance of taxi service from work	42.5	37.6	80.0	17.1	15.6	32.7
Travel time in the taxi	41.4	40.8	82.2	18.1	16.1	34.1
Security on walk to taxi	46.8	34.8	81.6	20.7	14.0	34.7
Security at ranks/stops	46.0	36.9	82.9	23.5	15.3	38.9
Security in the taxi	43.9	36.9	80.8	20.5	14.1	34.6
Level of crowding in the taxi	42.3	38.0	80.3	20.2	16.5	36.7
Safety from accidents when traveling	46.3	36.5	82.8	22.4	14.7	37.1
Peak-period frequency of taxis	40.3	43.4	83.7	21.1	15.6	36.6
Off-peak frequency of taxis	39.3	43.2	82.5	21.4	14.8	36.2
Waiting time for taxis	48.4	35.2	83.6	22.8	16.7	39.5
Taxi fares	44.8	35.9	80.7	21.3	15.7	37.0
Facilities at taxi ranks	42.0	37.5	79.5	21.2	16.7	37.9
Roadworthiness of taxis	45.5	37.3	82.8	23.1	18.0	41.0
Behaviour of taxi drivers	42.3	38.9	81.2	23.8	15.6	39.3
Reliability of taxi service	46.9	37.5	84.4	21.7	12.4	34.2
Taxi service overall	41.7	39.9	81.6	21.3	16.7	38.0

The figure, with the attributes ordered from least important to most important at the bottom, shows how similar the ratings are, especially in terms of importance. The attributes attracting the most dissatisfaction was not necessarily those with the highest importance rating, but at least 80 per cent of the respondents regarded them as important. Close to forty per cent of the taxi-using respondents expressed dissatisfaction with the taxi service overall.

In general, bus users are slightly more dissatisfied than taxi users.

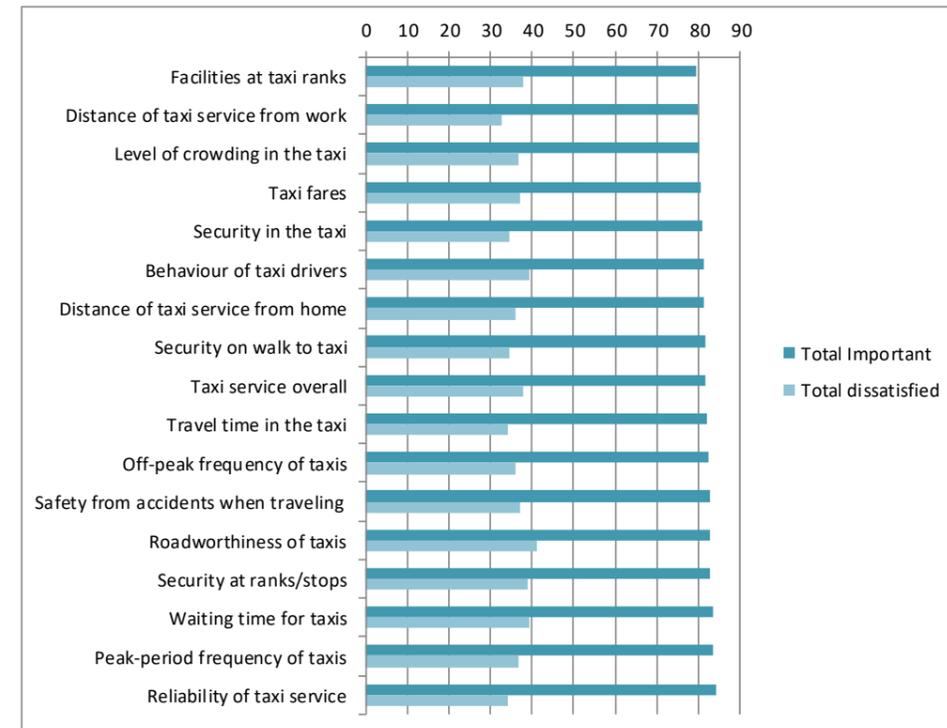


Figure 3-29: Importance and satisfaction ratings

3.6 Conclusion

Although the paucity of income information prevented the inclusion of valuable income-related cross-tabulations and calculations, the survey has produced valuable information about the demographic characteristics, travel-related problems, travel behaviour and attitudes and perceptions of the residents of the Mangaung Municipality.

4 Annexures

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Annexure C: THE IHS DEMOGRAPHIC MODEL

Annexure D: IHS GLOBAL ECONOMIC OUTLOOK

Annexure E: IHS SOUTH AFRICAN ECONOMIC OUTLOOK, MARCH 2016

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Annexure X: CBD Traffic Impact Study – IPTN

Annexure Y: Road Infrastructure Maintenance and Upgrades

Annexure Z: Waiting Areas Guidelines Per Number of Passengers in the peak 15-minutes of the peak hour

Annexure AA: Station Sizing

Annexure BB: Hoffman Square – Capacity Calculation

Annexure CC: MMM IPTN NMT Plan

Annexure DD: Detailed Infrastructure per Corridor

Annexure EE: Detail Route

Annexure FF: Facility Sizing per Design Year

Annexure GG: Route Details per Design Year Trunk, Feeder and Complementary Routes (31_Excel File)

Annexure HH: Detail Operational Cost and Revenue Calculation Per Route

Annexure II: NMT Infrastructure Projects Parameters

Annexure JJ: Operational Cost and Revenue per Route Design Options and Functional Public Transport Corridor

Annexure KK: Subsidised Bus Service Volumes and routes per functional public transport corridor

Annexure LL: Phase 1 Business Plan

Annexure MM: Environmental Strategy and Action Plan

Annexure NN: Universal Access Strategy and Action Plan

Annexure OO: Industry Transition

Annexure PP: Legal and Compliance

Annexure QQ: Marketing Communications

Annexure RR: Stakeholder Participation

Annexure SS: Economic Impact

Annexure TT: Social Impact

Annexure UU: Signage and Wayfinding

Annexure VV: Traffic Management

Annexure WW: Household Travel Survey Technical Report and Results