



MANGAUNG METRO MUNICIPALITY DIRECTORATE: PLANNING

CONTRACT NUMBER: C640/M2

FOR THE COMPILATION OF

COMPREHENSIVE INTEGRATED TRANSPORT PLAN (CITP)

MARCH 2023

PREPARED FOR:

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PLANNING DIRECTORATE
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Nelson Mandela Drive and Markgraaff Street,
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QUALITY MANAGEMENT

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ABBREVIATIONS

AFC	Automatic Fare Collection
AND	Airport Development Node
APAP	Agricultural Policy Action Plan
APTMS	Advanced Public Transport Management Systems
BATA	Botshabelo Amalgamated Taxi Association
BEPP	Built Environment Performance Plan
BRT	Bus Rapid Transit
CBD	Central Business District
CITP	Comprehensive Integrated Transport Plan
DITP	District Integrated Transport Plan
DRDLR	Department of Rural Development and Land Reform
FSDoT	Free State Department of Police, Roads and Transport
GBTA	Greater Bloemfontein Taxi Association
IBL	Interstate Bus Lines
IDP	Integrated Development Plan
IPTN	Integrated Public Transport Network
IRPTN	Integrated Rapid Public Transport Networks
ITP	Integrated Transport Plan
LITP	Local Integrated Transport Plan
MBT	Minibus Taxi
MDTC SC	Mangaung District Taxi Council Steering Committee
MLM	Mangaung Local Municipality
MMM	Mangaung Metropolitan Municipality
MRE	Municipal Regulatory Entity
MSA	Moving South Africa
MSDF	Municipal Spatial Development Framework
MTA	Manyatseng Taxi Association
NDP	National Development Plan
NLTA	National Land Transport Act
NLTTA	National Land Transport Transition Act
NMT	Non-motorised Transport
OL	Operating Licence
OLAS	Operating Licence Administration System

OLP	Operating Licence Plan
PA	Planning Authority
PLTF	Provincial Local Transport Framework
PRE	Provincial Regulatory Entity
PTNG	Public Transport Network Grant
PTOG	Public Transport Operating Grant
PTP	Public Transport Plan
QTA	Qibing Taxi Association
RDP	Rural Development Plan
RMTA	Rainbow Metered Taxi Association
SDF	Spatial Development Framework
SIP	Strategic Infrastructural Projects
SPLUMA	Spatial Planning and Land Use Management Act
SUMS	Subsidy Management System
TDM	Travel Demand Management
TEUTA	Tweespruit Excelsior United Taxi Association
TOD	Transit-oriented Developments
TR	Transport Register
TTA	Thaba Nchu Taxi Alliance
VOC	Vehicle Operating Company

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EXECUTIVE SUMMARY

The executive summary from the various chapters within the CIP is summarised as follows:

CHAPTER 1: INTRODUCTION

The Mangaung Metro Municipality presents its latest Comprehensive Integrated Transport Plan (CITP) for the period of 2023 to 2028. This plan aims to capitalize on the advancements achieved in the development and execution of the Integrated Transport Plan while concurrently focusing on the sustainable expansion of the Spatial Development Framework (SDF).

Background

The Mangaung Metropolitan Municipality (MMM) covers an approximate area of 988 763 ha and encompasses three prominent urban centers surrounded by a vast rural region. These urban areas comprise Bloemfontein, Botshabelo, and Thaba Nchu. Bloemfontein, known as the judicial capital and one of South Africa's largest cities, is the administrative capital of the Free State Province and acts as the primary economic hub within the provincial economy.

Situated centrally in the Free State Province, the Municipality enjoys accessibility via numerous national and provincial routes. Given Bloemfontein's pivotal role and central location in the context of the province, the majority of provincial and national road networks converge in the city, resulting in a radial network. Key routes include the N1 (the primary north-south corridor in South Africa), the N6 (connecting Bloemfontein to the Eastern Cape via Aliwal North), and the N8 (which links Lesotho in the east to Kimberley in the west through Bloemfontein). Other prominent routes converging in the area include R702 to Dewetsdorp, R706 to Jagersfontein, R64 to Warrenton, R700 to Bultfontein, and R30 to Virginia/Welkom.

In addition to road infrastructure, the region is serviced by an east/west and north/south railway line that aligns with the movement patterns of the N1 and N8 routes. The Bram Fischer National Airport also serves the area.

Located approximately 60km east of Bloemfontein along route N8, Botshabelo is the second urban node which represents the largest single township development in the Free State. A further 12km to the east of Botshabelo lies the third urban node, Thaba Nchu, surrounded by extensive rural settlements on trust (communal) land, visible in the far eastern parts of the Mangaung municipal area.

The surrounding rural areas of Mangaung is a home to extensive commercial farming in the west and communal commercial/subsistence farming in the east, centered around Thaba Nchu.

The population of MMM is estimated to consist of 285,385 households, with an average household size of 3.1 individuals. Approximately 65% of households reside in Mangaung/Bloemfontein, 31% in Botshabelo and Thaba Nchu, 3% in other small towns, and 2% in the rural areas. The estimated household growth during the period from 2011 to 2019 is approximately 44,752, translating to an average of 5,594 households per year.

MMM serves as the largest contributor to the province's GDP and boasts a reasonably diverse economy.

Approach on Integrated Transport

The Mangaung Metropolitan Municipality has developed the IPTN Plan 2036 which has an approval status from the Department of Transport (DoT). The IPTN is currently in its implementation phase

which has seen a notable improvement of roads in the Maphisa/ Mshoeshoe/ OR Tambo Functional Corridor.

The CITP will provide a comprehensive overview of how the Mangaung Metropolitan Municipality (MMM) intends to advance its integrated transport initiatives. The report will delve into how the MMM plans to utilize transportation as a means to address the spatial structure and foster the development of sustainable communities. It will explore various strategies and measures aimed at promoting integration and sustainability within the transportation system within MMM.

CHAPTER 2: TRANSPORT VISION AND OBJECTIVES

The vision has been constructed in alignment with national, provincial, and local policies and strategies, encompassing both long-term and short-term aspects of the Integrated Transport Plan. The objectives have been formulated in a manner that is measurable, comprehensible, and attainable, ensuring they are closely aligned with the overarching transportation vision for the Mangaung Metropolitan Municipality (MMM). Below is a summary of the objectives that are in line with the broader transportation vision for MMM.

No.	Objectives	Measures
1.	Furnish top-notch infrastructure in both urban and rural regions.	<ul style="list-style-type: none"> • Upgrade public transport facilities (ranks and stops). • Upgrade roads, while incorporating best practice NMT and universal access design principles. • Implement an effective maintenance plan. • Improve road infrastructure capacity through innovative transport solutions.
2.	Ensure sustainable transport network operations.	<ul style="list-style-type: none"> • Monitor transport operations to ensure acceptable service for all users. • Ensure the public transport routes cover the entire Metro. • Enforce laws and regulations with regard to transport system operators and freight vehicles.
3.	Improve the safety and security of all road users.	<ul style="list-style-type: none"> • Design and upgrade all roads using the safer roads design approach. • Ensure speed limits and other road rules are well enforced by acquiring the necessary staff and equipment. • Ensure the public transport facilities are improved to be safer for the users.
4.	Implement transport policies and plans effectively.	<ul style="list-style-type: none"> • Establish a responsible ITP team to oversee the planning of the transport systems including, but not limited to, public transport, freight, and NMT. • Update the ITP on an annual basis in synchronisation with the Integrated Development Plan (IDP) and SDF (updates to focus on action programme and budget). • Commit sufficient funding and resources to achieve the objectives of the CITP in relation to the catalytic big moves. • Integrate and co-ordinate land-use planning and transport planning initiatives.

5.	Reduce greenhouse gas emissions relating to the transport sector by creating a greener city.	<ul style="list-style-type: none"> • Promote the use of public and NMT through improved routes, ranks, infrastructure and connectivity. • Promote the use of low-carbon fuels and other cleaner mobility options. • Encourage the use of renewable energy at transport facilities.
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CHAPTER 3: SUMMARY OF THE TRANSPORT REGISTER

The following taxi associations are currently in operation within the MMM jurisdiction:

- **Greater Bloemfontein Taxi Association (GBTA)** – The taxi association serves both local and long-distance trips within Bloemfontein area.
- **Botshabelo Amalgamated Taxi Association (BATA)** – The taxi association serves both local and long-distance trips within the Botshabelo area.
- **Thaba Nchu Taxi Alliance (TTA)** – The taxi association serves both local and long-distance trips within the Thaba Nchu area.
- **Qibing Taxi Association** – The taxi association serves both local and long-distance trips within the Wepener area.
- **Tshwaraganang Scholar Transport Association** – The taxi association serves local scholar transport trips within the MMM area.
- **Motheo Region Taxi Association (region)** – The taxi association at the regional level that oversees the operations of other associations within the MMM.
- **Rainbow Metered Taxi Association (RMTA)** – The taxi association in MMM that is responsible for metered taxis.

SANTACO is the umbrella body governing the taxi industry, and they have a footprint in the Free State Province. The Motheo Regional Taxi Association was established to oversee the operations of different taxi associations within the MMM.

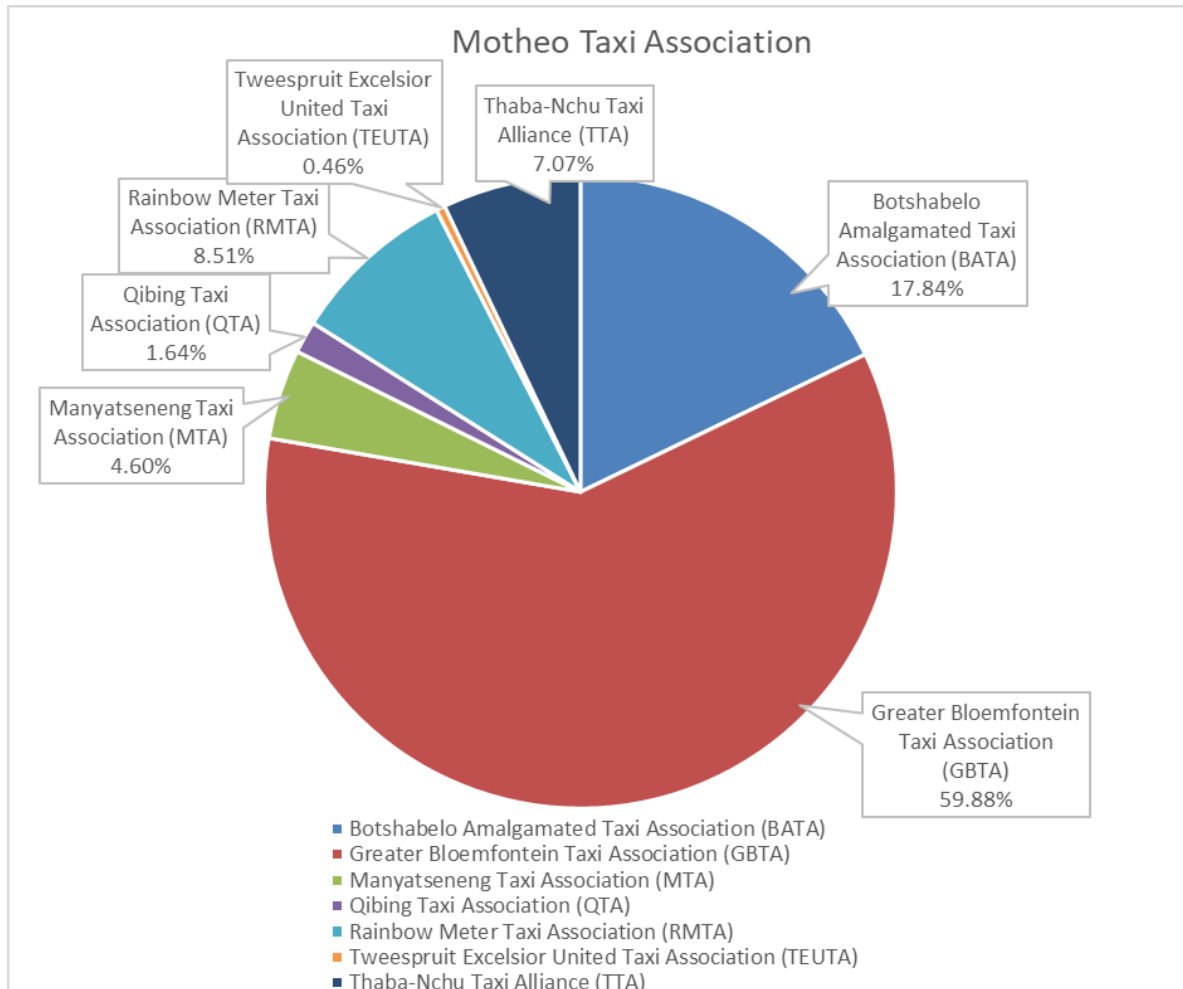
Annexure D has a summary of the 12-hour surveys conducted at the Ranks with the following data:

- MBT Arrivals
- MBT Departure
- Passenger Waiting Time
- Long Distance Arrival and Departure
- Holding Areas

Findings from the Motheo Taxi Association PRE data are as follows:

- There are 3 043 vehicles in operation under the Motheo Taxi Association.
- The GBTA makes up approximately 60% of the Motheo Taxi Association.
- TEUTA makes up 0.46% of the 3 043 taxis in operation under the Motheo Region.
- The BATA at 543 aggregates to 17.84% of taxis operational.

- The MTA accumulated to 4.60% in operation within the Motheo Region.
- QTA has a total of 50 taxis in operation.
- The RMTA makes up 8.51% of the 3 043 taxis active in the Motheo Taxi Association.
- Thaba Nchu Long and Short Taxi Association with a total of 215 taxis aggregates to 7.07% of the Motheo Taxi Association.



Provincial Regulatory Entity data compared with the surveyed data

Data from taxis captured on the register for the Motheo Taxi Association was compared with the data accumulated from the survey conducted between May and June 2022. The comparison aimed to identify how much of the surveyed data will be matched with the PRE data from the 3 043 taxis registered on the Motheo Taxi Association register.

The findings can be summarised as follow:

- Out of the 3 043 vehicles operating under the Motheo Taxi Association only 400 vehicles are registered.
- Registered vehicles under the Motheo Taxi Association averaged 13.14%.
- A total of 83.75% of registered vehicles belong to the GBTA.
- TEUTA, QTA and MTA have no vehicles registered under their respective associations.

- The GBTA comprises approximately 11% of the vehicles registered under the Motheo Taxi Association.
- The TTA comprises 1.74% of registered vehicles operating within the Motheo Region.
- BATA averaged 0.36% in terms of taxis registered and RMTA averaged 0.03%.
- A large number of vehicles operating in the Motheo Region remain unregistered.

The Rank Infrastructure audit has uncovered that the majority of ranks within the metropolitan area are situated in informal settings. While the existing formalized ranks generally fulfill most of the basic requirements for passengers, the informal ranks are lacking in several essential aspects. These informal ranks typically lack amenities such as shelters, ablution facilities, proper accessibility measures, and sidewalks. The absence of these fundamental provisions not only inconveniences passengers but also compromises their safety and comfort during their travel experience. Addressing these deficiencies by providing necessary infrastructure upgrades and improvements to informal ranks is crucial to ensure that all passengers have access to a reliable, safe, and comfortable public transportation system.

The Route Identification surveys have identified a concerning issue regarding the poor state of routes leading to townships in the southern areas of Bloemfontein and Botshabelo. This deterioration has had a significant impact on the accessibility and quality of service to these routes. It has become evident that road maintenance is a critical priority for mini-bus taxi operators operating on these routes. The condition of the roads directly affects the efficiency, safety, and reliability of transportation services provided to residents in these townships. It is imperative that road maintenance efforts be prioritized to address these challenges and ensure that the routes leading to these townships are in a suitable condition, facilitating improved access and reliable transportation services for the communities.

CHAPTER 4: SPATIAL DEVELOPMENT FRAMEWORK

This chapter seeks to ensure that the Spatial Planning Framework for the Mangaung Metropolitan Municipality (MMM) CIP is prepared based on the National Land Transport Act No 5 of 2009's Minimum requirements for the preparation of the Integrated Transport Plans 2016. The chapter borrowed some of the spatial initiatives from the MMM Spatial Development Framework (SDF) 2020. Furthermore, the chapter highlights the key nodes of transportation planning that are comprised within the MMM SDF. Bloemfontein is located at the center of the country and serves to integrate the major national nodes that are directly joined to all provinces except Limpopo and the Western Cape Provinces join. These key nodes are the MMM's comprehensive road network which is made of:

- National Road network: the N1, N8 and N6 are (national roads that cut across MMM to connect four key provinces that are, Gauteng, Northern Cape, Eastern Cape, and the Western Cape);
- Provincial Road Network: these are the R702, R64, R700, R706, R30, and R26 provincial roads that link far stretches of the province through MMM i.e., that is R26 runs parallel to the border linking Wepener to Hobhouse and Ladybrand to the North and Zastron to the South;
- And rail lines and air transportation

The chapter addresses topics on SDF proposals, implementation, and prioritization, incorporation of sectoral Plans, and the Transport Planning system of the MMM. The transportation planning of MMM also includes the Strategic Infrastructural projects (SPI) that aim to boost economic growth and ease of mobility within the entire municipal area.

To align with the municipality's strategic intent as outlined in the CITP, additional Spatial Development Framework intentions are proposed. These intentions involve the identification of routes for further development in various areas including Bloemfontein, Botshabelo, Thaba Nchu, Wepener, Dewetsdorp, Vanstadensrus, and Soutpan. The aim is to capitalize on opportunities for nodal developments and transport corridors.

Among the identified routes, the N8 Road, Nelson Mandela Drive, Curie Avenue, Fort Hare Street, and Dr. Belcher Road have shown significant transit activity, making them suitable for enhancing nodal development and proposing transport development corridors. Nelson Mandela Drive serves as a primary access route to Bloemfontein and facilitates transit between the city and the western suburb of Langenhoven Park. The medium-term development along Nelson Mandela Drive, particularly in the westernmost part, should be prioritized to leverage the transit activity and establish it as a future development node.

Dr. Belcher Road, spanning 4.74km, currently has only one type 3 node according to the Bloemfontein Spatial Development Framework (SDF) 2020, located at the southern tip of the road. Given the residential development south of Dr. Belcher Road along Dewetsdorp Road, there is potential for a corridor that enhances connectivity between the type 3 node and Bloemfontein CBD. The municipality has an opportunity to implement spatial initiatives that promote economic spin-offs along this route, benefiting both Heidedal and Mangaung Townships.

Curie Avenue, covering approximately 5.46km, is another potential corridor with existing type 2 and 3 nodes according to the Bloemfontein SDF 2020. The municipality can capitalize on this corridor by proposing spatial initiatives that leverage the transit activity along the route.

Fort Hare Street, leading to Maphisa Road, is a 4.4km road with significant potential for establishing nodes. By declaring this route as a corridor, the municipality can introduce spatial initiatives that enhance economic opportunities and improve the livelihoods of residents in the Mangaung Township.

The N8 Road, including both the western and eastern Masselspoort Roads, plays a crucial role in linking Bloemfontein to Botshabelo and Thaba Nchu. The western Masselspoort Road contains a railway precinct and MOSS (Military, Offices, Shops, Services) development towards the CBD, which can be enhanced to include freight movement and logistics linking the municipality, neighboring towns, and Lesotho. The eastern Masselspoort Road is part of medium-term spatial initiatives as per the Bloemfontein SDF 2020, forming part of a Future 3 nodal hierarchy. The declaration of this portion of Masselspoort Road can enhance the N8 Road corridor and generate economic benefits for the municipality.

By strategically identifying and developing these routes and corridors, the municipality can foster spatial initiatives that align with its overall development goals and enhance economic growth and connectivity within the metropolitan area.

CHAPTER 5: TRANSPORT NEEDS ASSESSMENT

The Department of Transport's minimum requirements state that the Transport Needs Assessment must determine and adequately describe the transport-related issues, problems, and needs of the municipality and its residents based on the following:

- an assessment of issues, problems, trends and performance standards revealed by the TR.
- a process of public participation and feedback aimed at identifying the needs of the community.
- present and future demand estimation.

The following Transport Needs were identified within the MMM:

Taxi Facilities

Soutpan, Dewetsdorp, and Vanstadensrus are small towns that collectively account for 5% of the total household percentage within the Metropolitan Municipality. Presently, these towns lack formalized rank facilities for public transport. In order to ensure efficient and safe movement of people within the Metro Municipality and to address public transport adequately, the proposal suggests the establishment of formalized mini Taxi Ranks in these small towns. By implementing these mini Taxi Ranks, it is expected that public transportation services will be better organized and more accessible to the residents, contributing to improved transportation efficiency and convenience within these areas.

It has been observed that major businesses do not sufficiently address public transport within their facilities. To address this issue, it is recommended to initiate an engagement process with these businesses in order to promote the availability of sufficient public transport facilities within their premises. These interventions aim to alleviate the current risk of minibus taxis occupying a lanes on the road, which ultimately reduces the road capacity. By encouraging businesses to provide dedicated public transport facilities, such as designated pick-up and drop-off points or bus stops, the smooth flow of traffic can be maintained, minimizing congestion and enhancing overall road capacity. This proactive approach will contribute to a more efficient and sustainable transportation system within the metropolitan area.

Learners Needs Assessment

The following routes were identified as the most inaccessible in the MMM:

- Route no. M039/2022; Bloemfontein–School (Willows); distance (54.2 km); number of learners 20.
- Route no. M013/2022; Bloemfontein–School (K.Khakhau); distance (71.2 km); number of learners 22.
- Route no. M050/2022; Thaba Nchu–School (Sediti); distance (71 km) number of learners 71.

These will need to be part of the priority list within the implementation strategies.

Transport Demand Estimation

The demand estimation model played a crucial role in formulating effective transport strategies aimed at tackling congestion and other transport-related issues. Chapter 8 of the report focuses extensively on travel demand management strategies that can assist to mitigate against traffic congestion and the continuous expansion of the MMM. These strategies are designed to optimize the utilization of transportation resources and promote more efficient travel patterns.

CBD Parking

The Central Business District (CBD) experiences a high demand for parking, primarily due to the significant usage of private vehicles on the road. In order to address this issue, the implementation of an Integrated Public Transport Network (IPTN) is proposed as a safe and dependable alternative to private transportation. The aim of introducing the IPTN is to encourage a modal shift from private car usage to increased utilization of public transport. By providing a reliable and efficient public transportation system, it is anticipated that more individuals will opt for public transport options, thus reducing the reliance on private vehicles and alleviating the strain on CBD parking facilities.

Emergency Services

The road Network within the MMM are experiencing potholes problems and lack of maintenance. The emergency routes needs to be on top of the priority list in terms of maintenance in order to improve access and safe lives.

Road Maintenance

Based on the RAMS data, it was revealed that gravel roads constitute the majority, accounting for 63.32% of the total road network within the Mangaung Metro Municipality. Just like surfaced roads, gravel roads also require maintenance. Implementing a road maintenance strategy for existing roads plays a vital role in the overall efforts to enhance the introduction of the Integrated Public Transport Network (IPTN) and improve the transportation systems within the MMM. By prioritizing road maintenance, the Municipality can ensure that both surfaced and gravel roads are in good condition, promoting safer and more efficient travel for all road users. This maintenance strategy will contribute to the overall objective of promoting efficient access to all areas within the MMM.

New Road Network

The proposed new road network associated with the Integrated Public Transport Network (IPTN) is expected to play a crucial role in expanding the capacity of the existing road network to meet the demands of growth and expansion in the MMM. However, it is important to note that the CITP will not solely focus on road expansions as a strategy to address traffic and transport-related problems. The CITP will explore a range of strategies beyond road expansions to tackle these issues. These strategies includes, amongst the few, promoting public transport usage, improving traffic management systems, implementing smart transportation technologies, encouraging non-motorized transport options, and considering land use planning and development that supports sustainable transportation patterns.

CHAPTER 6: PUBLIC TRANSPORT PLAN

Mangaung Metropolitan Municipality (MMM) has faced various changes and challenges since the last Public Transport Plan (PTP) was tabled, as part of the Integrated Transport Plan (ITP), in 2006. This includes the change in legal status and political boundaries, as well as the apparent failure to approve the previous ITP. The municipality also now needs to implement an Integrated Rapid Public Transport Network (IRPTN) which was introduced in 2011. The IRPTN was included in the MMM City-Wide IPTN (2015-2036) which aimed to transform the road-based public transport system by providing a “high-quality, safe and affordable public transport system.”

The objective of the PTP is to ensure that all aspects of public transport policy, planning and service provision are in place that would ensure integration, quality services and rationalisation to meet the demands of users and the developmental needs of the municipality. It is developed from and aligned

to the guidelines stipulated in the Integrated Development Plans (IDP) and the Spatial Developmental Framework (SDF). It has a 5 year horizon, which allows for changes in public transport demands to be managed efficiently.

This Public Transport Plan (PTP) for the Mangaung Metropolitan Municipality addresses the following areas and identifies gaps that have arisen since the previous reports in 2006 and 2011.

- provides the status quo (2022);
- reviews the current policies and strategies that relate to public transport;
- addresses the network design; and
- evaluates the Operating Licence Plan

A review of the status quo of public transport in MMM entailed collection of data from the Transport Register, Operating Licence Administration System (OLAS), the Subsidy Management System (SUMS), Municipal Spatial Development Framework, the IDP and the IPTN plan. This data was analysed against the backdrop of the previous Mangaung Local Municipality Integrated Transport Plan (2006-2011), as well as the MMM City-Wide Integrated Public Transport Plan (2015 -2036), firstly to ascertain alignment to the previous plans, and secondly to undertake a needs analysis based on current and potential demand.

The future development of the public transport system is guided by the ITP (2105-2036), which, as a means of stimulating economic growth through improved access to employment opportunities, introduced the concept of implementing the IRPTN through different corridors, in a phased approach over a period of time. It looks at modal integration along these corridors, recommending that current services be integrated into the IPTN. Subsidised bus services could contribute to trunk and complementary routes and minibus taxis could contribute to servicing feeder routes. There are however constraints to this concept that will need to be examined going forward. Five corridors have been identified as priority areas to focus on

Other legislation reviewed, that contribute towards the public transport regulation include the National Land Transport Transition Act (NLTTA), Act 22 Of 2000, the National Land Transport Act of 2009, the Urban transport Act, and the Free State Public Transport Act.

It was concluded that the transport policies and strategies support the planned provision of public transport that enhances access to socio-economic opportunities. The transport policy targets such as travel times, travel distances and costs, while the public transport strategy focuses on the quality of public transport. The link between transport and the spatial development framework also highlights the developmental role and support that public transport can contribute.

The public transport network design within the city has been based on the identification of functional corridors and a phased implementation of the IRPTN. The corridors have been designed to feed most areas of the city into the CBD in a radial format. Botshabela and Thaba Nchu are part of the city network and will be incorporated in the IPTN, while rural areas will continue to be serviced through the existing contracted bus services and minibus taxi services.

Implementation of the IRPTN along each corridor will require negotiation with current service providers to be integrated into the system or compensated for loss of business. This is an ongoing process, that is integrally associated with the Operating Licence Plan.

Examination of the Operating Licence Plan is necessary to address and support the implementation of the CITP. The objective of the Operating Licence Plan is to ensure a balance between the demand and supply of public transport services. This is effected by managing the OL applications and renewals, as

well as addressing rank space and vehicle compliance. Currently there is a moratorium on new OL applications, which the MMM sees as an opportunity to limit operators on the functional corridors and allow for negotiations on compensation. However, the negotiations have stalled, impacting the success of the CITP to be implemented within the stipulated 5 year period. Furthermore, the issue of which regulatory authority manages the system for OLs, has yet to be decided. Currently this is a provincial function on a national system, and negotiation between the 3 spheres is required to resolve the issue. It is recommended that the MMM not consider the devolution of the regulatory function.

The Operating Licence Plan provides some guidance on the manner of dealing with OL applications. The aim would be to expedite the IPTN implementation by concluding contracts for each of the public transport functional corridor.

The rural public transport connectivity, long distance inter-provincial services and metered, e-hailing and tuk-tuk services would require viability studies so that any potential for an over-supply and consequent reduction in the service quality may be avoided. In the annual update of the CITP and the PTP, there is a need to undertake route viability studies for rural public transport.

CHAPTER 7: TRANSPORT INFRASTRUCTURE STRATEGY

Integrated public transport network proposed infrastructure strategy

This section of the report elaborates on the design principles for the IPTN public transport infrastructure.

The passenger experience of the new system will rely on their familiarity with the new system and the smooth coordination between the operations of the new system and the existing one throughout the implementation process. To facilitate this, it is advantageous for the transformed system to have reference points that align with corresponding elements in the existing system. These main transfer points will be upgraded, and improvements will be made to the built environment to signify the transformation taking place.

The transfer facilities selected for the system comprise:

- the intermodal facility, next to Bloemfontein rail station;
- Hoffman Square in the CBD;
- Blue Rank in Botshabelo; and
- Thaba Nchu main taxi and bus rank (Van Riebeeck Street).

The transfer facilities will serve as the connecting points for transfers between trunk routes, specifically the Intermodal and Hoffman Square, as well as between feeders and trunks to/from Botshabelo, Thaba Nchu, and Bloemfontein.

In order to optimize operational expenses and consider practical considerations, it is advisable to locate the main bus depot(s) on the destination side of the IPTN main and trunk route(s) or service(s). This strategic placement allows the majority of buses to be stationed at the depot(s) during the middle of the day when they are not in active service. The facilities required for the full implementation stage are:

- One depot in Bloemfontein that accommodate 300 vehicles (main depot).

- An additional depot is required when Botshabelo and Thaba Nchu is incorporated into the system.
- Sleeping grounds are required close to the starting point in Mangaung, Botshabelo and Thaba Nchu.

Rail infrastructure strategy

Currently, these railway lines carry no commuter services within the MMM area, and they are exclusively used by Transnet Freight Rail for freight transport and by Shosholozza Meyl for long-distance passenger transport along the Johannesburg–Bloemfontein–Port Elizabeth service, the Johannesburg–Bloemfontein–East London service and the Cape Town–Kimberley–Bloemfontein–Pietermaritzburg–Durban service.

The following railway infrastructure initiatives are planned within the MMM area:

- According to the SDF, a railway connection proposal has been made to connect Botshabelo to the Thaba Nchu–Bloemfontein railway line section.
- A feasibility study is planned to determine the feasibility of developing an additional railway link/siding to serve the ADN (Phase 2).
- The PRASA railway upgrade programme has issued a tender for a Rail Feasibility Study of the N8 rail corridor (which forms part of the SIP 7).

A mode choice transport model would be required to test the possibility of another service being provided between Thaba Nchu and Bloemfontein, such as a light rail. Though this is a high passenger demand transport mode, light rail might attract a mode shift from private vehicles to public transport and assist to alleviate bus traffic on the n8 corridor. This more of a long term intervention strategy.

Non-motorised transport infrastructure strategy

The chapter on NMT infrastructure strategy provides design principles for NMT infrastructure for different road classes. It highly recommended for the Mangaung Metro to adopt this strategy moving forward.

Road network infrastructure strategy

Majority of paved roads are not in a good condition and requires urgent intervention.

Majority of gravel roads are in a very poor condition, and requires urgent intervention.

The introduction of the Outer ring road for SANRAL will add to the capacity of the road network in Bloemfontein and offer an alternative routes other than cutting through the CBD.

Emergency medical services strategy

The map in Annexure D shows roads that were identified as problematic by the emergency medical services team. All Emergency routes needs to prioritized in terms of road maintenance.

CHAPTER 8: TRAVEL DEMAND MANAGEMENT (TDM) STRATEGY

The CBD and the university precinct attract the majority of car trips in Bloemfontein. The introduction of such a policy has not discouraged car users in other cities such as Johannesburg. The City of Johannesburg had introduced a paid parking policy until recently. The non-payment culture that has engulfed the entire country was mentioned as one of the factors that affected the policy. Law enforcement was also mentioned as another factor. If a parking policy was to be considered in Bloemfontein, a buy-in from stakeholders such as law enforcement and businesses would be key to its success.

Considering the above, the TDM strategies proposed for MMM centre around two strategies:

- mobility options; and
- land use.

Mobility Options

The metro is already served by various modes of transport. It has been established that there are areas that have a car ownership ratio below 30%. Some of these areas are located in the southern part of the CBD close to the CBD and other attractions. The following mobility strategies are proposed:

○ Public transport

For the success of the IPTN, relevant supporting infrastructure should be provided to provide for the paradigm shift from private cars to public transport. Park-and-ride provision are key in enabling public transport and enabling the envisioned shift. It is therefore proposed that park-and-ride facilities should be provided at strategic locations. These facilities should also provide for cyclists. There should be a clear integration plan for public transport and NMT. NMT plays a crucial role in the success of public transport as a strategy as it provides the crucial last mile trip.

○ Non-motorised transport

The university in particular provides an opportunity for the provision of commuter NMT. The distances between places of residence and the campus are manageable. The distance to other places such as Langenhovenpark, Vista Park and Rocklands are manageable. The provision of the infrastructure should integrate with that of public transport to have a seamless system. This should further allow for bicycles to be permitted on buses. There should be areas designated for the storage of bicycles at stations where park-and-ride are provided. Commuter NMT should be encouraged within a 5 km buffer.

Furthermore, the safety and security of NMT users should be improved. Aspects such as lighting, quality of the pavement, and police visibility are critical in the successful implementation of this strategy.

○ Flexitime

The benefit of this is that flexibility allows for the employees to start their trips either before or after the peak but the intention is for them to avoid the peak hour traffic. This is ideal for the municipality

as it will reduce the number of trips to be catered for on the road network thereby reducing delays caused by lack of capacity.

This is ideal for the MMM. One of the biggest generators of trips in the metro is the university. The university could be approached and requested to consider a trip reduction programme by providing a flexible programme where most of the classes start or end outside peak hours.

- **Work from home**

Similar to the flexitime approach, big employers might have to be approached and persuaded to adopt the work-from-home strategy for it to succeed. Some of the factors affecting this strategy include:

Some of the gains of the work-from-home strategy:

- savings for both employer and employees;
- reduced traffic and congestion on roads;
- flexibility for parents and young families; and
- improved productivity levels.

Land use Management

The Metropolitan Municipality should actively pursue a land use strategy that promotes mixed and compact land use developments. Such a strategy would be instrumental in achieving trip reduction goals and encouraging internal trips through walking and non-motorized transport (NMT) modes. In particular, Transit-Oriented Development (TOD) should be actively encouraged, especially along the corridors where the Integrated Public Transport Network (IPTN) will operate. This should align with the corridors identified for prioritization in the report. By adopting this approach, the Municipality can create a built environment that supports sustainable transportation patterns, reduces reliance on private vehicles, and enhances accessibility and connectivity for residents. Emphasizing mixed land use and compact developments can help create vibrant, walkable neighborhoods where residents have convenient access to transportation options and daily needs, ultimately contributing to a more livable and sustainable metropolitan area.

CHAPTER 9: NON-MOTORISED TRANSPORT (NMT) PLAN

There is a vast account of access and mobility challenges within South Africa. Most rural people have no access to road infrastructure or reliable public transport systems. Growing urbanisation, dictates a need for policy makers to start looking seriously at developing, implementing, and promoting NMT as alternative and viable modes of transport. NMT plays a significant role in attaining a sustainable transportation system. The NMT Chapter provides guidance on the planning and design for safe pedestrian, bicycle, and other alternative low -carbon modes of transport. The objective of the NMT plan is to provide the planning authority with strategies to improve accessibility and increase the use of non-motorised transport.

A large portion of the Mangaung metro's population still walks long distances and cycles on a daily basis to access their place of work, attend school, shopping or for leisure purposes. The majority of individuals who walk long distances daily are scholars. The 2019 MMM IPTN surveys revealed that 41% of all trips were made via minibus taxis (MBT), and 32% on foot, 11% via bus, 15% via car and 1% via bicycle. The level of income has an impact on the chosen mode of transport. The majority of low-income individuals used MBT and walking for all their journeys. The 2022 NMT counts indicate that

there is a current demand for high-quality NMT infrastructure in every town, particularly in the larger and more populous towns such as Thaba Nchu and Bloemfontein. NMT networks were identified in Bloemfontein, Thaba Nchu and Botshabelo based on NMT counts, land use and points of interest.

The vision of the NMT implementation within the municipality is that it should be promoted and developed to reduce carbon emissions, promote a modal shift towards more sustainable modes, and developing low-cost mobility options.

The five key themes of the NMT strategy are to:

- Provide a safe and efficient pedestrian and bicycle network.
- Promote local economic development.
- Implement a comprehensive NMT network linked to the IPTN.
- Beautify the streetscape.
- Improve mobility and connectivity.

The proposed NMT Guideline provides guidance on the planning and design for safe pedestrian, bicycle, and other alternative low-carbon modes of transport, both across and alongside roads and streets. The NMT infrastructure plan identifies, prioritises and costs NMT projects for implementation. The plan was predominantly focuses on shared facilities.

From a public health and ethics perspective, it is recommended that NMT guidelines should be adopted by public transport practitioners. The guidelines should disseminate across all practitioners in the built environment sphere.

The NMT governance model recommends that champions responsible for the implementation and the operations of NMT provision should be fostered in all sectors, the silo approach to providing solutions to NMT promotion should be broken down and that citizen scientists should be included in the promotion and education of NMT guidelines and safety elements. Furthermore, the MMM requires approved integrated public transport and NMT by-laws for law enforcement. The by-laws will address NMT and the current public transport plans approach. NMT by-laws are critical as they address informal traders' policies and by-laws, universal access standards and requirements, and illegal street parking on NMT walkway.

CHAPTER 10: FREIGHT STRATEGY

The preparation of a freight strategy is a crucial aspect of the comprehensive integrated transport planning process, and certain minimum requirements must be met. These requirements were gazetted in 2016, and the freight strategy also considers guidance from the National Freight Logistics Strategy.

To develop the strategy, the main freight traffic routes in the area were identified based on collected freight volume data. The strategy also identifies problems that currently hinder or inhibit freight movement, based on stakeholder engagement and data collected. Additionally, the strategy outlines the routes that have been identified for vehicles that transport abnormal loads or dangerous/hazardous goods.

Overall, the preparation of a comprehensive freight strategy is necessary for the efficient movement of goods and services within the municipality. By understanding the current freight traffic routes, identifying issues that inhibit freight movement, and implementing appropriate measures to mitigate those issues, the municipality can create an environment that is conducive to efficient freight transportation.

The Free State province in South Africa is taking advantage of its strategic position as the most centrally placed province to advance the transport and logistics industry. The province has several national roads passing through it, connecting Gauteng to the ports of Durban and Richards Bay, leading to the seaports of Port Elizabeth and East London, and connecting Kimberley, the capital of the Northern Cape, to Maseru, the capital of Lesotho, via Bloemfontein, the capital of the Free State. The primary focus of freight transport should be on developing conditions that are conducive to achieving maximum economic efficiency in the flow of goods. In the Mangaung Metropolitan Municipality (MMM), freight transport can be split into heavy or light industrial and commercial transport, with the majority of freight being moved through the road network. The City's goals for freight transport in the MMM include prioritizing rail transport along major routes, generating employment and growing the economy, enhancing safety, and reducing the negative impact on the environment.

Bloemfontein is the most active town in the municipality in terms of freight transport, with around 35% of all freight going to or coming from there. The road is the main mode of freight transit, particularly for intra-city freight, and the Freight Transport Strategy specifies routes for transferring goods to encourage their smooth flow and avoid confrontation with road traffic. The CITP aims to see more long-distance freight transported by rail in the long run.

The Freight Transport Strategy is based on eleven focal areas, including dangerous goods, abnormal loads, overloading, traffic congestion, road safety, freight emissions, and rail freight. Although the Mangaung Metropolitan Municipality has limited authority over provincial and national freight routes, it encourages cooperation between stakeholders to advocate for compliance with regulations concerning road safety, emissions, and asset preservation.

The Freight Transport Strategy identifies several challenges and gaps in the freight system. The lack of regional connectivity and poor road safety pose significant road freight challenges, with approximately 60% of the MMM road network in poor or very poor condition. The cost of logistics, continuous rise in fuel prices, lack of carbon footprint contribution, and the shortage of skilled workers are other road freight challenges. Rail freight challenges include worn-out rails, internal defects, and corrugations.

To shift freight from road to rail, the city plans to focus on improving the quality and application of demand management mechanisms while aligning with ongoing policy processes in the transport environment. Additionally, capacity-driven dedicated Rail Network Strategy is required and to rectify the unbalanced 89% to 11% modal split. Finally, the Freight Strategy aims to address the lack of loading bays, inadequate planning, and misuse by motorists. Its aim is to ensure that freight transport is safe and efficient and serves the needs of the local and regional economy without compromising the access and mobility of other road users.

Chapter 11: Other Transport Related Strategies

In addition to the other strategies referred to in this CITP, strategies and plans related to the following topics were developed (as per the Minimum Requirements for the Preparation of ITPs):

Review on Traffic Impact Assessment

Traffic report is required for every land-use change application. For the proposed development that generates less than 50 trips, traffic motivation report is required without the need for capacity analysis. For the proposed development that generates more than 50 trips, a full traffic impact assessment report is required, which will require capacity analysis.

The MMM has officially adopted the latest TMH16, TMH17, and TRH26 manuals as the basis for analyzing and evaluating traffic impact assessments. It is important to note that these latest manuals supersede the previous manuals, signifying their updated and authoritative status.

The following standards and regulations are used by the MMM:

- A minimum level of service of D must be maintained for intersection design inclusive of all individual movements.
- Parking on sidewalks and angled on-street parking will not be allowed as part of the MMM requirements. Existing parking implemented in this manner in the past should be converted to parallel parking where necessary.
- Vehicle accesses: Full frontage accesses (wider than 8.5 m) to individual properties will not be allowed on arterial and collector roads. Full frontage accesses wider than 8.5 m will also NOT be allowed on local or activity streets.
- Loading facilities for all developments must always be provided on-site except in the CBD where the provision of on-street loading facilities can be considered with proper motivation (i.e. safe and not causing traffic operational problems). Parking on sidewalks, medians and angled on-street parking will not be allowed as part of the MMM requirements. Existing parking implemented in this manner in the past should be converted to parallel parking or removed where necessary.
- The MMM will only adopt a minimum 13 m road reserved width, though TMH16 allows for a minimum of 10 m.

The TRH26 manual is officially adopted to classify roads based on their respective functions. The road classification map is included on Annexure D. Public transport routes maps is also included showing all the MMM IPTN routes.

Public Transport Safety and Security

In order to improve public transport safety and security, the following strategies are proposed.

Public transport facilities	Installation of appropriate lighting at public transport facilities to improve personal security.
	Provision of furniture such as shelters, benches and waste bins at public transport facilities.
	Provision of infrastructure that would separate commuters from moving traffic such as kerbs, railings or bollards at public transport facilities and stops.
	Rollout of security services at public transport facilities.
	Cleaning up of public transport facilities to create clean, open, well-lit environments.

Non-motorised transport facilities leading to public transport facilities	Installation of appropriate lighting on NMT routes leading to public transport facilities.
	Keeping the NMT routes leading to public transport facilities clean, unobstructed, and well-lit.
	Providing traffic calming infrastructure such as raised pedestrian crossings and speed bumps at critical areas around public transport facilities where pedestrians are likely to cross.
	Providing traffic calming infrastructure around schools and areas where children are most likely to commute.
Public transport vehicles	The rollout of security services at public transport facilities.
	The rollout of public transport vehicle law enforcement to ensure that public transport vehicles are roadworthy and fit for safe operation.
	The rollout of public transport vehicle law enforcement to ensure that public transport vehicle operators are legally operating vehicles.
	Ensure that the MMM IPTN route functionality assessment and recommendations are implemented to ensure adequate coverage and appropriate OLs are assigned to the correct routes.

Road User Safety Strategy

Road user safety is the responsibility of all its users including drivers, pedestrians, cyclists and motorcyclists. Road user safety campaigns should focus on the following:

Drivers	drivers need to abide by traffic laws such as speed limits, traffic signals and stop signs;
	drivers should not be operating vehicles under the influence of alcohol, drugs or heavy medication;
	Drivers should refrain from road rage;
	pedestrians must enjoy the right of way when crossing at pedestrian crossings;
	being vigilant of their surroundings at all times; and
	avoid being distracted by issues such as cell phone use.

Vehicle roadworthiness	It is the responsibility of each driver to ensure that the vehicle, which is being operated, is roadworthy and in acceptable working condition.
Heavy vehicle roadworthiness	Weighing stations are required on the N8 to check that trucks are not overloaded.
	Rest areas are also required to ensure that drivers get sufficient rest before they can continue with their journey on the national road.
Pedestrian safety	Pedestrians should take responsibility for their own safety as far as possible.
	Pedestrians should avoid being out on the streets under the influence of alcohol, drugs or heavy medication.
	Pedestrians should obey traffic laws and avoid jay-walking and always be vigilant of motorists.
	Pedestrians should ensure that they are visible to all other road users.
Education of all road users from an early age	Looking both ways before crossing a road;
	only crossing the roads at designated areas
	having respect for all road users, being considerate, patient and courteous; and
	setting an example of safe road usage for children.

It is recommended that the MMM adopt these strategies and implement them as far as possible.

In terms of safety, the N8 between Bloemfontein and Thaba Nchu is proposed to be converted into a dual carriageway. A dual carriageway will eliminate 100% of head-on collisions, and ultimately reduce accident statistics. Dr Belcher is also a high risk road when it comes to collision between Mini-bus Taxis and motorists.

Law Enforcement Strategy

The appropriate authorities such as the South African Police Service, Provincial Traffic Police, and the local Traffic Police need to ensure law enforcement in terms of the following objectives:

Road user safety:	speeding;
	drunk driving; and
	abiding to traffic laws
Public transport usage	security at ranks;
	overloading and roadworthiness of public transport vehicles; and
	abiding to traffic laws.
	abiding to traffic laws;
	jay-walking; and

NMT	security at crime hotspots.
Freight vehicles	abiding to traffic laws; and
	overloading.

The following is a summary of recommendations on Law enforcement strategies:

- Install speed cameras in area where there’s recorded high operating speed,
- The MMM Traffic Department should acquire additional portable speed-measuring equipment; and
- The MMM Traffic Department should conduct regular roadblocks.

Tourism

The municipality should still provide efficient and safe modes of public transport to tourists who prefer to make use of it. The municipality needs to improve its transport sector to be more integrated and tourist-friendly.

The following intervention strategies are formulated for tourism within the MMM:

- Develop an integrated transport solution for the tourism sector.
- Engage with private and public transport companies to create linkages between attractions and activities.
- Develop a park-and-ride concept on the outskirts of the major towns.
- Identify and prioritise the main tourist routes that need repairs/maintenance within each municipality.
- Routine maintenance of roads is vital in providing access and safe driving conditions to tourists.
- Ensure the cleanliness of public roads.
- The Tourism Marketing Authority, Tourism Department and municipalities should communicate on this issue and produce solutions as attractions are losing business because of these challenges.
- Current tourism routes must link to major roads.

Accessible Transport System

Public transport vehicles should be accessible by people who are visually impaired, hearing impaired, make use of wheelchairs, pushchairs, and people who have any form of physical or mental disabilities. Additionally, all the people travelling with young children, infants, prams, or pregnant women needs to have a universally accessible transport system.

The following strategies are formulated around access to transport systems

- An accessibility study and detailed precinct master plan for the various nodes within the MMM focused on ensuring adequate NMT and public transport stops and shelters within 1km walking distance of the point of origin are provided.
- A feasibility study to provide information on transport options to passengers in an affordable manner.

Rural Transport Strategy

The Rural Transport Strategy focused on Rural Transport Implementation Framework to promote gravel road maintenance in order to improve access and riding quality especially for farmers.

Learners Transport Strategy

The majority of the routes to farm schools are inaccessible within the jurisdiction of the MMM.

The following routes were identified as the most inaccessible in the MMM and would need urgent attention:

- Route no. M039/2022; Bloemfontein–School (Willows); distance (54.2 km); number of learners 20.
- Route no. M013/2022; Bloemfontein–School (K.Khakhau); distance (71.2 km); number of learners 22.
- Route no. M050/2022; Thaba Nchu–School (Sediti); distance (71 km) number of learners 71.

Mangaung CBD Parking Demand

The parking demand study showing high demand for parking doesn't warrant the need for additional parking within the CBD. It was merely to demonstrate the struggle with parking which can be resolved through an efficient and reliable public transport system.

CHAPTER 13: FUNDING STRATEGY AND SUMMARY OF PROPOSALS

The Municipal Finance Management Act (2003) (MFMA), together with the Municipal Systems Act (2000) ensure that municipalities' priorities, plans, budgets, implementation actions and reports are properly aligned. The Acts also identify the main components of the financial management and accountability cycle and how they ought to be aligned. For the purposes of this report, the following are applicable:

- The Integrated Development Plan (IDP) sets out the municipality's goals and development plans, which need to be aligned with the municipality available resources. Council adopts the IDP and undertakes an annual review and assessment of performance based on the annual report
- The three-year budget sets out the revenue raising and expenditure plan of the municipality for approval by council. The allocation of funds needs to be aligned with the priorities in the IDP.

It is therefore a legal requirement that financial implications for the IDP (and thus its sector plan the CIP) are reported over a three-year period. From the current draft of the 2022/2027 IDP, the following is a list of transport related projects:

Engineering services

- Upgrade of road 2029 from gravel road to surfaced road – 4.4 km.
- Upgrade of road 437 from gravel road to surfaced road – 8 km.
- Upgrade of road 601 from gravel road to surfaced road – 5.6 km.
- Upgrade of Bochabela Street from gravel road to surfaced road – 2 km.
- Upgrade of Bochabela Street from gravel road to surfaced road – 1.6 km.
- Upgrade of Main Road 11388 and 11297 from gravel road to surfaced road – 1.9 km.
- Upgrade of Road 3824 Botshabelo West from gravel road to surfaced road – 2 km.
- Upgrade of Mapangwana Street in Freedom Square from gravel road to surfaced road – 2 km.
- Upgrade of Sand du Plessis Road from gravel road to surfaced road – 2 km.
- Upgrade of Lefikeng and Roma Streets from gravel road to surfaced road – 2 km.
- Upgrade of Zim Street Phase 2 Kagisano from gravel road to surfaced road – 2 km.

Public safety

- Speed law enforcement cameras – handheld cameras.
- Speed law enforcement cameras – fixed cameras.
- Parking meters.
- Un-roadworthy vehicles Road Safety Project.
- Law enforcement projects and patrols.

Office of the City Manager

- IPTN Phase 1 – trunk routes.
- IPTN Phase 2 – trunk routes.
- Bus stops.
- Intelligent Transport System.
- Open bus stations (bus stop shelter).
- IPTN transfer facilities.
- IPTN bus depot – building works.
- IPTN bus depot – civil works (Phase 2).

Hauweng bus turnaround point – University of the Free State

Summary of transport projects – CITP

From the Transport Register it was evident that additional public transport infrastructure projects that will improve transport systems:

- Convert the current rank facility that is un-used into a holding area,
- Construct a new mini-rank facility at Dewertsdorp,
- Construct a new mini-rank facility at Vanstadensrus,

- Construct a new mini-rank facility at Soutpan,
- Phase 01 IPTN should be prioritised to be in operation
- Rollout IPTN Phase 2
- Roads Transport Masterplan
- Mode Choice Road Masterplan
- Road Safety Investigations
- New Rank Facility – Soutpan
- New Rank Facility – Dewertsdorp
- New Rank Facility – Vanstadenrys
- Emergency Routes Maintenance
- Maintenance Cost – Class 1 Roads
- Maintenance Cost – Class 2 Roads
- Maintenance Cost – Class 3 Roads
- Maintenance Cost – Class 4 Roads
- Route viability studies for rural roads
- N8 – Dual Carriageway between Bloemfontein and Botshabelo
- Route no. M039/2022 maintenance; Bloemfontein–School (Willows); distance (54.2 km)
- Route no. M013/2022 maintenance; Bloemfontein–School (K.Khakhau); distance (71.2 km)
- Route no. M050/2022 maintenance; Thaba Nchu–School (Sediti); distance (71 km)

CHAPTER 14: STAKEHOLDER CONSULTATION

From the engagement with various stakeholders it was clear that the New institutional arrangements is required to establish the Transport Forum to be envisaged in the Public Transport Strategy to manage and regulate the public transport system.

CHAPTER 1: INTRODUCTION

Q&A Consulting was contracted by Mangaung Metropolitan Municipality (MMM) to develop a Comprehensive Integrated Transport Plan (CITP) for the 2023–2028 implementation period. The municipality’s last revision of a transport plan was the 2006 Integrated Transport Plan (ITP). Due to the growing footprint and transportation systems of the area, a comprehensive look and analysis of the municipality’s landscape can provide a clear vision and plan for the development of the transportation system in the MMM.

1.1 STUDY AREA

The MMM occupies an area of approximately 988 763 ha which is divided into 51 wards and comprises a total of 2 481 parent farms and 6 302 farm portions. The MMM comprises the following major areas:

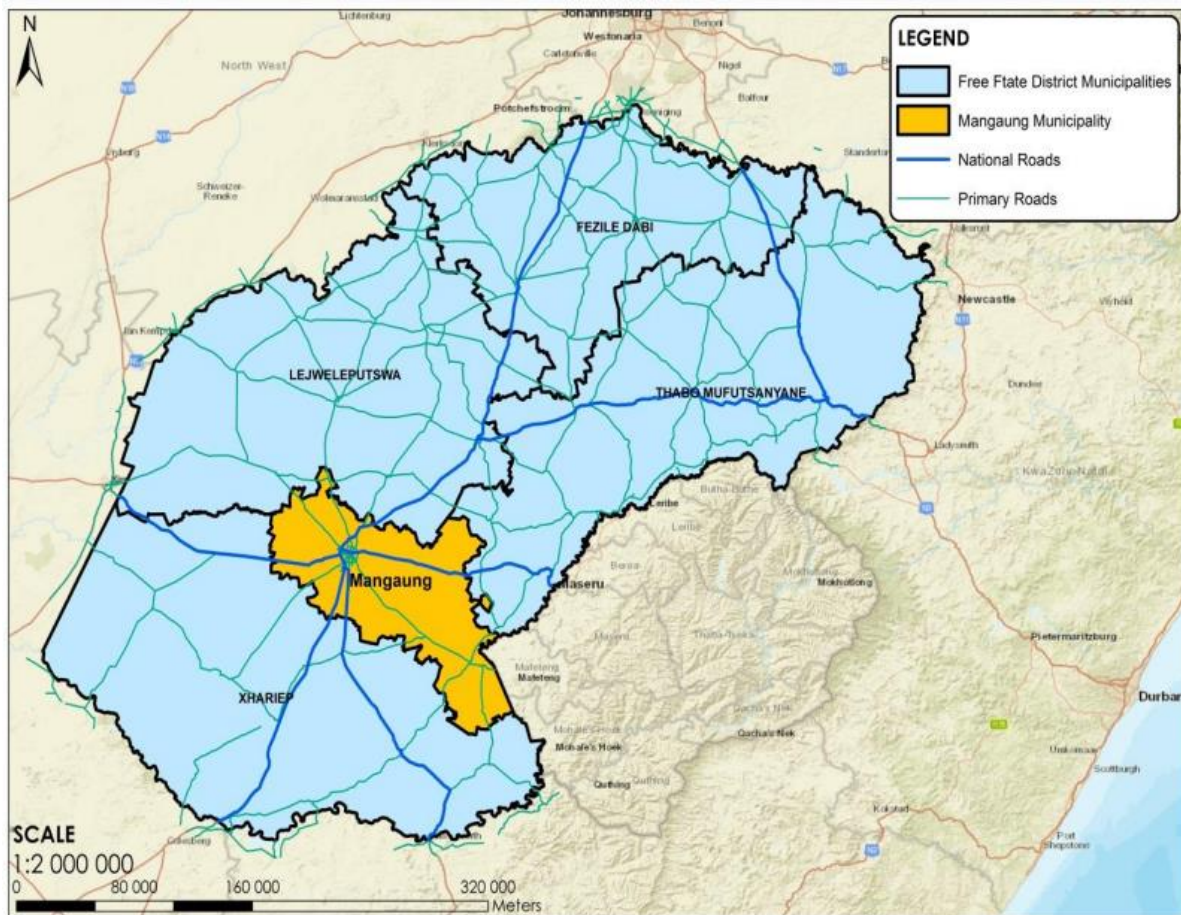


Figure 1.1 Study area

Bloemfontein is the only city in the Free State province with the eastern part of Bloemfontein earmarked for large-scale spatial transformation to create jobs and develop the economy. Higher-income residential developments are mostly located in the western and northern parts of the city. Low-income housing with little economic activity resides mainly in the southern and eastern parts of Bloemfontein.

Botshabelo is the largest township development in the Free State located 55 km east of Bloemfontein. Economic activity favours locations closer to the N8 freeway.

Thaba Nchu is a small town located 12 km east of Botshabelo. The existing industrial and business nodes in the area need to be enhanced according to the spatial development framework (SDF).

Soutpan is a very small town with limited development potential. The town is located 38 km north of Bloemfontein.

Dewetsdorp is a small town located 75 km south-east of Bloemfontein with potential in tourism.

Wepener is a small town that has a significant cultural-historic and environmental tourism potential. According to the SDF residential development is limited because of the limited economic potential of the town.

Vanstadensrus is a small town located 30 km outside Wepener. It has a very limited development potential; however, it comprises a border post between Lesotho and South Africa.

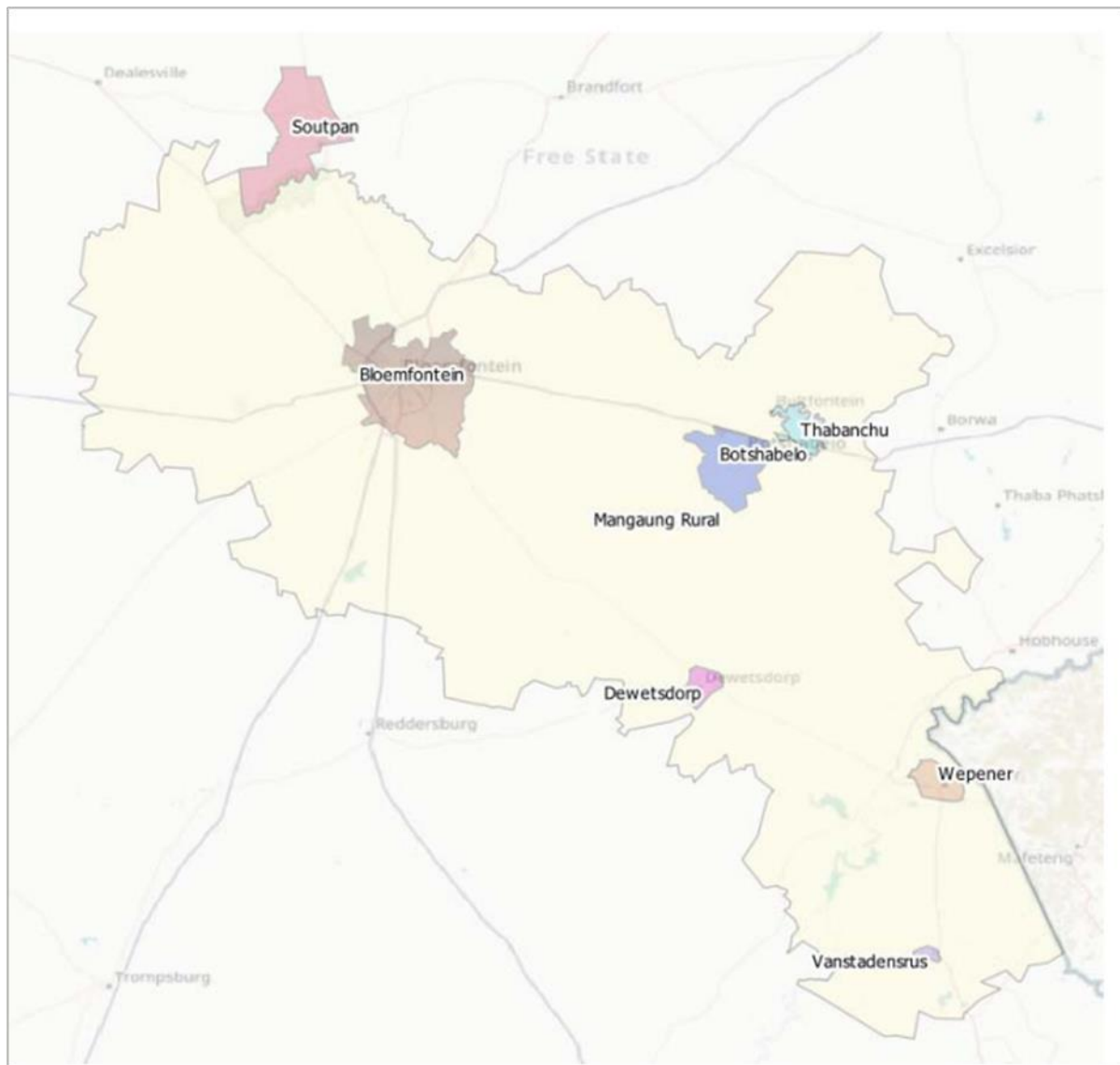


Figure 1.2: Mangaung Metro Municipality jurisdiction

1.2 LEGISLATIVE FRAMEWORK

A CITP is a statutory document required by the National Land Transport Act No. 5 of 2009 (NLTA). The minimum requirements for the preparation of integrated transport plans, published in the Government Gazette No. 40174 in 2016, provide for a five-year ITP in terms of the Act (hereafter referred to as the *minimum requirements*), however appropriate longer-term plans and strategies, which are applicable after the 5-year period of this CITP, have been included.

In general, ITPs are used as tools by planning authorities to provide, plan for, develop and manage all modes of transport within the area of jurisdiction. The desired outcomes of ITPs include improved accessibility, reduction of congestion, affordability of transport, improved travel times, and increased use of non-motorised transport to promote sustainable transport provision. The interventions that are needed to achieve the desired outcomes of ITPs include proactive transport planning, facility planning, better informed law enforcement, infrastructure planning, integration of public transport services, and land-use planning.

According to the minimum requirements, three types of planning authorities exist for land transport planning. The respective types of ITPs to be prepared by planning authorities are as follows:

- Planning authorities required to prepare a CITP are all metropolitan municipalities and other municipalities, where the demographics and transport movements in the area justify the preparation of a CITP.
- District municipalities are to prepare a District Integrated Transport Plan (DITP), which summarises the Local Integrated Transport Plans (LITPs) of the local municipalities in their districts. In the case where a local municipality has prepared a CITP, it must be incorporated as part of the DITP.
- All other local municipalities are to prepare a LITP.

The CITP must be redone every fifth year – every aspect of the plan must be re-examined to see if it is still up to date, revised and updated where necessary, and new relevant aspects must be added. The CITP must be updated on an annual basis. The update should focus on the projects to be implemented and the budget. The municipality may do a more comprehensive update depending on its needs. This provides for inter-relationship between respective plans, as contained in the minimum requirements.

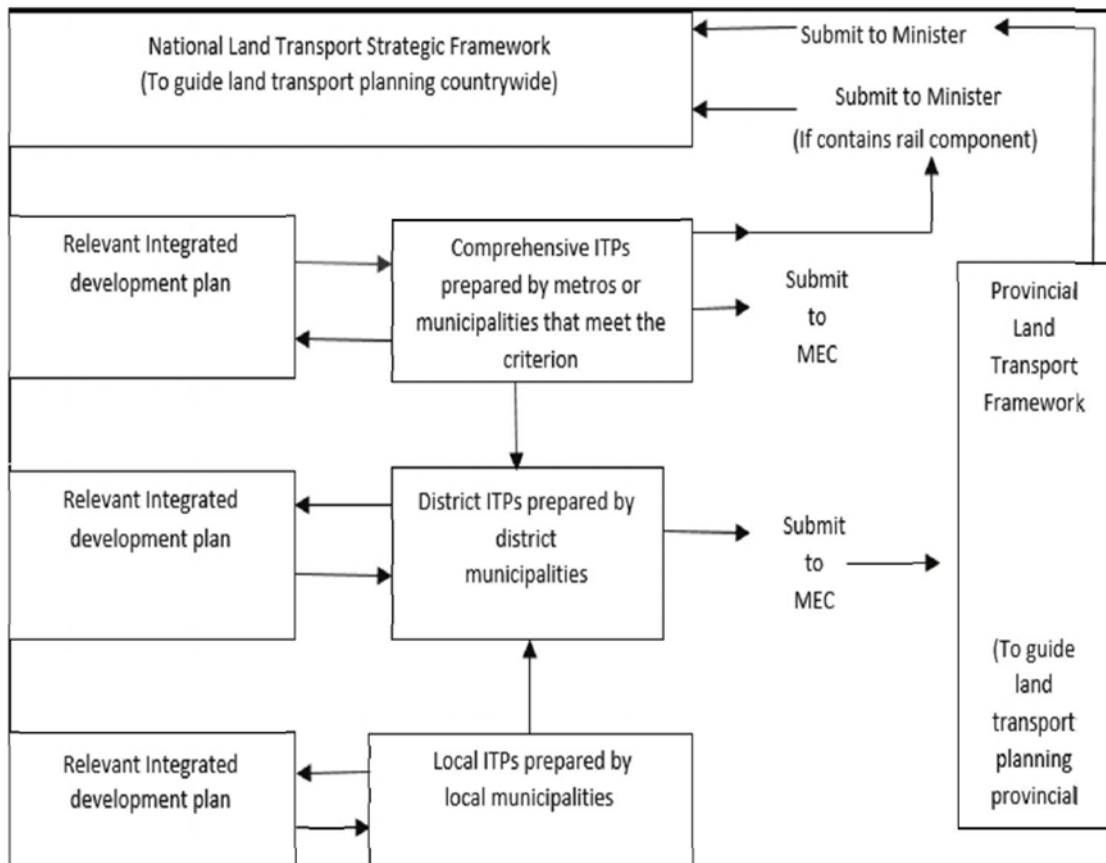


Figure 1.3: Inter-relationship between transport plans and frameworks

A key outcome of undertaking this CITP is, therefore, to ensure that there is synergy between the SDF, Integrated Public Transport Network (IPTN) and the CITP, to remove uncertainty, ambiguity, or differences of opinions, from these policy documents.

The CITP must inform the MEC when seeking approval of the ITP that it is compliant with sections 36(4)(a) to (d) (see Article 7 of the minimum requirements):

- The Planning Authority (PA) must confirm that the CITP is aligned with the Provincial Land Transport Framework (PLTF). This must be done by ensuring alignment and no conflict with the PLTF.
- The PA have to ensure that procedures and financial issues that affect the province are highlighted. The financial issues may relate to the Public Transport Operating Grant (PTOG) i.e., funding of subsidised services or any other financial or procedural issues which may also include any financial assistance provided by the province in respect of public transport infrastructure or assistance to the public transport sector e.g., funding to taxi structures in Mangaung.
- Confirmation that the PA followed correct procedures and complied with the prescribed requirements.

- Addressed provincial policies with respect to cross-boundary transports. When cross-boundary transport services are planned, they must be in line with provincial policies. This relates to cross-municipal boundaries. Inter-provincial boundaries are covered by the NLTA.

1.3 RESPONSIBLE AUTHORITY AND CO-ORDINATION

The preparation of the MMM CIP is the responsibility of the municipality.

There are certain functions that the PA or municipality may request to be assigned or the minister may assign to the appropriate sphere of government. This relates to the MRE and Contracting Authority function.

Before a CIP may make a recommendation on whether to request that the Municipal Regulatory Entity (MRE) function be assigned, there is a process to be undertaken prior to a recommendation in the CIP. However, the CIP may recommend that a feasibility study be undertaken to determine whether the municipality should request the function/s be assigned. Whilst the municipality is a contracting authority in respect of the IPTN contracts, it is not clear whether they have the necessary skills to be the contracting authority in respect of current subsidised services that are managed by the province. This would also require a recommendation.

1.4 STATUS OF THE PLAN AND THE PERIOD IN WHICH THE PLAN MUST BE IMPLEMENTED

This CIP has been prepared for the period 2023–2028 and, when adopted by Council, will replace the Integrated Transport Plan prepared in 2006.

1.5 REPORT LAYOUT

The summary below shows the minimum content of the CIP report according to the NLTA 2009 (Act No. 5 of 2009):

- Executive summary
- Chapter 1: Introduction
- Chapter 2: Transport vision and objectives
- Chapter 3: Summary of the transport register
- Chapter 4: Spatial development framework
- Chapter 5: Transport needs assessment
- Chapter 6: Public transport plan
- Chapter 7: Transport infrastructure strategy
- Chapter 8: Travel demand management (TDM) strategy
- Chapter 9: Non-motorised transport (NMT) plan
- Chapter 10: Freight transport strategy
- Chapter 11: Other transport related strategies
- Chapter 12: Summary of LITP in the case of district municipalities
- Chapter 13: Funding strategy and summary of proposals
- Chapter 14: Stakeholder consultation

CHAPTER 2: TRANSPORT VISION AND OBJECTIVES

The vision has been formulated within the framework of national, provincial, and local policies and strategies. It aims to address both the long and short-term components of the transport plan. The objectives relate to the vision and were developed in such a way that they are measurable, understandable, and achievable. The following sections outline the vision and objectives of the existing national, provincial, and local transport policies and strategies.

2.1 NATIONAL TRANSPORT VISION AND OBJECTIVES

2.1.1 Draft Revised White Paper on National Transport Policy (National Department of Transport, 2017)

The minimum requirements for the preparation of integrated transport plans, published in the Government Gazette (No. 40174) in 2016, refer to the White Paper on National Transport Policy, 1996. However, the White Paper was revised and approved by Cabinet in 2021 and the Mangaung vision was developed taking account of this revised national transport policy document.

The Draft White Paper provides the following direction in terms of vision and policy objectives:

VISION

“Provide safe, reliable, effective, efficient, environmentally benign and fully integrated transport operations and infrastructure that will best meet the needs of freight and passenger customers, improving levels of service and cost in a fashion that supports government strategies for economic and social development whilst being environmentally and economically sustainable.”

The government will provide a transport system that will:

- facilitate the movement of goods and people;
- enable equitable access to personal economic opportunities and social services;
- support economic and environmental sustainability and inclusive growth; and
- advance national, regional, and global competitiveness of the country.

To achieve this, there must be an adequate supply of transport infrastructure and services in relation to demand. Furthermore, for the users of transport, the supply should be:

- accessible;
- cost effective;
- time efficient and reliable; and
- safe and secure.

POLICY OBJECTIVES

The broad objectives of the government's transport policy are:

- to support the goals of the prevailing, overarching plan for national development to meet the basic accessibility needs of the residents of South Africa, grow the economy, develop and protect human resources and involve stakeholders in key transport-related decision-making.
- to enable customers requiring transport for people or goods to access the transport system in ways that best satisfy their chosen criteria.
- to improve the safety, security, reliability, quality, and speed of transporting goods and people.
- to improve South Africa's competitiveness and that of its transport infrastructure and operations through greater effectiveness and efficiency to better meet the needs of different customer groups, both locally and globally.
- to invest in infrastructure or transport systems in ways that satisfy social, economic, or strategic investment criteria.
- to achieve the above objectives in a manner that is economically and environmentally sustainable and minimises negative side effects.

2.1.2 Moving South Africa Action Agenda (National Department of Transport, 1999)

In September 1998, the Department of Transport completed the ambitious Moving South Africa (MSA) transport strategy project. The MSA focuses on the strategic actions that are required to unpack the policy formulation of the 1996 White Paper on National Transport Policy. The vision for transport in 2020, as formulated in the MSA-study, is as follows:

VISION

“By 2020, transport in South Africa should meet the needs of freight and passenger customers for accessible, affordable, safe, frequent, high quality, reliable, efficient, seamless transport operations, and infrastructure. It should do so by constantly upgrading in an innovative, flexible, and sustainable manner the economy and the environment. In so doing, transport should support and enable government strategies, particularly those for growth, development, redistribution, employment creation and social integration, both in South Africa and in the Southern African region to function optimally.”

2.2 NATIONAL TRANSPORT MASTER PLAN – NATMAP 2050

The transport master plan is an evolving, long-term planning document that establishes the framework and key elements of a country's transport sector, reflecting a clear vision based on its development principles.

VISION

An integrated, smart, and efficient transport system supporting a thriving economy that promotes sustainable economic growth, supports a healthier lifestyle, provides safe and accessible mobility options, socially includes all communities and preserves the environment.

OBJECTIVES

- a much-improved sustainable public transport system that is appropriately funded, with a reduction in the subsidy burden, with better and safer access, more frequent and better-quality services, and facilities to an agreed standard.
- greater mobility options, particularly for those who do not have cars.
- NMT network development.
- a transport system that promotes better integration between land use planning and transport planning to encourage densification and sustainable development in supporting high volumes of travel required for public transport.
- better infrastructure and better-maintained road and rail networks, with proper management and operations practices that link and provide interchange opportunities for different modes of transport.
- a transport system that is consistent with the real needs of people living in different parts of South Africa and with differing abilities to afford travel.
- a transport system that charges the traveller a fair reflection of the costs of making a journey or transporting a product, financially, socially, and environmentally.
- a transport system that supports focused funding of transport priorities.
- a transport system that has the sufficient human capital to drive the vision of transport.
- a transport system that enables and supports rural development.

2.3 NATIONAL RAIL POLICY – WHITE PAPER – MARCH 2022

With the high demand for modal shift (especially for freight) from road to rail, it is imperative to include the National Rail Policy as part of the transport vision and objectives under this chapter. The national Rail White Paper was published in March 2022 with the following vision, mission, and goals:

VISION

Rail, as an affordable, competitive, integrated, reliable, safe, sustainable, and valued transport mode that provides the backbone of South Africa's freight logistics and passenger mobility systems and strengthens its economic growth and social development by 2050.

MISSION

To recognise and understand rail's heritage of missed opportunities, strategic missteps, and structural impediments, and hence to identify and mobilise funding and resources to leverage rail's inherent competitiveness to reposition it as the backbone of South Africa's land transport task.

2.4 MANGAUNG METRO MUNICIPALITY CITY-WIDE INTEGRATED PUBLIC TRANSPORT NETWORK

The following vision and objectives were developed for the MMM IPTN. In noting the need for the metro to develop into a city of excellence, innovation, equality, and opportunities for all need to be at the fount of the MMM transport needs. The city needs to have a reliable, effective, sustainable, and accessible transport network that allows persons of all economic backgrounds to have affordable and accessible transport. The transport needs to be safe and innovative.

VISION FOR TRANSPORT SYSTEM

"By 2036 Mangaung is recognised nationally and internationally as a safe and attractive place to live, work and invest, is served by an effective, efficient, reliable, safe, affordable and convenient transport system with a public transport focus, providing high levels of mobility and accessibility for the movement of people and goods, with a focus on integrated strategic planning between spatial development, transportation systems and economic development to enhance the quality of life in the area with minimum negative impact on the environment."

GOALS

The primary goal of the IPTN is to develop a public transport network and related systems that provide the best possible service to the greatest number of people at the least cost, and which is in the long term sustainable (environment, social, financial). The goals are:

- To establish and maintain a network of high-quality urban and rural public transport services for residents and visitors.
- To provide access to places of residence, work, school, business, shopping, and recreation with the amount and type of service appropriate to each. This implies a minimum level of service on routes where minimum acceptable levels of ridership and revenues cannot be realised.
- To decrease the use of private vehicles by attracting new customers (i.e. choice riders), thereby helping to reduce traffic congestion, air pollution, and energy consumption.
- To provide and ensure reasonable service for the elderly, passengers with categories of special needs, young, and low-income people.
- To operate public transport vehicles safely and comfortably.

2.5 MANGAUNG METROPOLITAN MUNICIPALITY TRANSPORT VISION AND OBJECTIVES

The MMM has formulated a vision and set of objectives aimed at transforming the city into a secure and appealing urban area that provides equal transport opportunities to all. To achieve this goal, the city must establish a dependable, efficient, eco-friendly, and convenient transportation system that is accessible and affordable to people of all economic backgrounds. Additionally, the transportation network must prioritize safety and foster innovation.

VISION

To become a safe and attractive city through innovative, sustainable, reliable transport that is safe and accessible for all persons living in the MMM.

OBJECTIVES

In accordance with the national and provincial objectives, there is a need to prioritize transport and recognize its significance in generating employment and boosting the economy. The listed objectives are aligned with the broader vision for transportation in the MMM. Furthermore, all the measures associated with the objectives are attainable within the five-year timeline of the CITP.

Table 2.1: Objectives and measures proposed for Mangaung Metropolitan Municipality

No.	Objectives	Measures
1.	Furnish top-notch infrastructure in both urban and rural regions.	<ul style="list-style-type: none"> • Upgrade public transport facilities (ranks and stops). • Upgrade roads, while incorporating best practice NMT and universal access design principles. • Implement an effective maintenance plan. • Improve road infrastructure capacity through innovative transport solutions.
2.	Ensure sustainable transport network operations.	<ul style="list-style-type: none"> • Monitor transport operations to ensure acceptable service for all users. • Ensure the public transport routes cover the entire Metro. • Enforce laws and regulations with regard to transport system operators and freight vehicles.
3.	Improve the safety and security of all road users.	<ul style="list-style-type: none"> • Design and upgrade all roads using the safer roads design approach. • Ensure speed limits and other road rules are well enforced by acquiring the necessary staff and equipment. • Ensure the public transport facilities are improved to be safer for the users.

<p>4.</p>	<p>Implement transport policies and plans effectively.</p>	<ul style="list-style-type: none"> • Establish a responsible ITP team to oversee the planning of the transport systems including, but not limited to, public transport, freight, and NMT. • Update the ITP on an annual basis in synchronisation with the Integrated Development Plan (IDP) and SDF (updates to focus on action programme and budget). • Commit sufficient funding and resources to achieve the objectives of the CITP in relation to the catalytic big moves. • Integrate and co-ordinate land-use planning and transport planning initiatives.
<p>5.</p>	<p>Reduce greenhouse gas emissions relating to the transport sector by creating a greener city.</p>	<ul style="list-style-type: none"> • Promote the use of public and NMT through improved routes, ranks, infrastructure and connectivity. • Promote the use of low-carbon fuels and other cleaner mobility options. • Encourage the use of renewable energy at transport facilities.

CHAPTER 3: TRANSPORT REGISTER

3.1 BACKGROUND

Annexure A contains data of a subsequent analysis of the current transport register for the CITP, conducted in 2022. As the development footprint of the MMM continues to grow steadily, the city has observed a surge in the number of operating license (OL) applications, which are forwarded to the Provincial Regulatory Entity (PRE) for processing. While handling these applications, the MMM must comply with the criteria specified in section 55 of the NLTA. The TR was prepared in line with the minimum standards prescribed in the Government Gazette No. 40174, published in July 2016.

The completion of the TR is a mandatory component of the development planning that all municipalities must abide by as part of the IDP planning process. As such, the CITP serves as a sector plan that contributes to the IDP, and the ITP is an integral part of the development of the PLTF Act 5 of 2009. The TR forms part of the ITP as per the minimum requirements of Gazette No 40174. The TR summarises information about the transport operations and public transport plans, which guide public transport in each area. In addition, the Operating Licence Plan (OLP) will specifically plan and guide the minibus taxi operating licences. This exercise is based on the required surveys done regarding the public transport rank and routes within the area. The results of the surveys are evaluated against the route demand, rank demand, existing operating licences, route operations, modal split, and taxi associations within the area. During the TR update, surveys of ranks and routes of minibus taxis were conducted, where three types of surveys were executed:

- Rank surveys
- Route identification surveys
- Infrastructure surveys

This information was then assessed as part of the requirements to establish a statistical sample of the transportation operations within the MMM.

Q&A Consulting conducted a taxi route functionality assessment in February 2022. This was to assess the functionality of the existing registered MBT routes. This included the data collection surveys and GIS status quo mapping, which entailed the following:

- Rank surveys to assess the functionality of the existing routes regarding commuter needs.
- Questionnaires at the ranks.
- Mapping of all the existing routes of the onboard surveys on the existing GIS route maps as per how they are driven.
- Super-impose the surveyed routes and registered routes on the proposed and existing municipal growth spatial plan and assess the functionality of the routes with regard to future growth scenarios.
- Learners' needs assessment questionnaire to assess the demand for public transport.

Where possible, the latest information will be utilised to complete the TR for this CITP.

3.2 PUBLIC TRANSPORT OPERATIONS

SANTACO is the umbrella body governing the taxi industry, and they have a footprint in the Free State Province. The Motheo Regional Taxi Association was established to oversee the operations of different taxi associations within the MMM.

The following taxi associations are currently in operation within the MMM jurisdiction:

- **Greater Bloemfontein Taxi Association (GBTA)** – The taxi association serves both local and long-distance trips within Bloemfontein area.
- **Botshabelo Amalgamated Taxi Association (BATA)** – The taxi association serves both local and long-distance trips within the Botshabelo area.
- **Thaba Nchu Taxi Alliance (TTA)** – The taxi association serves both local and long-distance trips within the Thaba Nchu area.
- **Qibing Taxi Association** – The taxi association serves both local and long-distance trips within the Wepener area.
- **Tshwaraganang Scholar Transport Association** – The taxi association serves local scholar transport trips within the MMM area.
- **Motheo Region Taxi Association (region)** – The taxi association at the regional level that oversees the operations of other associations within the MMM.
- **Rainbow Metered Taxi Association (RMTA)** – The taxi association in MMM that is responsible for metered taxis.

The province provided details of the bus operations from the Interstate Bus Lines (IBL) service provider which included the following:

- Facilities
- Bus routes

3.3 TRANSPORT REGISTER DATA COLLECTION AND SURVEYS

The facility surveys conducted as part of the TR review were conducted from February 2022 to June 2022. A description of each survey type follows.

Rank surveys

Rank surveys were undertaken at all established formal and informal minibus taxi ranks (MBT) ranks and were carried out at ranks within the MMM from May 2022 to June 2022. In summary, the following were recorded as per the TR update:

- The number of passengers boarding and alighting at a rank including passenger waiting times.
- Mini-bus taxis arrival rate,
- Number of Mini-bus taxis queueing at the loading bays,

- Loading and holding area utilisation in terms of arrivals and departures.

The facilities were surveyed during the following periods:

- mid-week (Tuesday, Wednesday or Thursday) 06:00–18:00
- Saturday 08:00–15:00

Onboard route surveys

Onboard MBT surveys were undertaken to record the following route information:

- route alignment
- stopping point’s en-route
- number of passengers boarding and alighting en route per stopping point

The onboard surveys were conducted to delineate the routes of MBTs and to identify the predominant boarding and alighting points en route. However, it's important to note that only one journey per weekday and one journey per weekend were surveyed for each route. This was to assess the following:

- discrepancies between the PRE registered routes and the actual travelled routes;
- location of stops;
- coverage of the existing system and need to amend the PRE registered routes; and
- required new routes as per the taxi industry demand.

3.3.1 Cordon counts

The purpose of a cordon counts survey is to ensure that all public transport trips that do not originate from identified public transport ranks are surveyed. Refer to Annexure A for the results.

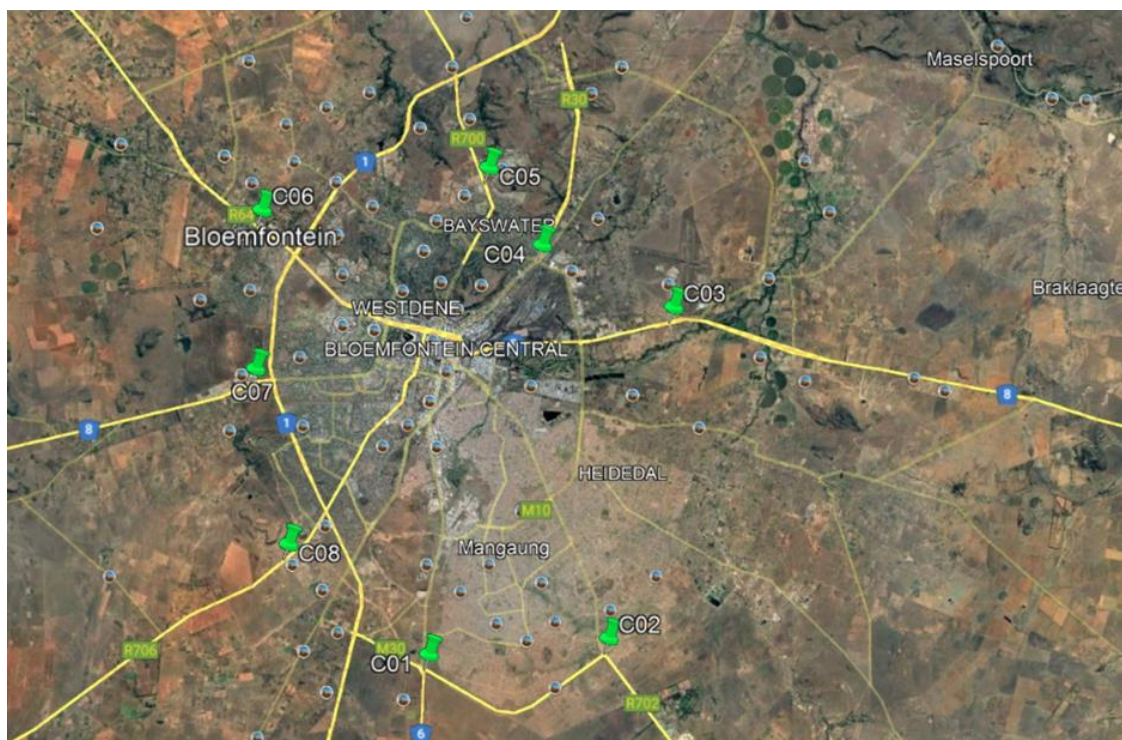


Figure 3.1: Bloemfontein cordon survey points

The cordon points were strategically placed to allow the capturing of public transport, in and out of Bloemfontein through the following major road network links:

- **Point C01:** N6 hiking spot. The survey point captured public transport modes that serve long-distance trips between Bloemfontein to Aliwal North.
- **Point C02:** The survey point captured public transport modes that serve long-distance trips between Bloemfontein and Dewetsdorp.
- **Point C03:** Most of the public transport trips that join the N8 have the specific origin at the rank coming from Bloemfontein. However, some of the public transport trips that come from Thaba Nchu and Botshabelo will have their origin from hiking spots. The survey point captured public transport modes that serve long-distance trips between Bloemfontein, Thaba Nchu and Botshabelo.
- **Point C04:** Raymond Mhlaba Street is a well know hiking spot area. The survey point captured public transport trips that serve long–distance trips between Bloemfontein and areas such as Welkom, Qwaqwa, and Kroonstad.
- **Point C05:** The survey point captured public transport modes that serve long-distance trips between Bloemfontein and Soutpan.
- **Point C06:** The survey point captured public transport modes that serve long-distance trips between Bloemfontein and Kimberley. The Mimosa Mall hiking spot uses the R64, Old Kimberley Road to service public transport trips.
- **Point C07:** The survey point captured public transport modes that serve long-distance trips between Bloemfontein and Kimberley.

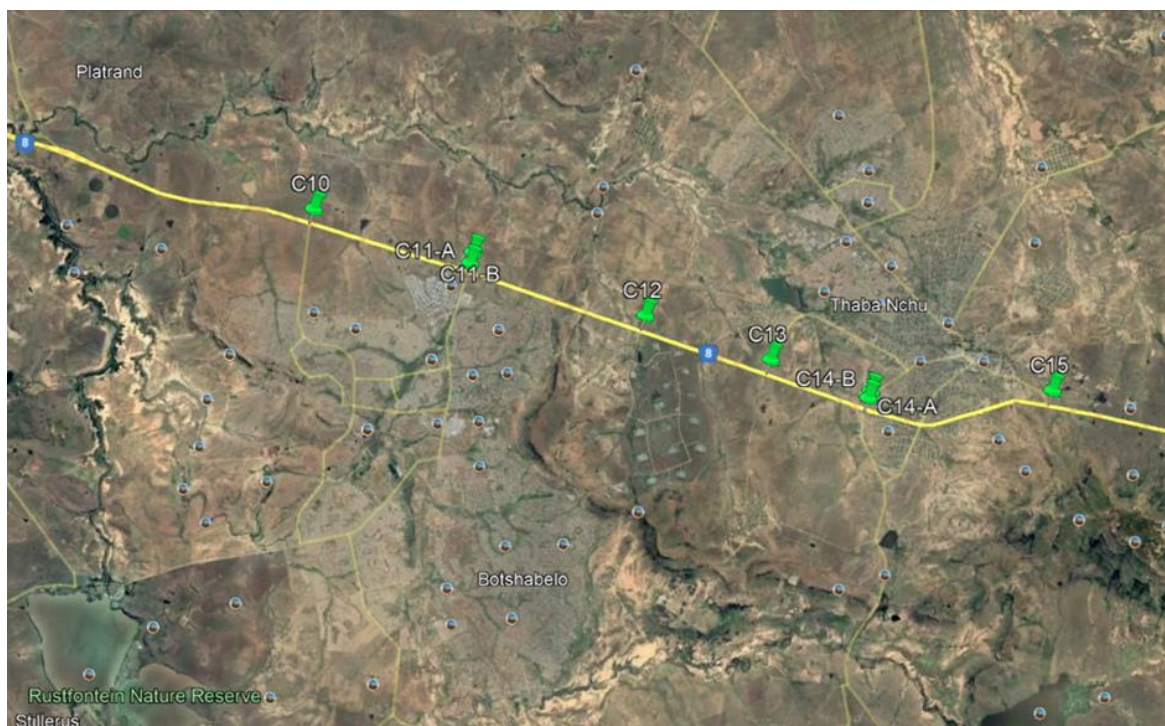


Figure 3.2: Thaba Nchu Botshabelo cordon counts

- **Point C10:** The survey point captured public transport modes that serve long-distance trips from the 1st Botshabelo access driving from Bloemfontein to various destinations.
- **Point C11A:** The survey point captured public transport modes that serve long-distance trips from the National Route to various destinations.
- **Point C11B:** The survey point captured public transport modes that serve long-distance trips from the National Route to various destinations.
- **Point C12:** The survey point captured public transport modes that serve long-distance trips from the gravel road access to various destinations. Though this access is not a formalised access via the N8.
- **Point C13:** The survey point captured public transport modes that serve long-distance trips from the 1st Thaba Nchu access driving from Bloemfontein to various destinations.
- **Point C14A:** The survey point captured public transport modes that serve long-distance trips from Brand Street in Thaba Nchu to various destinations.
- **Point C14B:** The survey point captured public transport modes that serve long-distance trips from Brand Street in Thaba Nchu to various destinations.
- **Point C15:** The survey point captured public transport modes that serve long-distance trips from Van Riebeeck Street in Thaba Nchu to various destinations.

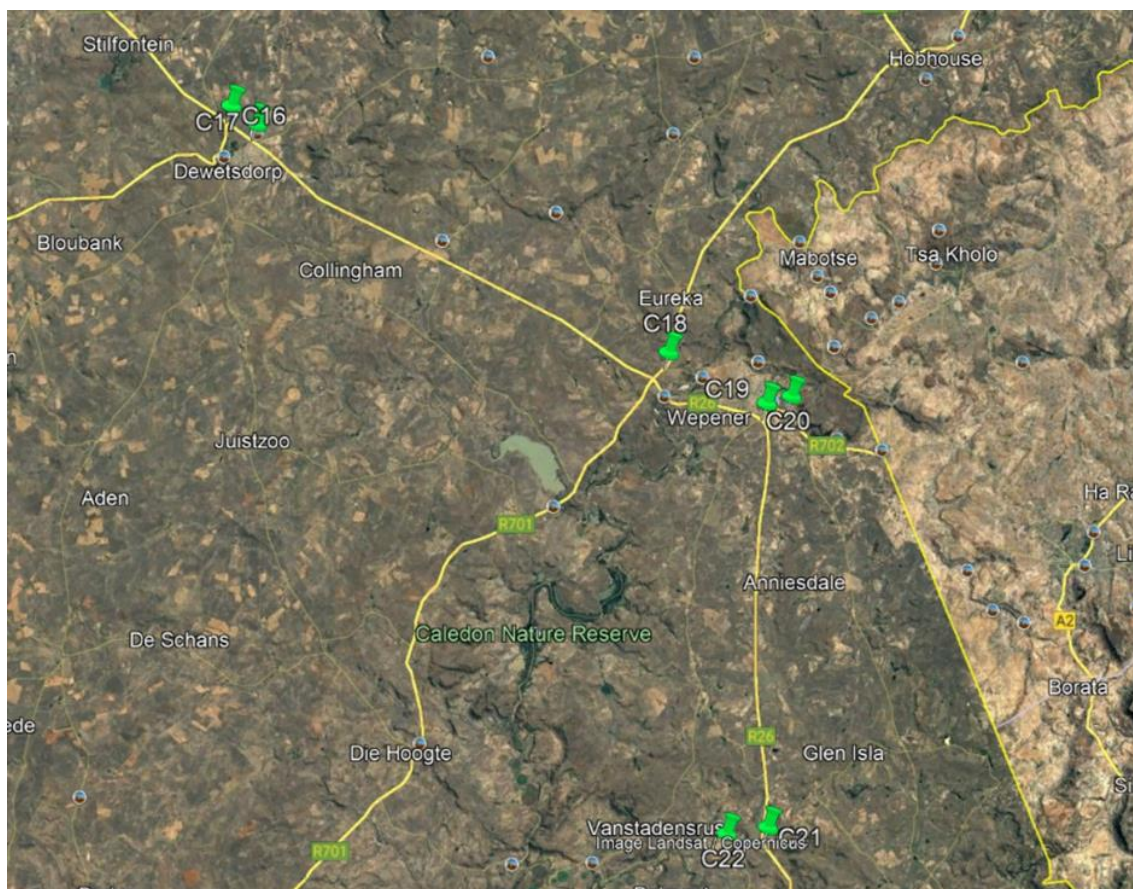


Figure 3.3: Dewetsdorp, Wepener cordon counts

- **Point C16:** The survey point captured public transport modes that serve long-distance trips from the R717 in Dewetsdorp to various destinations.
- **Point C17:** The survey point captured public transport modes that serve long-distance trips from Church Street in Dewetsdorp to various destinations.
- **Point C18:** The survey point captured public transport modes that serve long-distance trips from the R26 in Wepener to various destinations.
- **Point C19:** The survey point captured public transport modes that serve long-distance trips from Van Aardt Street in Wepener to various destinations.
- **Point C20:** The survey point captured public transport modes that serve long-distance trips from the R702 in Wepener to and from the border gate.
- **Point C21:** The survey point captured public transport modes that serve long-distance trips from Francina Street, eastern approach, in Van Stadensrus to various destinations.
- **Point C22:** The survey point captured public transport modes that serve long-distance trips from Francina Street, western approach, in Van Stadensrus to various destinations.

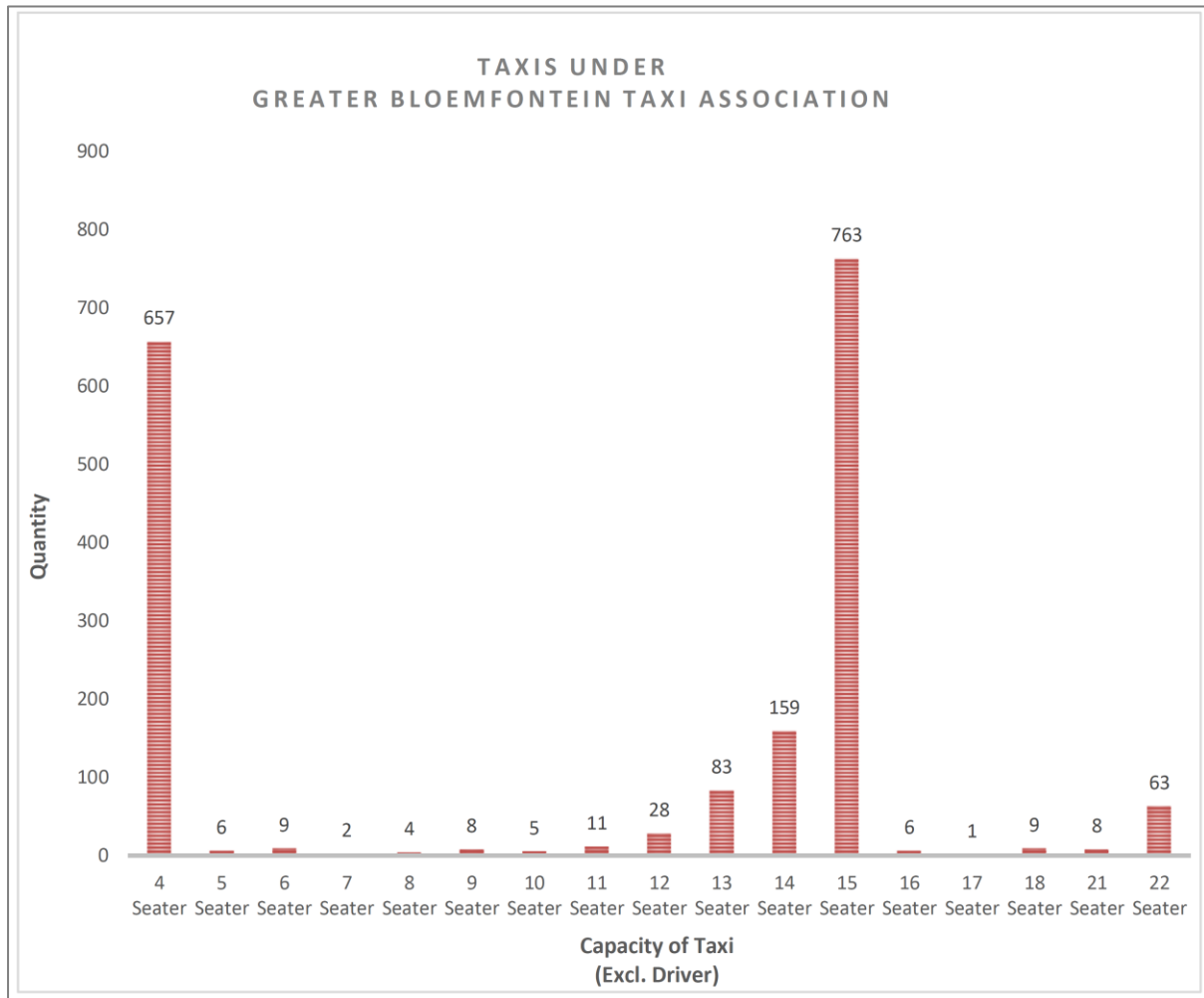
3.4 PROVINCIAL REGULATORY ENTITY DATA INVESTIGATION

3.4.1 Public Regulatory Entity data analysis per association

The following PRE data analysis discussed is for different taxi associations registered under the Motheo Taxi Association, which include the following:

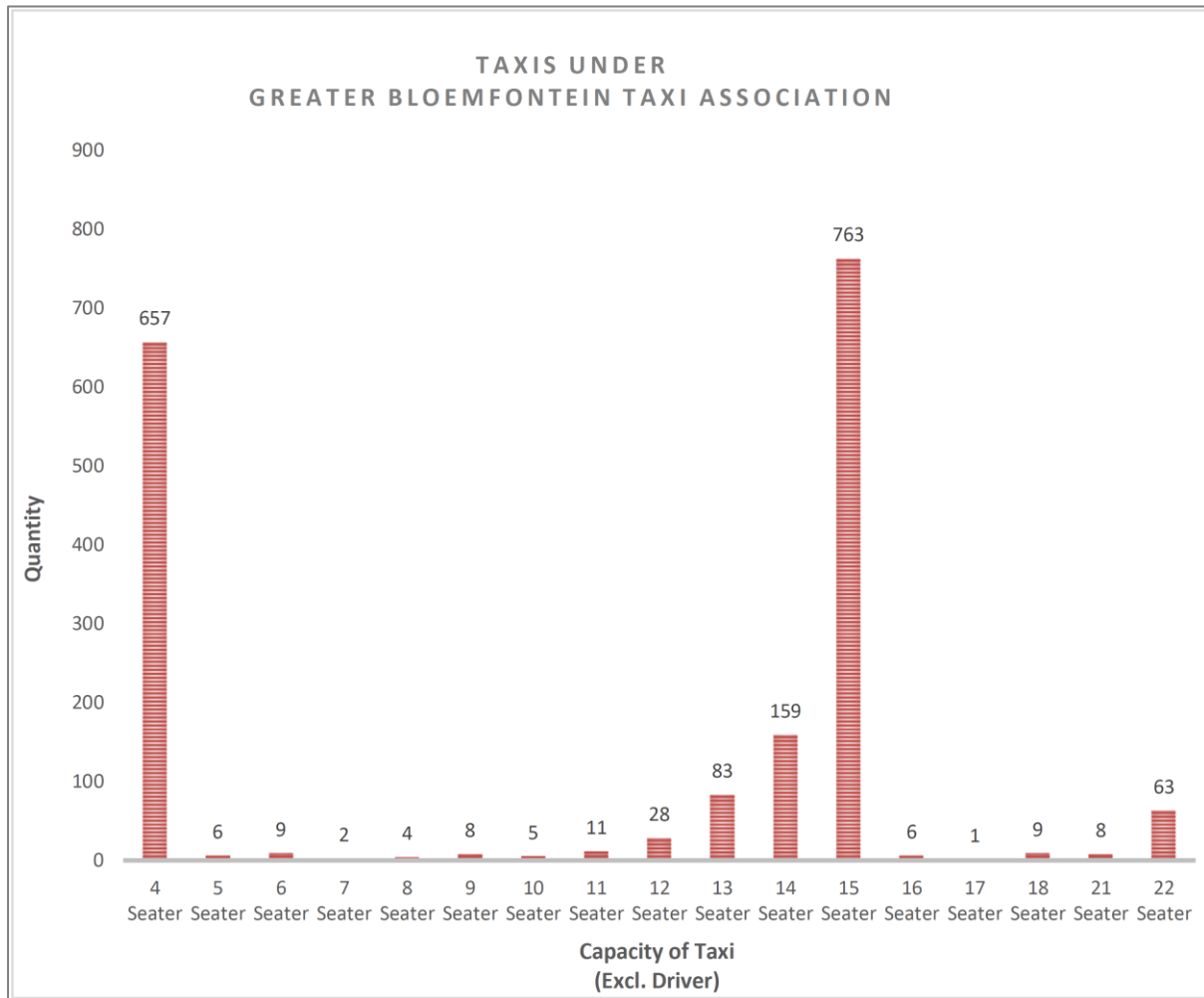
- BATA
- GBTA
- Manyatseng Taxi Association (MTA)
- Qibing Taxi Association (QTA)
- RMTA
- Tweespruit Excelsior United Taxi Association (TEUTA)
- TTA

3.4.1.1 Botshabelo Amalgamated Taxi Association



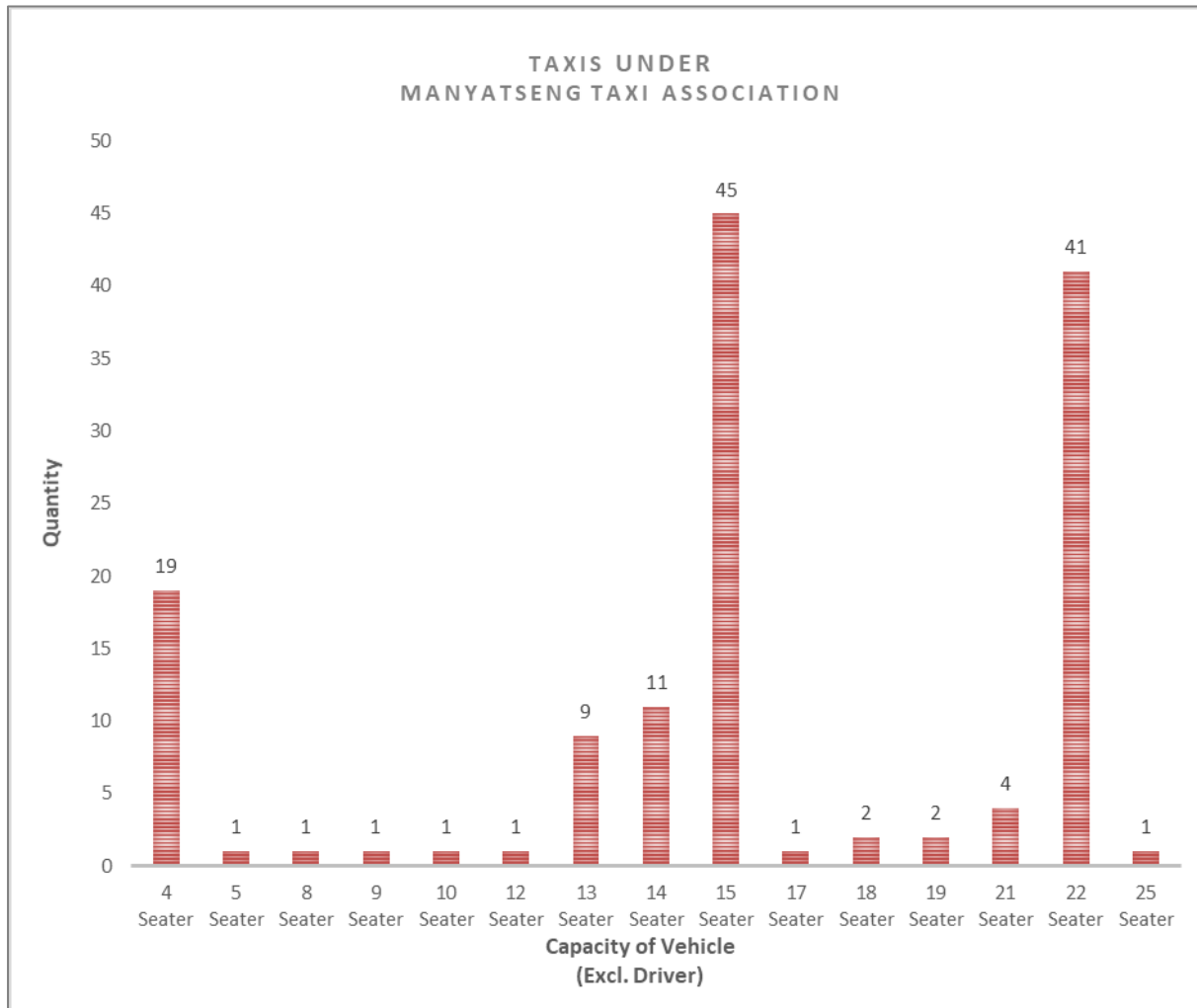
- As represented, 543 taxis are operating in the BATA according to PRE data.
- Taxis here range between 4–25-seater vehicles, with only two 34-seater buses recognised by the association.
- From the taxi association, we find the most common type of vehicle used by operators is the 15-seater taxi.
- The 4-seater is the most used small-scale capacity vehicle by operators.
- Taxis other than the 4-, 12-, 13-, 14-, 15- and 22-seater vehicles have under 10 operators as per their respective categories.
- The majority of vehicles with a capacity of 17–25 seaters are thus used for long-distance travel (city to city).
- The 4–8-seater taxis are used for short-distance travel (within the city).
- The 9–16-seater taxis are used for both short and long-distance travel.
- The least used type of vehicle by operators is the 8-, 17- and 25-seater taxis.

3.4.1.2 Greater Bloemfontein Taxi Association



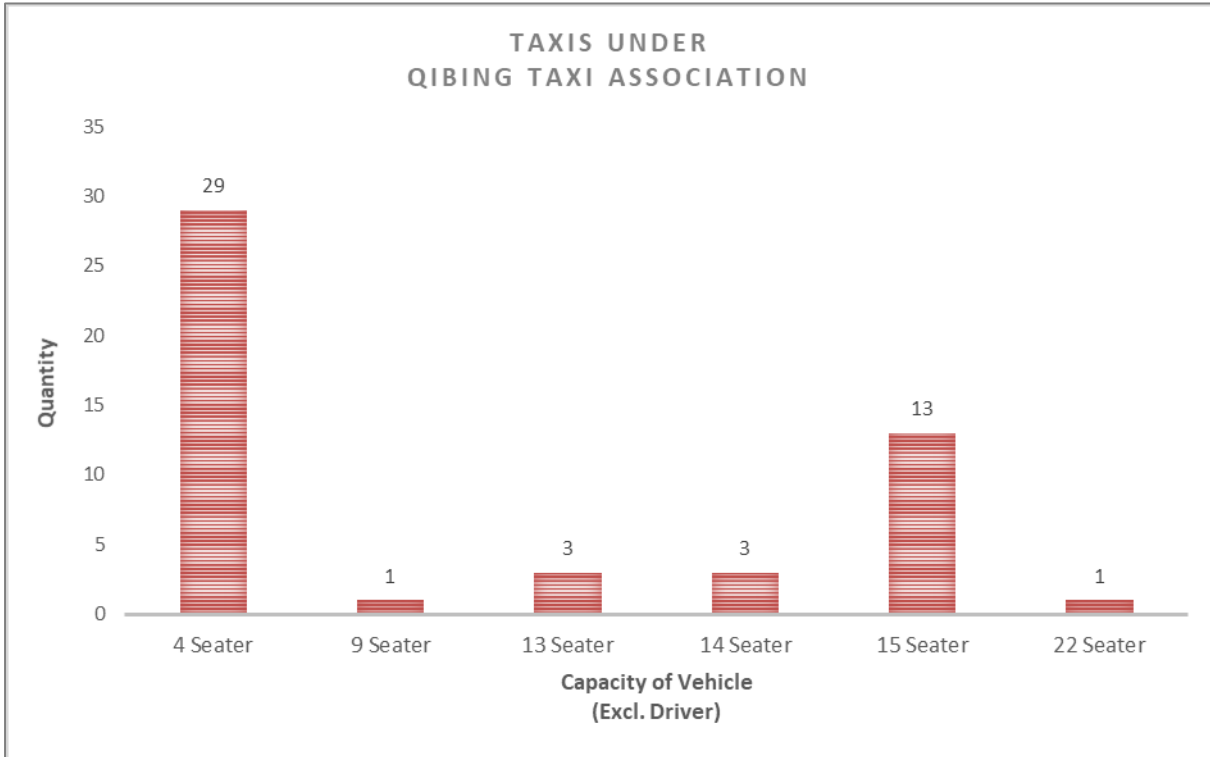
- There are 1 822 taxis in operation in the GBTA according to PRE data.
- Taxis under the association range between 4–22-seater vehicles.
- From the association, the 15-seater is the most commonly used taxis by operators.
- The 17-seater taxi is the least used vehicle by operators.
- Taxis with the capacity of 5-, 6-, 7-, 8-, 9-, 10-, 16-, 17-, 18--, and 21-seater vehicles have under 10 operators as per their respective categories.
- The 4-seater taxi, with 653 operators, is the second most used type of transport in the GBTA.
- The 4–8-seater taxis are usually used for short-distance destinations which are relatively closer to the city/central business district (CBD).
- A large number of 15–22-seater taxis are used for long-distance travel (city to city).

3.4.1.3 Manyatseng Taxi Association



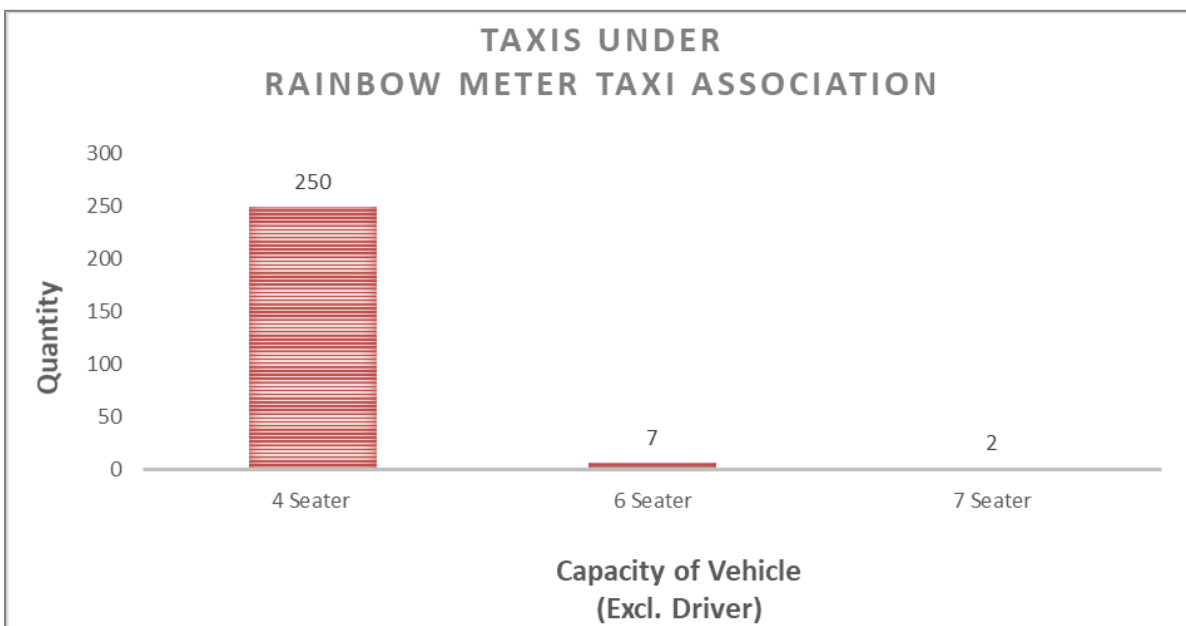
- There are a total of 140 taxis in operation under the MTA according to PRE data.
- Taxi capacity ranges between 4–25-seater vehicles.
- The vehicle most commonly used by operators is the 15-seater taxi, with the 22-seater being a close second.
- The type of taxis least used by operators under this association include the 5-, 8-, 10-, 12-, 17- and 25-seater vehicles.

3.4.1.4 Qibing Taxi Association



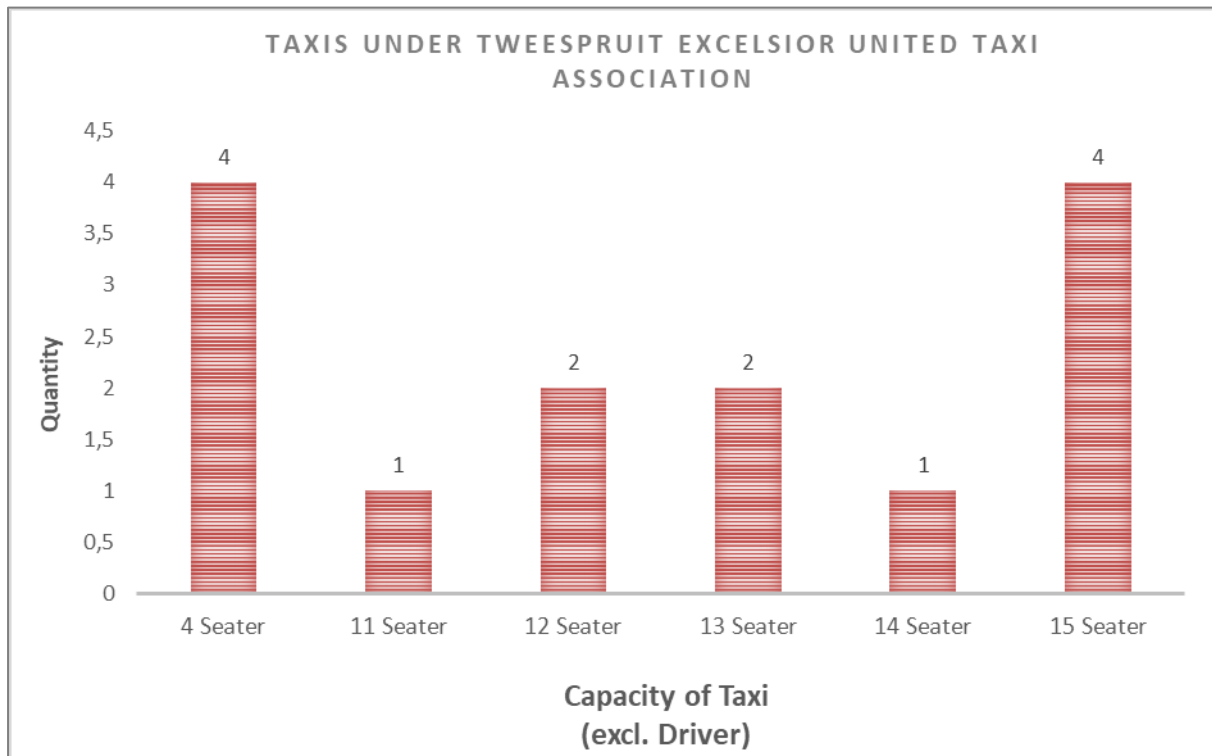
- There are 50 vehicles in operation under the QTA according to PRE data.
- Capacity types under this association include the 4-, 9-, 13-, 14-, 15- and 22-seater taxis.
- The 4-seater vehicle is the most commonly used taxi in this particular association.
- Both the 9- and 22-seater vehicles are the least used by operators.
- The 13- and 14-seater taxis both have a similar number of operators.

3.4.1.5 Rainbow Meter Taxi Association



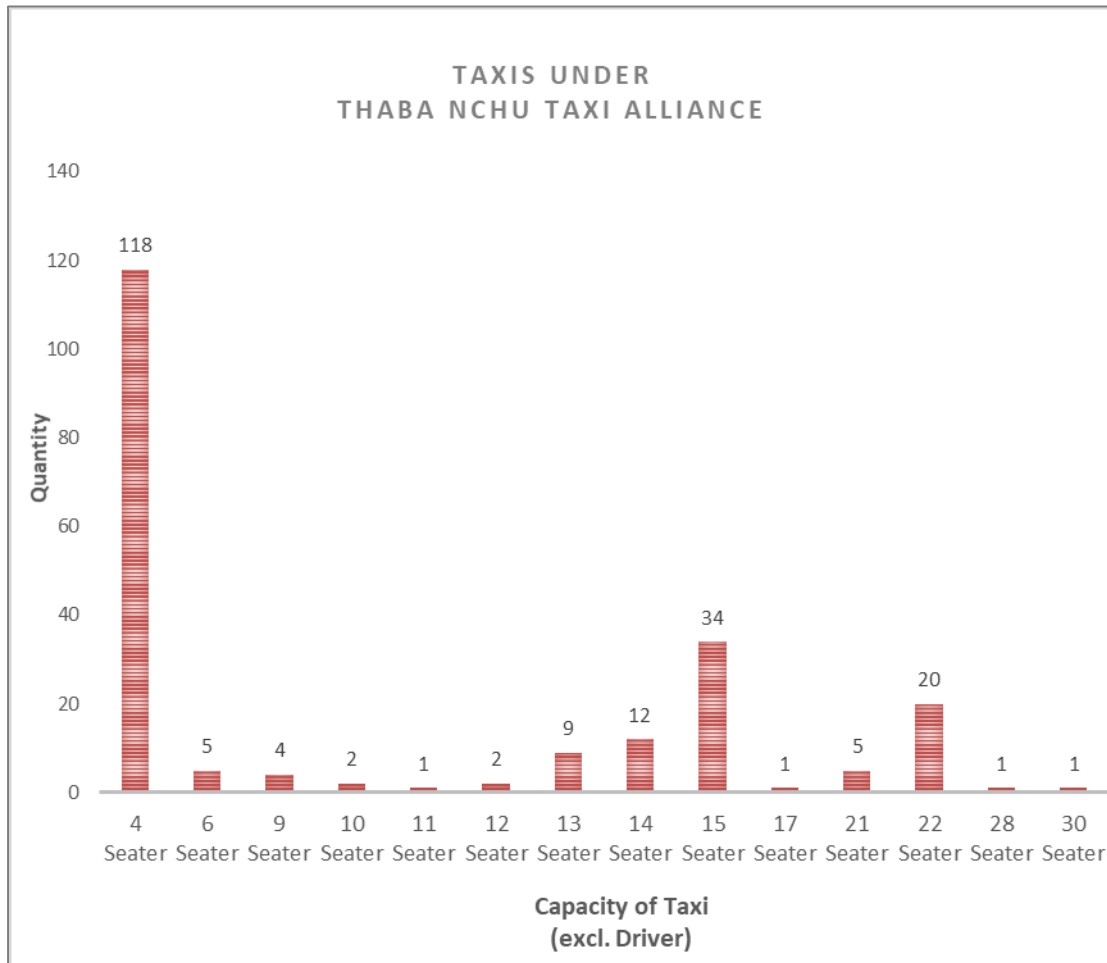
- There are 259 vehicles in operation under the RMTA according to PRE data.
- Vehicles under this association include the 4-, 6- and 7-seater taxis.
- The 4-seater is used by most operators in this taxi association, and the 7-seater is the least preferred option.
- Within the meter taxi industry, the 4-seater is the standard vehicle preferred by operators within the association.

3.4.1.6 Tweespruit Excelsior United Taxi Association



- There are 14 vehicles in operation under the TEUTA according to PRE data.
- The taxis range between 4–15-seater vehicles.
- Though being the smallest taxi association in size, the association is well balanced as both the 4- and 15-seater vehicles are mostly used by operators.
- The 11- and 14-seaters are the least used by operators.
- The size of this taxi association could be attributed to the fact that Tweespruit and Excelsior are not industrialised.

3.4.1.7 Thaba Nchu Taxi Alliance



- The TTA has 215 vehicles in operation.
- Taxis here range from 4–22 seater vehicles, with the 28- and 30-seater buses acknowledged by the association.
- The 4-seater taxi is the most used vehicle by operators under this association.
- The least used taxis under this organisation include the 11-, 17-, 28- and 30-seater vehicles.
- A large number of 15-, 21- and 22-seater taxis are used for long-distance travel.

3.4.2 Provincial Regulatory Entity data findings per association

The following data shows a summarised version of taxi statistics for the Motheo Taxi Association from the surveys:

Table 3.1: Taxi statistics for the Motheo Taxi Association

Motheo Taxi Association			
Nr	Taxi Association	Quantity	%
1	Botshabelo Amalgamated Taxi Association (BATA)	543	17.84%
2	Greater Bloemfontein Taxi Association (GBTA)	1822	59.88%
3	Manyatseng Taxi Association (MTA)	140	4.60%
4	Qibing Taxi Association (QTA)	50	1.64%
5	Rainbow Meter Taxi Association (RMTA)	259	8.51%
6	Tweespruit Excelsior United Taxi Association (TEUTA)	14	0.46%
7	Thaba Nchu Taxi Alliance (TTA)	215	7.07%

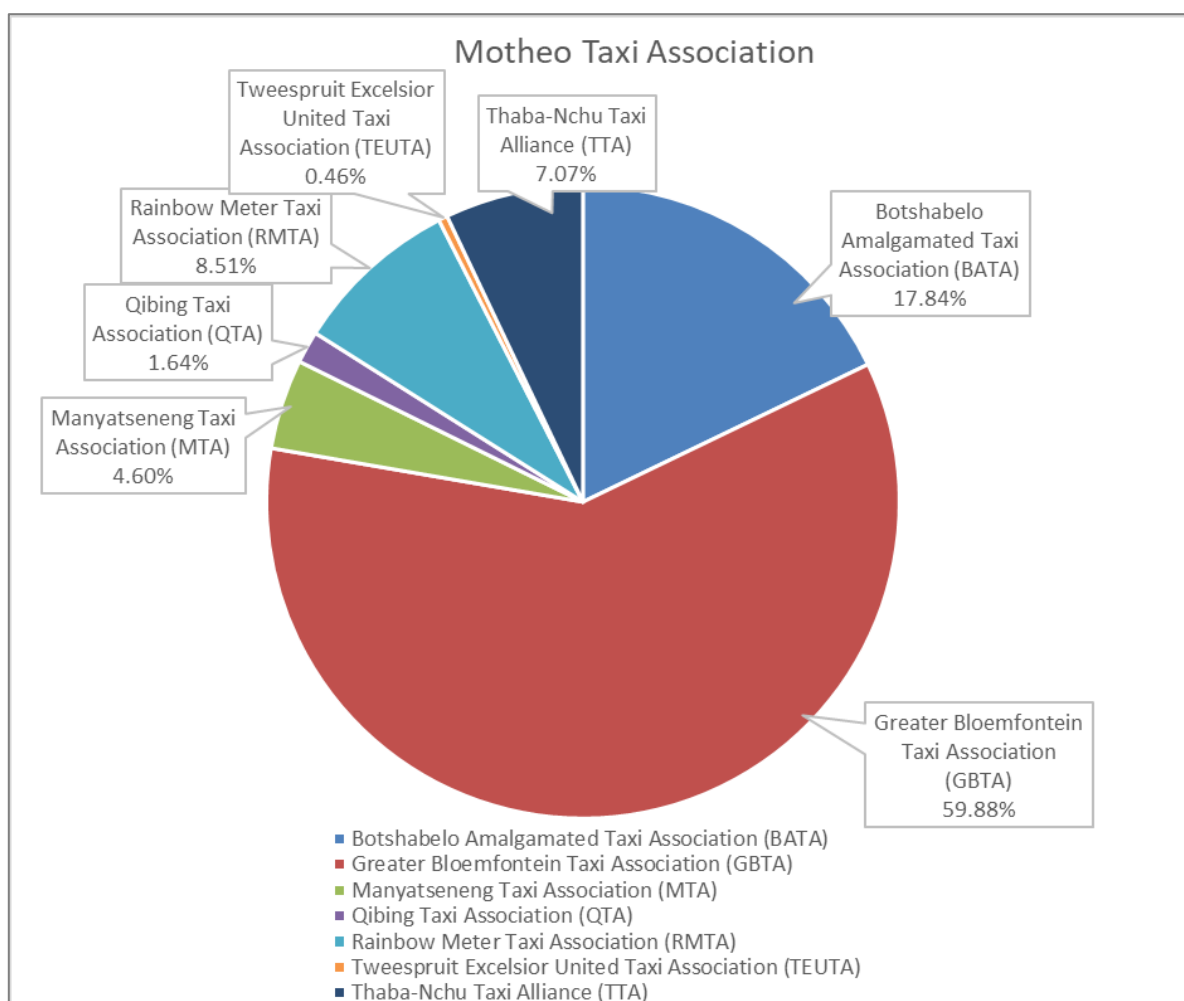


Figure 3.4: Graphical representation of the Motheo Taxi Association statistics

Findings from the Motheo Taxi Association PRE data are as follows:

- There are 3 043 vehicles in operation under the Motheo Taxi Association.
- The GBTA makes up approximately 60% of the Motheo Taxi Association.
- TEUTA makes up 0.46% of the 3 043 taxis in operation under the Motheo Region.

- The BATA at 543 aggregates to 17.84% of taxis operational.
- The MTA accumulated to 4.60% in operation within the Motheo Region.
- QTA has a total of 50 taxis in operation.
- The RMTA makes up 8.51% of the 3 043 taxis active in the Motheo Taxi Association.
- Thaba Nchu Long and Short Taxi Association with a total of 215 taxis aggregates to 7.07% of the Motheo Taxi Association.

3.4.3 Provincial Regulatory Entity data compared with the surveyed data

Data from taxis captured on the register for the Motheo Taxi Association was compared with the data accumulated from the survey conducted between May and June 2022. The comparison aimed to identify how much of the surveyed data will be matched with the PRE data from the 3 043 taxis registered on the Motheo Taxi Association register.

The findings can be summarised as follow:

- Out of the 3 043 vehicles operating under the Motheo Taxi Association only 400 vehicles are registered.
- Registered vehicles under the Motheo Taxi Association averaged 13.14%.
- A total of 83.75% of registered vehicles belong to the GBTA.
- TEUTA, QTA and MTA have no vehicles registered under their respective associations.
- The GBTA comprises approximately 11% of the vehicles registered under the Motheo Taxi Association.
- The TTA comprises 1.74% of registered vehicles operating within the Motheo Region.
- BATA averaged 0.36% in terms of taxis registered and RMTA averaged 0.03%.
- A large number of vehicles operating in the Motheo Region remain unregistered.

Table 3.2 is a summary of registered and unregistered public transport vehicles that were surveyed of each taxi association:

Table 3.2: Summary of registered and unregistered public transport vehicles

GBTA findings:		
% Registered:	% Unregistered	Total
335	1487	1822
18.39%	81.61%	100%

BATA findings:		
% Registered:	% Unregistered	Total
11	532	543
2.03%	97.97%	100%

Manyatseng findings:		
% Registered:	% Unregistered	Total
0	140	140
0.00%	100%	100%

QTA findings:		
% Registered:	% Unregistered	Total
0	50	50
0%	100%	100%

TEUTA findings:		
% Registered:	% Unregistered	Total
0	14	14
0%	100%	100%

RMTA findings:		
% Registered:	% Unregistered	Total
1	258	259
0.39%	99.61%	100%

TTA findings:		
% Registered:	% Unregistered	Total
53	162	215
24.65%	75.35%	100%

Motheo Taxi Association findings:		
% Registered:	% Unregistered	Total
400	2643	3043
13.14%	86.86%	100%

3.4.4 Infrastructure audits

Infrastructure audits were undertaken for the formal and informal MBT ranks identified in the study area during the 2018 TR update. Data on the location, condition and capacity of these facilities were collected.

Rank Name	Area	Formal/ Informal	Local/ Long distance	Net- work	Destinations	Fare	Operating hours	Street name	Nr of bays	Shel- ter	Ablution Facility	Accessi- bility	Drop- off area	Universal access	Side- walks
Langenhoven- park rank	Bloem- fontein	Informal	Local		CBD		05:00– 0830	Jochem Van Bruggen Street	-	No	No	Off- street	No	No	No
Brandwag- Mimosa rank– local	Bloem- fontein	Informal	Local		Loch Logan Waterfront, Naledi, Mimosa, Mediclinic, Tempe	R14,00	05:00– 07:00	Kellner Street	-	No	No	On- street	No	No	No
Brandwag- Mimosa rank– long distance	Bloem- fontein	Informal	Local		Kimberley, Boshof, Dealesville		07:00– 18:00	Kellner Street	-	No	No	On- street	No	No	No
Majakathata1– long distance	Bloem- fontein	Formal	Long		Qwaqwa, Ficksburg, Maseru, Klerksdorp, Mahikeng, Wepener, Sterkspruit, Kimberley, Welkom, Johannesburg		07:00– 08:00		-	Yes	Yes	Off- street	Yes	No	Yes

Rank Name	Area	Formal/ Informal	Local/ long distance	Net- work	Destinations	Fare	Operating hours	Street name	Nr of bays	Shelter	Ablution facility	Accessi- bility	Drop- off area	Universal access	Side- walks
Majakathata2– Koffiefontein	Bloem- fontein	Formal	Long		Koffiefontein		06:00– 20:00	Bastion Street	-	Yes	Yes	Off- street	No	No	Yes
Majakathata3– Edenburg	Bloem- fontein	Formal	Long		Edenburg		06:00– 20:00	Bastion Street	-	Yes	Yes	Off- street	No	No	Yes
Majakathata4– Locals	Bloem- fontein	Formal	Local		Various Locals		06:00– 20:00	Bastion Street	-	Yes	Yes	Off- street	No	No	Yes
Station rank	Bloem- fontein	Informal	Local		Various Locals		06:00– 20:00	Bastion Street	-	Yes	Yes	Off- street	No	No	Yes
Station– Brandwag rank	Bloem- fontein	Informal	Local		Brandwag	R14,00	06:00– 20:00	Charlotte Maxeke Street	-	No	No	On- street	No	No	No
Hypermarket	Bloem- fontein	Informal	Local		Fichardtpark	R14,00	07:00– 18:00	Bastion Street	-	No	No	Off- street	No	No	No
Route 40 Bainsvlei	Bloem- fontein	Informal	Local		Bainsvlei	R14,00	07:00– 18:00	Bastion Street	-	No	No	Off- street	No	No	No
Rocklands rank	Bloem- fontein	Informal	Local		Rocklands	R14,00	07:00– 1800	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No
Khayelitsha rank	Bloem- fontein	Informal	Local		Khayelitsha	R14,00	07:00- 18:00	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No
Ipopeng rank	Bloem- fontein	Informal	Local		Ipopeng/ Rocklands	R14,00	07:00– 18:00	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No

Rank name	Area	Formal/ Informal	Local/ long distance	Net- work	Destinations	Fare	Operating hours	Street name	Nr of bays	Shelter	Ablution facility	Accessi- bility	Drop- off area	Universal access	Side- walks
Route 25 4 + 1 rank	Bloem- fontein	Informal	Local			R14,00	07:00– 18:00	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No
Mafora rank	Bloem- fontein	Informal	Local		Mafora/ Rocklands	R14,00	07:00– 18:00	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No
Soweto rank	Bloem- fontein	Informal	Local		Surburbs	R14,00	06:00– 19:00	Bastion Street	-	No	No	Off- street	No	No	No
Universitas rank	Bloem- fontein	Informal	Local		Universitas/ Suburbs	R14,00	06:00– 19:00	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No
Heidedal	Bloem- fontein	Informal	Local		Heidedal	R14,00	09:00– 18:00	Peet Avenue	-	No	No	Off- street	No	No	No
Turflaagte rank	Bloem- fontein	Informal	Local		Turflaagte/ Rocklands	R14,00	09:00– 18:00	Peet Avenue	-	No	No	Off- street	No	No	No
Namibia rank	Bloem- fontein	Informal	Local		Namibia Square	R14,00	09:00– 18:00	Peet Avenue	-	No	No	Off- street	No	No	No
Freedom rank	Bloem- fontein	Informal	Local		Freedom Square	R14,00	09:00– 18:00	Peet Avenue	-	No	No	Off- street	No	No	No
Woodlands	Bloem- fontein	Informal	Local		Woodlands Estate	R14,00	06:00– 19:00		-	No	No	Off- street	No	No	No
Twin City	Bloem- fontein	Formal	Local		Twin City/ Heidedal	R14,00	08:00– 19:00	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No

Rank name	Area	Formal/ Informal	Local/ long distance	Net- work	Destinations	Fare	Operating hours	Street name	Nr of bays	Shelter	Ablution Facility	Accessi- bility	Drop- off area	Universal access	Side- walks
Preller Mall	Bloem- fontein	Informal	Local		Preller Walk/ Suburbs	R14,00	06:00– 19:00	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No
Northridge Mall	Bloem- fontein	Informal	Local		Northridge Mall/ Bayswater Suburb	R14,00	06:00– 19:00	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No
Lourierpark	Bloem- fontein	Informal	Local		Lourierpark	R14,00	09:00– 18:00	Charlotte Maxeke Street	-	No	No	Off- street	No	No	No
Phelindaba rank	Bloem- fontein	Informal	Local		Phelindaba/ Rocklands	R14,00	09:00– 18:00	Peet Avenue	-		No	Off- street	No	No	No
BATA locals rank	Botsha- belo	Formal	Local		Various Local destin	R11,00	06:00– 18:00	-	-	Yes	Yes	Off- street	No	No	Yes
BATA long distance rank	Botsha- belo	Formal	Long		Various Long.dist dest	R80,00- R300,00	07:00– 18:00	-	-	Yes	Yes	Off- street	No	No	Yes
Thaba Nchu local rank	Thaba Nchu	Formal	Local		Various Local destin	R11,00	06:00– 18:00	-	-	Yes	Yes	Off- street	No	No	Yes
Thaba Nchu long distance rank	Thaba Nchu	Formal	Long		Various Long.dist dest	R80,00- R300,00	07:00– 18:00	-	-	Yes	Yes	Off- street	No	No	Yes

3.4.5 Interstate Bus Lines data

The following IBL data was made available by the provincial government:

Table 3.3: Current bus facilities

NO.	Facility Name	Physical Location	Mode	Type of service	Holding/Loading/ Combined	Formal or informal (F/I)	On-street/ off-street	No. of bays (formal only)
1.	Phomolong	Dr Belcher Road Bloemfontein	130	Commuter	Holding	Informal	Off-street	N/A
2.	Thaba Nchu	Market Street, Thaba Nchu	15	Commuter	Loading	F	Off-street	10
3.	Botshabelo Depot	Block A, Botshabelo	120	Commuter	Holding	Informal	Off-street	N/A
4.	Central Park	Hanger Street, Bloemfontein	50	Commuter	Loading	F	Off-street	36
5.	Hoffman Square	Charlotte Maxeke Street, Bloemfontein	14	Commuter	Loading	F	On-street	14
6.	Thaba Nchu		Bus Service	Commuter				
7.	Fairways		Bus Service	Commuter				

From the data above it is evident that only Central Park is considered to be the only formalised facility for the IBL. All bus facilities serve commuter bus service trips.

Table 3.4: Current status of the bus facilities

NO.	Facility	On-street/ Off-street	Ablution facilities	Lights	Shelter	Formal/ Informal
1.	Phomolong	Off	Adequate	Yes	Yes	No
2.	Thaba Nchu	Off	Adequate	Yes	Yes	Yes
3.	Botshabelo Depot	Off	Adequate	Yes	Yes	No
4.	Central Park	Off	Not adequate	Yes	Yes	Yes
5.	Hoffman Square	On	Not adequate	No	Yes	Yes
6.	Zone 1	Off	Adequate	Yes	Yes	No
7.	Fairways	Off	Adequate	No	Yes	Yes

Table 3.5: Bus routes

No.	Mode	Origin Rank/Terminus	Destination Rank/Terminus	Route distance (km)	Trip time (one way)	Turnaround time (cycle time)
		Name	Name			
1.	Bus service	Thaba Nchu all zones	Bloemfontein	75	1 hour 10 min	1 hour 30 min
2.	Bus service	Brandfort	Botshabelo	34	45 min	1 hour
2.	Bus service	Brandfort	Bloemfontein	60	1 hour 10 min	1 hour 30 min
3.	Bus service	Soutpan	Bloemfontein	48	50 min	1 hour 10 min
4.	Bus service	Mangaung	All suburbs in Bloemfontein	15	40 min	55 min
5.	Bus service	Northern Trusts	Thaba Nchu	40	50 min	1 hour 10 min
6.	Bus service	Southern Trusts	Thaba Nchu	55	1 hour 10 min	1 hour 30 min
7.	Bus service	Botshabelo all blocks	Bloemfontein	61	1 hour 10 min	1 hour 30 min
9.	Bus service	All Bloemfontein suburbs	Thaba Nchu	28	45 min	1 hour
8.	Bus service	All Bloemfontein suburbs	Hoffman Square	12	35 min	50 min

No.	Mode	Categories	Input
(d)	Bus service	Subsidised routes	All routes are subsidised with 53% of trips. 47% trips are not subsidised
(e)	Bus service	Number of passengers	Transport of average 22 000 passengers during peak hours
(f)	Bus service	Timetable and size/capacity	1 759 trips per day on all routes with 215 buses
(g)	Bus service	Bus fare on each route	Attached
(h)	Bus service	Multi-journey tickets sold	20% of sales are cash tickets

3.4.6 Learners’ need assessment

A learners' need assessment were performed in a form of questionnaires through various schools. The following criteria were used to select schools to conduct these surveys:

- public school;
- one school per area in Bloemfontein;
- one school per town, outside Bloemfontein;
- preferably middle school or high school;
- average number of learners per school is 524. A total of 60 (11% sample) questionnaires were produced per school.

Table 3.6 is a list of schools that were surveyed.

Table 3.6: Learners’ needs assessment

No.	Town	Suburb	School
1	Bloemfontein	Ashbury	Petunia Secondary School
2		Bainsvlei	Bainsvlei Combined School
3		Batho	Academy of Excellence
4		Bayswater	Brebner High School
5		Bloemanda	Tsoseletso High School
6		Botshabela	St Bernards High School
7		Dan Pienaar	Hoërskool Sentraal
8		Fichardtpark	Fichardtpark High School
9		Freedom Square	Commtech Combined School
10		Gardeniapark	Jim Fouché High School
11		Generaal de Wet	Bloemfontein South High School
12		Grasslands	Grassland Secondary School
13		Hamilton	Headstart High School
14		Hartebeesfontein Small Holdings	President Steyn High School
15		Heidedal	Dr Blok Secondary School
16		Hospitaalpark	Sand du Plessis High School
17		Joe Slovo	Kagisho Comprehensive Secondary School
18		Naval View	Navalsig High School
19		Phahameng	Mabeoana Intermediate School
20		Rocklands	Moemedi High School
21		Turflaagte	Kopanong Secondary School

22	Bloemfontein	Universitas	Böhmer Secondary School
23		Willows	Louis Botha Technical High School
24	Botshabelo		Setjaba-Se-Maketse Combined School
25			Ntemoseng Secondary School
26			Kgauho Secondary School
27			Senakangwedi Secondary School
28			Kgorothuto Secondary School
29	Thaba Nchu		Moroka Secondary School
30			Albert Moroka High School
31			Phetogane Secondary School
32	Vanstadensrus		Thapelong Secondary School
33	Wepener		Qibing Secondary School
34	Dewetsdorp		Metsimaphodi Secondary School
35	Soutpan		Kagisano Combined School

3.4.7 Rank surveys

The following surveys were conducted at the rank facilities for both Long distance and local trips:

- MBT departure survey
- MBT arrival survey
- taxi queue length survey
- MBT leaving the holding areas
- MBT arriving at the holding areas

The ranks surveyed are listed in Table 3.7:

Table 3.7: Ranks surveyed (GBTA)

No.	Network	Rank
1	Network 01	Phase 2
2		Philindaba
3		Ipopeng
4		Rocklands
5		Route 25 (4+1)
6	Network 02	Heidedal
7		Turflaagte
8		Namibia

9		Freedom
10	Network 03	Brandwag
11		Route 16
12		Hypermarket
13		Route 40
14		Long Distance
15	Botshabelo	
16	Thaba Nchu	
17	Koffiefontein, Jagersfontein/Edenburg, Bultfontein, Deneysville, Brandfort	

Outside Bloemfonte, the following ranks were surveyed:

- BATA Local Rank
- BATA Long Distance Rank
- Thaba-Nchu Local Rank
- Thaba-Nchu Long Distance Rank

Van Stadensrys and Dewetsdorp do not have a formalised rank facility.

Wepener does have a formalised facility, however, the survey team was not allowed to survey in that area.

3.5 DEMOGRAPHIC AND SOCIO-ECONOMIC FACTORS

3.5.1 Population size

During the period 2011 to 2019, the estimated population of MMM increased from 775 028 to 878 834; an increment of about 90 904 (1.6%) people per annum. This is due to immigration into the city from the neighbouring towns and other rural areas within the Free State Province. This large influx represents both challenges and opportunities for the municipality, such as an increase in demand for basic services and human settlement. The opportunities are amongst others revenue income for the municipality.

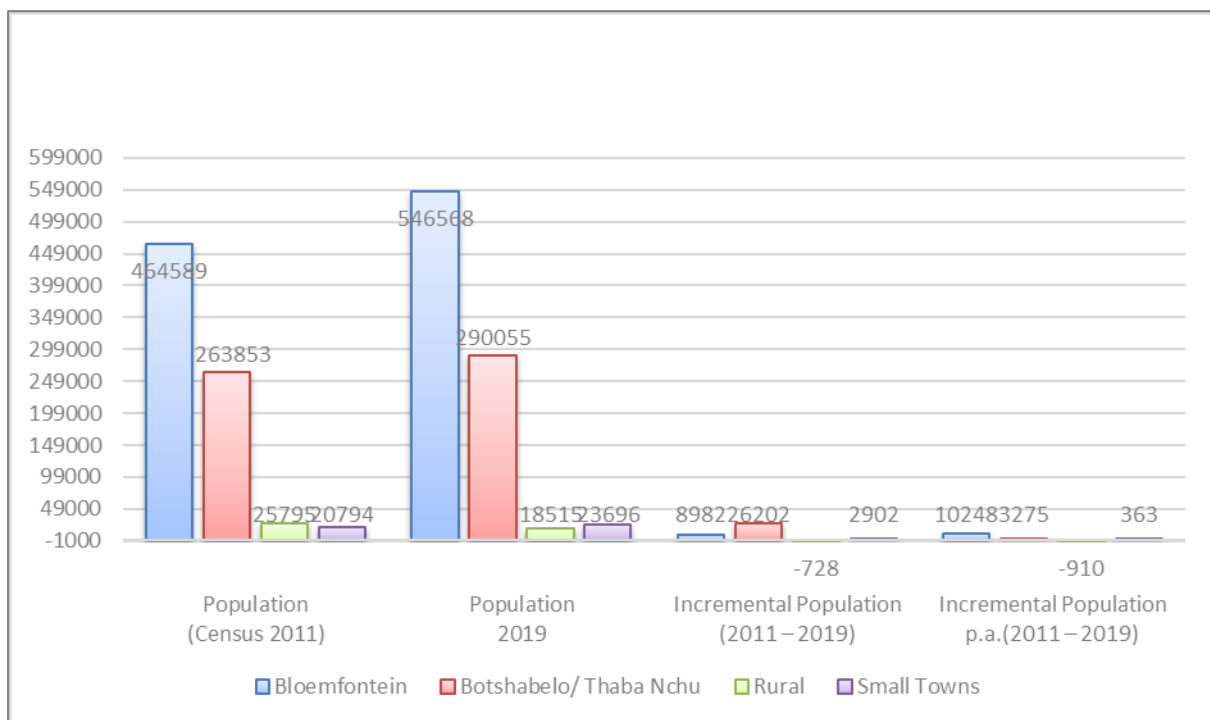
The city has 51 wards according to the demarcation of 27 November 2020 with the representation of 101 councillors.

Table 3.8: Mangaung population 2011–2019 per town/area

	Population (Census 2011)	%	Population 2019	%	Incremental population (2011–2019)	Incremental Population p.a.(2011–2019)	% Growth p.a. (2011–2019)
Bloemfontein	464 589	60%	546 568	62%	81 982	10 248	2%
Botshabelo/ Thaba Nchu	263 853	34%	290 055	33%	26 202	3 275	1%
Rural	25 795	3%	18 515	2%	-728	-910	-4%
Small towns	20 794	3%	23 696	3%	2 902	363	1.6%
Total	775 028	100%	878 834	100%	103 806	12 976	1.6%

(Source: Mangaung Spatial Development Framework 2019)

Table 3.9: Mangaung population statistics



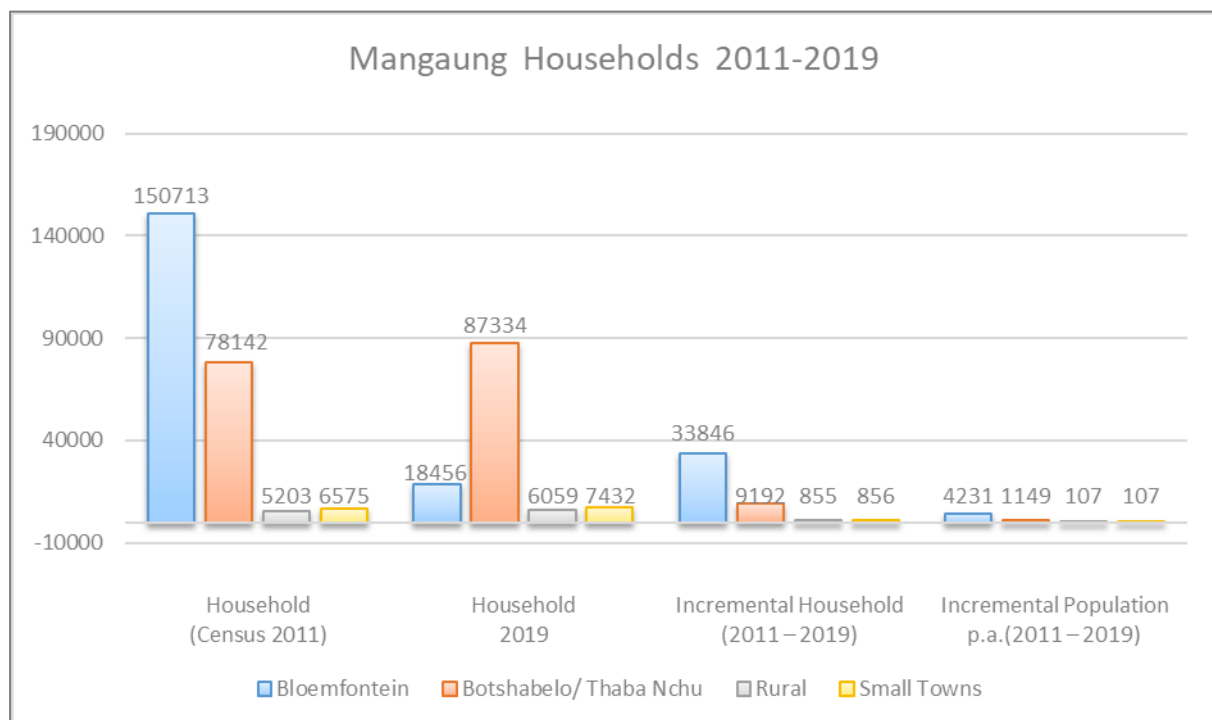
3.5.2 Population income distribution

The population represents an estimated 285 385 households with an average household size of 3.1 people per household. About 65% of all households reside in Mangaung/Bloemfontein, 31% in Botshabelo and Thaba Nchu, 3% in the other small towns and 2% in the rural areas. The estimated

household increment during the period 2011 to 2019 is approximately 44 752 which translates to approximately 5 594 households per annum as depicted in Table 3.10.

Table 3.10: Mangaung households 2011–2019

	Household (Census 2011)	%	Household 2019	%	Incremental household (2011–2019)	Incremental household p.a.(2011–2019)	% Growth p.a. (2011–2019)
Bloemfontein	150 713	63%	184 56	65%	33 846	4 231	2.6%
Botshabelo/ Thaba Nchu	78 142	32%	87 334	31%	9 192	1 149	1.4%
Rural	5 203	2%	6 059	2%	855	107	1.9%
Small towns	6 575	3%	7 432	3%	856	107	1.5%
Total	240 635	100%	285 385	100%	4 475	5 594	2.2%



(Source: Mangaung Spatial Development Framework 2019)

Figure 3.5: Mangaung households 2011–2019

The information in Table 3.11 was extracted from the National Household Travel Survey for the MMM area.

Table 3.11: Dwelling type

Source of household income	
2013	
Salaries	35.6
Income from business	37.3
Pension	33.6
Grant	29.3
Remittances	28.0
Other	48.3
2020	
Salaries	44.1
Income from business	4.5
Pension	2.6
Grant	35.7
Remittances	11.4
Other	1.7

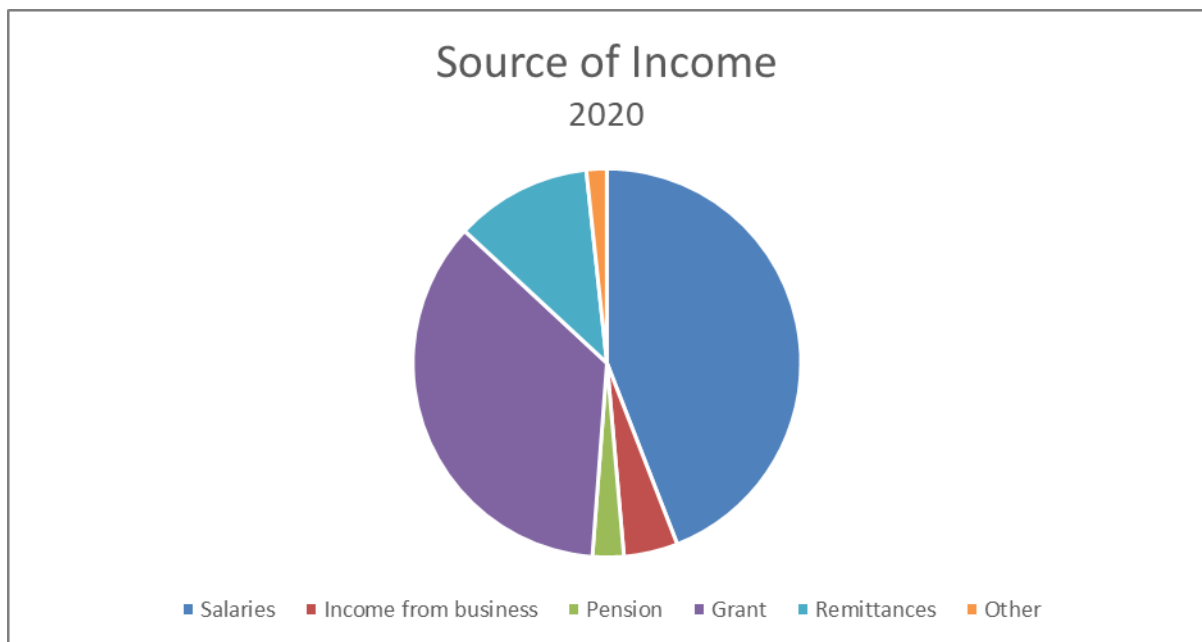


Figure 3.6: Source of income

Table 3.12: Most important transport-related problems experienced by households

Transport related problems	
No transport problems	21.1
Poor conditions of roads	25.7
Rude drivers	9.7
Overload	0.7
Congestion	1.8
Crime	2.1
Toll fees	0.2
Parking	*
Other	3.3
Taxi	
Taxi too expensive	4.5
Reckless driving by taxi driver	5.7
No taxi at specific times	2.9
Taxi too far	3.1
No taxi available	1.3
Bus	
No busses available	2.5
No busses at specific times	8.2
Busses too far	1
Busses too expensive	2.9
Reckless driving by bus driver	1.6
Train	
No trains available	0.9
Trains are not available	0.2
Busses too far	*
Busses too expensive	0.7

Table 3.13: Main modes of travel usually used by households

Mode of Travel	
Train	*
Bus	17.5
Taxi	52.2
Car/Truck driver	22.2
Car/Truck passenger	3.6
Walking	4.2
Other	0.3

CHAPTER 4: SPATIAL DEVELOPMENT FRAMEWORK

4.1 INTRODUCTION

To promote and attain sustainable planning and development, transport planning must align with the principles of the approved spatial development framework of the Municipality. The Free State Spatial Development Framework of 2007 was compiled and has remained in draft form, hence not forming part of this chapter. The MMM aims at transforming a city-wide public transport system to deliver a transport system that is of high quality, economically sound and safe to all the inhabitants of the city. The CITP borrows from the proposed regulations of the current SDF to ensure that the intentions of the national Department of Transport are realised and executed unambiguously.

Section 25 of the Municipal Systems Act, 200 (Act 32 of 2000) grants jurisdiction to the Municipal Spatial Development Framework (MSDF) to outline the spatial development of a metropolitan area. This Act also makes a provision for the identification of the areas of prioritisation in terms of investment and development. The purpose of the MSDF is to promote investor confidence in a growing and changing metropolitan area.

After this introduction this chapter continues to unpack two main sections, namely:

- 1) current municipal initiatives related to the CITP; and
- 2) the enhancement of nodal developments and transport development corridors.

4.2 CURRENT MUNICIPAL INITIATIVES RELATED TO THE CITY INTEGRATED TRANSPORT PLAN

The section consists of the three sub-sections, namely:

- 1) SDF;
- 2) Municipal Integrated Transport Network; and
- 3) sustainable community methodology.

4.2.1 Spatial Development Framework

The key components of the SDF in this chapter are:

- key demographics
- the Hierarchy of nodes forming the MMM
- SDF proposed spatial interventions in the municipality
- Identification of integration zones

4.2.1.1 Key demographics

According to the study conducted in 2019, the population of MMM is about 861 651. A large part of this population is situated in Bloemfontein (63%), followed by Botshabelo (24%), Thaba Nchu (9%), Dewetsdorp and Wepener (1.5%), Soutpan (0.8%) and Vanstadensrus (0.2%).

HIV/Aids are a prevalent cause of death within the MMM. Other diseases such as COVID-19 have recently contributed to the socioeconomic ills that are evident within the municipality. While the effects of the Coronavirus are evident throughout the country and the world, the unemployment rate has risen to the highest level ever in South Africa and the MMM has not been spared the wrath of the pandemic.

4.2.1.2 Hierarchy of nodes

Four hierarchical nodes as outlined in Figure 4.1 will be discussed as a means of transport access that provides opportunities and strengths that can be enhanced with proper planning.

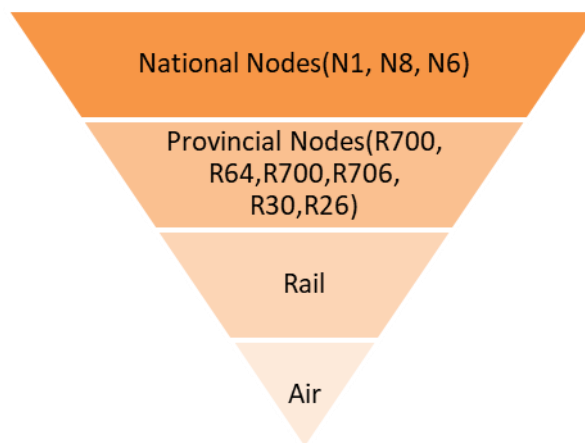


Figure 4.1: Hierarchy of nodes in MMM

4.2.1.2.1 National growth point

The national growth points which comprises the N1, N8, and N6 are the highest-order roads in the province and within the MMM jurisdiction. These nodes are vital for the economic growth of the larger municipal population. The N8 is the busiest commuting road for people working in Bloemfontein who commute daily from the nearest areas such as Botshabelo and Thaba Nchu. The N8 further stretches to Ladybrand which is a few kilometres away from the Lesotho border. The N1 passes through the city of Bloemfontein allowing the transportation of goods from provinces such as Gauteng and the Western Cape to move with ease. The N6 passes south-eastwards towards the Eastern Cape towns such as Queenstown and East London.

There are strategic infrastructural projects, which are situated in the eastern section from Bloemfontein to Thaba Nchu. Table 4.1 lists these projects which are serving the construction of the Thaba Nchu public transport route and N8 development respectively.

Table 4.1: Strategic infrastructure projects

SIPs	Strategic Importance
SIP 6	It serves as the construction of the Thaba Nchu Public Transport Route
SIP7	It runs on the rail line parallel to the N8 route and serves as the development corridor

4.2.1.2.2 *Provincial Growth Points*

The provincial growth points connect the city with smaller agricultural towns around the metro municipality. The Glen Agricultural College, which is situated about 10 km east of Bloemfontein on the R30 has employed a significant number of Bloemfontein-based citizens who commute to the city and also connect the city with the mining town Welkom. The other provincial nodes include the R702 which connects the city with towns such as Dewetsdorp and Wepener, the R64 from Bloemfontein to Dealesville, the R700 from Bloemfontein to Hoopstad and Bloemhof, the R706 from Bloemfontein to Jagersfontein and the R26 which is situated to the east towards the Lesotho border (Van Rooi) linking Wepener to Hobhouse and Ladybrand on the north and Zastron to the south.

4.2.1.2.3 *Rail growth nodes*

Along the N1 route runs the freight and passenger line which moves from Johannesburg to Cape Town. The Kimberley to Maseru freight line is alongside the N8 route, where the section between Bloemfontein and Maseru forms part of SIP17. The Bloemfontein to Wepener line is no longer operational.

4.2.1.2.4 *Air*

There is one primary airport in the Free State Province, and it finds its locality within the MMM, namely the Bram Fischer International Airport. Other smaller airfields can be found within the municipal area. Figure 4.2 is a depiction of the MMM Spatial Structure and Movement Network with the seven urban centres encircled in red.

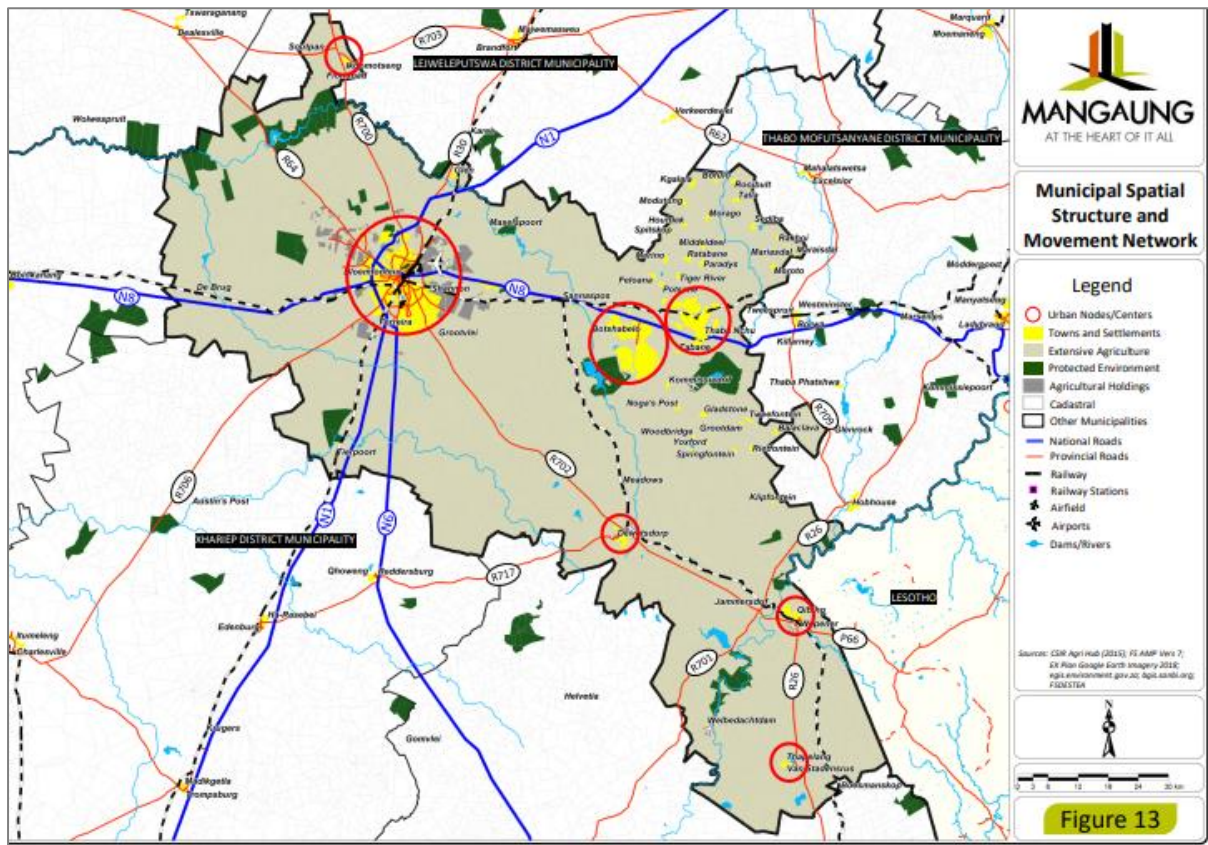


Figure 4.2: Map of Mangaung Metropolitan Municipal Spatial Structure and Movement Network

4.2.1.3 Spatial Development Framework proposals

For the MMM SDF to address the spatial and socioeconomic inefficiencies and to achieve a spatial structure that is efficient, sustainable, resilient, and spatially just, it must prove adherent to the norms and principles of the Spatial Planning and Land Use Management Act (SPLUMA).

The suggested proposals and significant interventions brought forward by the MSDF are summarised as follows:

- 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 would create a more balanced city structure for the town, and benefit communities in Mangaung Township. This will ensure spatial inequities of the past and achieve integrated rejuvenation of the spatial form of the city.
- Strengthening the city core through CBD regeneration and consolidating the urban structure by way of an urban edge.

- Enhancing local economic development in Botshabelo, Thaba Nchu and areas between these two towns by way of corridor development. This includes the establishment of labour-based manufacturing industrial parks at Botshabelo and reinforcing Thaba Nchu as a rural market town.
- Improving access from the surrounding rural communities to these areas.

The reviewed SDF further identified four distinct and yet interrelated priorities to articulate spatial and economic transformation. These priorities include improving the linkages and services focusing on the city concerning integration zones, the township development ensuring vibrant economic growth, the small-town development, and the rural development concerning agriculture, conservation tourism, and mining.

4.2.1.4 Integration zones

The MMM has identified three integration zones (Table 4.2 and Figure 4.3). They are IPTN routes, Waaihoek, Batho and Phahameng dubbed Integration Zones 1, Airport Development Node Estoire Development which is referred to as Integration Zone 2, and the Central University of Technology to University of the Free State Brandwag Integration Zone 3. These integration zones are made of several roads that link the CBD with the high-order traffic areas that are largely private-sector driven.

There are four vital reasons for the identification of the above-mentioned integrated zones:

- Creating opportunities for a spectrum of land uses (commercial, industrial, residential or social) through the increased use of space (densification) to support the viability of public transport systems and growth nodes.
- Integrated public transport system that will be used by the majority of communities in the metro and also support the transformation of the urban form.
- Investment in infrastructure to catalyse spatial transformation and ensure the implementation of metropolitan catalytic projects.
- And, reducing poverty and inequality and accelerating more inclusive urban economic growth within and along with settlement areas and other growth nodes that include commercial and industrial growth in or in the proximity of townships.

Table 4.2: Mangaung Metropolitan Municipality integration zones

Integration Zones	Project/Precinct	Progress
Integration Zone 1	Waaihoek Precinct Development	Designs completed. Commencing with development of urban pocket in 2017–19
	IPTN Phase 1	Completed Maphisa Road in 2015/16
	IPTN Phase 2 of Maphisa	Embark construction over 2017/18 MTREF

	Vista Park 2 Mixed Development	Traffic study report has been submitted for approval
	Vista Park 3 Mixed Development	Traffic study in respect of the first three phases has been approved. Further studies for other phases will be dealt with at a later stage
Integration Zone 2	Airport Development Node	Planning completed
	Estoire Development	Urban design initiated
	Raceway Development	Urban construction
Integration Zone 3	IPTN NMT Development	Under construction

4.2.2 Municipal integrated transport network

This section primarily focuses on discussing public transport systems, air transport systems, and rural transport systems.

4.2.2.1 Public transport systems

The IPTN of the MMM aims at implementing a full network that incorporates the existing public operators, sufficient and effective infrastructure (road and systems), and other vital institutional structures necessary to execute its transport mandate. The daily work-related trips are estimated at 195 000 in the Mangaung Municipal area with the highest percentage being in the Mangaung Township (47%), 23% in Bloemfontein, 14% in Botshabelo and Thaba Nchu. Figure 4.3 shows the MMM IPTN linked with the three integrated zones.

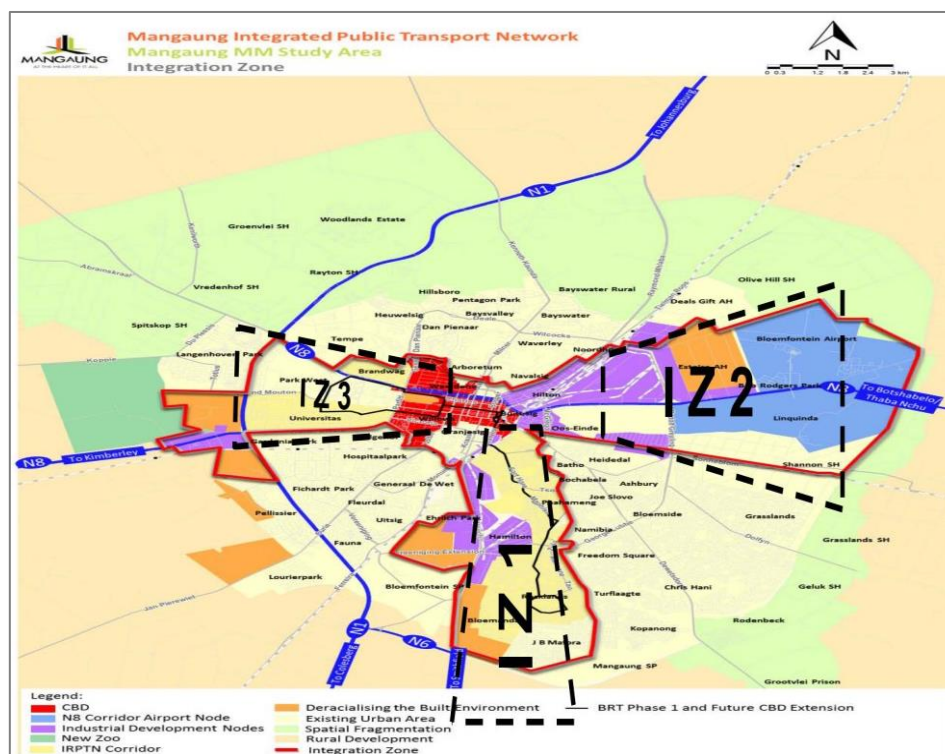


Figure 4.3: Map of Mangaung Metropolitan Municipality integration zones

The trips that are evident within the municipal area which falls under public transport planning unfold in three ways:

- a) taxis that comprise 33% of the network;
- b) buses 11%; and
- c) by foot which makes up 17%.

The MMM IPTN has identified two vital phases that are necessary for the implementation of a sustainable and economically viable full network where people reside. The revenue in this regard is dependent on the number of passengers that will be attracted by the system. Two of these phases is identified by the MMM IPTN corridor network.

Phase 1 is detailed in Table 4.3 and Figure 4.4, while *Phase 2* is detailed in Table 4.4 and Figure 4.5.

Table 4.3: Mangaung Metropolitan Municipality Integrated Public Transport Network

Phase 1 IPTN Corridor Network

The key system features include the following system characteristics:

Routes inclusive to Phase 1	CBD Complementary 1, CBD Complementary 2, Trunk Routes 1 & 2 and Complementary Route 1
Stations (Controlled Access)	4 stations (2 per location)
Stations (Un-Controlled Access)	18 Stations (2 per location)
Stops (CBD)	16 Stations (2 per location)
Stops (complementary routes)	3 Stops (1 per location) - Crescent 14 Stops (2 per location) – Comp Route 1
Service Type	Mixed Traffic lanes (no dedicated lanes)
Infrastructure Distance (km)	6.5 km Trunk Route 27.2 km Complementary Routes
Go –live	Dec 2019

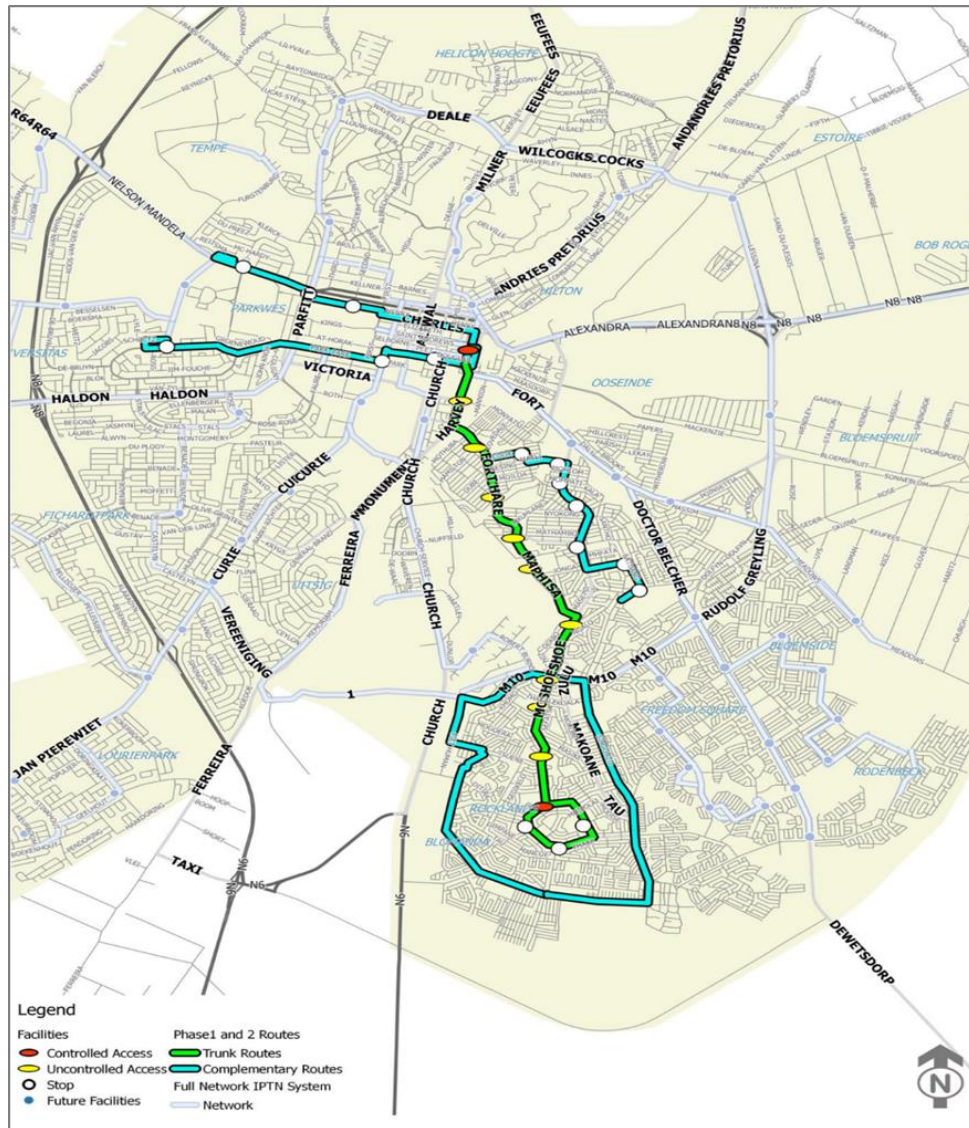


Figure 4.4: Map of Phase 1 Integrated Public Transport Network Corridor Network

Table 4.4: Integrated Public Transport Network Phase 2 key system features

Phase 2 IPTN Corridor Network

The key system features include the following system characteristics:

Routes inclusive to Phase 2	Complementary Routes 1 and 6, Route 13 (Trunk Dr Belcher) Complementary Routes 12, 13 and 15
Stations (Controlled Access)	2 stations (2 per location)
Stations (Un-Controlled Access)	8 Stations (2 per location)
Stops (complementary route)	32 Stops (2 per location)
Service Type	Mixed Traffic lanes (no dedicated lanes)
Infrastructure Distance (km)	5,1 km (Trunk route) 421.2 km Complementary Routes
Infrastructure Cost Estimates (R)	± R 120 mil
Go –live	July 2020

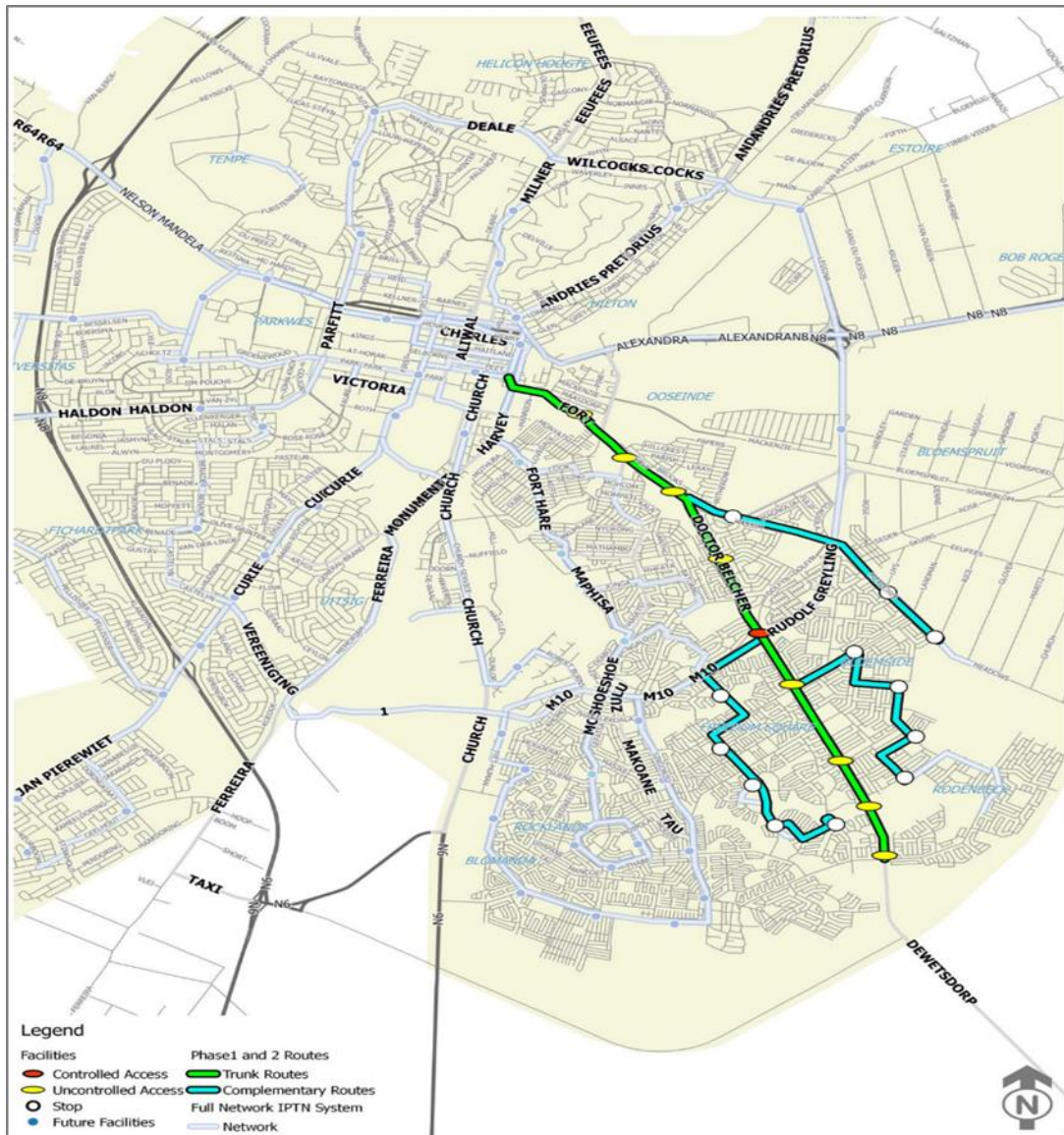


Figure 4.5: Map of Phase 2 Integrated Public Transport Network Corridor Network

The key system features include the following system characteristics:

- extensive NMT infrastructure plans (walkways and cycle paths);
- 6 access controlled stations (Phases 1 and 2);
- numerous uncontrolled access stations;
- numerous bus stops;
- improving accessibility to include inter-modal facilities to incorporate taxi and IPTN buses;
- limited roadway and busway improvements;
- resurfacing of existing roads (trunk and complementaries);
- road furniture, provision of a bus depot to house approximately 300 buses (includes future phasing);

- intersection upgrades and improvements, communication, ticketing, and CCTV infrastructure provision; and
- traffic control measures and improvements.

4.2.2.2 Airport transport system

The Bram Fischer International Airport has been identified as one of the most important development nodes that would consist of two main phases (Figure 4.6) as part of the urban development programme. The first phase of the Airport Development Node (ADN) is situated south of the N8 airport interchange while the second phase is situated on the north-eastern boundary of the airport. The progress of the implementation of these two phases of the ADN has been largely hampered and delayed by the effects of the COVID-19 pandemic that compelled the country to be placed under a state of disaster.

The conceptual plan of the mixed land used in Phase 2 of the ADN has been depicted in Figure 4.7. The ADN is aimed at increasing commercial services, educational and civic sites, an urban square and international conference centres, hotels, and mixed housing. The private developers were encouraged to invest in these phases as it was proposed that it be developed in stages. The focus would be on the light industrial and mixed-use to encourage interest from private developers.

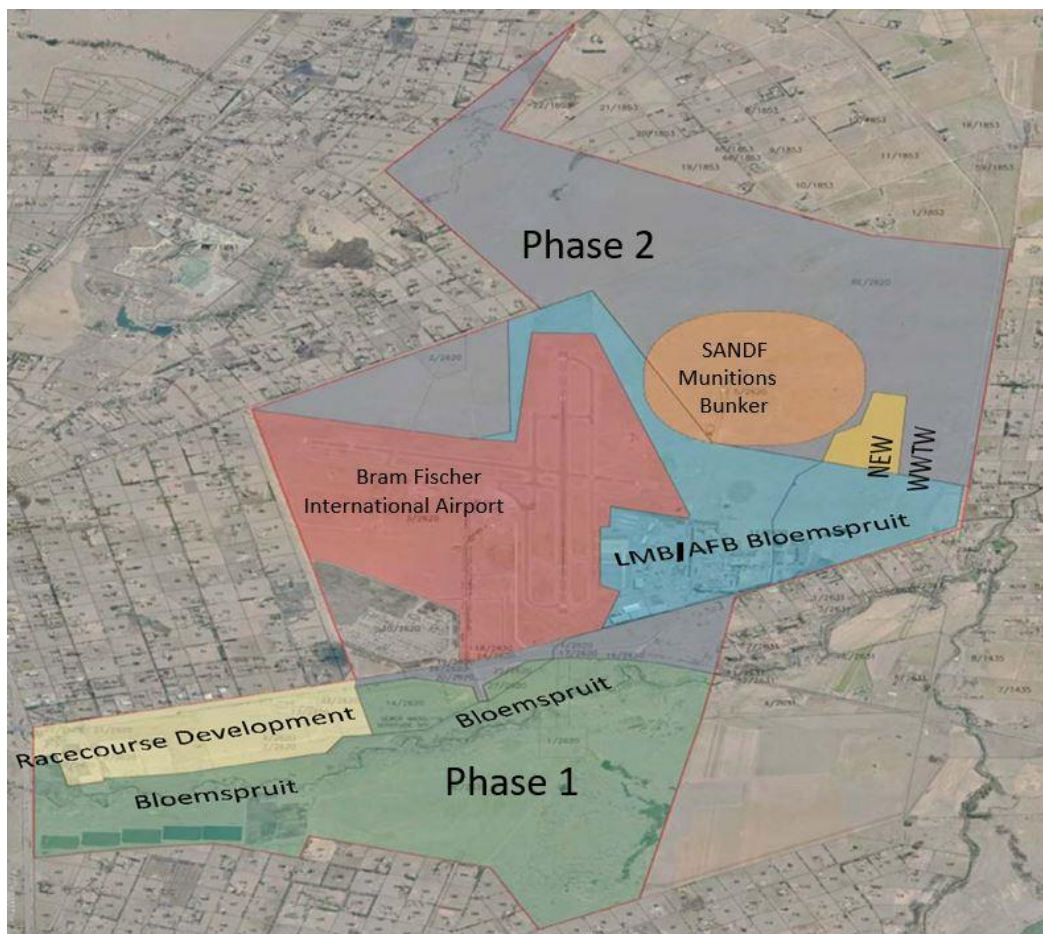


Figure 4.6: Locality map of Phase 1 and Phase 2

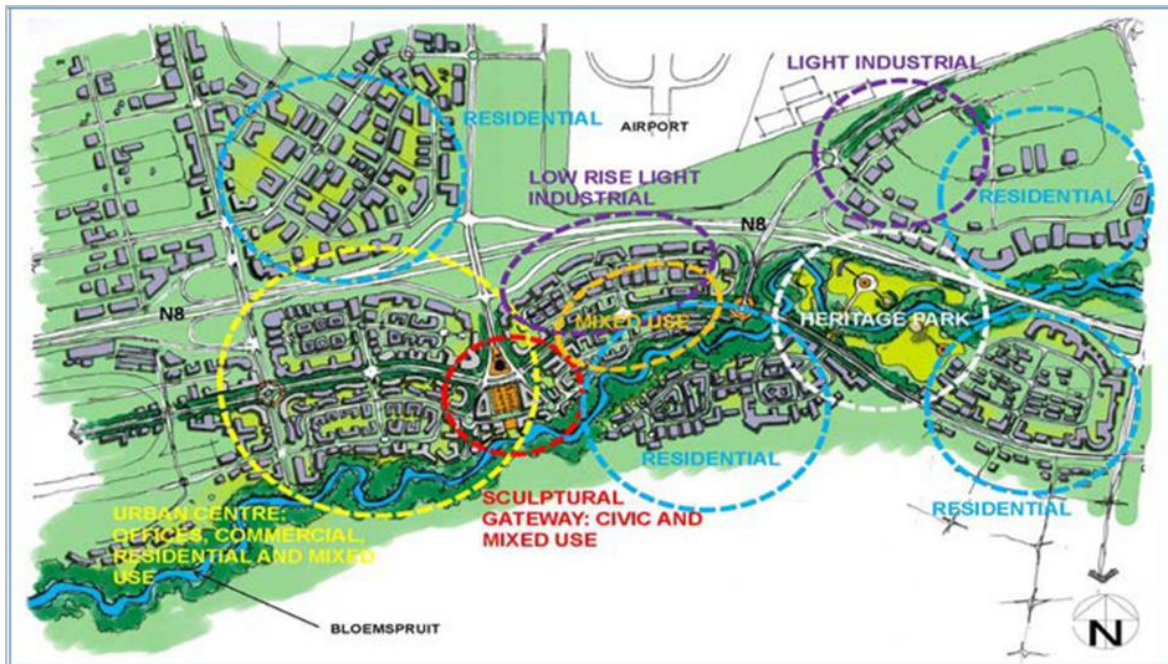


Figure 4.7: Conceptual design of ADN Phase 2

The N8 development corridor pays special attention to three instruments.

- boosting connectivity and improving mobility;
- erupting nodal development; and
- facilitating linear growth along transport corridors (long term) and/or development corridors.



Figure 4.8: The N8 Airport Node Master Plan Proposal

The purpose of the urban development programme is aimed at increasing mobility and interdependence as well as the linkages between the three urban centres of the MMM. The underutilised railway networks between Bloemfontein and Lesotho are the priority for resuscitation of the provincial government to increase mobility. The resuscitation of the railway lines will aid with the reduction of traffic on the N8 route. As a result of this initiative, the Botshabelo/Thaba Nchu node is also earmarked alongside the ADN to ensure the integration of communities. The ADN intends to ensure that there is sufficient development of the bulk and link services for the MMM to make it feasible for private developers to invest by purchasing properties within the ADN and to connect the link infrastructure with their internal services. Figure 4.8 shows the N8 Airport Master Plan proposal.

Various aspects underpin the ADN to be focused on being a green infrastructure. For purpose of the ADN, the CITP has aspects such as:

- promoting NMT with dedicated pedestrian and cyclist reserves not only in the road reserves but throughout the entire development; and
- implementation of the IPTN, which will reduce the number of private vehicle users.

There is a linkage of the ADN with the IPTN as Phase 3 of the Urban Development Programme. The full network of the IPTN includes services from the airport to the CBD and the Waaihoek Precinct. The airport is aimed at being serviced by three different routes via the CBD or directly based on the passenger demands between the two nodes. A formal public transport system is required to improve the linkage with the CBD (Figure 4.9) and other economic hubs of the city. The accessibility would improve exceptionally to avail alternatives of having to hire an automobile by the users of the ADN.

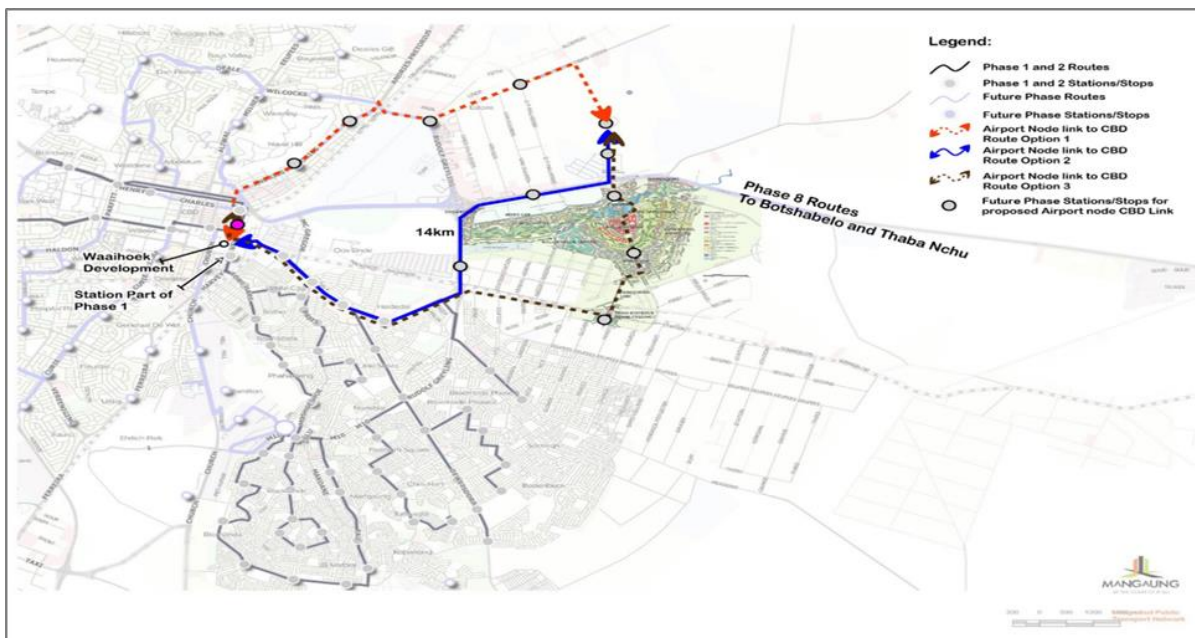


Figure 4.9: Linkage of ADN with IPTN Phase 3

4.2.2.3 Rural transportation systems

This section will address the importance of the integration of rural areas into the SDF and highlight the functional regions to address the rural transportation challenges.

4.2.2.4 Integration of rural areas into the spatial development framework

In 2011 the Department of Rural Development and Land Reform (DRDLR) identified poverty-stricken areas throughout the country and initiated the formulation of the Rural Development Plans (RDPs) to robustly improve the livelihoods of citizens living in the most impoverished rural areas. The DRDLR collaborated with the Department of Agriculture, Forestry, and Fisheries, after identifying agriculture as one of the important key sectors for rural economic transformation. The collaboration mandate was to implement an Agricultural Policy Action Plan (APAP).

The municipalities are constitutionally mandated to ensure that sustainable service delivery reaches rural areas. SPLUMA No. 16 of 2013 stipulates that spatial planning and land development may not alienate the rural places, and instead should address the integration of the rural areas in the economic activities, and spatial and environmental objectives of the local government.

MMM is identified as one of the most impoverished areas in the country. The incorporation of the largely rural landscape that previously belonged to Naledi Local Municipality has contributed significantly to the impoverishment of the MMM jurisdiction.

4.2.2.5 Functional regions

There are five broad functional regions that MMM has been delineated into by the natural resources. The characteristics of these five functional regions (Figure 4.10) are unique to each region. They are categorised into mining, intensive agriculture, catalytic intervention, priority land reform, and tourism.

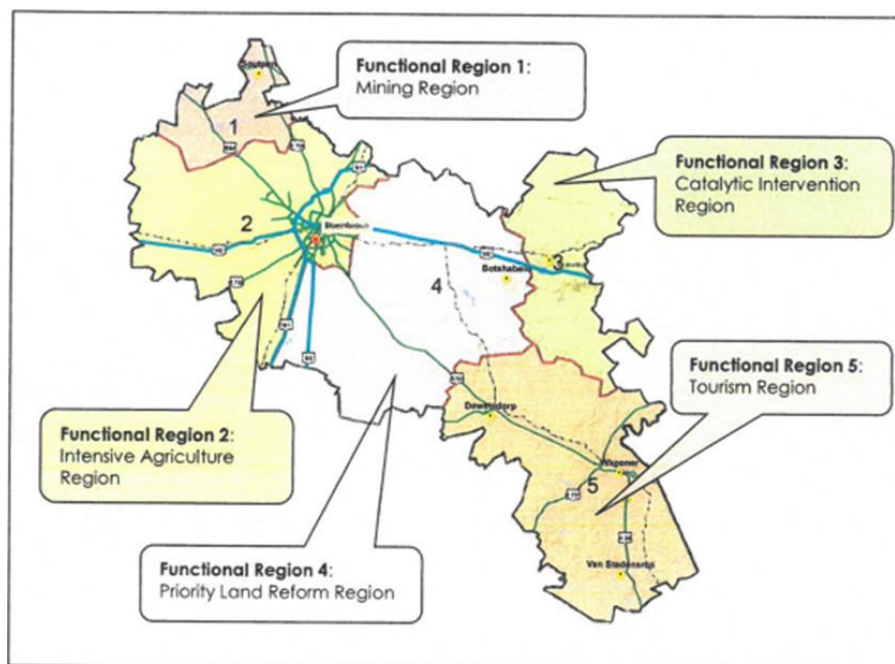


Figure 4.10: Delineation of Managing Functional Regions

4.2.2.5.1 *Mining region*

The region is located in the north-western corner of the municipal area and situated on the Soutpan and Ikgomotseng nodes (Figure 4.11). The region is on the R700 and R703 corridors linking Soutpan with Bloemfontein and Dealesville with Brandfort via Soutpan respectively. The salt is abundant in this region, which is mined informally. The revitalisation of the salt mining industry is a strong focus of the MMM.

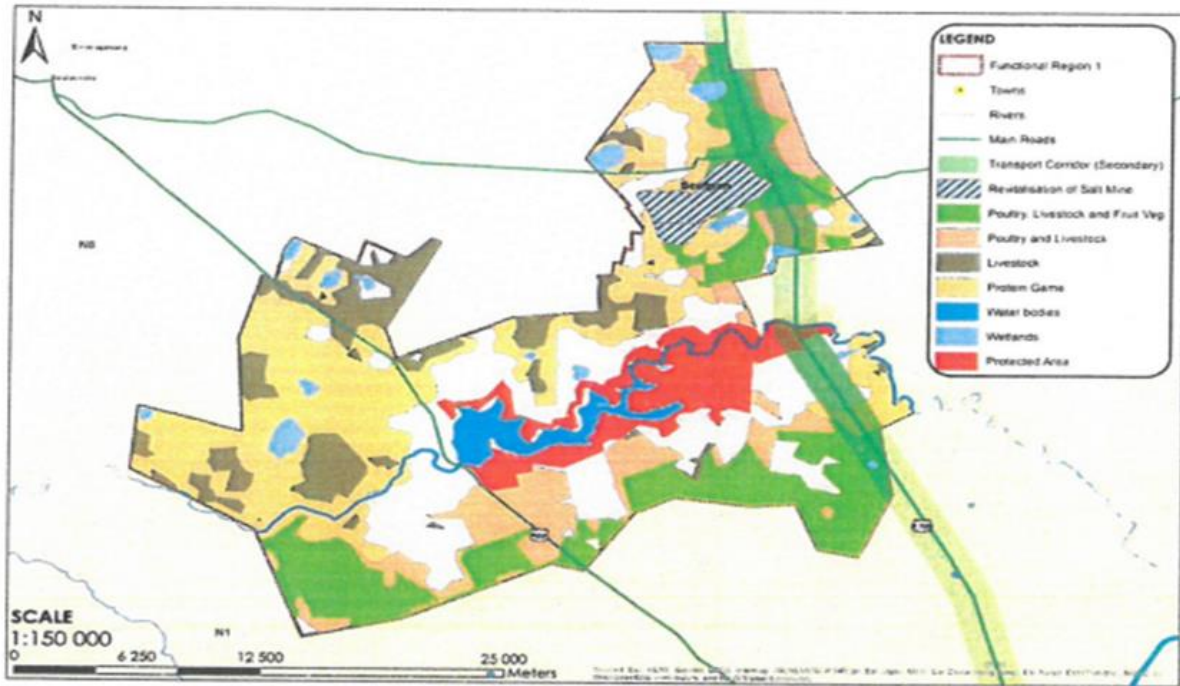


Figure 4.11: Functional Region 1: Mining

4.2.2.5.2 *Intensive agricultural region*

This functional region is on the western border of the municipal area (Figure 4.12). It comprises the Glen Agricultural College, which is on the R30 west of the N1, the Lengau Experimental Farm, and the De Brug military training site. The other corridor in this region includes the N6, N8, R64, R702, and R706.

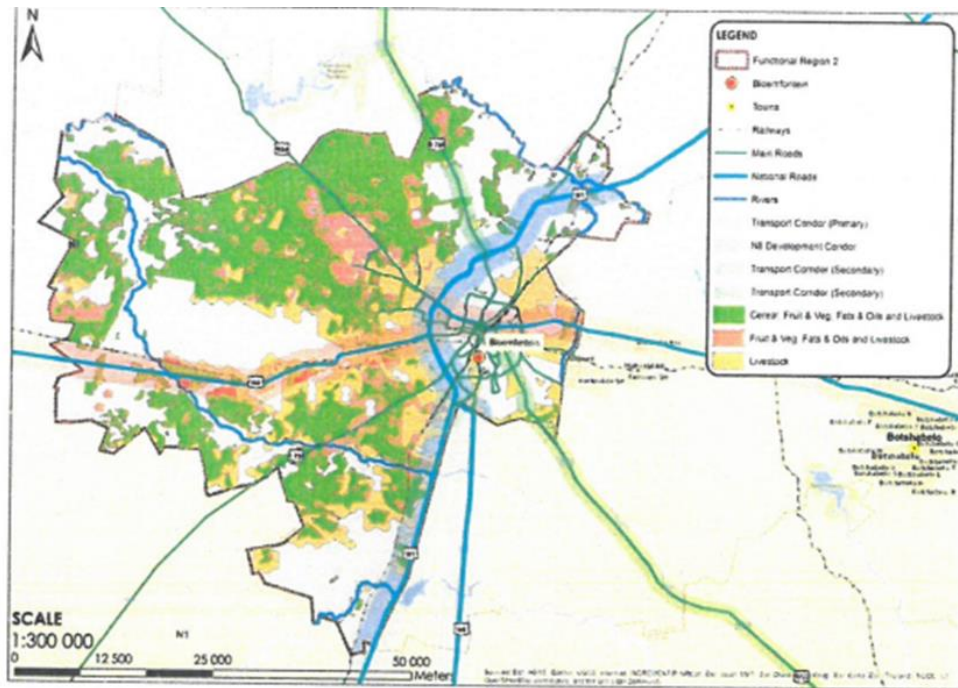


Figure 4.12: Functional Region 2: Intensive agricultural

4.2.2.5.3 *Catalytic intervention region*

This is located in the north-eastern corner of the municipal area (Figure 4.13). The nodes of this region include Thaba Nchu, Seloseshu, various formalised villages, and 37 non-formalised rural villages. The N8 serves as the main corridor linking Thaba Nchu, Botshabelo, and Bloemfontein. The main focus of this region is making Thaba Nchu an economic growth point, which includes the development of the agri-hub, strengthening of farmer productive units, tenure reform, and the improvement of the rural villages to serve as more effective centres.

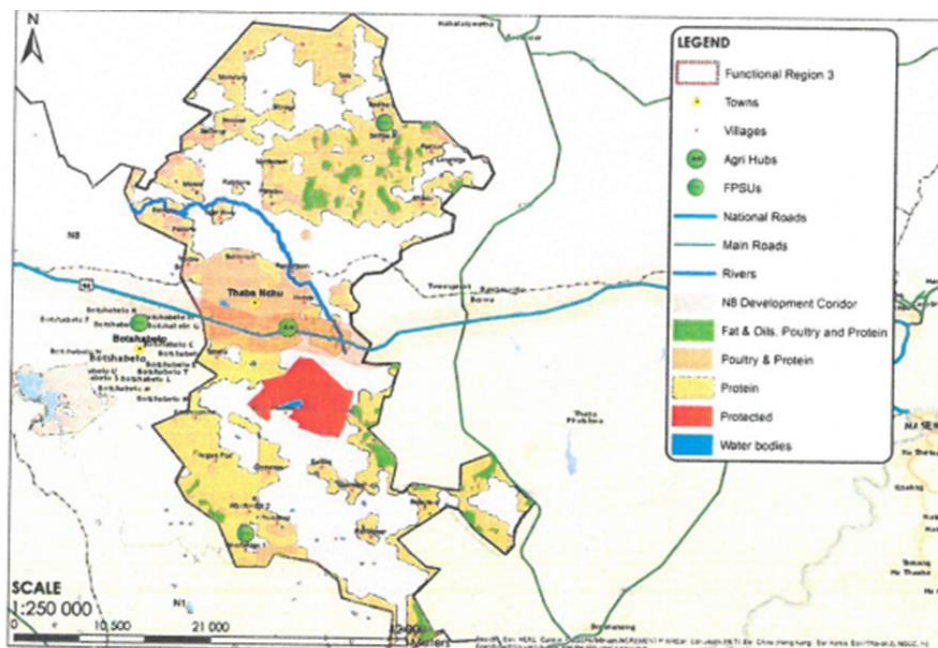


Figure 4.13: Functional Region 3: Catalytic intervention

4.2.2.5.4 *Priority land reform region*

This region is at the centre of the municipal area (Figure 4.14). The region is in Botshabelo and the outskirts of the Bloemfontein west nodes. The N8 is the main corridor. The focus is on land reform projects and state-owned land in the area.

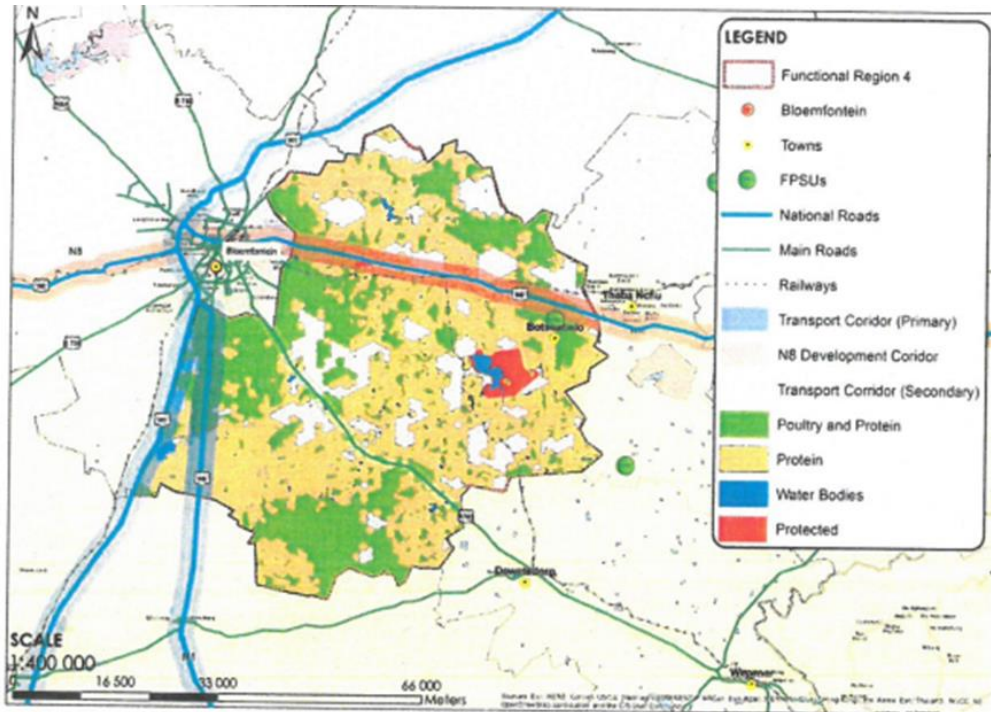


Figure 4.14: Functional Region 4: Priority land reform

4.2.2.5.5 *Tourism region*

The location of this region is south-east of MMM (Figure 4.15). The nodes of this region are Dewetsdorp on the R702 linking to Bloemfontein, and Wepener which is on the R26 linking to Vanstadensrus. The R701 links Wepener with Gariep Dam via the Caledon Nature Reserve. This region is focused on the Caledon Nature Reserve, its pristine environment, the gateway to Lesotho, and historical monuments.

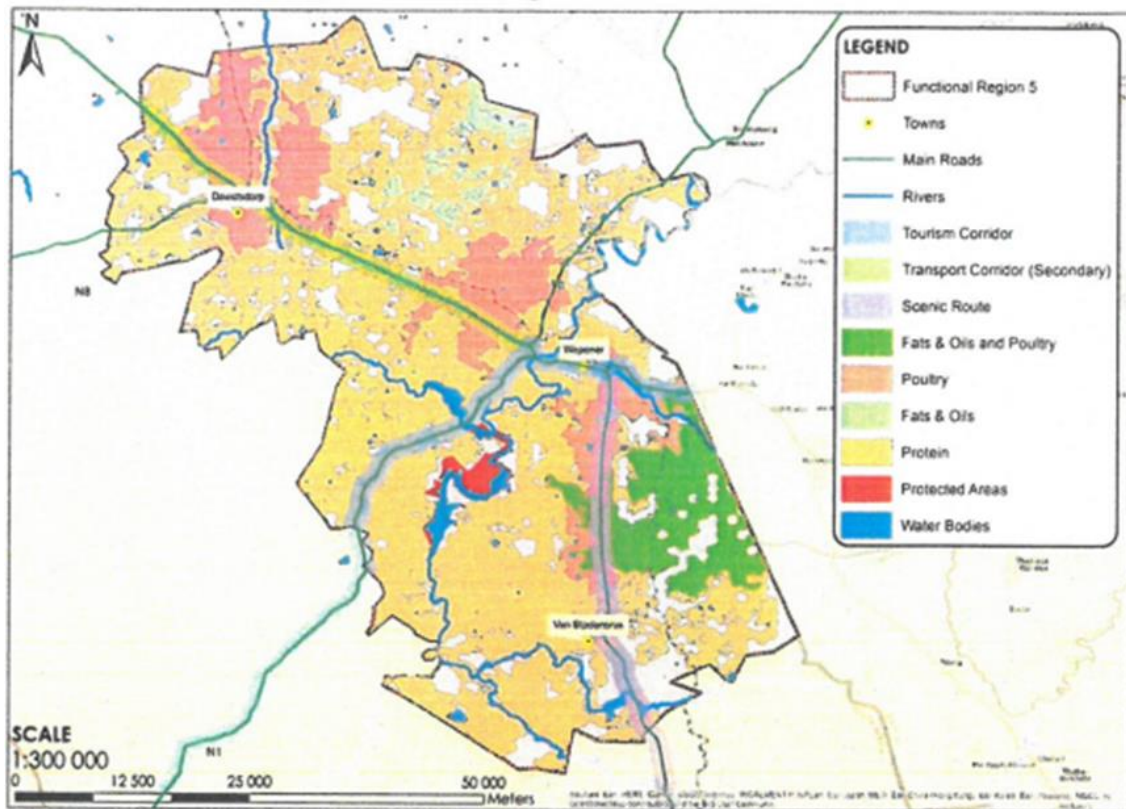


Figure 4.15: Functional Region 5: Tourism

4.2.3 Sustainable community methodology

The MMM aligns with the principles of its IDP to uphold eight key priorities:

- poverty eradication, rural and economic development, and job creation;
- financial sustainability e.g., revenue enhancement, clean audit;
- spatial development and the built environment;
- basic service delivery: eradication of the bucket system, VIP toilets in Botshabelo, Mangaung, and Thaba Nchu, focus on the basics, building solar farming, power plant feasibility, safety and security;
- integrated human settlement;
- integrated public transport;
- environmental management and climate change; and
- social and community services.

Furthermore, the city is adamant about maximising development and this is aimed at putting different strategies into place. These strategies are as follows:

- a) using integrated transit-oriented development by facilitating development along transport corridors;

- b) urban networks;
- c) identifying integration zones to crowd-in future investments; and
- d) locating catalytic projects within the integration zones.

4.3 FURTHER SPATIAL DEVELOPMENT FRAMEWORK INTENTIONS FOR THE CITY INTEGRATED TRANSPORT PLAN

The municipality has seven urban centres, namely Bloemfontein, Botshabelo, Thaba Nchu, Soutpan, Dewetsdorp, Wepener, and Vanstadensrus that were considered for further spatial development framework intentions that are linked to the CITP. The traffic count results have assisted the chapter by identifying routes with the most transit to enhance economic spin-offs through spatial initiatives. This section, therefore, consists of two sub-sections, namely:

- 1) the identification of routes for further development; and
- 2) the enhancement of nodal developments and transport development corridors.

4.3.1 Identification of routes for further development

The identification of routes for further development is based on identifying major routes in both urban and rural areas.

4.3.1.1 Rural routes for further development

The rural routes are the N8, R702 and R64 that connect the urban centres in the municipality. The N8 that connects Botshabelo and Thaba Nchu to Bloemfontein is an asset of SANRAL, and is in a well-kept condition. The R702 connects Wepener, Vanstadensrus, and Dewetsdorp to Bloemfontein, and needs maintenance work on certain parts and expansion in the agricultural regions to encourage more access to such markets. The R64 to Soutpan plays a pivotal role to link it to Bloemfontein along with agricultural markets within that region, and maintenance and upgrade could encourage more movement.

4.3.1.2 Urban routes for further development

The identification of routes for further development is based on identifying major routes in and around the urban centres in the municipality. Each urban centre is therefore discussed based on traffic count results that are used to identify routes for further development.

4.3.1.2.1 Bloemfontein

Bloemfontein as the main urban centre of the municipality and the Free State Province attracts the most transit through a wider range of routes. To sufficiently express its magnitude these are discussed in two sections, namely:

- 1) major access routes to Bloemfontein, and
- 2) inner-city transit.

Major access routes to Bloemfontein

The major access routes to Bloemfontein are Kenneth Kaunda Road, Nelson Mandela Drive, Walter Sisulu Road, Curie Avenue, OR Tambo Road, Dr Belcher Road, the N8, and Raymond Mhlaba Road. Based on the summary of the traffic count through arterial roads in Bloemfontein (Figure 4.16), Nelson Mandela Drive and the N8 road demonstrated the highest transit, which triggers the more urgent attention for route identification to manage and reduce the traffic in the short to medium term. However, roads such as Kenneth Kaunda Road, OR Tambo Road, Curie Avenue, and Walter Sisulu Road require future route identification in the medium to long term.

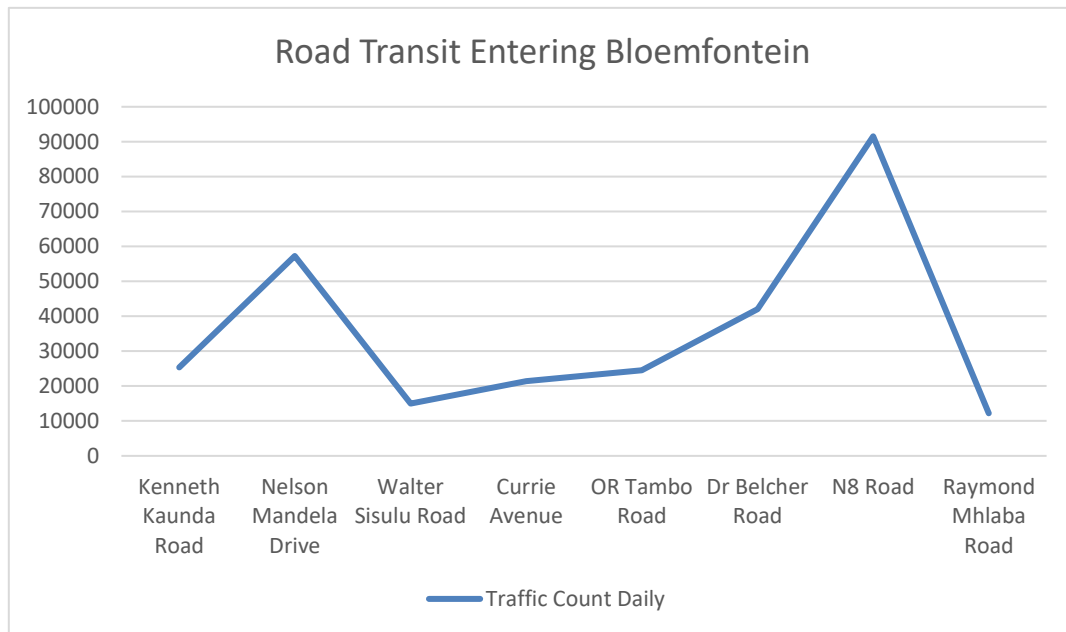


Figure 4.16: Summary of traffic count through arterial roads entering Bloemfontein

Inner city transit

The traffic transit within Bloemfontein however increases on the inward along routes that lead to the CBD. The 12 arterial roads that carry most of the transit in and out of the Bloemfontein CBD are:

- Dan Pienaar Drive
- Albrecht Street
- Milner Road
- Raymond Mhlaba Road
- Nelson Mandela Drive
- N8 road
- Parfitt Avenue
- Curie Avenue
- OR Tambo Road

- Henry Road
- Fort Street
- Dr Belcher Road

Figure 4.17 depicts the traffic count of transit that access the Bloemfontein CBD. The N8 road, Curie Avenue, Fort Street, and Dr Belcher Road carry the most traffic and have the greatest need for further development.

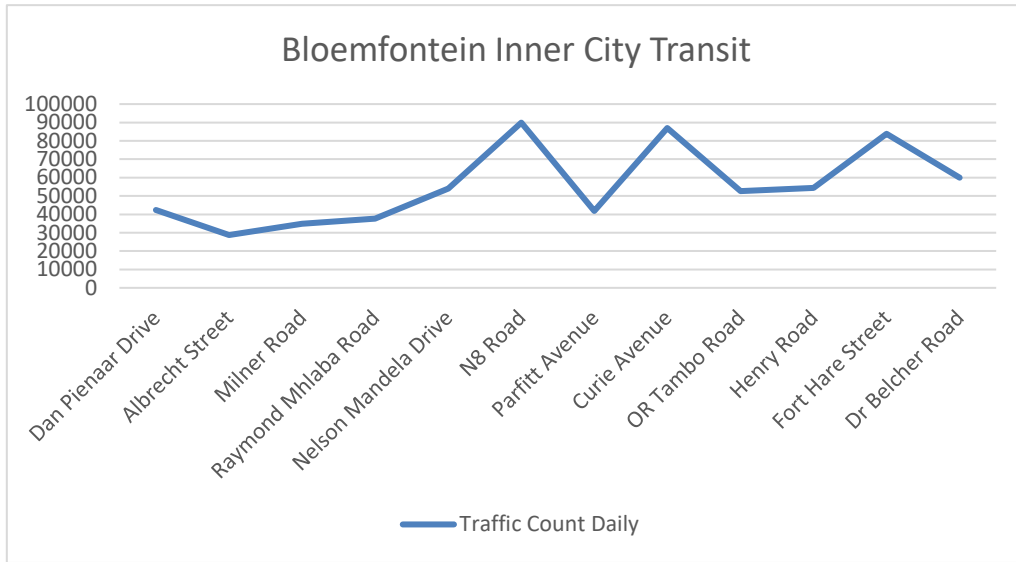


Figure 4.17: Bloemfontein inner city transit traffic count

4.3.1.2.2 Botshabelo

In Botshabelo, a traffic count was done on the main and Botshabelo West roads that provide primary access to the town. However, based on the traffic count shown in Figure 4.18 the results do not suggest a need for identifying further routes of development.

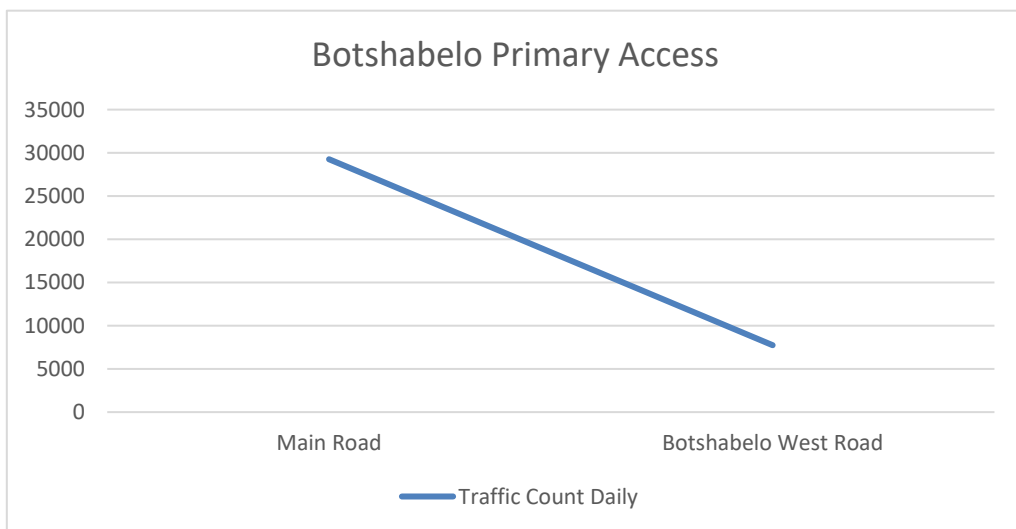


Figure 4.18: Botshabelo road transit traffic count

4.3.1.2.3 *Thaba Nchu*

In Thaba Nchu, a traffic count was done on the Thaba Nchu West Road, Brand Street, and van Riebeeck Street, which provide primary access to the town. However, based on the traffic count shown in Figure 4.19 the results do not suggest a need for identifying further routes of development.

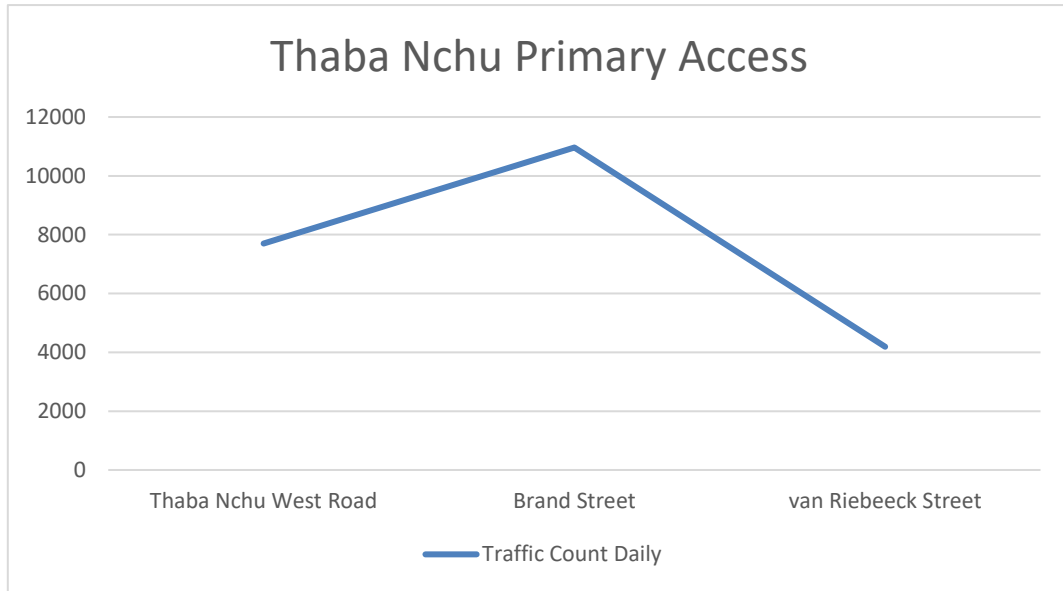


Figure 4.19: Thaba Nchu Road transit traffic count

4.3.1.2.4 *Wepener*

In Wepener, a traffic count was done on Church Street, Keet Street, and Van Aardt Street that provide primary access to the town. However, based on the traffic count shown in Figure 4.20 the results do not suggest a need for identifying further routes of development.

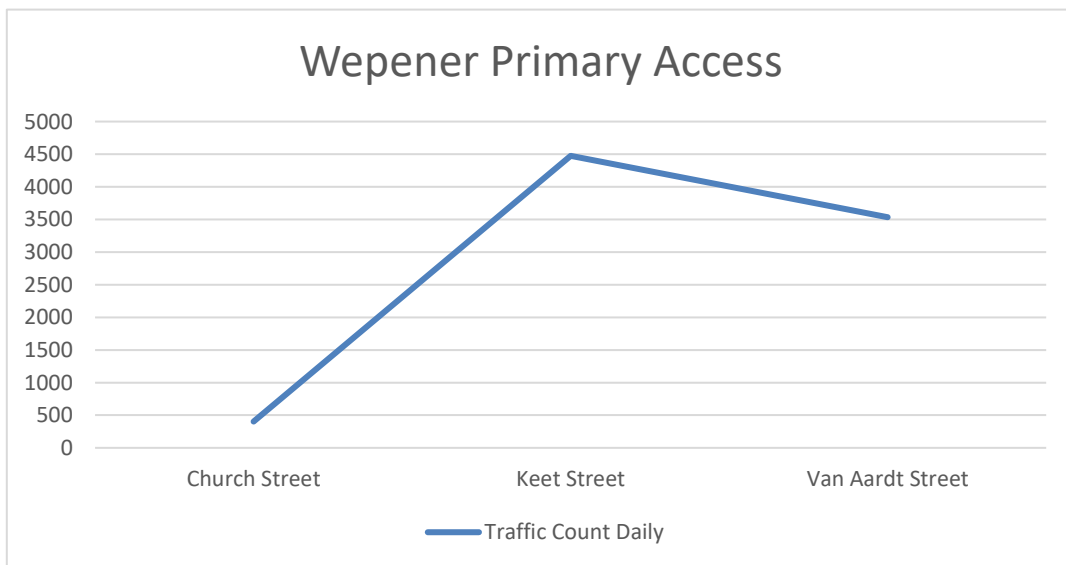


Figure 4.20: Wepener Road transit traffic count

4.3.1.2.5 Dewetsdorp

In Dewetsdorp, a traffic count was done on Voortrekker Street, Church Street, and Morojaneng Township Access Road which provide primary access to the town. However, based on the traffic count shown in Figure 4.21 the results do not suggest a need for identifying further routes of development.

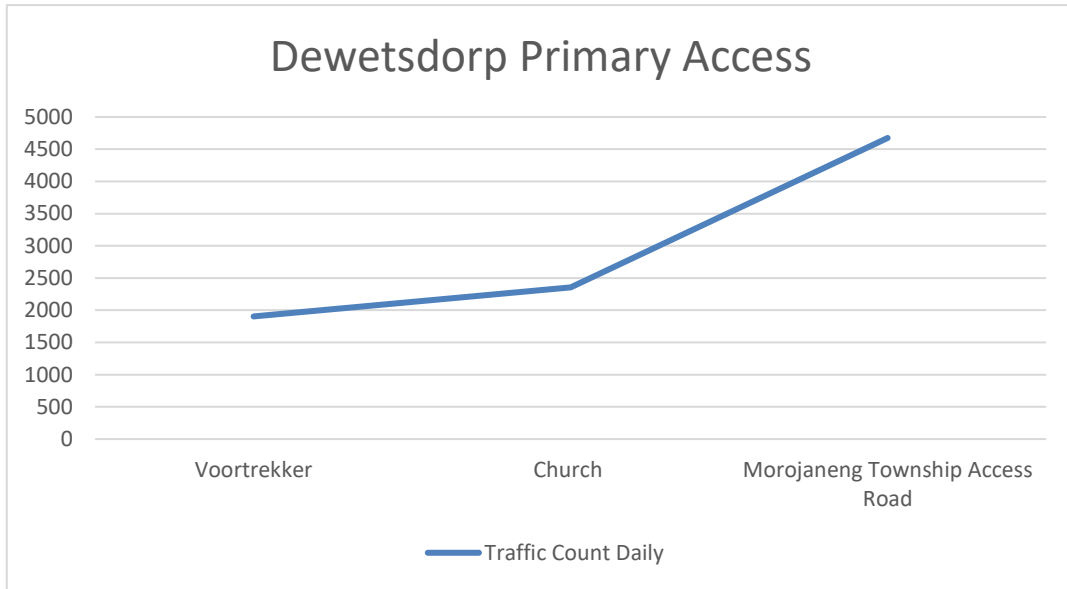


Figure 4.21: Dewetsdorp Road transit traffic count

4.3.1.2.6 Vanstadensrus

In Vanstadensrus, a traffic count was done on Francina Street which provides primary access to the town. However, based on the traffic count shown in Figure 4.22 the results do not suggest a need for identifying further routes of development.

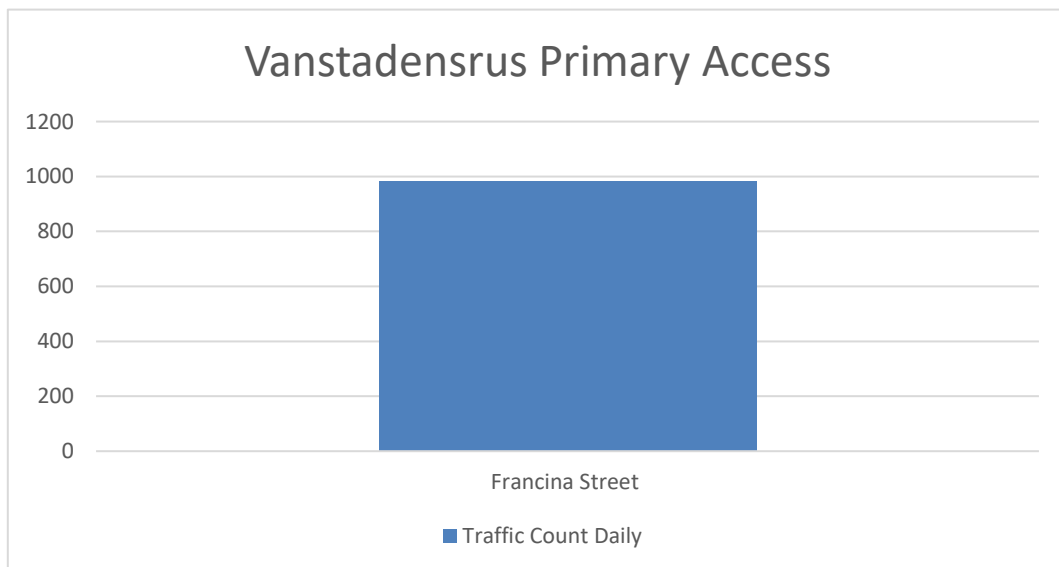


Figure 4.22: Vanstadensrus Road transit traffic count

4.3.1.2.7 Soutpan

In Soutpan, a traffic count was done on the Ikgomotseng Township Access Road which provides the primary access to the town. However, based on the traffic count shown in Figure 4.23 the results do not suggest a need for identifying further routes of development.

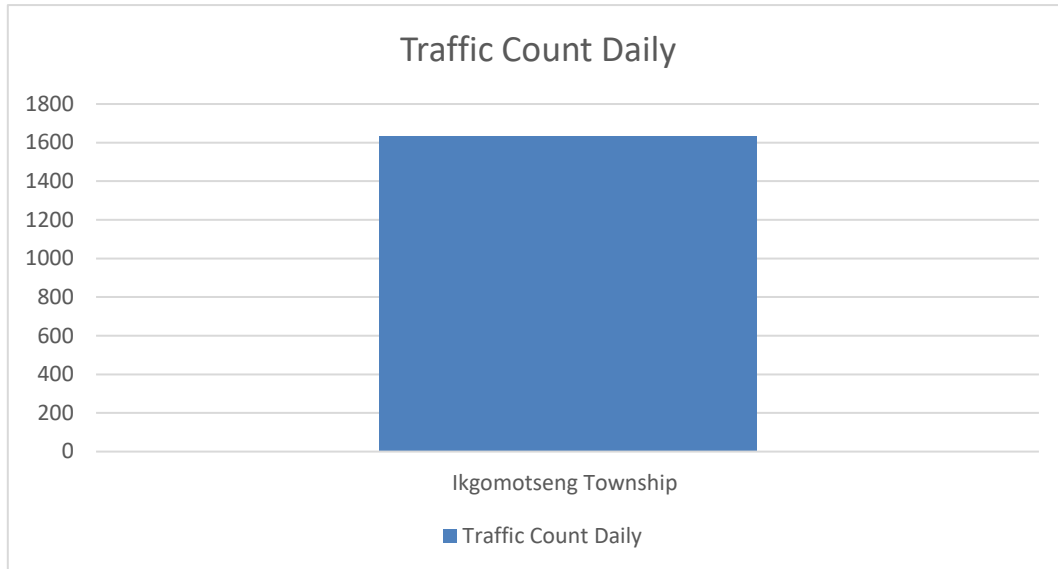


Figure 4.23 Ikgomotseng Road transit traffic count

4.3.2 The enhancement of nodal developments and transport development corridors

As already stated, the N8 road, Nelson Mandela Drive, Curie Avenue, Fort Hare Street, and Dr Belcher Road (Figure 4.24), as highlighted in red, attracted the most transit making them suitable routes for enhancing nodal development and proposing transport development corridors that can be enhanced through spatial planning.

Nelson Mandela Drive provides both primary access to Bloemfontein and transit between the city and the western suburb of Langenhovenpark and related small holdings in Bainsvlei. To the westmost part of Nelson Mandela Drive, the medium-term development should be prioritised to capitalise on the transit as a future development node.

For 4.74 km, Dr Belcher Road only has a Type 3 node according to the Bloemfontein SDF 2020 at the southern tip of the road. The city has had further residential development south of Dr Belcher Road along Dewetsdorp Road. This indicates a potential for a corridor that enhances the connectivity between the Type 3 node and Bloemfontein CBD. Therefore, the municipality has an opportunity to develop spatial initiatives to enhance economic spin-offs along the route for both Heidedal and Mangaung Townships.

Curie Avenue over its approximately 5.46 km is a potential corridor that currently has Type 2 and 3 nodes according to the Bloemfontein SDF 2020. This is another potential corridor that the municipality can capitalise on by proposing spatial initiatives to tap into the transit along this route.



Figure 4.24 Major roads and inner-city access routes

Fort Hare Street leading to Maphisa Road is an approximately 4.4 km long road that has the most potential that can establish nodes. By declaring this route as a corridor, it can yield economic spin-offs through spatial initiatives that create a node to better the livelihoods that enhance the Mangaung Township.

The N8 road (western Maselspoort Road) which is approximately 2.94 km long and links Bloemfontein to Botshabelo and Thaba Nchu largely has a railway precinct and MOSS towards the CBD. The railway precinct can be enhanced to include freight movement that can provide logistics that link the municipality, surrounding towns, and the neighbouring country of Lesotho and establish a node in the process. The N8 road (eastern Maselspoort Road) which is approximately 2.95 km is part of medium-term spatial initiatives according to the Bloemfontein SDF 2020 that form part of a Future 3 nodal hierarchy. The declaration of this portion of the Maselspoort Road can therefore enhance the N8 road corridor which can also yield economic benefits for the municipality.

4.4 CONCLUSION

The CIP finds its physical expression through the Spatial Planning Framework to address challenges faced within MMM in this regard. The SDF was a critical tool to be considered because of its synthesis of spatial initiatives of various municipal sector plans that need to find expression in sustainable transport planning. The MMM Integrated Transport Network further considered multiple modes of transport that the municipality considers to be worth looking into. The sustainable community methodology introduces the interests of the community as expressed within the IDP to ensure that the municipality is inclusive in dealing with transport-related matters. By furthering Spatial Development Framework intentions, the CIP will be able to be physically implemented to generate economic benefits for the municipality.

CHAPTER 5: TRANSPORT NEEDS ASSESSMENT

The Department of Transport's minimum requirements state that the Transport Needs Assessment must determine and adequately describe the transport-related issues, problems, and needs of the municipality and its residents based on the following:

- an assessment of issues, problems, trends and performance standards revealed by the TR.
- a process of public participation and feedback aimed at identifying the needs of the community.
- present and future demand estimation.
- emergency services routes access.
- CBD parking demand.

Furthermore, the upgrading and maintenance needs of all roads and public transport facilities for which the MMM is responsible must be identified. The need for new roads and facilities must also be identified and reference must be made to any infrastructure management systems employed by the authority.

As a result, this chapter was developed taking into consideration the information contained in the TR, community surveys, and guidance received by various stakeholders.

The survey used a questionnaire at various schools and around the public transport facilities to interrogate the functioning and the gaps in the current public transport system.

5.1 NEEDS IDENTIFIED FROM THE TRANSPORT REGISTER

During the completion of the TR, the following key issues or challenges affecting public transport in the MMM were identified:

- improvement (and introduction) of public transport facilities and road infrastructure, especially in rural areas;
- more accessible and affordable public transport for the rural community and special needs users;
- improvement of road safety and law enforcement; and
- improvement of emergency routes.

5.1.1.1 Taxi facilities

There is only one formalised taxi rank facility in Bloemfontein that serves both local and long-distance trips. The Majakathata Taxi Rank facility is still functional with the availability of most of the basic needs including shelter, and ablution facilities. The remainder of the ranks in Bloemfontein are in an informal setting, or they are mainly set up for business. Taxi ranks that are in an informal setting occupies the lanes along the following roads:

- Harvey Road
- Hanger Street
- Oos Burger Street
- Peet Avenue
- Douglas Street
- Bastion Street
- St Georges Street
- Fichardt Street
- Charlotte Maxeke Street
- St Andrews Street

The public transport modes occupy the parking and the lanes along the above-mentioned streets. This reduces parking capacity as well as the capacity of the road in terms of the traffic volume it is designed for.

Taxi routes are dependent on the municipal road infrastructure maintenance strategy. A functional route must be well maintained and avoid delays experienced due to potholes and ponding water. The majority of taxi operators that operate towards the areas in the south of Bloemfontein complains mainly about poor access to the roads in the townships. Botshabelo also has inaccessible routes due to poor road conditions.

5.1.1.2 Bus facilities

The majority of the bus facilities are in a good state with a formalised infrastructure setting. The basic services are available at these facilities across MMM including ablution facilities, lights, and shelter.

Similar to the taxi operators, there is in general poor access in areas in the south of Bloemfontein due to roads that are not in a good condition.

5.1.1.3 4 + 1 taxis

The 4+1 rank facility is located along the road on Douglas Street. The 4+1 taxis in Bloemfontein serve the following local destination trips:

- Bochabela
- Phahameng
- Batho
- Maphisa

The rank facility is informal does not have facilities to provide basic needs. During the rank surveys, it was discovered that the 4+1 taxis become fully loaded with passengers at the rate of having eight 4+1 vehicles leaving at the same time during peak hour periods.

5.1.1.4 Metered taxis

The following metered taxi companies exist in Bloemfontein:

- Eddy Meter Cab

- Let It Be A Cab
- Bloem Taxi
- Tshepo Meter Taxis
- Bloemfontein Meter Taxi
- JR Maxi Taxis
- KGK and AMP Taxis
- Rooikat Taxis
- TM Meter Taxis
- Big Boy Meter Taxi Services
- Alfa Taxis
- Free State Cab
- Nyathe Taxis
- Pro Taxis
- Cya's 24/7 Meter Taxi

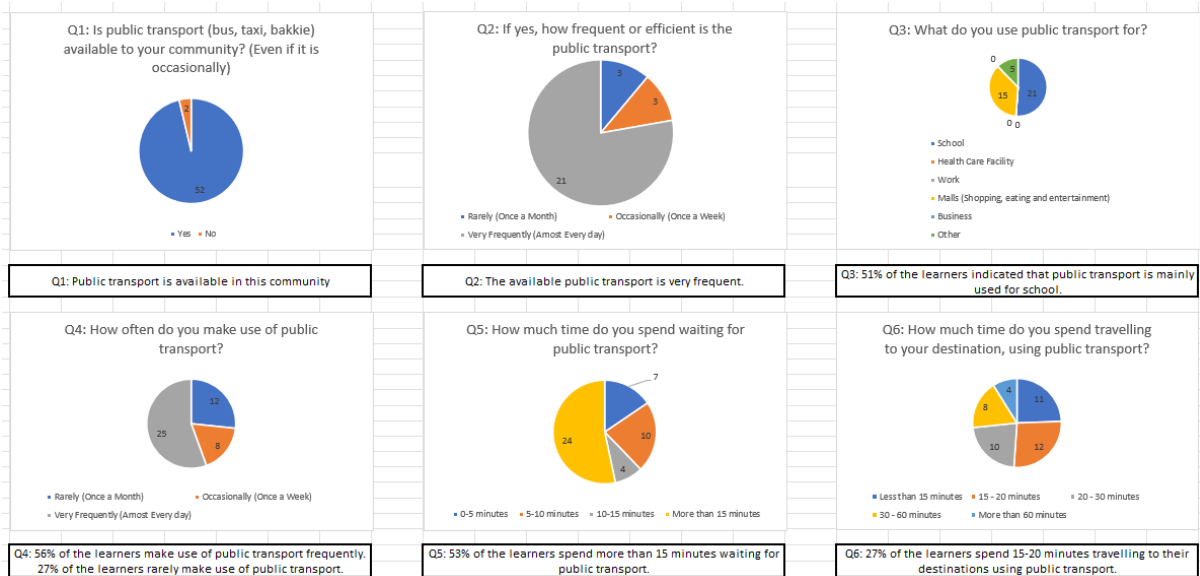
These are personalised on-demand services, offering both first/last mile and longer distance taxi services. Metered taxis are more costly compared to the usual minibus taxi services. They are usually centralised around the CBD, malls, shopping centres, and most urban areas in the north and west of Bloemfontein. Most areas in the south of Bloemfontein with a lower cost of living, depend heavily on 4+1 taxis, and minibus taxis. These services usually have a waiting period where passengers have to wait for the taxis to be full before departing at the rank. Consultation and sharing of information with the RMTA was unsuccessful. From the list above, it is not clear which metered taxi companies are registered with the RMTA.

5.2 NEEDS IDENTIFIED FROM THE COMMUNITY SURVEY

The results of the questionnaires from various public schools are presented in Annexure D. The following results indicate what to expect from the survey results from various schools. The results do confirm the availability of public transport in various communities, especially to hospitals, shopping centres, and schools. The questionnaires were designed in such a way that any community member can understand and populate their individual experience when it comes to public transport.

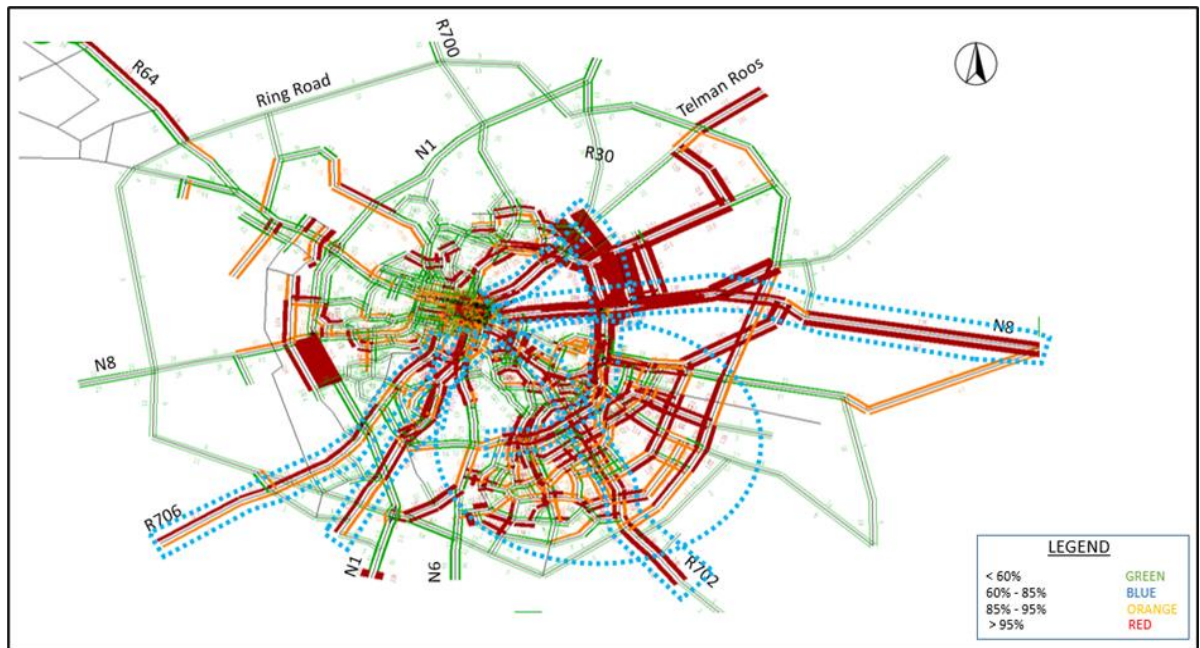
The same survey templates were shared with the MMM to share with ward councillors to carry out this exercise as part of the Mangaung Transport Register record.

Moroka Secondary School feedback



5.3 TRANSPORT DEMAND ESTIMATION

The TDM strategy will elaborate further on the current demand and future estimation of the road network. It is worth noting in this chapter that the majority of the road infrastructure has enough lanes to accommodate the current transport demand on the various road networks.

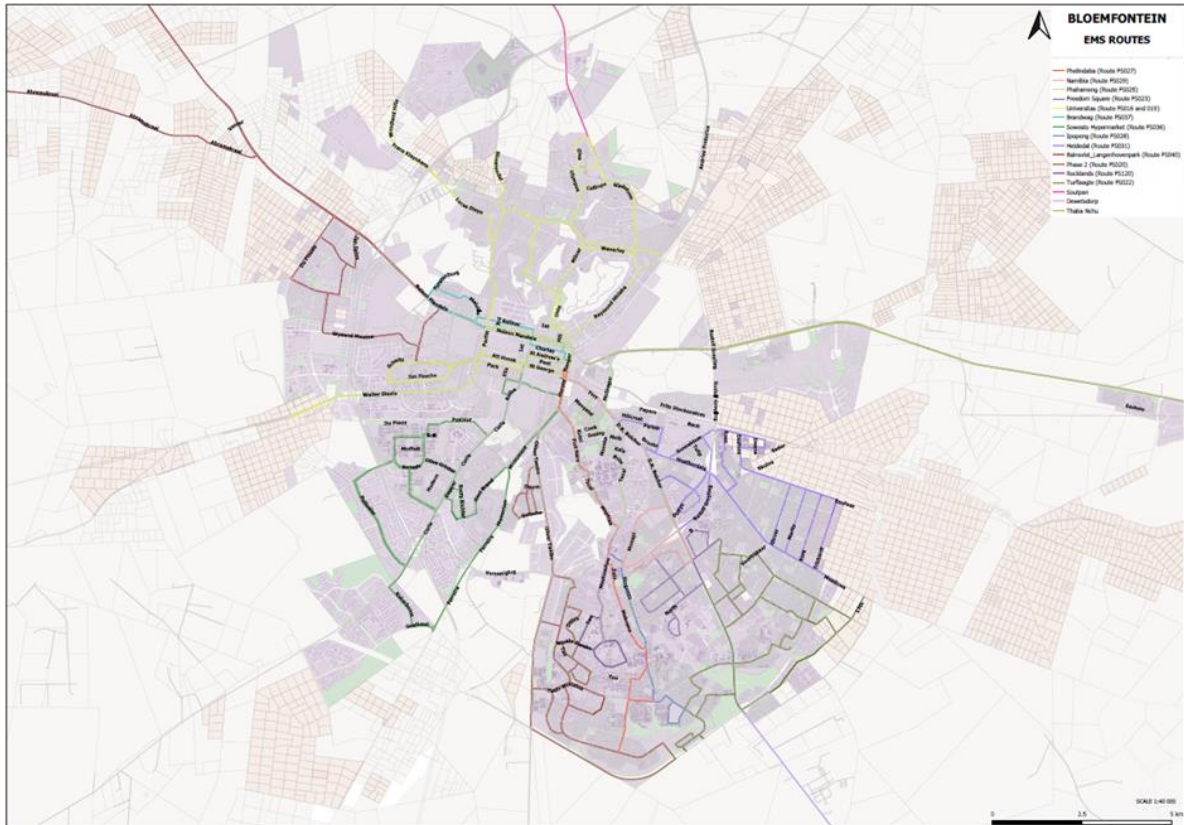


5.4 MANGAUNG CENTRAL BUSINESS DISTRICT PARKING

Availability of safe parking space in the CBD is an issue to motorists. The report will explore the parking space availability in the CBD and parking strategies to minimise this problem.

5.5 MANGAUNG EMERGENCY SERVICES

The map in Annexure D shows the current emergency services routes within the MMM area. The report on stakeholder engagement will elaborate more on the experiences of access on these emergency routes. It is worth noting that the poor state of the roads in the south of Bloemfontein has created problems for emergency services. Emergency routes needs to be on the priority list of the MMM repair and roads maintenance strategy.



5.6 NEED FOR ROAD MAINTENANCE

Based on the RAMS data, it is revealed that gravel roads constitute the majority, accounting for 63.32% of the total road network within the Mangaung Metro Municipality. Just like surfaced roads, gravel roads also require maintenance. Implementing a road maintenance strategy for existing roads plays a vital role in the overall efforts to enhance the introduction of the Integrated Public Transport Network (IPTN) and improve the transportation systems within the MMM. By prioritizing road maintenance, the Municipality can ensure that both surfaced and gravel roads are in good condition, promoting safer and more efficient travel for all road users. This maintenance strategy will contribute to the overall objective of establishing a reliable and integrated transport system within the Mangaung Metro Municipality.

5.7 NEED FOR NEW ROAD NETWORK

From the IPTN, the following new roads are proposed within

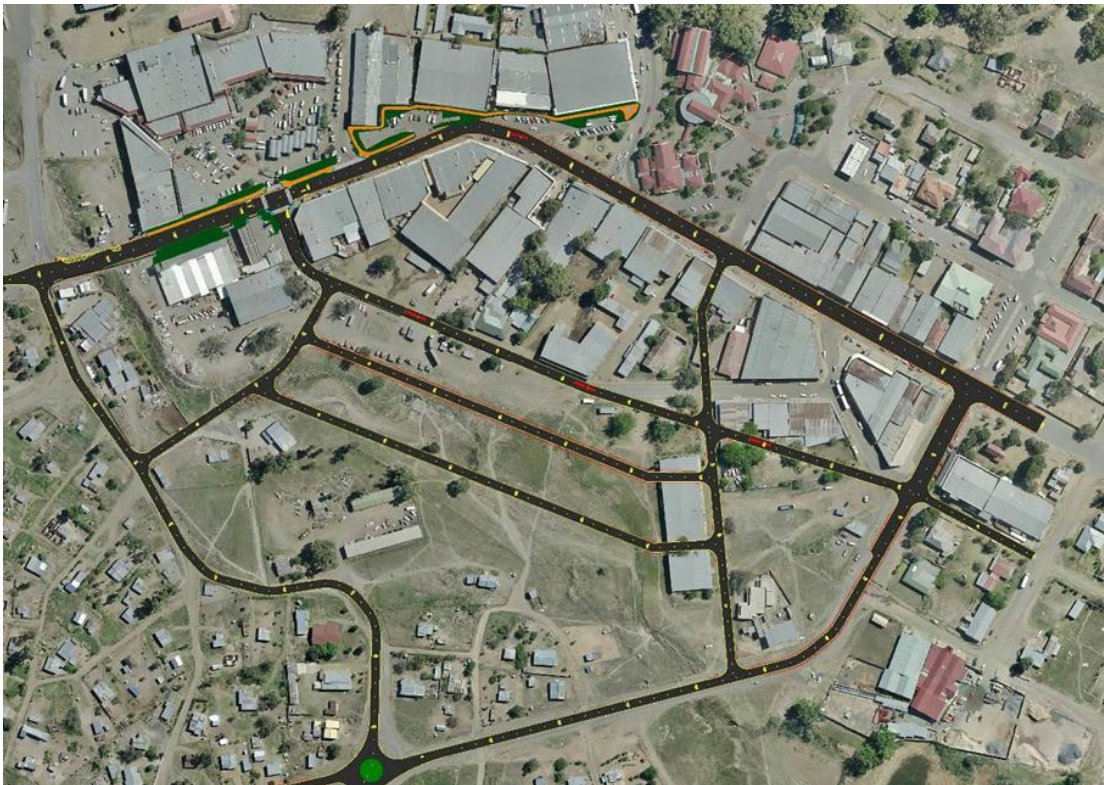
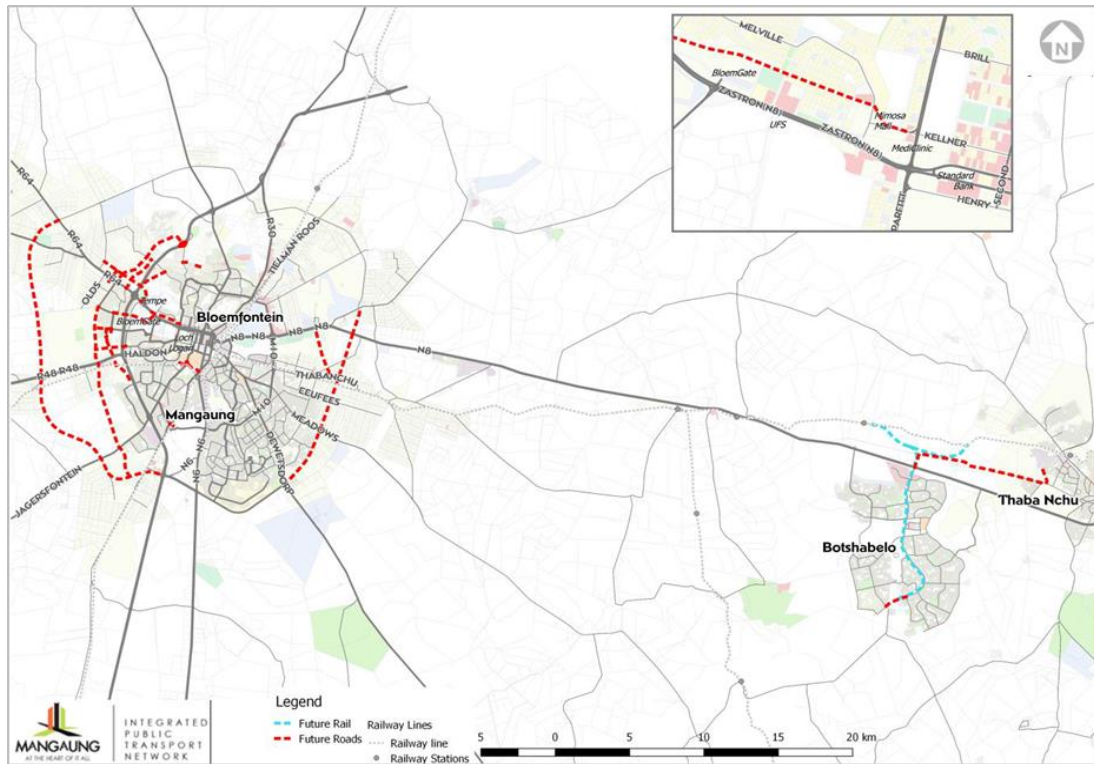


Figure 5.1: Proposed roads in Bloemfontein, Botshabelo and Thaba-Nchu

CHAPTER 6: PUBLIC TRANSPORT PLAN

6.1 BACKGROUND

The legislative requirement for the preparation of ITPs is found in the National Land Transport Act, 2009 (Act No. 5 of 2009). The 2016 Minimum Requirements for the Preparation of ITPs sets out the types of plans that several types of municipalities would need to prepare. Furthermore, the minimum requirements provide the technical guidelines for the preparation of all components of the ITP.

The MMM previously prepared an ITP for the period 2006 to 2011, and it was prepared for the erstwhile Mangaung Local Municipality (MLM) which is part of the Motheo District Municipality. Unfortunately, the MLM ITP was never updated or overhauled (as is the legal requirement). This CITP is therefore the first for the MMM since it attained metropolitan status in May 2011.

The MMM was one of 13 municipalities chosen to plan and implement Integrated Rapid Public Transport Networks (IRPTN) within its boundaries. During the IRPTN planning process, it was decided that the approach would be for a city-wide IPTN plan, since not all parts of the network would include the rapid component of the Public Transport Strategy.

From a contextual perspective of the NLTA and minimum requirements, the IPTN plan must be included in the CITP. The Integrated Public Transport Plan was developed for the period 2015 to 2036 and contained information, data, policy and strategies with respect to the MMM IPTN. The CITP and the chapter on the Public Transport Plan (PTP) would focus on the next five years of the IPTN. The 16-year IPTN plan would not incorporate all public transport aspects in the five years of the CITP, therefore the focus of the PTP would be for the five years of the CITP.

This report provides the current state of public transport in the MMM. It reviews the ITP prepared in 2006 and analyses the impact of the current IPTN systems plans as well subsidised bus services and minibus taxi-type services.

The intention, therefore, is to identify gaps in the ITP such as growth in public transport services, and new areas incorporated into the MMM area so that it may guide the development of the PTP.

6.2 SCOPE OF THE PUBLIC TRANSPORT PLAN

The PTP is reliant on data and information from various sources. Chiefly among this is the TR, which consists of data collected through surveys as well as data and information from other sources such as the Operating License Administration System (OLAS), the Subsidy Management System (SUMS), the MSDF, the IDP and the IPTN plan. Extensive data had been collected and analysed through the IPTN planning process. This data is still relevant and would be supplemented where possible. It is assumed that the analysis provides the core for the PTP and will include the following:

- the status quo;

- policies and strategies as it relates to public transport;
- overall network design i.e., city-wide network; and
- OLP.

The report will follow the minimum requirements for the PTP and many areas that are included in the minimum requirement may be merged and consolidated into other areas of this plan. This plan is divided into four parts:

- Part 1 will deal with the status quo;
- Part 2 focuses on the policy and strategy as it relates to public transport;
- Part 3 includes the overall network design; and
- Part 4 includes the OLP.

6.3 PART 1: PUBLIC TRANSPORT STATUS QUO AND GAP ANALYSIS

6.3.1 Introduction

The municipality prepared, in terms of the National Land Transport Transition Act of 2000 (NLTTA), the ITP for the period 2006 to 2011. The need for an annual update and a complete overhaul of the ITP every five years was a requirement in the NLTTA and is still a requirement in respect of the NLTA.

There have been important developments in Mangaung since the 2006 ITP was developed:

- Mangaung became a metropolitan municipality.
- The Public Transport Strategy and Action Plan was adopted by the Cabinet; and
- Mangaung is one of 13 municipalities selected to implement the Public Transport Strategy's IRPTN.

The ITP was never updated, and there is no indication that it was ever approved by the MEC for Transport in the Free State Province. The planning for the IRPTN and IPTN is therefore not included in the Mangaung ITP.

This report provides the current state of public transport in the MMM. It reviews the ITP prepared in 2006 and analyses the impact of the current IPTN systems plans as well subsidised bus services and minibus taxi-type services.

The intention, therefore, is to identify gaps in the ITP such as growth in public transport services, and new areas incorporated into the MMM area so that it may guide the development of the PTP.

6.3.2 Purpose and Requirements for public transport plan

Section 36 of the NLTA provides for ITPs to be prepared by municipalities. In 2014 the Minimum Requirements for the Preparations of Integrated Transport Plan was promulgated. This guides the

development of the ITP. The PTP is an important component of the ITP. Key aspects from the TR and the Transport Needs Assessment influence the preparation of the PTP.

The objective of the PTP is to ensure that all aspects of public transport policy, planning and service provision are in place that would ensure integration, quality services and rationalisation to meet the demands of users and the developmental needs of the municipality based on the IDP and the SDF. For the status quo report, the minimum requirements for the PTP will be used to assess the public transport aspects of the 2006–2011 ITP, the IPTN/IRPTN Plans, contracted and non-contracted services as well as rail services.

The status quo report will serve the purpose of identifying gaps based on the minimum requirements for the preparation of the PTP, which includes the following:

- Public Transport Policies and Strategy of the MMM
- Overall network design linked to city-wide IPTN
- Commuter Rail Plan
- Contracted Service Plan (including subsidised services and IPTN contracts)
- Non-contracted Services Plan
- OLP.

6.3.3 Mangaung Local Municipality Integrated Transport Plan: 2006 to 2011

At the time of the preparation of the ITP, Mangaung was a local municipality within the Motheo District Municipality. After the local government election in May 2011 Mangaung was designated as a metropolitan municipality. Effectively, the political boundaries and area of jurisdiction have changed from that of the MLM.

6.3.3.1 Mangaung Local Municipality

The ITP was developed for the MLM area of jurisdiction. The area of jurisdiction changed in May 2011 when the MLM became the MMM. The preparation of the ITP for the MLM included using data and updating data and information from the Motheo District Municipality ITP that was prepared in 2005.

6.3.3.2 Public transport status quo

The information contained in the 2006–2011 ITP for PTP was based on the CPTR surveys of the Motheo District Municipality that were prepared in 2005. The Transport Status Quo component included the following:

- Public transport facilities and utilisation i.e., tax ranks and bus termini
- Detailed minibus taxi and bus routes
- Minibus taxi passenger numbers, trips and service utilisation
- Passenger waiting times and service levels
- User costs for minibus taxi services

- Minibus stops en route
- Information on taxi associations including regional taxi structures
- Bus operations information including bus routes, passengers, and subsidies

The review and update of the current public transport situation will be undertaken in the TR, the Transport Needs Assessment and the PTP during the development of the latest CIP.

6.3.3.3 Mangaung Local Municipality Integrated Development Plan and Spatial Development Framework

The ITP contribution and inclusion in the IDP from a public transport perspective included the following priorities based on the regeneration strategy:

- CBD 1: regeneration of the CBD includes promoting pedestrian-friendly facilities and infrastructure. This approach supports the role of public transport in complementing non-motorised transport in the CBD.
- CBD 3: An integrated transport system in the municipal area which included the development of intermodal projects.
- CBD 4: promoting the development of the Mangaung Activity Corridor which would be supported by public transport interventions.

The IDP and the Municipal SDF may have changed since 2006 and the land-use and transport planning would require updating and alignment that would also include the current IPTN plans.

6.3.3.4 Public transport needs assessment

6.3.3.4.1 *Transport operational needs*

The ITP had accepted the transport needs assessment for the Motheo District Municipality that was undertaken in 2005. A critical aspect that was undertaken in the ITP was the route economic viability assessment and utilisation. The assessment at the time found that only 16% of minibus taxi routes operate at an economic loss. Other routes were not excessively profitable. The assessment concluded that there is a need to regulate the allocation of OLs to support sustainable bus and taxi operations.

The ITP also proposed a bus service model for Bloemfontein, the basis of which was to determine the financial impact of a passenger bus service. The routes and areas considered were the Bloemfontein CBD and the surrounding suburbs. It was recommended that the MLM undertake a full feasibility study before taking a policy decision on the provision of the services.

Key concerns of minibus taxi operators were:

- The need for improved law enforcement to reduce illegal minibus taxi operations.

- Overloading control.
- Improvement of informal public transport facilities and loading areas.
- Training and workshops for operators to understand legal implications and obligations in respect of operating licences and taxi recapitalisation.

6.3.3.4.2 *Public transport facilities needs*

The ITP identified public transport facilities that required upgrading and the provision of new facilities. These facilities included ranks termini, bus and taxi stops, and loading and holding areas.

6.3.3.4.3 *Special transport needs*

The need for the provision of services to accommodate special needs passengers, viz. vulnerable groups such as people with disabilities, learners, etc. was recognised.

6.3.3.4.4 *Non-motorised transport need*

The status quo for NMT included routes between residential, retail, industrial and social attractions. It was identified that there is a need to develop an NMT policy. The transport needs assessment provided a broad approach to the transport need of the MLM at the time. This assessment provided the basis for the Public Transport Proposal of the ITP.

6.3.3.5 **Public transport proposal**

The approach to the proposal was the identification of projects that spanned the following categories of projects:

- institutional restructuring
- NMT user
- private transport user
- public transport user

These categories included historical, new, and other stakeholder projects. The list below focuses on the public transport or projects that would complement public transport and included, *inter alia*, the following:

- pedestrianisation of a road in Bloemfontein CBD;
- link Loch Logan to Westdene via NMT infrastructure;
- develop long distance minibus taxi facility in Thaba Nchu;
- upgrading of bus facility at Fourways in Botshabelo;
- upgrading of bus facility in Thaba Nchu;
- implement public transport stops and facilities;
- inter-modal facilities in Bloemfontein CBD;

- extension of Mangaung activity corridor;
- Mangaung N8 corridor development;
- policy development for the provision of public transport facilities at private developments;
- NMT links linking public transport facilities in Botshabelo to improve pedestrian mobility;
- study to identify Bloemfontein East for the position of NMT infrastructure;
- planning project to identify needs for transport services for people with disabilities; and
- planning study for upgrading of informal public transport facilities.

6.3.3.6 Operating Licence Strategy and Rationalisation Plan

The OL strategy identified routes that were not profitable and recommended that no new OLs be issued. On routes that were experiencing very high profit margins, additional OLs would be considered. The OL strategy also suggested a new procedure for the erstwhile Operating Licence Board when dealing with new OL applications. The OL strategy utilised the cost, vehicle occupancy and utilisation based on trip numbers and route distances to inform the OL strategy.

The rationalisation plan considers the effective and efficient use of the bus subsidies through a reduction but not affecting service levels. The majority population in the areas serviced by subsidised bus transport have high levels of unemployment, and the average disposable income is low. Furthermore, many of the trips experience low ridership. Within this context, the rationalisation plan recommendation was:

- Terminate bus service and replace with a modal efficient alternative that would meet the passenger demand.
- Reduce trip frequency.
- Introduce lower capacity vehicles; improve road conditions.

6.3.3.7 Concluding remarks on the 2006-2011 Mangaung Local Municipality Integrated Transport Plan

A period of more than ten years had elapsed since the ITP was either updated or overhauled. During that period there were significant changes and developments in the local and district municipality. These include amongst others:

- Mangaung was declared a metropolitan municipality in 2011.
- The municipal boundaries of MLM changed when the MMM boundaries were declared.
- There has been significant urbanisation and development within the MMM.
- The Public Transport Strategy and Action Plan were adopted in 2007.
- The NLTA was promulgated in 2009 and replaced the NLTTA of 2000.
- The minimum requirements for the preparation of ITPs were published in 2014, changing the public transport planning aspects.

- The MMM was one of 13 cities chosen to implement the Public Transport Strategy by planning and operationalising the IPTN.

With the time-lapse since the preparation of the ITP and the city-wide IPTN planning, the housing and economic development would have significantly changed the public transport environment with the MMM. The need to prepare a new TP and PTP is required.

6.3.4 Mangaung Metropolitan Municipality city-wide Integrated Public Transport Plan 2015–2036

The MMM embarked on intensive planning for the IPTN and developed the Integrated Public Transport Plan. The plan comprises three volumes:

- Volume 1 Introduction and background
- Volume 2 Status quo (Public Transport Register/CITP)
- Volume 3A Status quo Analysis and Needs Assessment
- Volume 3B System Alternative Analysis and Implementation Plan

The following section provides a brief assessment of the aforementioned volumes in respect of alignment with the PTP requirements. The PTP requirements are reiterated and include:

- Policy and strategies
- Overall network design
- Commuter rail plan
- Contracted services plan
- Non-contracted services plan
- OLP

6.3.4.1 Volume 1

This volume sets out the background and the approach adopted for the IPTN extensively. Whilst the legislative requirements are comprehensive it has a fundamental flaw. Unfortunately, parts of the legislative requirements were a “cut and paste” from the 2006–2011 ITP, and the flaw is in respect of the applicability of the NLTTA. This Act was repealed in its entirety in 2009 by the NLTA i.e., a full ten years before the development of the city-wide integrated public transport plan. It is critical in the enabling legislation for the preparation of the CITP and the minimum requirement for its preparation is based on the NLTA. Fortunately, the PTP requirements are based on the 2014 Minimum Requirements to develop Integrated Transport Plans as reiterated above.

6.3.4.2 Volume 2 (Volume 2A and 2B)

The data collected for the IPTN plan from 2014 to 2018 is the most updated. The data was collected to plan a network that meets the needs of the MMM, the users and public transport service providers.

The extensive data collected included the following:

- spatial orientation and demographic profile of the city;
- demographic and economic forecasts (2025; 2036);
- land-use model;
- regional and local travel patterns and mode usage through analysis of the household travel survey 2018 analysis;
- public transport operational areas, the extent of operations through surveys, stakeholder engagements and regulatory body data (from the PRE); and
- current public transport demand based on public transport links, public transport facilities survey, and on-board surveys (bus and taxi).

The data collected was extensive and presented in a manner that assists in interpretation and is ready for analysis. Furthermore, the transport problems experienced by users provide a sense of the challenges faced by users. The report acknowledges the lack of sufficient income data which may influence travel and or mode choices, however, the surveys produced valuable data.

The data in respect of public transport usage was detailed, and unpacked taxi and bus routes, operations, public transport facilities, vehicle and facilities utilisation rates, travel times, waiting times, etc.

6.3.4.3 Volume 3 (Volume 3A and 3B)

These volumes considered the design methodology for the city-wide IPTN and the alignment thereof with the MMMs Public Transport Vision, Goals and Objectives. The status quo of public transport in the city was subjected to a needs analysis based on the potential demand that will be assigned to the IPTN. The data from Volumes 2A and 2B were the base for the needs analysis. The focus in the needs assessment includes the customer profile, the public transport supply, and spatial structure and demand corridors.

The Margaung output included the identification of the Margaung Urban Network and Integration Zone Plan and other aspects such as the land-use, and the derived main origins and destinations based on primary, secondary and minor movements. This was based on demographic, spatial, land-use, public transport operations and customer surveys that were undertaken and included in Volume 2. The analysis also considered the public transport operations based on the modes which included the midi-bus, subsidised bus, metered taxi and long-distance commuter rail. Demand modelling (EMME 4) was undertaken. This assisted in identifying the IPTN Public Transport Demand Corridors as well as Functional Public Transport Corridors that assist in the identification of the city-wide IPTN. The IPTN identification and the approach in the service plan are based on a ten-year implementation horizon of the IPTN. The incremental approach is based on using the current services to continue and scheduled trunk and feeders to be introduced at a later stage.

The service plan incrementally addresses the services for each of the IPTN corridors including fleet requirements and the proposed timeframes for the incremental approach. The service plan is supported by implementation strategies, cost and revenue modelling and business plans.

6.3.4.4 Concluding remarks

The process adopted, including the extensive surveys and data collection exercise undertaken, as well as the analysis undertaken, provides an excellent assemblage of data which is extremely helpful in the development of the PTP for the CIP. The approach in terms of the purpose of the analysis was the focus on the IPTN.

6.3.5 Preparing the public transport plan

The minimum requirements for the PTP is discussed above. Based on the 2006–2011 MLM ITP and the City-wide Integrated Public Transport Plan 2015–2036 the following may be concluded:

- The transport policies and strategies for MMM are in place but would require a high-level review.
- The planning area of the ITP was for MLM and not for the MMM jurisdiction.
- The high-quality data that was collected during the City-wide Integrated Public Transport Plan will, to a large extent still be extremely useful in the development of the PTP.
- The City-wide plan would support the requirement for the overall network design requirement of the PTP.
- The data on contract/subsidised bus services are extremely useful but would require engagement with the Provincial Department of Transport which are currently the contracting authority.
- A non-contracted service plan can be developed based on the mini/minibus taxi data available.
- The preparation of the OLP would require further information and assessment of whether the incremental implementation of the IPTN is on track or not.
- The OLP preparation would need to be developed in close conjunction with the IPTN management team in the city.
- The fact that the latest data was collected in 2018/2019 would require that a review be undertaken to mitigate the impact of the COVID-19 shutdown on transport demand and the effects of unemployment.

6.3.6 Conclusion

The development of a robust PTP would firstly support and promote the IPTN initiative undertaken and would secondly ensure that public transport supply and demand meet the needs of the MMM and its citizens.

The horizon of the PTP is five years whilst the IPTN implementation horizon is 21 years. The incremental approach would then be included in the PTP so that the MMM can manage the public transport challenges in a planned and meaningful way.

6.4 PART 2: PUBLIC TRANSPORT PLAN: POLICIES AND STRATEGY

The MMM Transport Vision finds its origin in the White Paper on National Transport Policy. Transport is one of the key priority areas for socioeconomic development. An efficient, effective, integrated, affordable and safe transport system are the tenets of the transport vision in the revised National White Paper on Transport Policy of 2021.

The Transport Vision in the White Paper is:

Provide safe, reliable, effective, efficient, environmentally benign and fully integrated transport operations and infrastructure that will best meet the needs of freight and passenger customers, improving levels of service and cost in a fashion that supports government strategies for economic and social development whilst being environmentally and economically sustainable.

The MMM Land Transport Vision is:

By 2015 Mangaung is recognised nationally and internationally as a safe and attractive place to live, work and invest and is served by an effective, efficient, reliable, safe, affordable and convenient transport system with a public transport focus, providing high levels of mobility and accessibility for the movement of people and goods in an equal manner. As part of the Mangaung Vision the focus should be on integrated strategic planning between spatial development, transportation challenges and sustainable economic growth to enhance the quality of life in the area and does not lead to the degradation of the environment.

Beyond the transport-specific policies, the alignment with the key priorities of the government would ensure that the role of public transport, as a derived demand would support the key priorities and outcomes.

From a transport policy target perspective, the MMM has through the planning of the IPTN opted for the introduction of quality public transport services that meet the policy targets set in the White Paper which include:

- the need for a decline in disposable income per household to be spent on transport from the current average of 30%; and
- trips to and from work should not be more than 40 km or one hour per direction.

The quality of public transport services is based on the Public Transport Strategy and includes:

- eighty-five per cent of all residents within 1 km of (rapid) public transport network by 2020;
- upgraded modal fleet, facilities, stops and stations;
- extended operation hours (16–24 hours);
- peak frequencies 5–10 minutes and off-peak frequencies 10–30 minutes;
- full special needs and wheelchair access (universal access);

- safe and secure operations monitored by a control centre;
- electronic fare integration when making transfers;
- integrated feeder services including walking/cycling and taxi networks integration with metered taxi services and long-distance intercity services;
- car competitive public transport option that enables strict peak period car use management.

The MMM transport policy objectives will be applied to the IPTN planning and operational plan for the future public transport system that the MMM has planned. These objectives include:

- provision of universally accessible services;
- ensure route and system co-ordination;
- co-ordination with provincial, metropolitan and local development;
- provide convenient services;
- provide a system and services that are safe;
- provision of quality equipment;
- dedicated personnel; and
- service monitoring and responsiveness.

6.4.1 Future development of the public transport system

The National Department of Transport, shortly after the adoption of the Public Transport Strategy and Action Plan in 2007 chose the MMM as one of 13 cities to plan and implement that IRPTN, with a subsequent focus on the IPTN. The Mangaung IPTN plans aim to transform the road-based public transport system by the provision of a “high-quality, safe and affordable public transport system”.

The MMM developed the Integrated Public Transport System 2015–2036, which is a city-wide plan that is the foundation for their future public transport system. The plan identifies the various corridors that would ensure city-wide coverage of the IPTN and the plan is based on improving access to socioeconomic opportunities and activities by addressing:

- spatial distortions;
- IPTN infrastructure and operations;
- promoting non-motorised transport;
- planning universally accessible transport services and infrastructure; and
- engagement with currently affected public transport operators.

The spatial distortion manifests in the form of morning and evening peak public transport services for workers from dormitory townships and the former homelands. In the case of the MMM, most public transport services the Mangaung Township, Botshabelo and Thaba Nchu. The entire rationale for subsidised bus contracts was to provide affordable transport so that the towns and cities can have access to cheap labour. Subsidised services continued into the new dispensation due to the

continuation of the settlements of the most vulnerable in our society, situated far from socioeconomic services and activities. These areas are currently served by subsidised bus services as well as minibus taxi services.

The IPTN plan was prepared based on the Public Transport System, thus ensuring connectivity to all parts of the city and access for all citizens and based on the principles of quality included above.

The implementation of the IPTN, especially the conclusion of IPTN operating contracts confers on the MMM the power of being a contracting authority. This contrasts with the current subsidised bus contracts in which the Free State Department of Police, Roads and Transport (FSDoT) is the contracting authority. The IPTN plan would eventually integrate subsidised services into the IPTN network, thus ensuring that all aspects of the public transport contracting function vest with the MMM.

The funding for the IPTN is through the Public Transport Network Grant (PTNG) which focuses on the funding for current and future planning, infrastructure, regulations and services. The current bus subsidised services are funded through the PTOG. These grants are allocations by the MMM and the FSDoT, respectively. The MMM is the planning authority and is also the contracting authority for IPTN operating contracts. It is therefore logical that the grant funding for public transport i.e., the PTNG and the PTOG be consolidated and allocated to the MMM. The IPTN approach integrates all public transport operations that are currently in existence within the MMM and such operations would be regulated and managed through the MMM as the responsible authority. This is in line with one of the key aspects of the Public Transport System i.e., municipally controlled and managed public transport.

The IPTN model with respect to improving public transport services ensures that current public transport operators on affected IPTN routes are provided with the opportunity to participate in the provision of IPTN services under certain conditions.

In summary, the future development of the public transport system in the MMM is based on:

- The incremental implementation of the IPTN Plan 2015–2036.
- Incorporation and integration of the subsidised service contracts into the incremental IPTN contracting process.
- Consolidation of the contracting authority function for all public transport contracts with the MMM for both IPTN operating contracts and the current subsidised bus contracts.
- Integration of public transport grant funding to the MMM i.e., both the PTNG and the PTOG.
- Public transport operators such as subsidised bus operators and minibus taxi operators who are affected by the IPTN rollout would be given the opportunity for the provision of IPTN services.

6.4.2 Role of each of the public transport modes within the future public transport system for Mangaung

Modal integration is one of the priorities of all three levels of government. The vision of the 1996 White Paper on National Transport Policy includes “fully integrated transport operations and infrastructure which will best meet the needs of freight and passenger customers”. The transport vision of the MMM alludes to integrated strategic planning and an efficient and effective transport system, which effectively supports the most appropriate mode to achieve efficiency and effectiveness of the transport system.

The strategies to attain the policy goals of the White Paper identified two key thrusts, namely the promotion of integration and inter-modalism, and then the assurance that modal, spatial, institutional and planning integration is critical to transportation policy.

MSA – The Action Agenda, 1999, was a 20-year strategic framework of the National Department of Transport for all transport in the country. One of their strategic principles is to integrate services and value chains, including the creation of integrated services in corridors through multi-intermodal solutions. One of the key targets for urban passenger transport specifically includes the planning for and the encouragement of the integration of modes based on modal efficiencies.

The Public Transport System initially focused on bus and rail as part of the IRPTN i.e., Bus Rapid Transit (BRT) on road-based corridors and trains on priority rail corridors. The subsequent move to IPTN is based on the integration of modes based on IPTN corridors supported by feeder and distribution services which may include lower-capacity public transport vehicles. The integration of modes is based on the demand for IPTN corridors and feeder and distribution services.

The current total mode split for the MMM area is 32.56% minibus taxi, 10.55%-bus, 8.44% with lift clubs or as a passenger, and 29.3% with private vehicles. More than 40% of passenger trips are made by public transport and at least 17% of passengers travelling during the morning peak period walk all the way to work.

The Mangaung City Integrated Public Transport Plan 2015–2036 collected data on the minibus taxi population in the MMM. The information on the number of taxis was collected from taxi associations, namely the GBTA and Thaba Nchu Long and Short Distance Taxi Association. The BATA did not provide the necessary information. Based on the available information provided, GBTA has 2 609 taxis while the Thaba Nchu Long and Short Distance Taxi Association members operate 374 taxis.

The subsidised service bus contracts within the MMM area of authority are operated by IBL. These contracts service Bloemfontein, Thaba Nchu, Botshabelo, Mangaung and Soutpan as well as distribution services that are operated from Central Park Terminus to Bloemfontein’s residential areas. The subsidised services are operated using a fleet of 214 buses. IBL operates these services in terms of five contracts that are funded through the PTOG. The FSDoT is the contracting authority for the subsidised service contracts. These contracts with IBL for services operated between Bloemfontein and Botshabelo, Thaba Nchu and Mangaung were entered into in 1997 and they have been extended numerous times over the last 25 years. The contract for services operated between Bloemfontein and

Soutpan was entered into in January 2015 after the previous operator, GS Thebeagae Bus Services who operated the contract since 1997, abandoned the contract.

The bus contracts that would be affected by Phases 1 and 2 for Mangaung, Soutpan and distribution services to the Bloemfontein suburbs.

6.4.3 Integrated Public Transport Network Plan

The role of modes in the MMM would be based on the IPTN operational plans for each of the phases as they are prepared. The operational plans would determine the most appropriate mode for road-based IPTN services based on modal efficiencies. These efficiencies would include passenger demand, distance, road space, energy requirements, environmental factors, and costs.

The Operational Plan for the IPTN 2016–2020 provides the mode strategy that is linked to a node strategy. The mode strategy is defined by the adoption of a node strategy and the selection of a mode between nodes. This is based on the passenger volumes per hour and distance. Table 6.1 indicates the conventional and IPTN modes based on passenger volumes and distance.

Table 6.1: Conventional and IPTN modes based on passenger volumes and distance

Passenger numbers	Distance	Conventional modes	IPTN modes
>500	1–3 km	NMT – walk or cycle	
>3 000	>10 km	Minibus taxi	Feeder vehicle
2 500–4 000	>50 km	Conventional bus	
2 500–6 000	>50 km	Quality bus service -priority signalling	
2 000–6 000	>35 km		BRT - mixed traffic
3 000–6 000	>35 km		BRT – right of way/ kerb side
8 000–15 000	>35 km		BRT – right of way/ median/separated
15 000 +	>15 km		Heavy rail

The nodal strategy and the modal strategy find alignment based on access to and between nodes. The access to nodes is based on distance and demand that would determine the mode. This is then applied to the IPTN in that the distance to a node of 1–3 km will be an NMT mode i.e., walking or cycling and anything beyond 3 km between nodes would be motorised vehicles. The modal choice of the motorised transport between nodes would then be a function of demand and distance.

The IPTN Operational Plan 2016–2020 planned for buses for trunk, complementary and distribution in both Phases 1 and 2. Phase 1 is the corridor between Rockdale and the CBD and Phase 2 is from Heidedal to the CBD. The long-term fleet deployment is contained in the *Fleet Deployment Strategy*

below. Whilst Phase 1 and 2 are being planned and in process of rollout, the current modes operating will continue until such time that the IPTN operational plan and the operating contracts are in place that would remove current taxi and subsidised bus services to be replaced by IPTN services. This will be based on the rollout programme of the IPTN that may be done on an incremental basis subject to the necessary funding for compensation and the vehicle removal strategy that may be agreed between the MMM and affected public transport operators.

The concern is that the status of the IPTN Operational Plan 2016–2020 is unclear, especially since it was included in the 2022 draft IDP. This creates uncertainty in respect of the PTP, which is developed for 5 years. The uncertainty relates to whether any part of the 2016–2020 plan had been implemented such as a starter service. Unfortunately the operations plan was not implemented in any way.

Certain assumptions are necessary for determining the modes for the MMM over the next five years which include:

- Subsidised bus contracts will be integrated into IPTN when the relevant phases that affect such contracts are rolled out.
- The current modes in all routes will continue with operations until the IPTN phase/s that affect those routes are implemented and IPTN operating contracts are concluded.
- No new OLs will be issued on any of the proposed IPTN corridors or distribution routes to avoid any oversupply and potential distortion of the negotiation and compensation process.
- MMM should request that the Free State PRE place a moratorium on new OL applications.

The MMM adopted the IPTN as the future of public transport in the metro and it will be necessary that a moratorium be placed on any new OL applications. This effectively means that the current services will remain in place with no new operators i.e., the public transport status quo (i.e., current minibus taxi and subsidised bus services) will remain in place until they are replaced by IPTN operations.

The recommendation is that the modes of public transport over the next five years and beyond should be based on the fleet mix decided as part of the operational plans of the IPTN for each phase. Since there is little or no progress in the rollout of IPTN Operational Plan 2016–2020 services for Phases 1 and 2, a moratorium on all new applications for the routes affected by these phases should be in place. The moratorium should be extended city-wide since the future of public transport in MMM is based on the City-wide Integrated Public Plan 2015–2036 and the subsidised bus contracts would have to be incorporated/integrated into the IPTN.

The following extract from the Integrated Public Transport Plan 2015–2036 (volume 3B):

“Fleet Deployment Strategy:

- The fleet will comprise of 22-, 80- and 120 seat vehicles;
- 19-metre articulated low entry (Euro V) diesel-powered (initially) – 120 passenger capacity;
- 12-metre standard low entry (Euro V) diesel-powered (initially) – 80 passenger capacity
- Smaller vehicles for feeders. – 22 passenger capacity.

- The detailed specification of these vehicles needs to be finalised and approved by a universal access specialist.
- Long distance standard and articulated – universal accessible but also suitable for rural road conditions;
- The sustainability action plan for long-term alternative fuel options to be implemented.
- The optimum vehicle capacity will be selected per route and demand to ensure a service frequency of at least 20 minutes during the peak hour of the day.
- The fleet mix will allow for two or more vehicle capacities when a corridor is operationalised to enable optimisation of operational cost and to implement incrementally and not for the ultimate estimated demand;
 - 80- and 120 seat vehicles will be new universal accessible vehicles; and
 - 22-seat vehicles and initially existing vehicle will be used for this part of the fleet.

Three years after corridor is operationalised these vehicles will be replaced by universal accessible vehicles. Vehicles to be deployed need to be validated and evaluated according to minimum specifications. This will ensure road worthy and well-maintained vehicles to be part of the fleet. These services provided by these vehicles will be contracted and will not be an informal service. Vehicles will be branded and equipped with AFC. Long distance standard and articulated vehicles will be branded and equipped with AFC to ensure that fare collection system is the same on MMM services. This will enhance integration between services across the city.”

The role of other transport services such as metered taxis and e-hailing would continue within the current regulatory framework and may support the IPTN outside of operating hours. However, such services should not be classified as public transport, but they do have a role to play in ensuring mobility, access and travel choice.

6.4.3.1 Moratorium on new operating licences

The FSDoT confirmed that there is a moratorium in place on all new public transport OL applications. The moratorium may be lifted once new services are part of the IPTN operational plans, with the approval of the FSDoT and with a compelling case for the introduction, approval and implementation of IPTN operating contracts based on the city-wide Integrated Public Transport Plan (2015–2036). The moratorium applies to new OL applications for non-contracted services and does not apply to the following:

- OL renewals;
- replacement of vehicles;
- change in ownership; and
- temporary replacement of vehicles.

The NLTA allows for renewal of OLs for up to seven years, and the MMM would need to only recommend renewal of OLs that would align to the IPTN rollout in instances it is planned to be implemented in less than seven years.

6.4.3.2 Principle of “clear the corridor”

The principle of “clear the corridor” was adopted in the Integrated Public Transport Plan. This simply means that when IPTN service contracts are implemented, all public transport service competition is removed from the affected public transport corridor. The implementation of the principle can only be executed by agreement with the legitimate affected operators. Furthermore, whilst this principle has its merits, it is neither practical nor achievable without:

- Having the IPTN service contracts provide for meeting the total demand on the corridor.
- Certain affected operators may opt not to participate in the IPTN service and would continue with their current operations for as long as the OL allows for them to do so.
- Sufficient budget being available to pay compensation for all affected operators at the very outset of IPTN operations.

Effectively, this principle would also require the support of the Free State Province, which are currently the contracting authority for the subsidised public transport services. Many of these services either service the identified IPTN public transport functional corridor or impact others.

6.4.3.3 Extent of public transport operating grant subsidies in Mangaung and integration into the Integrated Public Transport Network

The subsidised public transport contracts comprise two negotiated contracts and one tendered contract. Based on 2019 estimates the PTOG allocations to the three subsidised service contracts are R203 million per annum.

These services would be integrated into the IPTN public transport functional corridors with a view to the PTOG allocations being used within the IPTN service contracts to subsidise the new concept of operations as it is incrementally improved. This would allow for the fare policy to keep fares at levels that would trigger travel behaviour changes as well as manage travel demand. The aim is for the fare revenue on the IPTN services to cover the variable operating costs. If not subsidised in one way or another, the IPTN fares may be unaffordable. This would lead to a reduction in passenger demand and as such affect the sustainability of the service.

It is assumed that once the subsidised service contract operations are integrated into the IPTN that the PTOG allocations would automatically pass to the MMM. Unfortunately, it is not as simple, since

there is a process that would need to be followed to be a Contracting Authority which would require that a feasibility study be undertaken and the responsible MEC and the Minister of Transport must be satisfied that the municipality has the necessary capacity and expertise to manage this function.

6.4.3.4 Integrated Public Transport Network concept of operations

The concept of operations is based on the incremental approach. It is regarded as a logical approach as it manages scarce financial resource responsibly. Therefore, the increments, based on ever-improving passenger demand, fare revenue and quality of services demonstrate a successful quality service and thus future financial allocations can be justified.

Operations of the IPTN would commence based on the design principles. The increments would be based on the positive uptake by passengers of the service. As the demand increases various aspects of the systems would be incrementally improved. This would include the road infrastructure from operations in general traffic to operating on a dedicated right of way. The stops, stations and fleet would be improved over time.

6.4.3.5 Integrated Public Transport Network fare policy

The fare policy aims to ensure that the fare revenue covers the variable operating costs. The fare structure would firstly have to ensure that it would attract the necessary patronage, and secondly that it is affordable and competitive with other modes.

The approach to the fare structure is based on positioning the fare between the subsidised services and taxi fares. Thus, the fare policy would consider the fare structure to achieve certain policy goals such as:

- triggering changes in travel behaviour i.e., making public transport attractive to users;
- manage travel demand and influence travel patterns;
- influence social, economic and environmental issues; and
- target policy goals of affordability i.e., not more than 10% of household disposable income should be spent on transport for work and education.

Whilst the fare policy and the fare structure are considered, it will be imperative that any change in fare structure must be considered after a price elasticity assessment is undertaken, otherwise, the sustainability of the IPTN operating contracts would be unsustainable and would have the opposite effect on public transport demand within the MMM.

POLICY ON CONTRACT PACKAGING

Within the MMM jurisdiction there are currently subsidised public transport services contracts that provide operations that service Botshabelo, Thaba Nchu and Soutpan. These subsidised contracts are managed by the FSDoT as the contracting authority.

The MMM in keeping with transport policy and strategic objectives would focus on affordability for the consumer which would make public transport attractive to the user and thus the sustainability of

the future contracted services. In doing so the policies of cost management and containment would be the priority of the MMM as well as the operators. Costs would be managed closely ensuring that it is within industry norms to promote efficiencies in the operations.

The MMM planned the IPTN based on the Integrated Public Transport Plan (2015–2036). The plan acknowledges that the subsidised service contracts need to be integrated with the IPTN. As part of the planning of the IPTN services the integration would ensure efficiency and quality services without any duplications. The MMM commenced with the preparation of the IPTN contract packages based on the phased approach to each of the identified phases of the functional public transport corridors.

The contract packages for the IPTN would be based on the service and operational requirements per phase based on the operational plans. The IPTN contracts would eventually integrate the subsidised services and minibuss taxi services into IPTN operating contract(s) based on IPTN service designs. The contract packages would initially be negotiated contracts in terms of section 41 of the NLTA. The negotiated contract(s) would be entered into with the entity or entities consisting of affected operators as shareholders.

The MMM adopted a phased approach to the operationalisation of each of the corridors. Each corridor would include an operational contract for providing public transport services. The approach to negotiating contracts would be based on the following process for each of the functional corridors which includes:

- Identification of current public transport operators on the functional public transport corridor route(s) commonly referred to as affected operators.
- Enter into negotiations with the affected public transport operators for:
 - agreement on the removal of their current fleet from the corridor;
 - compensation for the removal of the vehicles and OLs for the route(s), effectively removing their legal right to operation on the route; and
 - negotiating the IPTN operations contract with affected operators who would establish a legal entity i.e., vehicle operating company (VOC), which would enter the negotiated contract in terms of NLTA section 41 negotiated contract(s).

The contract packages would be based on one contract package per functional public transport corridor based on the readiness to implement, available funding and agreement with the FSDoT on the process of integration of subsidised service contract services into each of the contract packages. The MMM did not limit contracting with the VOC to the core business i.e., provision of public transport services, they also engaged in other aspects (Integrated Public Transport Plan 2015–2036, Vol 3B, p 15-1). The management of stations and the Advanced Public Transport Management Systems (APTMS) have been considered. The benefit of the APTMS is that it is also a management system to monitor the IPTN service operations and as such is a tool for monitoring the performance of the VOC based on the IPTN operations contract. Should the latter be contracted to the VOC, it may be viewed as the VOC is monitoring itself.

The contracting model for IPTN operations adopted for the IPTN services is the Gross Cost Contract Model. Simply, a gross cost contract is utilised to first remove any competition for passengers and the operators are remunerated on a fixed sum. The MMM would, *inter alia*, set the timetable for the service, and collect the fares, which means that the contracting authority would set the level of service required and the contracted operator would be remunerated a fixed rate for providing the service. Effectively, the contracting authority would provide the level of service required, collect the fare revenue, market the service and be responsible for the passenger patronage.

The Integrated Public Transport Plan (2015–2036) suggests that IPTN operating contracts be phased in. Unfortunately, delays in the IPTN programme effectively stalled the implementation of any operating contracts. This uncertainty makes it difficult to determine the contract packages and when such contracts would rollout the validity period of this CITP. The dependency for certainty on the rollout of the contract packages is the following:

- The PTNG allocations and the milestones linked to the annual grant allocations.
- The progress on negotiations with affected public transport operators on each of the functional corridors.
- Integration of aspects of the current subsidised services contracts as it affects specific functional corridors.
- The finalisation of the devolution of the contracting authority function as it relates to subsidised services contracts from the FSDoT to MMM.

6.4.3.6 Public transport contracting function

Both the MMM and the FSDoT are contracting authorities in respect of public transport contracts. This is in line with the NLTA. The MMM would be the contracting authority in respect of IPTN operating contracts and the FSDoT is the contracting authority for subsidised service contracts (commonly referred to as subsidised bus contracts). The subsidised service contracts are between the province and the current service provider i.e., IBL.

The policy position in respect of contracting responsibilities for public transport vests within the jurisdiction of the MMM, however, the FSDoT is also a contracting authority in terms of the NLTA. The FSDoT are supportive of their function, namely that devolved subsidised services contracts are managed by the MMM. This would require support from FSDoT that had historically managed subsidised service contracts since 1997. This leads to fragmentation in the planning and provision of public transport services. The MEC responsible for transport would need to be satisfied that the MMM has the requisite capacity, skills and experience to undertake the function.

The public transport system supports municipal-controlled and managed public transport to eliminate such fragmentation and thus the MMM is the contracting authority. This would require that the MMM embark on a process with the Free State Province and National Treasury to cede the subsidised service contracts and provide that the PTOG be devolved to MMM.

6.4.4 Land-use and spatial transformation of public transport

The Mangaung Spatial Development Framework (2016) provides the basis for future spatial development. It aims to address the spatial and socioeconomic inefficiencies through compliance with the norms and principles of the SPLUMA. To achieve this the framework recommends an integrated approach to include:

- functional integration and relationship between the Bloemfontein, Botshabelo and Thaba Nchu nodes;
- stimulating economic growth and mixed-use development in the eastern and south-eastern parts of Bloemfontein;
- strengthening the city core through CBD regeneration and consolidating the urban structure by way of an urban edge;
- enhancing local economic development in Botshabelo and Thaba Nchu and between these two areas; and
- improvement of access from rural areas to the nodes.

The IDP, the Built Environment Performance Plan (BEPP) and MSDF alignment support land-use initiatives that are supported by traffic/transport corridors that would enhance the benefits of densification, mix-use development and infilling. The transport promotes access and mobility along corridors and through transit-oriented developments (TOD).

The approach to the Integrated Public Transport Plan is aligned with the MSDF:

- Functional public transport corridors cover the entire urban structure of Bloemfontein.
- Public transport aligned supported economic corridors (including the Botshabelo/Thaba Nchu–Bloemfontein functional corridor).
- Support for CBD regeneration through the functional public transport corridors, supported by planned NMT infrastructure as a significant mode of transport for shorter distances and to access public transport.

6.4.5 Enabling the legislative environment

6.4.5.1 National Land Transport Transition, 2000 (Act No. 22 of 2000)

The NLTTA required that transport authorities, core cities and other municipalities compile a package of plans to give effect to the provisions of the NLTTA. This was done by the MMM. Section 27(2) of the NLTTA indicates that the ITP must formulate the planning authority's official vision, policy and objectives, consistent with the national and provincial policies, with due regard being given to any relevant integrated development planning or land development objectives. The NLTTA was repealed and replaced by the NLTA.

6.4.5.2 National Land Transport Act of 2009

The NLTA section 41(a) prescribes that contracting authorities should enter negotiated contracts with public transport operators on integrating services, forming part of integrated public transport networks in terms of their integrated transport plans.

To date, this has not yet been undertaken by the MMM and both PTOG bus services, as well as the MBT still provide non-integrated public transport services with the MMM. None of the PTOG contracts have been integrated into the IPTN. This is because the current PTOG contracts are managed at a provincial level and not at a Local level where the planning of the IPTN is undertaken. For the above to be undertaken, the MMM must undertake a devolution of powers feasibility assessment to ascertain whether they will be able to be a contracting authority.

In terms of the NLTA a contracting authority is defined as:

“(a) the Department

(b) a province, subject to section 11(6); and a municipality, subject to section 11(2) and (5); “.

The province will continue to perform the functions of a contracting authority, as before the promulgation of the NLTA until the Minister assigns the function to a municipality.

However, in the case where a municipality was performing the contracting authority function (in terms of section 11(1)(a)(xi)) before commencement of the NLTA, it would continue to perform such function as if the functions have been assigned to them.

Currently, municipalities that have been selected to implement the Public Transport Strategy are contracting authorities when they enter IPTN service contracts. However, their contracting authority role does not extend to subsidised service contracts, which are all managed by their respective provinces. This is also the case for the MMM.

The NLTA in section 50 sets out the requirement that any person operating a road-based public transport service can only do so if they own a valid OL or permit. Furthermore, a municipality may only issue OLs if the function is assigned to them and only for services within the boundary of the municipality.

The OL function currently resides at a provincial level. The role of the MMM in the OL function is that of a planning authority. As a planning authority, they are responsible for the development of the ITP as in the case of the MMM. The minimum requirement for ITPs requires that the public transport regulator and an OLP be prepared. The OLP is used by the province to consider applications for OLs. Currently, there is a moratorium placed on the issuance of OLs within the MMM.

6.4.5.3 Urban Transport Act

Bloemfontein, within the MMM, is the core city. According to the Urban Transport Act, the functions of the core cities in terms of urban transport are:

- manage the preparation of transport plans;
- implement the transport plans according to provincial guidelines;
- provide guidance to other local authorities in the metropolitan transport area;
- prepare a map of the metropolitan transport area;
- conduct investigations as required;
- revise and update the approved transport plans;
- keep up to date on transport needs and technology in the metropolitan transport area; and
- involve the public in the transport planning process.

The Urban Transport Act, 1977 (Act No. 78 of 1977) is one of the legislative documents that guide the Department of Public Works, Roads and Transport in the Free State.

The planning of the IPTN, therefore, falls within the legislative framework of the NLTA and is supported by the Urban Transport Act. However, it should be noted that none of the IPTN plans developed has been implemented and the data collected is outdated as they are all older than 18 months. The impact of COVID-19 also needs to be taken into consideration as travel patterns would have changed.

6.4.5.4 Free State Public Transport Act

The Free State Public Transport Act provides the statutory rights, guidelines and requirements for public transport planning and operations in the Free State Province. The Act is based on the same goals and objectives as identified in the National White Paper on Transport. It focuses on the following issues relating to the preparation of Integrated Transport Plans:

- Part 2: Public Transport Services: Principles for specifying public transport services in transport plans (Paragraphs 4–21.).
- Part 3: Functions and Powers of the MEC: Regulations by the MEC and integrated land transport information system (Paragraphs 22–24.).
- Part 4: Public Transport Planning: Principles for public transport planning of which integrated, comprehensive planning must occur, transport plans must identify modal options and transport plans must indicate what purposeful measures have or will be taken to provide for passengers with special needs, such as persons with disabilities. (Paragraph 25.) Public Transport Plans. (Paragraph 26.) Duties of planning authorities relating to planning. (Paragraph 27.).Part 5: Transport Authorities: Agreements for the formation of transport areas and transport authorities (Paragraph 29), the declaration of transport areas and concomitant establishment of transport authorities (Paragraph 30), contents and essentials of founding agreements (Paragraph 31), functions and competencies of transport authorities (Paragraph 32) and the ancillary powers, governance, dissolution and finance of transport authorities (Paragraphs 33–36) are some of the regulations that are described in this section.

6.4.6 Conclusion

The transport policies and strategies support the planned provision of public transport that enhances access to socioeconomic opportunities. The transport policy targets issues such as travel times, travel distances and costs, while the public transport strategy focuses on the quality of public transport. The link between transport and the SDF also highlights the developmental role and support that public transport can contribute.

6.5 PART 3: PUBLIC TRANSPORT PLAN: OVERALL PUBLIC TRANSPORT NETWORK

6.5.1 Approach to the overall public transport network

The design approach and selection of alternatives for the Mangaung IPTN implementation are to progressively develop an integrated public transportation system in which road-based modes have a particular role and function, and where current public transport operations can transform from informal (unscheduled, no specific route) to formalised (scheduled, route-based) operations or variations thereof.

A route-based, scheduled system creates an environment in which public transportation can be regulated and optimised to implement a sustainable, safe, accessible, dependable, and affordable public transport system.

The overall network design considers the network plan. The city's vision for the built environment includes public transportation planning. The National Development Plan (NDP) recognises urban migration among youth and the poor, as well as the impact on the urban environment. As a result, the NDPs recommendations for urban areas include:

- upgrade informal settlements;
- promote densities;
- shift job opportunities to urban townships on the periphery; and
- substantial investment in reliable, safe, affordable public transport with co-ordination between modes.

The NDP recognises the significant role of public transport in the urban environment especially in economic and social opportunities and services. The long distances people travel from where they live to where they work demonstrate the country's apartheid legacy's social and economic exclusion. It is critical to provide appropriate means for people and goods to move efficiently, safely, and cost-effectively. Mobility increases social and economic access, which helps to alleviate poverty.

There are various strategic and planning initiatives that address the role of public transport and urban spatial planning such as:

- The Public Transport Strategy and Action Plan
- Municipal Spatial Development Framework
- Integrated Development Plan
- The Built Environment Performance Plan

Part 3 of the Mangaung PTP considers the overall network that is based on the Mangaung Integrated Public Transport Plan of 2015–2036 which identifies the functional transport corridors and phases of the IPTN for Mangaung.

6.5.2 High-level depiction of the overall network

The current network consists of the municipal and provincial road networks within the municipality's boundaries. Minibus taxis and subsidised bus services provide public transportation in Mangaung's urban surroundings. The network currently provides a radial service, that is, services into and out of the CBD. However, to address historical spatial distortions and improve access and mobility, the Cabinet adopted the Public Transport Strategy and Action Plan in 2007.

The city embarked on the process of planning the IRPTN, which included a rapid service on a dedicated right-of-way infrastructure. Due to budget and density constraints, it was decided that Mangaung would plan an IPTN. The IPTN planning and infrastructure requirements are funded through a conditional grant (PTNG) from the National Treasury.

The spatial transformation of the metropolitan area is centred around economic and social integration, access, and connectivity. These are based on mixed land use, densification, and a quality public transport system. Central to supporting the spatial transformative initiatives is the role of transport infrastructure and operations, especially public transport, and its role in providing access, connectivity and improving levels of mobility.

The population distribution of the metropolitan area is as follows:

- Bloemfontein 63%
- Botshabelo 24%
- Thaba Nchu 9%
- Rural towns 2.5%

The future public transport system within the urbanised part of Mangaung is based on the IPTN with a focus on Bloemfontein, Botshabelo and Thaba Nchu.

Outlying rural towns and agricultural areas are well served by a network of road infrastructure, particularly the provincial road network, which connects them to Bloemfontein. The urbanised portion of Mangaung will be served by IPTN functional public transportation corridors in the future, while the rural towns and agricultural areas within the metropolitan area will be served by the provincial road network.

6.5.2.1 The future network

Whilst the corridors are radial, they cover the entire city and extend to Botshabelo and Thaba Nchu. The IPTN functional corridors as identified in the Integrated Public Transport Plan 2015–2036 are:

- Maphisa/Moshoeshoe/OR Tambo functional public transport corridor.
 - Sub-corridor 1- Mafora West operational areas; and
 - Sub-corridor 2 – Ipopeng, Mafora Central, Mafora East operational areas.
- Dr Belcher functional public transport corridor.
 - Sub-corridor 1 – Turflaagte, Freedom Square, Namibia, Ooseinde; and
 - Sub-corridor 2 – Heidedal, Grassland.
- CBD
 - Sub-corridor 1- Brandwag.
 - Sub-corridor 2- Universitas.
 - Sub-corridor 3- Langenhovenpark.
 - Sub-corridor 4- Hyperama; and
 - Sub-corridor 5 – Estoire, Airport.
- Botshabelo functional public transport corridor.
- Thaba Nchu functional public transport corridor.

Whilst there are numerous plans for the implementation of the IPTN, the current situation is that it is taking longer than anticipated and is subsequently far behind schedule. The process of implementing the IPTN Operational and Systems Plan is intensive and besides the infrastructure provision, the operations require that public transport operators engage in negotiations. This latter aspect is known as industry transition and is an extensive and sensitive process of identifying the legitimate affected public transport operators and negotiating compensation and the future operations contract. However, it should be noted that compensation negotiations will also include the cancellation and or amendment of OLs as well as vehicle removal. The following section will explain what should be implemented from the Integrated Public Transport Plan 2015–2036.

6.5.2.2 “Clear the corridor” principle

Clear the corridor refers to the principle of eliminating the taxi and bus industries (within the current operating model) and compensating them for their current business stake. Except for the feeder service indicated in the route design alternatives, they are removed or cleared from the corridor where they currently operate comprehensively and permanently. The negotiated compensation amount purchases the business rights (OLs), and a restraint of trade agreement is part of the compensation agreement.

This approach relies on the need for cost efficiency, financial resource optimisation, and system operational optimisation. Therefore, the city cannot compete financially with other operators, either along the same corridor or on parallel corridors to the trunk routes. This is also applicable to some

competing services that receive government funding. Any such competition is unjustified because it could lead to empty buses.

In practice, this means that the city must be able to regulate the issuance of current and future OLS along its jurisdictional corridors. In terms of regulatory requirements, the city cannot afford to be reliant on the decisions of another party, whether it is another government institution or not. The city must decide its own fate. However, the process has not yet been commenced by the city to undertake a devolution of powers from provincial government to local government in terms of the contracting authority and regulatory function as per the NLTA, due to the current capacity reality.

The city will have to undertake a feasibility assessment to ascertain if they have the relevant resources (human, systems and financial) to have these powers devolved to them.

6.5.2.3 Complete withdrawal

The clear the corridor principle is also related to another principle, namely that when a corridor is cleared, the removal is complete and not partly. From a practical point of view, it is not possible to clear only half of the corridor. In the minibus taxi industry, the destabilisation of a business association consisting of numerous individuals is too complex when it is done in small steps. It requires a buy-out of the entire business or not at all. Hence, the agreed principle to be adopted between the parties in the taxi industry is to remove a particular corridor (taxi route) completely at one specific point in time. In some instances where the market areas of two parallel routes are overlapping to a considerable extent, it is necessary to remove these two corridors at the same time.

It should be noted that the financial implications for implementation of a full clearance option, will have a huge financial implication for the city, as compensation will then need to be paid to all the operators who have been removed. Additionally to this, dedicated law enforcement will be required to ensure that no other public transport modes operate in the cleared area.

Moreover, cognisance should be taken on how the vehicles that are to be removed will be disposed of and not find their way back onto the roads Mangaung.

However, it is important to note that the public transport capacity that is taken away by the introduction of the IPTN, should be sufficient in replacing capacity based on any operating contract to provide for the demand and no passenger should be left stranded.

Based on the above it is unclear when any of the future functional corridors will become operational based on new operating contracts, as per the requirements of the NLTA. A further complexity is the engagement between the IPTN team and the Free State Department of Transport, which are the contracting authority for the subsidised public transport contracts. However, the process has not yet been undertaken by the municipality for the devolution of powers from provincial government to local government in terms of the contracting authority function as per the NLTA. The municipality will have to undertake a feasibility assessment to ascertain if they have the relevant resources (human, systems and financial) to have these powers devolved to them.

Additionally, the city under the IPTN will need to ensure that the public transport contracts are integrated, and that fare rationalisation is undertaken to ensure that the passengers are not worse off when using public transport.

6.5.2.4 Current modes operating on the future functional corridors

Currently, public transport services on the functional public transport corridors are provided by the minibus taxi (MBT) industry and subsidised bus services. The outlying rural areas are serviced by minibus taxi services. As part of the planning of the IPTN and the public transport functional corridors, the role of the different modes viz. bus and taxi industries were included in joint engagements with the city as part of a Joint Steering Committee and the Joint Technical Committee.

Itumeleng Bus Services (trading as IBL) buses currently provide a sizeable portion of the public transport system and primarily focus on long-distance transportation of passengers from Botshabelo, Thaba Nchu and Soutpan, and transports 10.55% of passengers. IBL operates these bus services using a fleet of 214 buses across the five PTOG contracts. The contracting authority for the subsidised service contracts is the FSDoT. These contracts with IBL for services between Bloemfontein and Botshabelo, Thaba Nchu, and Mangaung were signed in 1997 and have been extended several times over the last 25 years. It should be noted that these services will need to be integrated with other public transport modes to provide a seamless journey for passengers. If these contracts, including the PTOG funding, are devolved/transferred to the city, any current shortfall will have to be funded from the MMMs budget through the equitable share. Any redesign based on meeting the transport demand of the passengers being serviced will undoubtedly cause a shortfall. However, as the city has not even commenced with a feasibility assessment for the devolution of powers, there is still a long way to go.

A memorandum of agreement has been concluded with the MTI which is primarily represented by the regional structure of the MMM minibus taxi industry (the Motheo District Taxi Council) and the three local taxi associations, namely:

- GBTA
- Thaba Nchu Long and Short Distance Taxi Association
- BATHA

The Mangaung District Taxi Council IPTN Steering Committee (MDTC SC) represent the minibus taxi industry, consisting of representatives of the leadership of the Mangaung District Taxi Council, the GBTA, the BATA and the Thaba Nchu Long and Short Distance Taxi Association. The MDTC SC will represent the interests of the potentially affected associations and potentially affected operators in their deliberations, engagements, and negotiations with the MMM concerning the IPTN.

6.5.3 Integrated Public Transport Network node hierarchy and modal strategy

Nodes are points on the public transport network and links are either stops or stations that serve as access points to public transport. They may either be trip generators or trip attractions. At the local level, nodes are where public transport trips are generated and they are attracted to secondary and primary nodes that must provide access to economic and social activities such as work, hospital, and school trips. Effectively, two elements are considered in the node hierarchy i.e., first the distance to

access or surrounding activity attractions and second, the appropriate mode. Distances between 1–3 km would be accessed through NMT viz. walking and cycling and distances beyond 3 km taxis or buses would depend on passenger volumes.

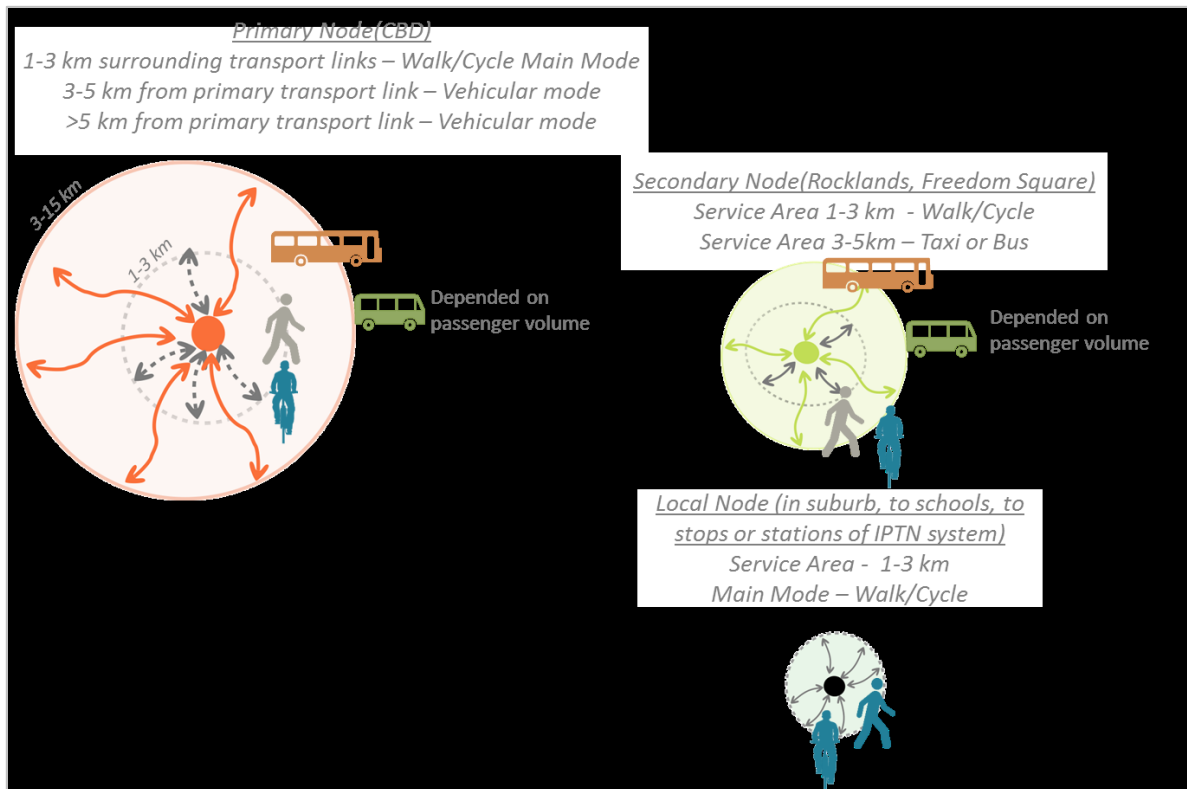


Figure 6.1: IPTN Node Hierarchy and Modal Strategy

Based on the ITP of the city, the aim is to include 85% of the metro’s population in the IPTN system as well as the design of a system that is financially sustainable. With these objectives in mind, the approach to the design of the system is to provide services for the identified primary and secondary movements in the city.

These movements allow for between 70–80% of origin-destination pairs to be accommodated by the main routes of the system and thus represent the financial lucrative routes in the city. However, the remainder of origin-destination pairs, namely minor movements, also needs to be accommodated within the IPTN system to ensure an inclusive system. These minor movements will be accommodated through the provision of voluntary transfer points in the system. A voluntary transfer point is where a passenger can transfer between routes if no main route is provided between origin and destination or at identified main transfer points in the system. Thus, as part of the system design, the route design will be evaluated to ensure that transfers are provided to allow for a directional change in the system between main routes and thus accommodate minor movements.

Though it is important to note as the IPTN is not yet operational, none of the above can be undertaken and when the services are implemented it should be noted that there is a possibility that the services would need to be rationalised.

6.5.4 Identification of preferred mode or modes for routes or corridors

The ITP proposes that the following route types will be considered during the design process:

- trunk routes;
- complementary routes;
- direct routes; and
- feeder routes.

The trunk route may either operate on a dedicated right-of-way or in mixed traffic, whereas feeder routes will collect passengers from an area surrounding a specific node and bring them to the nearest stop or station, where they will transfer to services operating along complementary or trunk routes.

Considering the impact of a specific design on passenger journey times, the selection of alternatives must be carefully considered. As a result, while a feeder-trunk service may be the most cost-effective solution, the impact on passenger journey time and the number of transfers must be considered. As a result, the primary goal of a feeder-trunk system is to collect/distribute passengers from main trunks to final destinations with feeder vehicles, thereby improving the vehicle utilisation rate per vehicle in the fleet.

The ITP also took into consideration alternatives per corridor, namely:

- scheduled trunk routes, with direct routes;
- scheduled feeder-trunk;
- scheduled feeder-trunk and complementary; and
- scheduled direct routes – direct scheduled services - origin and destinations.

6.5.4.1 Trunk-only routes and services

- Consisting of scheduled trunk routes and services with unscheduled feeder services.
- The feeder services will be provided by Hauweng-branded feeder vehicles that will collect passengers in the suburbs and provide access to the trunk routes and services at one or two main transfer facilities.
- Feeder routes – maximum of 7 km.
- Trunk routes – between 20 –30 km per round trip.
- The position and size of the main transfer are determined by the number of feeder routes and vehicles that integrate with the trunk services at the specific transfer.
- There will be direct/diagonal routes from one corridor to the other and will operate between designated stops, main transfer points, or high-capacity public transportation stops.

6.5.4.2 Feeder-trunk route design

- The trunk and feeder routes are scheduled, and route alignment is fixed.
- Feeder services are designed according to the same design principles as trunk-only.
 - Direct/diagonal routes from one corridor to the other corridor will be provided.
 - These will operate between identified stops, main transfer or high-capacity public transport stops.

6.5.4.3 Feeder-trunk and complementary routes

- Trunk and feeder routes are scheduled, and route alignment is fixed.
- Feeder services are designed according to the same design principles as trunk-only services.
 - Where rationalisation of trunk feeder route into complementary, where patronage along feeder is more than 450 passengers per hour.
 - This rationalisation will enhance passenger experience and omit one transfer in the full journey of a passenger.
 - Direct/diagonal routes from one corridor to the other corridor will be provided.
 - These will operate between identified stops, main transfers, or high-capacity public transport stops.

6.5.4.4 Direct routes

From the perspective of a passenger, this route design is ideal because the origin and destination are linked without any transfers. However, the cost and fleet implications of all options must be considered to have a long-term and financially viable solution.

6.5.4.5 Feeder-trunk route design

- Feeder routes feed from the suburbs to a transfer point in the suburban area.
- From this transfer point, the trunk service/route facilitates movement to a transfer point in the CBD.
- Passengers are forced to change routes in the CBD to distribution/feeder routes to reach their destination.
- The trunk portion of a corridor is calculated using several principles, including time spent on feeders versus time spent on trunks and the number of feeders to a transfer point that will integrate/feed trunk services.
- The existing public transport operations force passengers to transfer in the CBD. Thus, with this route design, an additional transfer is added to the operations.

6.5.4.6 Feeder-trunk and complementary route design

- A complementary route will be chosen if the patronage along a feeder route exceeds 450 per hour.
- The principle is that if a service area collects more than 450 passengers per hour, the bus (80-seat capacity) will be fully occupied when it reaches the trunk route.
- Thus, express service can be provided for these passengers from the point where the service joins the trunk route to the destination in the CBD.

A transfer can be inconvenient due to the potential increase in overall travel time caused by walking between stops and waiting for the next vehicle and therefore impacts the seamlessness of the journey. Furthermore, the matter of fare rationalisation also comes into play as the passenger should not pay for additional transfers, however from an operational point costs are incurred for the provision of the service.

While transferring between public transport services reduces the level of service, it is an unavoidable feature of public transportation networks. Therefore, once implemented the IPTN will need to take into consideration the impact of the transfers and ensure that they are coordinated in terms of waiting time and service.

6.5.4.7 Fleet for Integrated Public Transport Network

The ITP states that the fleet considered for implementation as part of the IPTN system must be a universally accessible vehicle and this is as per the requirements of the PTNG.

The vehicle fleet comprises a variety of vehicle capacities to align with demand per route and will comply with all standards per grant requirement. The transformation/replacement of existing public transport vehicles with vehicles that comply with universal accessibility standards, automatic fare collection and APTMS requirements form part of the incremental approach associated with the implementation of the service.

The following vehicles are being considered as part of the fleet as per the ITP:

- articulated bus – 120-passenger capacity;
- rigid bus – 80-passenger capacity;
- smaller vehicle for feeders and direct/diagonal routes and services – 22-passenger capacity.

Both the 80- and 120-capacity buses will be low-entry (Euro V) diesel-powered (initially) vehicles. The detailed specifications of these vehicles need to be finalised and approved by universal access specialist(s).

However, it should be noted that utilisation of smaller vehicles for example 15-seater or 22-seater minibus taxi vehicles should be deemed as an option for the feeder and of complementary routes. This is since the purchasing of a bus fleet is expensive and the MMM is not guaranteed to get the modelled patronage. The smaller vehicles are also more agile than a midibus type of vehicle. In

addition, the utilisation of the minibus taxi vehicles can be deemed as a value chain opportunity for the MBTs and will reduce the compensation to be paid to the industry. Yet, the issue of automatic fare collection and universal access compliance will need to be investigated to ensure it adheres to the requirements of the PTNG. A positive for this approach will also be the integration of public transport modes as well as saving in terms of the acquisition of a new bus fleet. As the IPTN has not yet been implemented it is advised that the engagements between the MMM and the MBTs commence as a matter of urgency.

The ITP stipulates that the optimum vehicle capacity will be selected per route and passenger demand to ensure a service frequency of at least 20 minutes during peak hours. It is envisaged that the fleet mix will allow for two or more vehicle capacities when a corridor is operationalised to enable optimisation of operational cost and to implement incrementally and not for the ultimate estimated demand. This portion of the fleet will initially be comprised of the existing vehicles.

These vehicles will be replaced by universally accessible vehicles three years after the corridor is operational. The deployed vehicles must be validated and evaluated following minimum specifications. This will ensure that vehicles in the fleet are roadworthy and well-maintained. The services provided by these vehicles will be contracted and will not be provided on an ad hoc basis. Vehicles will be branded and automatic fare collection-equipped. This is in line with the proposal made in the previous paragraph.

Long-distance standard and articulated vehicles will be branded and equipped with automatic fare collection to ensure that the fare collection system is the same as the MMM services. This will enhance integration between services across the city.

To begin the design process, the estimated total passenger volumes to be generated by each corridor, traffic volume per lane along trunk routes within the corridor, and corridor length were compared to the guidelines in terms of the volume of passengers per hour and the recommended mode, vehicle capacity, and right-of-way. This is presented in Table 6.2. The information will be taken into consideration when the fleet mix are implemented and to ensure that the optimal public transport mode is used.

Proposal assessment of the status quo and policies, rationalisation and restructuring of existing contracted services, developing new contracted services, and restructuring non-contracted services.

Table 6.2: Estimated total passenger volumes to be generated

Passenger numbers	Distance	Conventional modes	IPTN modes
>500	1–3 km	NMT – walk or cycle	
>3 000	>10 km	Minibus taxi	Feeder vehicle
2 500–4 000	>50 km	Conventional bus	
2 500–6 000	>50 km	Quality bus service – priority signalling	
2 000–6 000	>35 km		BRT – mixed traffic
3 000–6 000	>35 km		BRT – right of way-kerb side
8 000–15 000	>35 km		BRT – right of way/median/separated
1 5000 +	>15 km		Heavy rail

6.5.5 Rationalisation and restructuring existing contracted services, developing new contracted services, restructuring non-contracted services

It is envisaged that the defined functional public transport corridors will be rationalised. Rationalisation will include MBT services and subsidised bus services (PTOG) in the corridor, meaning that subsidised bus contracts will be rationalised per corridor.

It should be noted that the rural and cross-border services will continue to be separate contracts, with service frequency and route design differing from the local corridors. According to the Hauweng system design, service in these corridors will be provided on demand and will not be subject to minimum service frequencies. However, vehicles used in these contracts must be universally accessible, and the fare collection system must be integrated with the Hauweng system.

The rationalisation of contracted unscheduled feeder services to scheduled services will be based on financial viability and the availability of funding. Yet, this will need to be in line with the requirements of section 41(a) of the NLTA.

It is envisioned that the IPTN will provide services in Bloemfontein, Botshabelo, and Thaba Nchu's local corridors. The rural and cross-border services will continue, with OL amendments to allow for integration with the Hauweng services at designated transfer facilities. Three taxi associations currently operate 230 routes in the local corridors of Bloemfontein, Botshabelo, and Thaba Nchu.

Subsidised bus services operate in the same authority areas, with contracts specifying specific service areas. The rationalisation of existing services, as well as the principles used in the rationalisation process, are critical to the success of the new system and the provision of an integrated system that is financially sustainable, easily managed and regulated following rationalisation. However, rationalisation must be accompanied by industry transformation for the industry to transition to the new system and minimise job losses. This will be included in the industry transition process. Section

41(b) of the NLTA must be amended as follows: promoting the economic empowerment of small businesses or individuals who have previously been disadvantaged due to unfair discrimination.

Cognisance should be taken that the rationalisation of services will be undertaken in an incremental approach as will be done per corridor.

Corridors can be at various stages of development depending on the year in which they are operationalised. The proposed rationalisation and transformation are re-evaluated bi-annually to determine progress with implementation and the next phase or increment of services to be incorporated into the system, as well as how the new IPTN system services that have already been implemented need to be changed or amended.

The conversion of feeder services from unscheduled to scheduled should also be considered. When a corridor is operational, service will consist of trunk-only scheduled services with unscheduled feeder services. At designated transfer points along the trunks, these feeder services will be integrated with the trunk services. These unscheduled feeders run the risk of not serving passengers during off-peak hours and not at the same service frequency as trunk services. As a result, converting the feeder service to a scheduled service remains the preferred option. Feeder service rationalisation to scheduled services is subject to financial viability and sustainability.

If a feeder route or service transports more than 450 passengers during a peak hour, it should be considered for conversion to scheduled service. Regardless of volume, vehicles will be replaced with universally accessible vehicles three years after the initial operation, even if a scheduled service cannot be implemented.

Approval from the national Department of Transport will need to be obtained in terms of the above as the requirements clearly state that any vehicle to be used on the IPTN needs to be universal access compliant as per the PTNG.

6.5.5.1 Planned sequencing of network implementation

It was initially envisaged that the MMM citywide IPTN will be incrementally implemented within ten years from the operationalisation of the first corridor. These services will initially be trunk services only to be expanded to trunk services with scheduled feeders and complementary routes and services.

6.5.5.2 Implementation plan per corridor

The IPTN will be implemented per corridor, and this will be done in a staged approach. A summary of each of the corridors follow:

6.5.5.2.1 *Maphisa/Moshoeshoe/OR Tambo functional public transport corridor*

Based on the 2015 to 2036 planning process of the Public Transport Improvement Programme through the alternative analysis process resolved that the transformation of existing services to the Hauweng system be undertaken in two distinct stages.

Primary movements will be rationalised into the new system by implementing scheduled trunk routes and services, which will be followed by the rationalisation of feeder services and routes to scheduled feeders or extension of trunk route services.

It was initially envisaged that the corridor will be operationalised during 2020/21 and 2021/22 with full transformation in 2024/2025 given that funding remains at the current level. As the first two milestones have been missed it will have a ripple effect on all the remaining milestones for the corridor in terms of its implementation. An alternative would be that a catch-up (compressed) programme be implemented, however, this is unlikely to be successful based on the Industry Transition Process as well as the integration of the PTOG contracts to be undertaken.

Additionally to this, the Department of Transport has indicated that an “operate now build later” principle be put in place, which puts even more pressure on the MMM to negotiate public transport contracts which are in line with the requirements of the NLTA.

6.5.5.2.2 *Dr Belcher functional public transport corridor*

Based on the planning of the IPTN the transformation of current services to the Hauweng system will be most attainable if they are rationalised to the new system in four increments. These four increments were primarily defined based on the “clear the corridor” principle, which states that the corridor will be operationalised as a scheduled trunk service with unscheduled feeder services, followed by the rationalisation and formalisation of the unscheduled feeder services to scheduled feeder routes and services, or to complementary routes where possible.

The rationalisation and transformation of feeder services will be implemented in three stages, once the rationalisation has been proven to be financially viable, i.e., when funding is available and patronage along these feeders is at least 450 pax per hour.

It should be noted that the “clear the corridor” principle might not be viable due to the financial implications and dedicated law enforcement and public transport by-laws will need to be developed to ensure that only the Hauweng system is operational on the corridor.

The spatial extent of the three increments identified aligns with the operational areas of existing public transportation operators. These operational areas, as well as the areas that will be transformed per transformation increment, are as follows:

Namibia, Turflaagte, Freedom Square, and south of Turflaagte, Heidedal

It is envisaged that the operationalisation of the corridor will include the rationalisation of subsidised bus services demand into the Hauweng system, from year one of the operations. Some of the feeder routes will be transformed into trunk-extension services and others will be transformed into scheduled feeder services, however, the financial viability needs to be taken into consideration.

The corridor will be operationalised during 2024/25 with full transformation in 2028/2029 given that funding remains at the current level and the feasibility of feeder transformation from unscheduled to scheduled routes and services.

It has been indicated that the industry transition process will be undertaken on a city-wide level, however, cognisance should be taken that the negotiations process in terms of compensation (including OL cancellation and vehicle withdrawal) and the Hauweng service contract will most probably be long and sensitive, and this is only with the MBT industry. With the addition of the PTOG bus operator, it becomes even more time-consuming, considering that these contracts are still managed at a provincial level and might not have come to the end of their contract. For the MMM not to pay compensation to the bus industry, it is advised that engagements commence with the province to ensure that the PTOG contracts are not renewed.

It is also important to note that compensation will be paid to public transport operators who adhere to the requirements of the NLTA in terms of the provision of public transport services. Based on benchmarking with other cities, the database of affected operators will need to be signed off to ensure that all MBT operators have valid OLs linked to a vehicle. This process should be undertaken as a matter of urgency, however keeping in mind that affected operators have been identified.

6.5.5.3 Central business district implementation plan

The alternative analysis process recommended that the transformation of existing services to the Hauweng system take place in three stages in the CBD to align with available funding. The stages were primarily defined based on the "clear the corridor" principle, with the three stages aligning with existing public transportation operator operational areas. These operational areas provided three distinct sub-corridors. These sub-corridors include:

- Sub-corridor 1 (CBD)
- Sub-corridor 2 (Universitas)
- Sub-corridor 3 (Hyperama)

The primary movements in the CBD sub-corridor will be rationalised first into the new system through the implementation of scheduled direct routes and services, followed by the Universitas sub-corridor, and finally the Hyperama/Airport sub-corridor.

The corridor's operationalisation will exclude the rationalisation of subsidised bus service demand in the Hauweng system. The demand for subsidised bus service will be rationalised into the CBD corridor in 2024/25. Meaning that the "clear the corridor" principle will not apply to the corridor's operationalisation. Route and service rationalisation will take several years, with routes per sub-corridor.

It was projected that the corridor will be operationalised during 2019/20 with full transformation in 2026/27 given that the PTNG funding remains at the current level. However, the service has not been operationalised and therefore the proposed programme will have to be reviewed taking into consideration that this key milestone had not been met it is unlikely that the funding will remain at the same levels. The comments made by the MBT industry in terms of the Dr Belcher Functional Public Transport Corridor are also relevant to this corridor.

6.5.5.4 Botshabelo functional public transport corridor

It is planned that the transformation of existing public transport services to the Hauweng system will be undertaken in two separate stages. Where primary movements will be rationalised into the new system through the rollout of scheduled trunk routes and services, followed by the rationalisation of unscheduled feeder services to scheduled feeder routes and services or the extension of trunk route services spread over several years depending on funding available and the financial feasibility of the feeder service transformation.

Given that subsidised bus services service a massive portion of the demand in the area, the corridor's operationalisation will include the rationalisation of subsidised bus service demand into the Hauweng system. The rationalisation or transformation of feeder service vehicles will take four years to complete. Nevertheless, it is important to note that the MMM should have commenced with engagements with both the bus industry and the provincial government in terms of the rationalisation of these services as with the other corridors.

These areas align with existing public transport operators' routes or operational areas. The rationalisation of feeders from unscheduled feeders' services to scheduled services will depend on the financial viability and feasibility of the rationalisation.

It is envisaged that the corridor will be operationalised during 2028/29 with full transformation envisaged in 2015/2036 given that funding remains at the current level. Based on this the MMM has ample time to undertake the industry transition process with the incumbent public transport operators and additionally which includes the finalisation of the service contract. In terms of this corridor, the MMM also has ample time to undertake the devolution of powers process in terms of the contracting authority function from the provincial government as per the NLTA and be able to ensure that transport planning, as well as contracting, is undertaken at a municipal level. Also, it is important to ensure that the provincial government does not enter new PTOG contracts with the bus industry and to ensure that the planning of public transport is synchronised on a local and provincial level. However, it is important that these processes need to be taken as a matter of urgency to ensure that the corridor is operationalised on time.

6.5.5.5 Thaba Nchu functional public transport corridor

The alternative analysis process used by the public transportation improvement programme determined that the transition of existing services to the Hauweng system will take place in two stages. Where primary movements will be rationalised into the new system through the implementation of scheduled trunk routes and services, followed by the rationalisation of unscheduled feeder services to scheduled feeder routes and services or the extension of trunk route services. The corridor's operationalisation will include rationalisation of subsidised bus service demand into the Hauweng system.

As a result, the corridor should be free of operationalisation. The rationalisation/transformation of feeder services will take place over two years, with rationalisation consisting of the conversion of unscheduled feeder services to scheduled feeder services or the replacement of feeder vehicles with universally compliant vehicles. If funding remains at the current level, the corridor will be operational

in 2030/31, with full transformation in 2033/34. It is advised that the clear the corridor principle needs to be reviewed based on the following:

Hauweng will be one mode of public transport and might not be able to cover the passenger demand based on the number of buses and MBTs removed, and additionally, it does not speak to the integration of public transport. If this principle is to be applied, it might increase passenger waiting times as the demand might exceed supply. The financial implications in terms of the payment of compensation and the bus fleet and drivers required to implement the service and dedicated law enforcement requirements. The gap created by the removal of all other public transport vehicles within a much wider area of influence (than the original 500 m corridor clearance) will require more buses than currently. This will have an impact on the Contracting Authority function which resides with the Province.

6.5.6 Contracts

The goal of local government and local governance is to ensure a well-functioning city, district, town, or region with decent living conditions and economic development. This means that citizens can expect adequate income and good local service delivery. Economic development has the impact of stimulating societal development and creating viable communities where people can live, work, and have a good life. An efficient and high-quality public transport system promotes increased levels of social welfare and economic access without relying on subsidies or government-controlled services.

A well-functioning public transportation system promotes a fair and publicly accessible transportation system. The municipal/local sphere of government oversees public transportation planning. Specific regulatory and contracting functions, however, are conducted at the provincial level of government. As a result, there is a gap between planning and implementation. While there is justification for provinces to perform such functions on behalf of municipalities, this may only apply to municipalities that lack the necessary capacity.

In terms of section 14(b) of the NLTA, all planning authorities (municipalities) *must* perform the constitutional transport functions listed in Parts B of Schedules 4 and 5 of the Constitution.

Section 40 provides that provinces and planning authorities (like the city) must take steps as soon as possible after the date of commencement of the NLTA to integrate services subject to contracts in their areas, as well as appropriate uncontracted services, into the larger public transport system in terms of the relevant integrated transport plans. We require information from the city as to whether the steps contemplated in this section have been undertaken. If so, what the position is and if so whether this was ever done specifically in relation to contracting services or whether the project is the first step towards achieving that objective.

Two critical areas (not exhaustive) that would need to be considered for a successful transfer of functions and powers from the PRE to the potential MRE would be:

- staff complement (institutional arrangements)
- funding (budget requirements)

It was envisaged that the Hauweng service would have already been operationalised in certain corridors however there have not been any engagements between the MMM and the provincial government to discuss the PTOG contracts and how they will be integrated into the Hauweng System. Additionally, it is important to note that not only the bus industry will need to be engaged but the MBT as well and therefore these two parties will need to engage with each other to commence with the engagements. Looking at the timeframes for the implementation of some of the corridors for example the Botshabelo Functional Public Transport Corridor it is possible that the MMM enter a negotiated tender as per the requirements of the NLTA. Still, it is important to note that the MMM is as contracting authority as the NLTA, however, it has not taken up this function and will not be able to until the MMM has indicated its capability to take over this function from the Free State Department of Transport, who is currently the contracting authority for the subsidised public transport contracts. As the MMM is responsible for transport planning it is logical that also the contracting of PTOG-funded bus services falls under the MMM to streamline the process. Currently, the MMM has no control over the way these bus services are contracted. This raises a concern in terms of the integration of public transport modes as well as the utilisation of already dwindling financial resources.

Taking the above into consideration it is evident that the MMM is not yet able to integrate the PTOG contracts into that of the IPTN, which needs to be addressed as a matter of urgency. In addition to this, the role to be fulfilled by the MBT industry in the IPTN however defined still needs to be implemented and this process should have commenced years ago, before the initial operationalisation dates of the IPTN's first corridor which was in 2020/2021.

6.5.7 Conclusion

It is evident that much planning has gone into the IPTN as per the relevant public transport legislation and policies of the country. However, none of the envisaged milestones (implementation/operationalisation of the service) has been attained and this might have an impact on the funding received in the form of the PTNG. The MMM will need to commence with the implementation of the service as a matter of priority and review it to set realistic and attainable dates.

Additionally, the impact of COVID-19 was not considered as this might have distorted travel patterns and this matter needs to be taken into consideration. This might have an impact on the transport demand in the MMM.

Little to no reference is made to the integration of public transport modes and this is evident in the "clear the corridor" principle. The MMM needs to review this principle to ensure that the passenger demand will be met and that the correct fleet mix is used on the IPTN. Also, this principle has vast financial implications, which might not be met by the MMM, and the operational aspects of law enforcement and all relevant costs need to be considered.

However, a gap in the planning process is the industry transition process which needs to be undertaken in terms of the rationalisation of the Hauweng service. This process is long and sensitive and should be undertaken as a matter of urgency. This also includes the bus industry and the contracting authority function which is currently undertaken by the province.

The MMM should not be approaching the implementation of the IPTN in a piecemeal approach but have an integrated way in how this IPTN is being implemented. The role of the Free State Department of Transport and Community Safety is integral to the issue of integration of the subsidised bus services as well as assisting in accessing the PTOG funding, where possible.

The moratorium that the Free State Department of Transport and Community Safety imposed on new OLs had not yet been lifted and as such no new OLs would be considered leading up to the implementation of the IPTN services.

6.6 PART 4: PUBLIC TRANSPORT PLAN: OPERATING LICENCE PLAN

6.6.1 Objective of the operating licence plan

The PTP and specifically the OLP is the guide that would assist the PRE in decisions relating to operating licences. Section 50 of the NLTA empowers the PRE to deal with OLs. Currently, the supply of public transport services for non-contracted and non-scheduled services is driven by the MBT industry. Contracted services are managed in terms of the contract with restrictions for expansion. The restrictions relate to budget availability and increase in passenger numbers on specific trips i.e., the vehicle on a scheduled trip has passengers over the legal carrying capacity of the vehicle. The extension or expansion of MBT services is merely based on perceptions by the operators of the need for increased services. This approach is limited to no methodical approach from the planning authority, and as such the PRE has no legitimate reason to refuse any licence.

The objective, therefore, is to ensure that there is a balance between the demand for and supply of public transport services based on the transport plan. The MMM as the planning authority are responsible for the development of the CITP. Once the CITP is approved by the MEC responsible for transport in the province, the PRE would be obliged to use the PTP to dispense OL applications and renewals.

The management of the supply, therefore, is the function of the MMM based on the plan. From a pragmatic perspective, the demand and supply are more than just the passenger demand numbers but should also address:

- rank space
- vehicle compliance-based specifications and modal efficiencies

6.6.2 Current situation in respect of new operating licences

It was ascertained that there was a moratorium on new OL applications. The moratorium had been in place for an exceedingly long time and is yet to be lifted. Attempts to obtain information on the moratorium were not successful, however, in discussions with the FSDoT, they confirmed the moratorium. The moratorium means that the PRE is not approving any new OL applications, however, they would continue to address other OL issues such as renewals, amendments and transfers in terms of section 58 of the NLTA.

It is understood that the moratorium was not necessitated by the development of the IPTN Plan, but it would assist and support the MMM's negotiation process for compensation and in the application

of the “clear the corridor” principle. Such a moratorium would assist by preventing the saturation of the IPTN public transport functional corridors.

The moratorium was also supported by the taxi industry at the 2020 Taxi Lekgotla and as such it was one of the resolutions. The reasoning for the support of the moratorium was simply that there is a perception by the MBT industry that there is an oversupply of taxis, and this impacts negatively on the financial sustainability of the industry and thus poor quality of service.

6.6.3 Lifting of the moratorium

The growth in demand for public transport would necessitate the lifting of the moratorium. The Taxi Industry Lekgotla suggested that each province undertake an exercise to seriously determine the supply and demand for public transport in the province and then consider lifting the moratorium.

For the MMM, the moratorium is viewed as an opportunity to ensure that no new OLs be considered for each of the phases of public transport functional corridors. This would limit the number of affected operators and thus the budget for the compensation would not be unaffordable.

Unfortunately, the IPTN negotiations for the first phase of the IPTN have stalled and there is no clarity on when it would be resumed. This has an impact on the 5-year effectiveness of the CITP. With new residential and commercial developments continuing, any growth in demand for public transport would require innovative ways of managing the provision of new public transport services.

The integration of the contracted services into the IPTN is yet to be addressed, the resumption of negotiations with affected operators needs to be expedited, and the current contracted bus operator would need to be included as affected. Once the integration is complete, the negotiations of the IPTN operating contract are agreed upon, and the incremental approach alluded to in the IPTN concept of operations is adopted, only then the moratorium may be lifted.

It is recommended that consideration be given to lifting the moratorium in a phased manner. The phasing would be aligned to each IPTN operations contract for each of the public transport functional corridor. The entire urban area of Bloemfontein is covered by one or other public transport functional corridor and this also extends to Botshabelo and Thaba Nchu.

The CITP, being for five years, would require that the MMM undertake to finalise all the IPTN functional corridors within the next five years or reprioritise the corridors based on the highest impact on development. Thereafter, all OLs would be aligned to the IPTN operating contracts.

6.6.4 Operating licence administration system

The OLAS system is the basis for the management of OLs. The system is a national system and each of the provincial transport authorities would have to manage and access the system for data inputs as well as verification of operators, routes and vehicles as it relates to OLs. Should the MMM opt to have the regulatory function of the PRE to be devolved to a MRE that would have jurisdiction within the boundaries of the MMM.

Should the MMM seek to establish an MRE, there is a process that they would need to follow as stipulated in the NLTA. The key to deciding whether the MMM should take on this function is subject to:

- capacity to manage the public transport regulatory environment;
- would there be a perception of bias or conflict of interest with the MMM being the planning authority, the contracting authority and the regulatory authority; and
- financial sustainability of funding the function in the long term.

It is recommended that the MMM not consider the devolution of the regulatory function. However, access to the OLAS would be a subject of negotiation between the three spheres of government. The access would be only for verification purposes.

6.6.5 Operating licence plan guide for granting and rejection of applications

The NLTA prescribes the process for applications for OLs and the requirements. A key aspect in dispensing with OL applications is that the CIP must plan for new OLs required on routes within the planning authority. This will assist in identifying over and under-supply of public transport services. In instances of an over-supply of serviced routes, the planning authority may:

- direct the PRE not to grant the OL;
- not recommend any renewal of existing OLs; and
- recommend that some services be re-assigned to routes that have an under-supply.

The latter approach may prove to be difficult if such re-assigned route(s) is not financially sustainable. In instances where the CIP provides for a need for public transport services, the planning authority would direct that such OLs be granted.

6.6.6 Operating licences for new contracted services

The IPTN Operating Contracts are planned in terms of the Integrated Public Transport Plan 2015–2036. The five public transport functional corridors were identified and planned for implementation. The operational plan for the functional corridors includes fleet requirements, service schedules, operating hours, etc. The contracting authority for the IPTN functional corridors is the MMM. The contracting authority must ensure that there is no duplication of services or financial support for contracted services. It means that there should not be more than one contracted service for each of the functional corridors.

While the MMM is the contracting authority, the FSDoT is currently the contracting authority for subsidised service contracts within the boundaries of the MMM. The subsidised service contract would need to be integrated into the IPTN operations plan. This would require that the two contracting authorities ensure rationalisation and integration.

Once the integration has been addressed and contracts concluded, the OLs would be addressed in terms of section 56 of the NLTA.

6.6.7 Provincial Regulatory Entity referrals to the planning authority

The PRE would be guided by the CIP when considering OL applications. They refer such applications to the planning authority for direction. The planning authority would have to make a recommendation either to grant or refuse such applications based on the CIP.

The MSDF had addressed the need to prioritise the CBD regeneration, the stimulation of the eastern and south-eastern parts of the city and rural areas' access to nodes. Botshabelo and Thaba Nchu are part of the N8 development corridor that is part of the eastern and south-eastern parts of the city. Based on the MSDF, there is a need for the MMM to revisit the phasing of the IPTN implementation so that it is aligned with the MSDF.

6.6.7.1 Referral for operating licence for public transport functional corridors

The five public transport corridors identified and planned for the IPTN services had differing implementation dates assigned to them. There were dates assigned for the implementation of each of the corridors.

6.6.7.2 Maphisa/Moshoeshoe/OR Tambo corridor

This public transport functional corridor was planned for implementation in the 2020/2021 financial year. The full transformation of the corridor in line with the concept of operations was planned for 2024/2025. Unfortunately, the planned implementation date was not realised. Furthermore, there is uncertainty as to when the implementation of this corridor would take place.

It is recommended that no new OLs be considered on this corridor except in line with the IPTN operating contract (which would specify the operating fleet requirements). Applications for OLs will be addressed in line with section 56 of the NLTA.

6.6.7.3 Dr Belcher corridor

The planned implementation of this corridor was envisaged to take place in the 2024/2025 financial year. With the delays experienced, it is assumed that this would take place around the 2026/2027 financial year. That period would be within the 5-year validity of this CIP.

It is recommended that no new OLs be considered until the IPTN operating contract is finalised and applications for OLs be considered in terms of section 56 of the NLTA.

6.6.7.4 Central business district corridor and sub-corridors

It was planned that this corridor would have been implemented in the 2019/2020 financial year. This was not achieved, and it is recommended that no new OLs be considered for the CBD corridor until the IPTN operating contract is finalised. The role of public transport as the catalyst for CBD regeneration is imperative and its implementation needs to be expedited.

The importance of the CBD public transport functional corridor is core to inner-city regeneration since it is the major attraction for most of the public transport services. The public transport functional corridors, services from surrounding rural areas and long-distance intra- and inter-provincial are attracted to the CBD and surrounds.

The recommendation for the CBD corridor includes:

- A moratorium on new OLs remains in place for the corridor.
- The moratorium on new OL applications for public transport services generated from other corridors to the CBD remains in place.
- The moratorium be lifted in line with a revised IPTN implementation phasing for this corridor.
- Expediting the CBD corridor in line with the MSDP's CBD regeneration.

6.6.7.5 Botshabelo and Thaba Nchu corridors

The planned implementation of these corridors is planned for the 2028/2029 and 2030/2031 financial years respectively. These corridors are part of the N8 Corridor project and fall within the industrial hub of the MMM. The N8 Corridor links several nodes:

- CBD node;
- Airport node;
- Mandela View; and
- Botshabelo and Thaba Nchu.

The airport node development is the first significant development on the corridor, and it comprises residential (Estoire and Raceway Park) and industrial stands around the airport node. The intention is for a high-density area supported by TOD that would prevent urban sprawl and support the development of an industrial base for Mangaung.

A National Treasury grant provided the investment for the supporting infrastructure for the industrial stands. The private sector is responsible for developing Raceway Park. Currently, the project is still in the process of township establishment, a task being undertaken and funded by the Housing Development Agency.

The proposed implementation dates in the Integrated Public Transport Plan seem highly unlikely. Whilst the proposed period for implementation may fall in the latter years of the CIP, and in the instance of the Thaba Nchu corridor, outside of the period. Given the above, it is extremely important for the IPTN plan phasing to be reconsidered.

The N8 corridor is part of the MMM's strategic priority and a reprioritisation of the Botshabelo and Thaba Nchu public transport functional corridors that would serve as a catalyst for the N8 Development Corridor. The reprioritisation should consider the catalytic impetus that it would provide to attract development investment to the N8 corridor, in both residential and industrial development.

Current taxi and bus operations on these public transport corridors operate on the N8 and impact on the CBD, Maphisa/Moshoeshoe/OR Tambo and the Dr Belcher public transport functional corridors.

Due to the PTOG budget allocations for subsidised services, they cannot be expanded. However, the integration as part of the IPTN would ensure quality public transport on the corridor.

It is recommended that:

- Consideration be given to the reprioritisation of Botshabelo and Thaba Nchu functional corridors due to the potential economic and social impact that it would have on the N8 corridor development.
- The moratorium on new OLs would remain in place until there is a decision on the reprioritisation.
- In the interim, the integration of the current subsidised contracted services with the IPTN plan needs to be expedited.

6.6.8 Renewals, transfers and amendments of operating licences

Renewal, transfers, and amendment of OLs are done in terms of section 58 of the NLTA.

6.6.8.1 Renewals

OLs have a definite lifespan, which is seven years, however, planning authorities may limit the timespan based on the CITP. The MMM may limit the validity of renewed OLs based on the IPTN implementation plan. Effectively, any OLs that are to be renewed on a public transport functional corridor may be linked to the effective date of the IPTN implementation of that corridor.

As previously mentioned, the dates for implementation as planned for the CBD and Maphisa/Moshoeshe/OR Tambo corridors had passed. This creates uncertainty for the renewal of OLs on these corridors. This would require needs of the MMM to guide the IPTN implementation phasing.

Once the implementation phasing has been decided, the timespan for the renewed OLs would be linked to the implementation phases for each of the public transport functional corridors. Renewal of OLs that operated within the MMM boundaries but are not affected by the IPTN public transport functional corridors would continue to be addressed as per the recommendation of the MMM.

6.6.8.2 Transfers

A transfer is the change of ownership and as such the process is for the PRE to be satisfied that the new owner of the public transport business is compliant in terms of the NLTA.

6.6.8.3 Amendments

Amendments to the OL will be restricted to the replacement of vehicles with the same seating capacity as the vehicle being replaced on all the public transport functional corridors. This approach would have the current supply remain constant and would support the “clear the corridor” principle.

6.6.8.4 Long-distance inter-provincial transport and cross-border transport

The regulatory body that considers and decides on inter-provincial passenger transport is the National Public Transport Regulator. The functions of the regulator are contained in section 21 of the NLTA. The regulator would refer an application to the relevant PREs and planning authorities.

To this, for any new applications the PTP must ensure that there are sufficient ranking facilities and approval thereof. The ranking and stopping facilities within the MMM area must also consider security arrangements since there is a spate of violent attacks on long-distance bus operations.

Cross-border public transport operations relate to services that cross international boundaries. These services are prevalent in the Free State Province and the MMM in respect of services between Lesotho and South Africa. Whilst these are dealt with in terms of the cross-border transport legislation there is a need to ensure that public transport facilities are provided for by the MMM.

It is recommended that the MMM manage referrals for inter-provincial transport by access to official ranking as well as officially designated stops and drop-off and pick-up points within the MMM.

6.6.8.5 Rural public transport

The areas surrounding the urban area of Bloemfontein which is supported by the five public transport functional corridors are considered the rural areas, which include the various towns that fall within the area or jurisdiction of the MMM.

To identify the connectivity of the rural and small-town citizens, the node would require that the current services continue. However, throughout the CIP validity there is a need to undertake an exercise on the viability of each of the rural routes to nodes within MMM.

The route viability exercise would need to determine a minimum level of service, route rotation of services to ensure maximum coverage of services to rural areas, and improvement of vehicle safety by being prescriptive on vehicle specifications, age and condition.

It is therefore recommended that:

- Applications for OLs on rural routes (i.e., routes outside the identified public transport functional corridors) should be accepted and considered subject to a route viability exercise.
- The MMM recommendations on OL application referrals must address:
 - minimum levels of service;
 - minimum vehicle age and condition; and
 - availability of official rank facilities.

6.6.8.6 Metered taxi, e-hailing and tuk-tuks

The roles of these types of services are not driven by mass public transport demand and are considered services for individuals and support of private services. These services do not operate on

fixed routes and as such OLs are granted for operations within a particular radius and ensure that the numbers are not oversupplied.

6.6.9 Conclusion

The OLP provides some guidance on the manner of dealing with OL applications. The aim would be to expedite the IPTN implementation by concluding contracts for each of the public transport functional corridors.

The rural public transport connectivity, long-distance inter-provincial services and metered, e-hailing and tuk-tuk services would require viability studies so that any potential for an over-supply and consequent reduction in the service quality may be avoided.

In the annual update of the CIP and the PTP, there is a need to undertake route viability studies for rural public transport.

CHAPTER 7: TRANSPORT INFRASTRUCTURE STRATEGY

The Transport Infrastructure Strategy is in line with the objectives of the CITP. Therefore, prioritizing the development of superior infrastructure in urban and rural regions, as well as enhancing the safety and security of all road users, is of utmost importance to the MMM's strategic approach.

When formulating the Transport Infrastructure Strategy for the MMM, the emphasis was placed on prioritizing projects that would yield the most substantial outcomes, particularly targeting public transport users and road infrastructure. This encompassed initiatives such as non-motorized transportation (NMT), public transport enhancements, and the enhancement of existing road infrastructure.

7.1 INTEGRATED PUBLIC TRANSPORT NETWORK PROPOSED INFRASTRUCTURE STRATEGY

The MMM IPTN has developed a 20-year City Wide IPTN Plan with an implementation schedule which includes public transport infrastructure. The discussions below will give a summary of the infrastructure strategy from the IPTN.

7.1.1 Stops and Stations

7.1.1.1 Design principle

The passenger environment's quality at stops, stations, and transfer points plays a vital role in shaping the perception of a public transport system. These locations encompass various elements, including waiting areas, walkways, doors, stairs, escalators, elevators, fare gates, ticket machines, information displays, and bicycle storage facilities. When designing stations and stops, a combination of estimating passenger flows and providing adequate space for passengers, based on a chosen design level of service, is crucial.

The design of stations and stops must consider the needs of passengers with special requirements, focusing on designs that are not only universally accessible compliant but also convenient for specific categories of passengers with special needs. For instance, placing elevators alongside stairways facilitates convenience for passengers with special needs, rather than simply meeting minimum accessibility standards with an elevator located in a remote area.

The selection of a stop or station type depends on the route design and whether the facility serves as an end destination or a transfer point. The facility's function is determined by the number of routes that pass through or near it. Consequently, facilities are strategically planned to provide passengers with choices for voluntary transfers between routes or to accommodate forced transfers resulting from the system's design. Forced transfers can be advantageous when a passenger misses the first bus of the day but knows that they can access multiple routes near the main transfer point, allowing them to reach their final destination conveniently.

To enable flexibility within the system, providing passengers with transfer options and allowing loading and offloading near key points of interest such as hospitals, retail areas, universities, and other facilities that are part of the Integrated Public Transport Network (IPTN) is essential.

A six-tier hierarchy was developed for the IPTN and comprise of:

- controlled access stations;
- uncontrolled access stations (stop with shelters);
- main transfers ;
- high-capacity public transport stops;
- stops; and
- low-capacity transfer (voluntary transfer).

7.1.1.2 Levels of service for queuing and waiting areas at facilities

Figure 7.1 provides an illustration of the concept of level of service concerning passenger queuing and waiting areas. The established thresholds take into account factors such as average pedestrian space, personal comfort, and varying degrees of internal mobility. The level of service is presented in terms of the average area allocated per person and the average interpersonal space (the distance between individuals). It is important to note that the design assumes the inclusion of a dedicated area for wheelchair users in all facilities. Additionally, design principles encompass cross-cutting elements such as universal accessibility, geometric design standards, and environmental considerations.

The required level of service for waiting within a facility is determined by factors such as the duration of the wait, the number of people waiting, and the desired level of comfort. Generally, longer waiting times necessitate a larger space allocation per person. Individuals' tolerance for crowding levels also varies with time. For instance, people may tolerate being tightly packed in an elevator for 30 seconds, but not in a waiting area for 15 minutes.

Acceptance of limited personal spacing also depends on population characteristics, weather conditions, and the type of facility. For instance, commuters might be more willing to tolerate higher levels or longer durations of crowding compared to inner-city and recreational travelers.

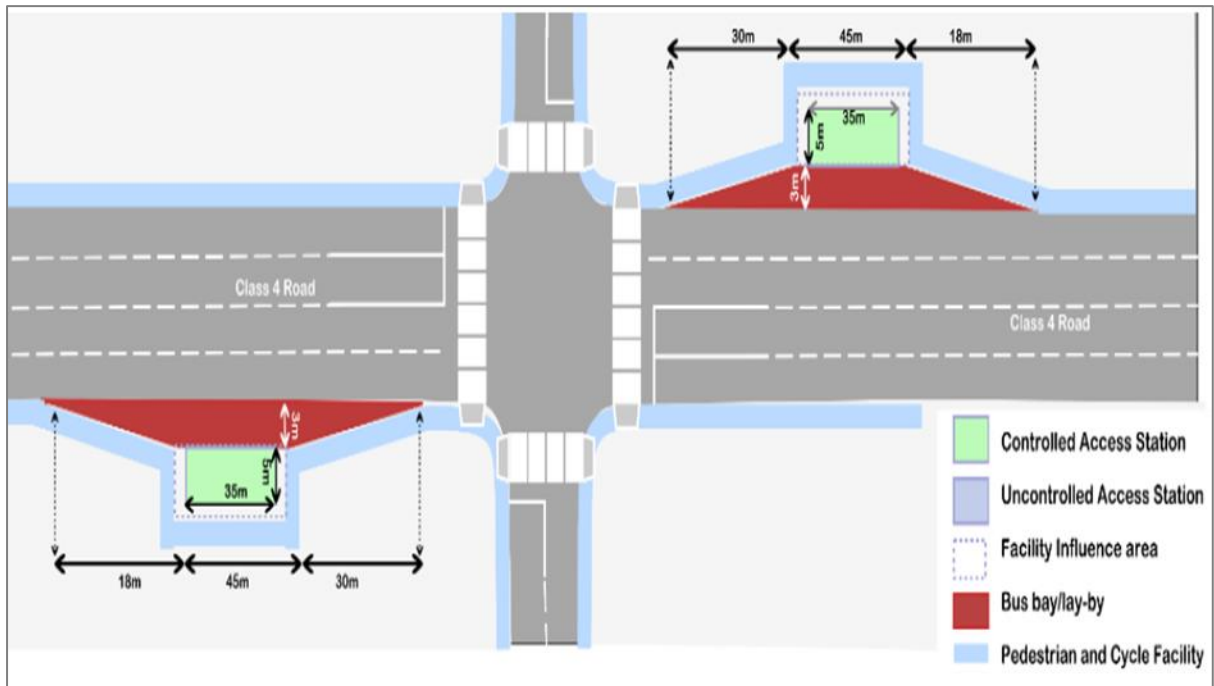
LOS	Average Pedestrian Area (m ² /p)	Average Inter-Person Spacing (m)	LOS Description
A	1.2	>=1.2	Standing and free circulation through the queuing area possible without disturbing others within the queue.
B	0.9-1.2	1.1-1.2	Standing and partially restricted circulation to avoid disturbing others within the queue is possible.
C	0.7-0.9	0.9-1.1	Standing and restricted circulation through the queuing area by disturbing others is possible; this density is within the range of personal comfort.
D	0.3-0.7	0.6-0.9	Standing without touching is impossible; circulation is severely restricted within the queue and forward movement is only possible as a group; long-term waiting at this density impacts on personal comfort.
E	0.2-0.3	<0.6	Standing in physical contact with others is unavoidable; circulation within the queue is not possible; queuing at this density can only be sustained for a short period without serious discomfort.
F	<0.2	Variable	Virtually all persons within the queue are standing in direct physical contact with others; this density is extremely discomforting; no movement is possible within the queue; the potential for pushing and panic exists.

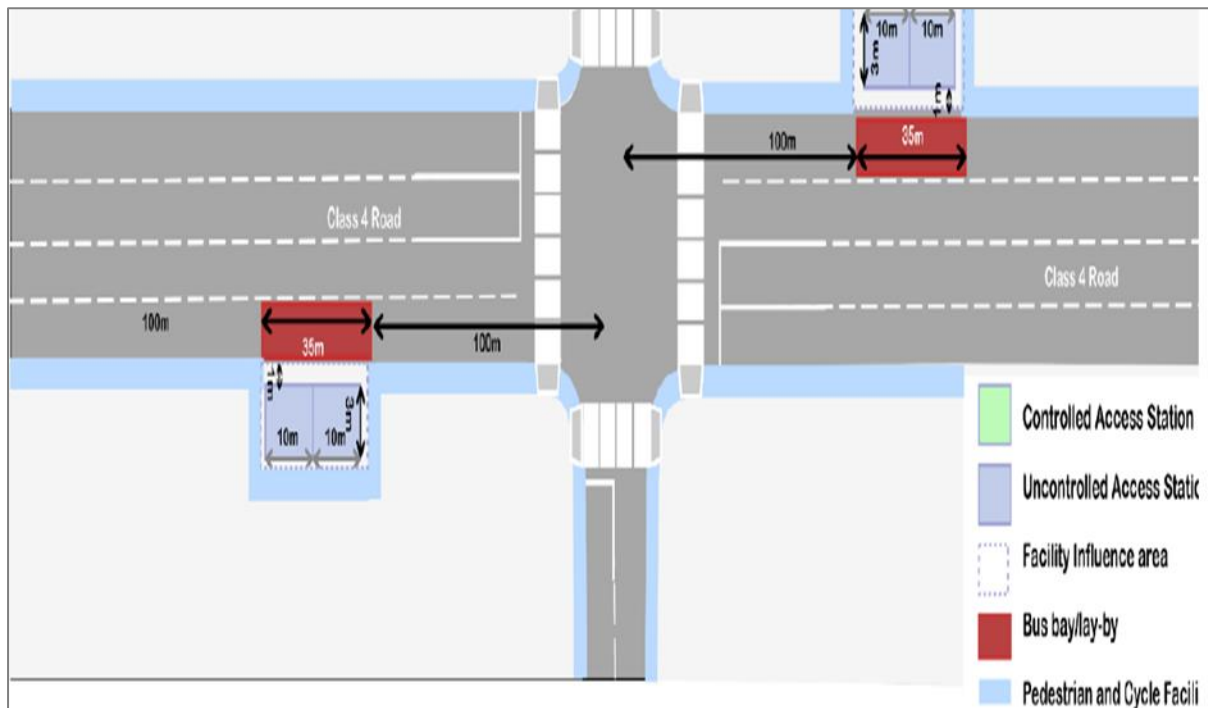
Figure 7.1: Level of service display

7.1.1.3 Controlled access stations

Below is the design criteria for the controlled access station for the MMM IPTN:

- Passenger volumes per peak 15 minutes: >400 per hour.
- Stations are to be manufactured in 10-metre modules to cater for varied demands at different locations.
- 35-m long station x 5 m deep in.
- 45 x 3-m kerbside layby.
- Situated right up to layby roadway with Kassel Kerb docking.
- Station floor needs to be raised to match low-entry bus. Low entry bus, entry-level is 340 mm.
- Comply with universal access requirements.
- Station can be increased in modules of 10 m to allow for an increase in passenger demand.
- Two automated doors to align with the left front door and middle door on the left side of bus.
- Usually, 1 100 mm wide with 30 mm clearance for door handles on each side when doors are open. Height is 1 900 mm.
- One lockable manual roller door at the entrance.
- One emergency exit at the other end of the station.
- 1 m for electricity.
- 1 m for the intelligent transport system.
- One toilet and washbasin.
- Closable recess in a wall for communication systems, e.g. microphone and IP phone.
- 500 mm for cleaning equipment.
- Pedestrian phase required at signals nearest to controlled access station or pedestrian crossing at priority controlled intersections.
- Signalling is to be upgraded at relevant intersections to include voice and visual signalling in the long term after detailed universal surveys are completed.
- Seating rails.
- Lockers under seating rails.
- Four fold-down seats attached to a seating rail in the paid area.
- Guardrails to facilitate correct passenger flow.





7.1.1.4 Uncontrolled access stations

Below is the design criteria for the un-controlled access station for the MMM IPTN:

- Passenger volumes per peak 15 minutes: $100 << 400$.
- Station sizing:
 - 10 m long x 3 m deep open station in 35 m x 3-m layby. The average configuration should require ± 2 modules.
 - Stations are to be manufactured in 10 m modules to cater for varied demands at different locations.
 - Station set back ± 1 m from Kassel kerb to facilitate quick boarding only through the left front door.
- No cubicles.
- Pedestrian phase required at signals nearest to controlled access station or pedestrian crossing at priority-controlled intersections.
- Signalling to be upgraded at relevant intersections to voice and lit signals.
- Median to facilitate crossing.

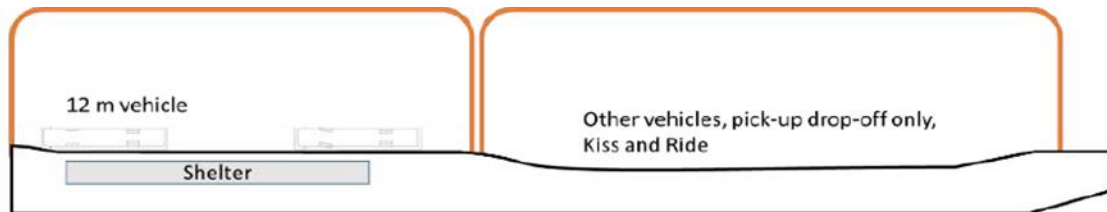


7.1.1.5 High-capacity public transport stop

The following is the highlight of the function of a high-capacity public transport stop:

- Provide transfer between routes in the network.
- Size depends on the number of feeder routes and vehicle fleet servicing the feeder routes. Forced transfer from trunk to feeder route.
- Implemented where short-term route design is trunk-feeder and long-term route strategy will be a complementary route and selective feeder route implementation model.
- In each corridor, an allowance was made for several high-capacity public transport stops. At these stops allowance is made for integration between feeder and trunk services and to allow for:
 - holding of smaller vehicles; and
 - trunk and complementary service vehicle layovers.
- Several of these stops were included in the system design; this decreases the need for only one large transfer facility in a corridor and provides transfer opportunities at the main points of interest in the city.

- To increase capacity and become transfer facilities where holding for vehicles, long-distance, trading and other services will be allowed.
- Furthermore, the approach allows that a corridor can be operationalised while a formal transfer facility is constructed or till demand trigger a main transfer facility in a corridor. Other for feeder trunk operations, integration at main trip generators and attractors, hospitals, shopping centres etc.



7.1.1.6 Low-capacity voluntary transfer facility

The following is the highlight of the function of a low-capacity voluntary transfer facility:

- Provide transfer opportunities to passengers within the system. These transfers are positioned where main corridors or routes intersect.
- The number of transfers between these corridors or routes needs to be determined once the system is operational.
- However, the implementation of these facilities allows passengers that travel between origin and destination where less than 50 people were modelled the opportunity to transfer between main routes to reach the final destination.

Performance measure:

- No seating arrangements.

- No shelter.
- No bicycle parking.
- Stops will be implemented:
 - along feeder routes and integration with trunk routes and services will only be at the main transfer or high-capacity public transport stops. Refer to the design principles of a high-capacity public transport stop above.
 - along the trunk routes to provide direct access to the services thus not requiring to use a feeder service. The size of the stops is determined by the number of passengers that will gain access to the services. The stop can also be an uncontrolled access station depending on the number of passengers and other criteria presented in the design principles.

7.1.2 Summary of city-wide network facilities: trunk feeder and complementary route design

Facility type	Maphisa	OR Tambo	CBD	Dr Belcher	Botshabelo	Thaba Nchu
Stops	32	28	170	74	120	62
Controlled access stations	-	-	-	-	-	-
Uncontrolled access stations (stop with shelters)	10	10	22	16	16	14
Transfers high-capacity	6	6	11	10	4	6
Transfers low-capacity (voluntary transfer)	8	8	6	4	0	0

7.1.3 Summary of city-wide network facilities: trunk-only route design

Facility type	Maphisa	OR Tambo	CBD	Dr Belcher	Botshabelo	Thaba Nchu
Stops			170			
Controlled access stations	-	-	-	-	-	-
Uncontrolled access stations (stop with shelters)	10	10	22	16	16	14
Transfers high-capacity	6	6	11	10	4	6
Transfers low-capacity (voluntary transfer)	8	8	6	4	0	0

7.1.4 Transfer facilities

The proposed route design alternatives necessitate the inclusion of transfer facilities in the central business districts (CBDs) of Bloemfontein, Botshabelo, and Thaba Nchu. These facilities will serve as key integration points connecting various modes of transportation and services within these areas as well as to other locations. Furthermore, long-distance and cross-border public transport services will integrate with the local corridors at these transfer points. To assess the capacity required, the four design years were considered, comparing the capacity of these facilities to accommodate the anticipated demand during the full development stage of the system.

The passenger experience of the new system will rely on their familiarity with the new system and the smooth coordination between the operations of the new system and the existing one throughout the implementation process. To facilitate this, it is advantageous for the transformed system to have reference points that align with corresponding elements in the existing system. These main transfer points will be upgraded, and improvements will be made to the built environment to signify the transformation taking place.

The transfer facilities selected for the system comprise:

- the intermodal facility, next to Bloemfontein rail station;
- Hoffman Square in the CBD;
- Blue Rank in Botshabelo; and
- Thaba Nchu main taxi and bus rank (Van Riebeeck Street).

The transfer facilities will serve as the connecting points for transfers between trunk routes, specifically the Intermodal and Hoffman Square, as well as between feeders and trunks to/from Botshabelo, Thaba Nchu, and Bloemfontein.

To ensure efficient development, it is planned that these facilities will be constructed and expanded gradually in alignment with the operational phases of the system. Constructing these facilities to their full capacity during the initial stages of development would result in high capital costs and underutilization. Instead, the design and development approach focuses on providing infrastructure and systems based on the estimated demand for each operational phase. The design principles include triggers that indicate the appropriate stage to consider capacity increases as the system progresses.



Facility type	Maphisa	OR Tambo	CBD	Dr Belcher	Botshabelo	Thaba Nchu
Transfer (main)			2		1	1
Controlled access stations at transfer facilities or in corridor	1	1	3	3	1	1

7.1.4.1 Hoffman Square main transfer facility

Hoffman Square is conveniently located within the CBD, offering a walking distance of 500 meters to the Intermodal Facility and Central Park. These existing transfer points already serve as connections between bus and taxi services in the city. Hoffman Square itself provides an urban space with various amenities and retail developments. It seamlessly integrates with Floreat Avenue, which serves as a predestination point and offers informal trading facilities. Additionally, there is a direct pedestrian link to Wes Burger and Charles Streets.

To utilize the space as a transfer facility, the on-street parking along the square will be repurposed to accommodate public transport bays. However, on-street parking will still be available along the rest of St Andrews and Charlotte Maxeke Streets. This reduction in on-street parking aligns with the objective of the city, as stated in the ITP 2008, to promote public transport within the urban area.

The capacity of the transfer facility is determined by factors such as passenger waiting time, the type of stops and stations based on demand, and the number of public transport bays required for effective route integration. With Hoffman Square extending 185 meters along St Andrew and Charlotte Maxeke Streets and 56 meters between these roads, following the design guideline of 24 meters by 3 meters per public transport bay, a total of 20 bays can be implemented along the perimeter of the square.

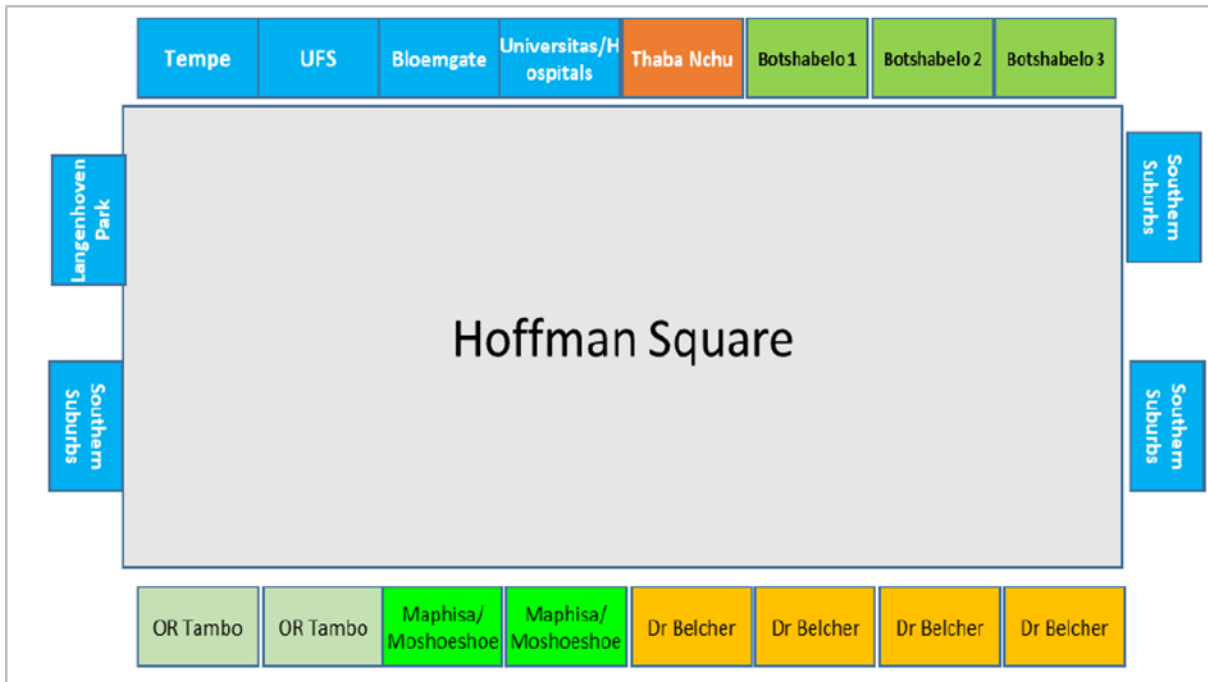


Figure 7.2: Hoffman Square

As according to the IPTN the design approach aimed to assign at least one bay per functional public transport corridor in the city. The number of bays required was determined by considering the vehicle dwell time for each route at different service frequencies in the years 2017, 2025, and 2036. In cases where the service frequency was significantly higher than the dwell time, the bay was allocated to another route to optimize the utilization of bays. Similarly, routes with longer dwell times required more than one bay.

Following the analysis from the IPTN, it was found that a total of 37 routes would require transfers, with the highest number of bays required being 27 and the lowest being 21. However, since the maximum number of bays that can be accommodated at Hoffman Square is 20, additional transfer stations will be needed to facilitate transfers between routes. As a solution, it is planned to provide 5 bays at the nearby intermodal facility, located approximately 500 meters from Hoffman Square. This addition will ensure a sufficient number of bays for transfers within the city.

In the long-term, with full implementation, it is anticipated that long-distance taxi and bus services will integrate with the system at the intermodal facility. Moreover, the route design allows for integration between facilities in such a way that the majority of routes from suburbs pass through the intermodal facility and Hoffman Square. Express services may only connect to one of the two transfer facilities, but this will be clearly indicated in route descriptions and route numbering. A CBD circulation route can be implemented when demand and passenger surveys indicate the need for it.

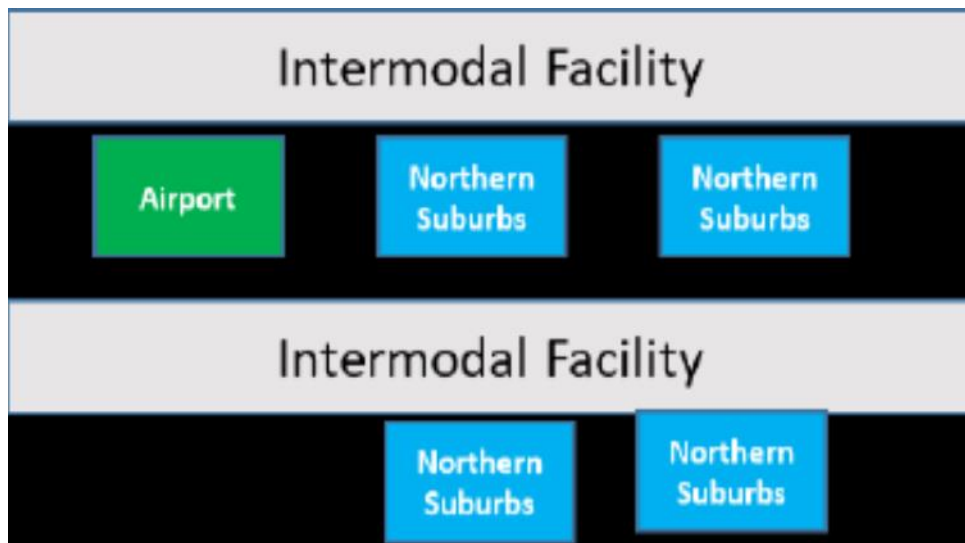
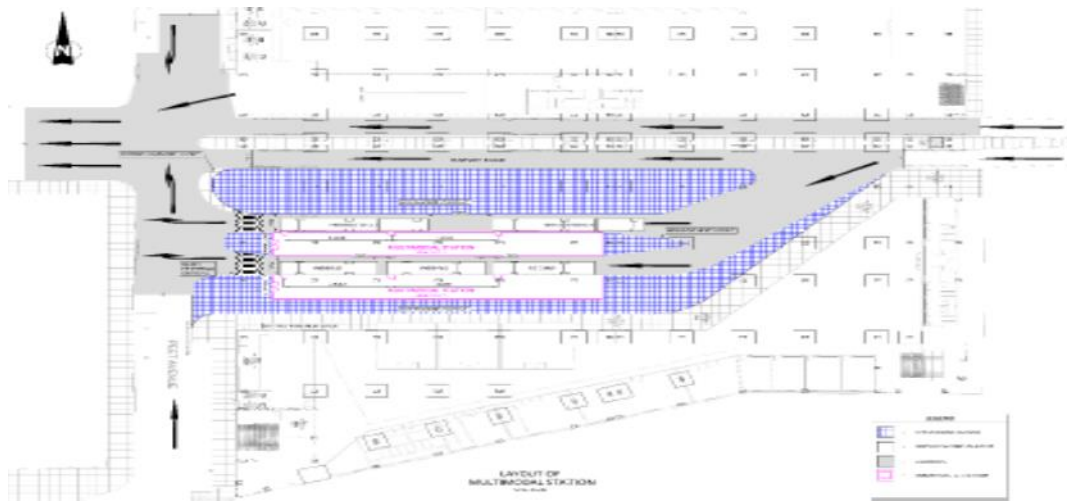
7.1.4.2 Multimodal facility

The intermodal is situated between the rail station and the main transfer facility of the subsidised bus service, Central Park. Central Park is privately owned, and service integration between the multimodal facility and Central Park is via a pedestrian bridge.



The functions that will be performed by the multimodal facility will consist of the following:

- Serves as distribution and collection hub for incoming and distribution services, both taxi and bus.
- Allows easy access to other integrated modes of public transport such as rail, subsidised bus services, long-distance taxi services, and taxi services not yet integrated into the IPTN.
- Allows easy access to the customer care centre for the purchase of fare smartcards, top-ups and the resolution of fare collection, concession procurement, and service problems.
- Stations/stops will be constructed on the ground floor to allow integration between modes at the facility. The size of the stops and stations depends on the passenger demand and the number of phases of the IPTN that is operational.



7.1.5 Botshabelo transfer facility

According to the IPTN The existing Blue Rank in Botshabelo is envisioned to serve as the primary transfer facility. This rank currently functions as an integration point for bus and taxi services, as depicted in Figure 7.3. To ensure seamless integration between the existing public transport services and those incorporated into the IPTN system, a comprehensive precinct plan must be developed. This plan will outline the necessary steps and strategies for achieving integration at the rank. Before the Botshabelo corridor can be operationalized, a detailed analysis and implementation plan must be conducted to address the specific requirements of the area and ensure a successful integration process.



Figure 7.3: Botshabelo transfer facility

7.1.6 Thaba Nchu transfer facility

The Thaba Nchu rejuvenation project has provided an opportunity to establish dedicated lanes in the CBD of Thaba Nchu. The implementation of this project follows an incremental approach, with plans to transition from dedicated lanes to mixed-use operations. As part of the rejuvenation proposals, integration between local services and IPTN services is planned at the proposed rank area. According to the IPTN the strategic design of Thaba Nchu CBD is depicted in Figure 7.4, highlighting the proposed integration between existing services and the IPTN services at the new rank location. However, before the Thaba Nchu corridor can be fully operationalized, a detailed assessment of the existing facilities will be necessary. This assessment will help ensure that the integration and operation of the corridor are carried out effectively.



Figure 7.4: Thaba Nchu transfer facility

7.1.7 Depot and sleeping ground



Figure 7.5: Depot and sleeping ground for Bloemfontein

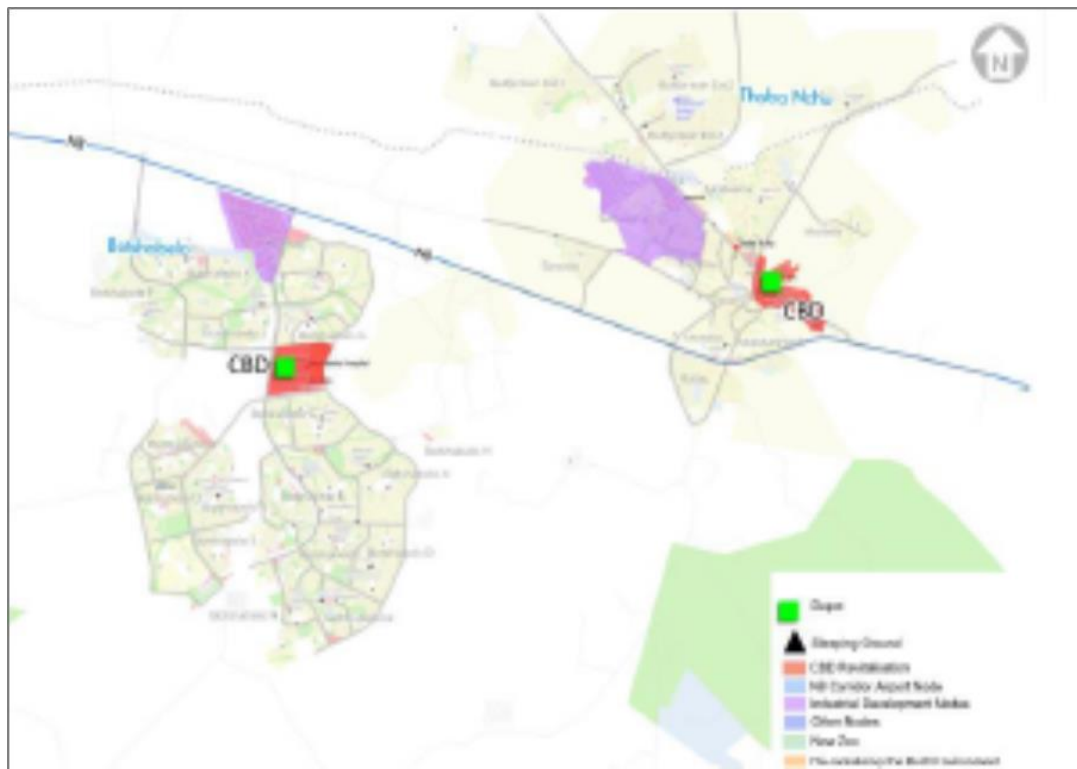


Figure 7.6 Depot and sleeping ground for Botshabelo and Thaba Nchu

7.1.7.1 Definitions

A **depot** is defined as a facility that houses the full fleet function, inclusive of the administrative, financial, human resource, technical/maintenance and operational disciplines. Depending on the exact circumstances of the particular public transport service, there might be more than one depot for a single operation, in which case there will be a hierarchy of depots. The headquarter functions will typically be fulfilled by one such depot, while the others will fulfil more regional-type functions.

A **sleeping ground** can be defined as a secure area where buses are kept, when not needed for operation. Such facilities are usually strategically located near the trunk and main routes, to reduce operating hours and minimise dead and empty kilometres. The term sleeping ground traditionally refers to the staging of vehicles, properly surrounded by a secure electric fence, is well lit with high mast lighting and guarded by security personnel, mainly overnight, with the main purpose of positioning vehicles so that they are located close or near operational starting points. It is very seldom that facilities are provided at sleeping grounds for drivers to sleep over or rest, i.e., the *sleeping* thus refers solely to the vehicles and not the drivers. The only building needed is a guardhouse building, with toilet facilities.

7.1.7.2 Bus depot at destination-end

The demand for transportation services in the MMM exhibits a consistent one-directional pattern during the morning and afternoon peak periods. This pattern is expected to remain unchanged due to the existing settlement patterns. During the peak periods, which typically last around 1 to 2 hours in the morning and 2 to 3 hours in the afternoon, there is significant passenger demand, while during

off-peak hours, the demand is minimal or non-existent. Furthermore, even during the off-peak period, the demand remains predominantly one-directional.

In order to optimize operational expenses and consider practical considerations, it is advisable to locate the main bus depot(s) on the destination side of the IPTN main and trunk route(s) or service(s). This strategic placement allows the majority of buses to be stationed at the depot(s) during the middle of the day when they are not in active service. The depot(s) should include necessary facilities and amenities to facilitate tasks such as bus washing, refueling, and maintenance. These activities can be more efficiently carried out during regular working hours, eliminating the need for unnecessary overtime expenses. Additionally, a fully equipped workshop, a driver rest area, and management offices are typically included in the depot design.

7.1.7.3 Sleeping ground at origin

Considering the earlier discussion regarding the placement of bus depots on the destination-side of the trip in the morning, it is clear that sleeping grounds for buses are more appropriately situated at the origin-end of IPTN routes, specifically during the morning period. Ideally, these sleeping grounds should be located within a feeder route service area capable of servicing multiple feeder route service areas.

In addition to serving as a designated resting place for buses, the sleeping ground at the origin-end of IPTN routes can incorporate various other facilities and amenities. These may include offices, workshops, wash bays, refueling facilities, and so on. Given the sporadic nature of maintenance requirements at sleeping grounds, the inclusion of mobile workshop units that can be deployed on an as-needed basis can effectively address maintenance needs and facilitate feeder vehicle requirements.

The facilities required for the full implementation stage are:

- One depot in Bloemfontein that accommodate 300 vehicles (main depot).
- An additional depot is required when Botshabelo and Thaba Nchu is incorporated into the system.
- Sleeping grounds are required close to the starting point in Mangaung, Botshabelo and Thaba Nchu.

Design year	Feeder trunk and complementary	Feeder trunk	Trunk only
2017	522	664	424
2025	629	714	516
2036	576	853	443

7.2 RAIL INFRASTRUCTURE STRATEGY

The PRASA 2019/2020 Annual Report reveals that there has been a steady decline in patronage for the past ten years continued in 2019/20. The plan is to increase the number of trains and routes, increasing the number of passengers. The key focus will be on popular and untapped routes:

Komatipoort, Polokwane for Moria, Mafikeng, Garden Route and Bloemfontein shuttle services. The timetable will be reviewed to reflect passengers' preferred travel days and times. The Marketing Department will aggressively market the service and look for new and repeat passengers.

The MMM is serviced by two rail lines:

- Bloemfontein–Maseru railway line which connects Thaba Nchu to Bloemfontein along the National Route N8 corridor alignment in an east-west direction.
- Johannesburg–Bloemfontein–East London/Port Elizabeth railway line, which traverses the Bloemfontein urban node in a north-south direction.

Currently, these railway lines carry no commuter services within the MMM area, and they are exclusively used by Transnet Freight Rail for freight transport and by Shosholozza Meyl for long-distance passenger transport along the Johannesburg–Bloemfontein–Port Elizabeth service, the Johannesburg–Bloemfontein–East London service and the Cape Town–Kimberley–Bloemfontein–Pietermaritzburg–Durban service.

The following railway infrastructure initiatives are planned within the MMM area:

- According to the SDF, a railway connection proposal has been made to connect Botshabelo to the Thaba Nchu–Bloemfontein railway line section.
- A feasibility study is planned to determine the feasibility of developing an additional railway link/siding to serve the ADN (Phase 2).
- The PRASA railway upgrade programme has issued a tender for a Rail Feasibility Study of the N8 rail corridor (which forms part of the SIP 7).

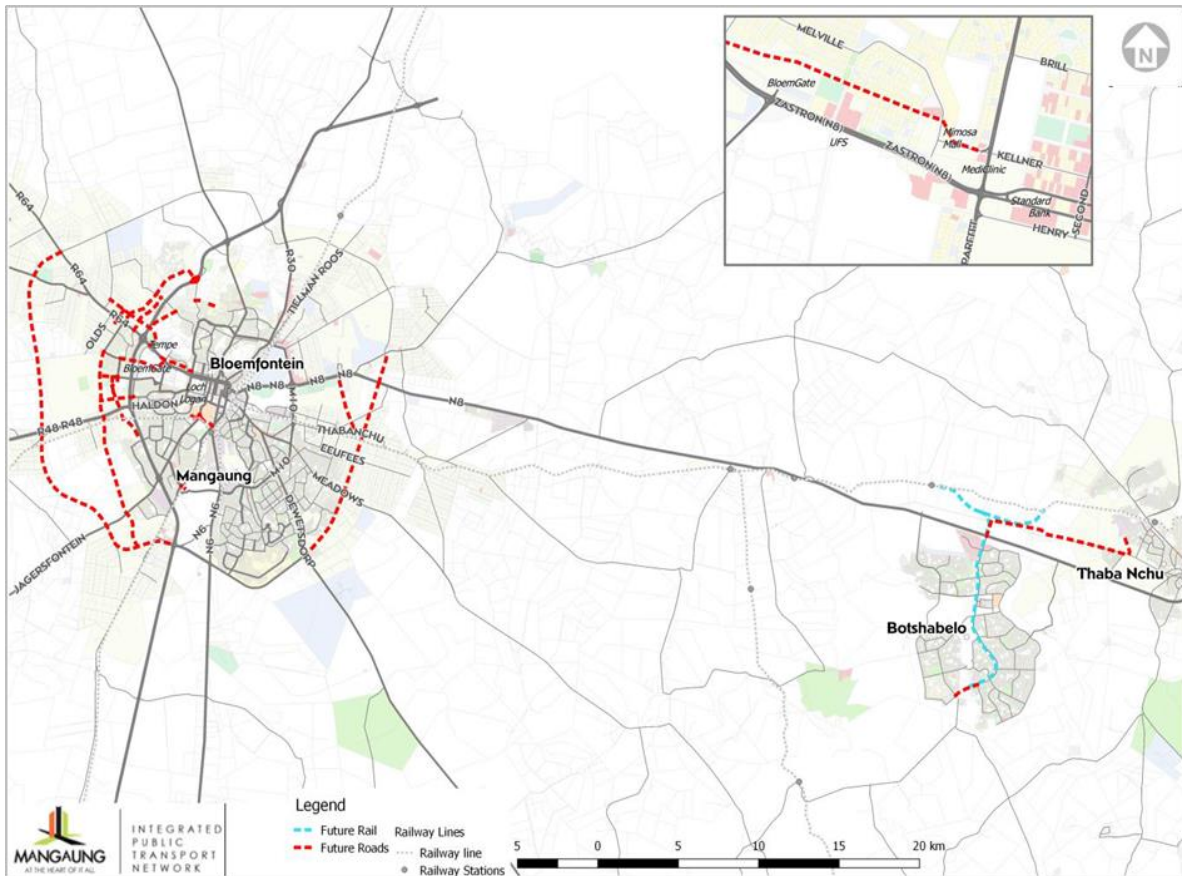


Figure 7.7: MMM future road network

7.2.1 Future rail network

From the MMM IPTN several route alignments were considered to provide a commuter rail service from Botshabelo and Thaba Nchu to Bloemfontein. The proposed alignments are presented in Figure 7.8. The detailed feasibility study to determine the sustainability of daily commuter service between the mentioned areas needs to be developed. It should be noted that a mode choice transport model will be needed to support the proposals above.

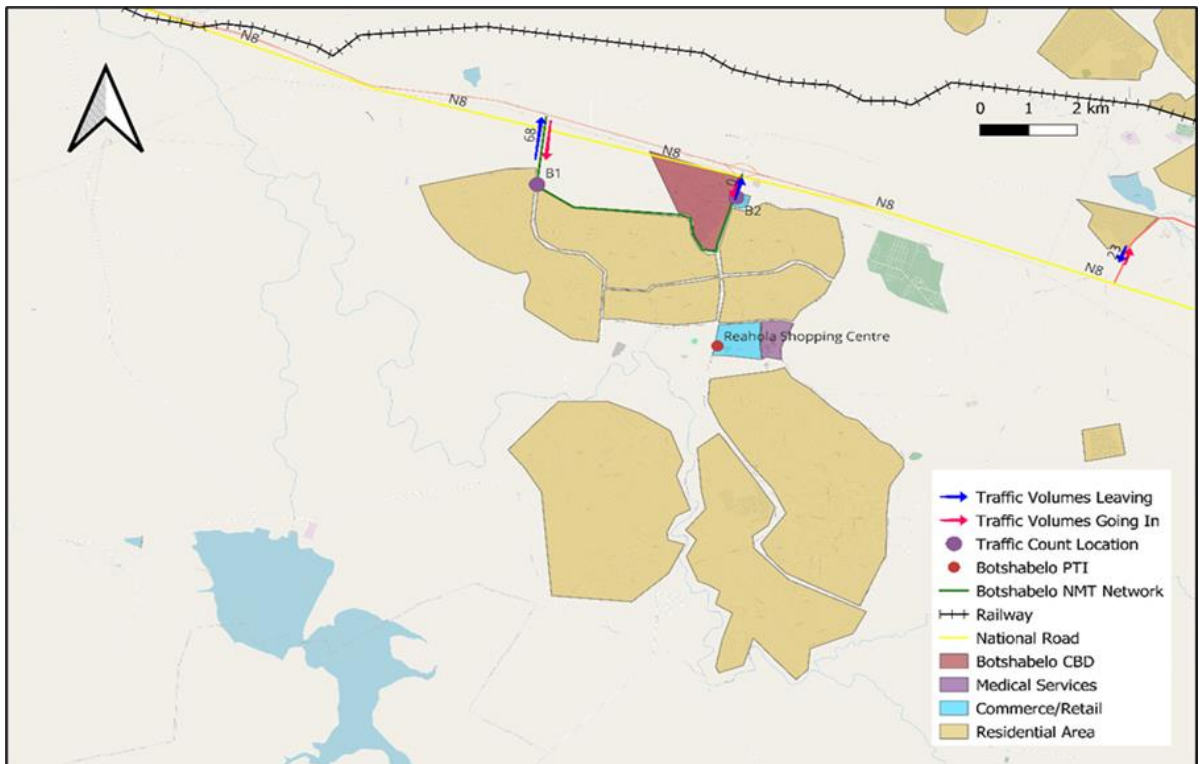
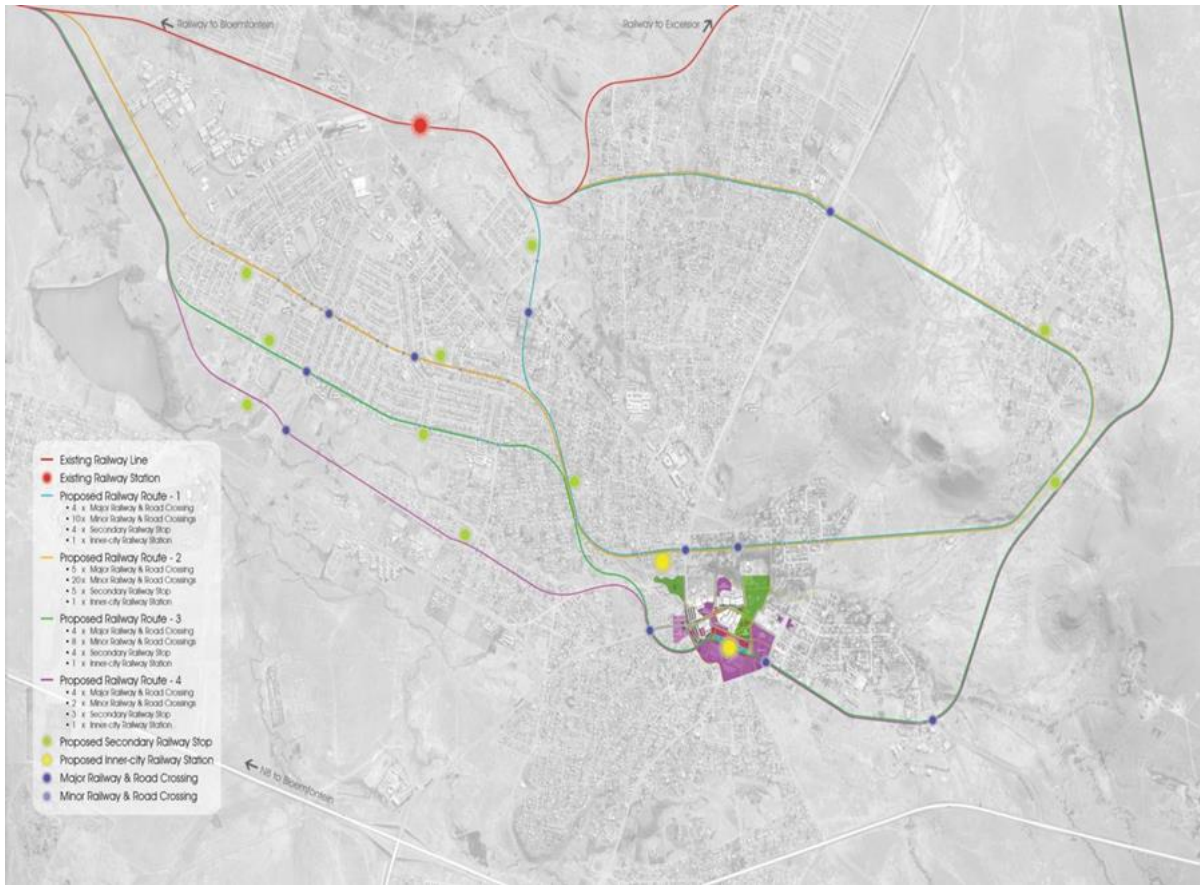


Figure 7.8: IPTN proposed rail alignment

From the PRASA report, there is a proposed future expansion of rail services between 2023–2026 for in between the following towns that affect MMM:

- Botshabelo–Thaba Nchu–Bloemfontein
- Qwaqwa–Bloemfontein

A mode choice transport model would be required to test the possibility of another service being provided between Thaba Nchu and Bloemfontein, such as a light rail. Light rail can be warranted for passenger demand between 6 000 and 12 000 in one direction per hour. From the screen-line surveys, there is 4 311 pax/hour/direction from existing public transport modes during the morning peak hour period on the N8 heading to Bloemfontein from Botshabelo and Thaba Nchu. Light rail might attract a mode shift from private vehicles to public transport and assist to alleviate bus traffic on the N8 corridor.

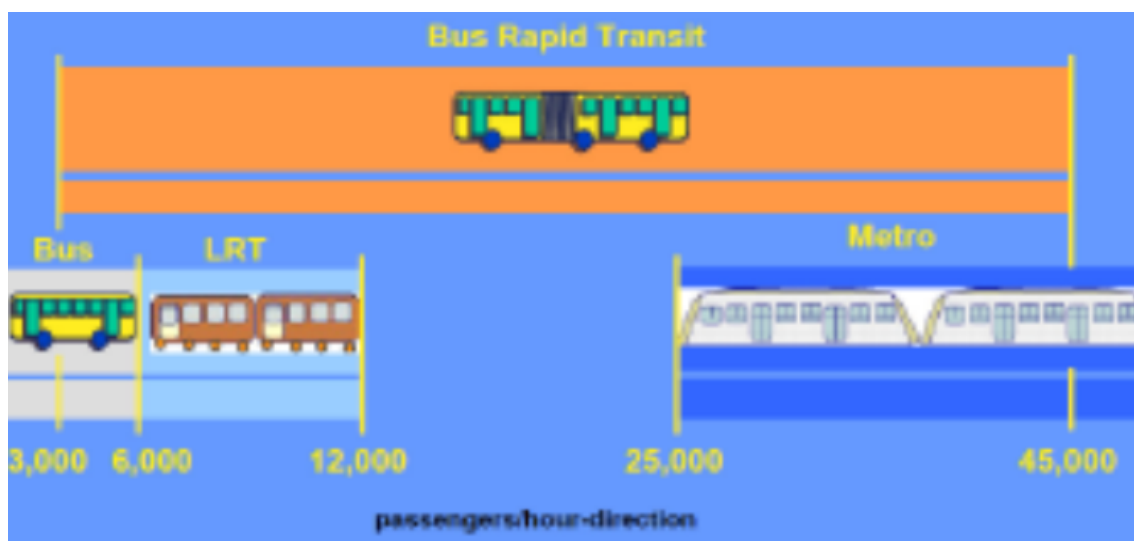


Figure 7.9: Light rail proposal

7.3 NON-MOTORISED TRANSPORT INFRASTRUCTURE STRATEGY

7.3.1 Non-motorised transport design principles

This section provides an overview of salient standard principles for NMT infrastructure design. The design of all NMT infrastructure should be completed in a safe and responsible manner according to all relevant South African laws and guidelines.

7.3.1.1 Walkways and cycleways

The proposed design width and separation criteria for NMT walkways on different road classes in the MMM are indicated in Appendix D. This information was taken from the Department of Transport’s NMT Facility Guidelines 2014.

Table 7.1: Recommended design criteria for walkways in MMM

Road class	Accepted minimum sidewalk width	Optimal sidewalk width (subject to capacity requirements)	Separation requirements from motor vehicle roadway	Notes
Class 1– principal arterials	N/A	N/A	N/A	NMT facilities are not eligible along these routes
Class 2– major arterial	1.8 m	2 m	5 m total separation*	Barriers recommended
Class 3– minor arterial	1.8 m	2 m	2–5 m total separation*	
Class 4– collector street	1.8 m	3 m	Partial separation**	
Class 5– local street	1.8 m	2 m	Partial separation/ mixed shoulder	
Class 6– NMT only	0 m	2 m	No separation required	Walkway and cycleway can be adjacent to minimise earthwork

* Total separation: No conflict between motorised and NMT even in the event of loss of control of vehicles. A heavy barrier or separation of 1–9 m should be provided between the shoulder and NMT lane.

** Partial separation: No conflict can occur under normal operating conditions. Often a level difference between the roadway or light barriers is provided.

The sidewalks should be designed with the following principles:

- Separated sidewalks should be a minimum of 1.8 m wide (all classifications).
- Sidewalks should be provided on both sides of all street classifications (including most residential and industrial areas).
- Wider (≥ 2.0 m) sidewalks should be provided along public transport routes and connections to public transport hubs.
- Wider (≥ 2.0 m) sidewalks should be provided for connections to schools, within activity centres and near major pedestrian generators.
- Sidewalks should be wider (> 2.0 m) to provide separation from traffic when:
 - truck volumes are $> 10\%$ of the total volume;
 - design speed is > 60 km/h (do not apply to this faculty); and
 - traffic volume is $> 20\,000$ vehicles per day.
- Sidewalk width should be chosen based on surrounding land uses (higher density requires wider sidewalks).

- For sidewalks constructed at the base of a retaining wall (between the wall and the street), be sure to include additional sidewalk width (space to remove the discomfort of having to walk immediately next to the wall or curb). The additional sidewalk width required might need to vary by the height of the wall, with higher walls requiring more space and very low walls requiring less. However, this distance should typically be at least 0.3 m from the wall and, if the sidewalk must be back-of-curb due to space constraints. Generally, a sidewalk next to a retaining wall should be at least 2.3 m wide on avenues, boulevards, and parkways, not including the curb measurement.
- For sidewalks constructed near the top of retaining walls, provide the same additional sidewalk width as described above, and (depending on the height of the wall) include a handrail at the top of the retaining wall.
- Pedestrian-scaled lighting should be incorporated appropriately into the use of the street.
- Handrails and landings should be provided along steep grades.

With regards to the cycleways, the design width and separation criteria for NMT cycleways on different road classes are indicated in Appendix D. It is recommended to allocate space within the NMT network, where possible, to accommodate potential future cycle demand.

Table 7.2: Recommended design criteria for cycleways

Road class	Accepted minimum sidewalk width	Optimal sidewalk width (subject to capacity requirements)	Separation requirements from motor vehicle roadway	Notes
Class 1– principal arterials	N/A	N/A	N/A	NMT facilities are not recommended along these routes
Class 2– major arterial	1.5 m (check sight distances)	2 m (check sight distances)	5 m Total separation	Barriers recommended
Class 3– minor arterial	1.5 m (check sight distances)	2.5 m (check sight distances)	Partial separation	Dropped kerbs at crossings
Class 4– collector street	1.5 m	1.8 m	Marked separation	
Class 5– local street	1.5 m	1.8 m	Partial separation/ mixed shoulder	
Class 6– NMT only	0 m	1.5 m	No separation required	Walkway and cycleway can be adjacent to minimise earthwork

The design of cycleways can be classed into four categories. These are Class 1, 2, 3 and 4.

Class 1 requirements:

- A Class 1 bicycle road has an independent alignment in a cycle reserve.

- A 3.5 m road width is desirable, but an absolute minimum of 2.5 m could be considered.
- Provide 0.5 m lateral clearance and at least 2.5 m vertical clearance.
- Commuter and recreational routes where there is adequate space for greenway development.
- Preferably separated from pedestrians, but could be designed as multi-use pathways.
- Typically having grade separation at intersections.
- There are limited accesses and junctions, and cyclists are not required to behave as pedestrians rather than vehicles at junctions.
- Provide smooth pavement.
- Ensure connectivity through the development of a bicycle master plan.

Table 7.3: Bicycle roads class 1 minimum widths

Implementation	Minimum width (m)
Parking prohibited with kerbing or hard shoulder	1.2
Roadway with unpaved shoulder or sloped drop-off	1.5
Parking permitted	1.8
Minimum width at intersections	1.5
Desirable width at intersections	1.8
Maximum width at intersections	2.0

Class 2 requirements

- Provided within the road reserve of a street or road, either on- or adjacent to the carriageway.
- A 1.8 m one-way lane width is desirable, but an absolute minimum of 1.5 m could be considered.
- A 3.0 m two-way lane width is desirable, but an absolute minimum of 2.5 m could be considered.
- Provide 0.5 m lateral clearance where no property access is present, otherwise, 3.0 m is required.
- There are limited accesses and junctions, and cyclists are not required to behave as pedestrians rather than vehicles at junctions.
- Ensure continuity of routes.
- Provide sufficient sight distance at intersections and accesses.
- Preferably separated from pedestrians, but could be designed as multi-use pathways.
- Provide smooth pavement.
- Ensure proper maintenance, especially pavement edges.

- Provide a smooth transition from pavement to the gutter pan.

Table 7.4: Class 2 bicycle lane minimum widths

Condition	Minimum width (m)
Desirable minimum	3.5
Acceptable minimum	3.0
Absolute minimum	2.5
Horizontal clearance	0.5

Class 3 requirements

- Specifically marked on the roadway pavement, usually unprotected.
- Provide streets with an 80 km/h posted speed limit, but preferably 60/70 km/h.
- Provision should be made for aerodynamic forces where heavy vehicle speeds exceed 70 km/h. This is done by providing a separation distance between the roadway and cycle lane, varying from 0.5 to 2.2 m.
- Not appropriate for use by young cyclists.
- Ensure proper maintenance, especially pavement edges.
- Provide a smooth transition from pavement to the gutter pan.

Table 7.5: Bicycle lane class 3 minimum widths

Implementation	Minimum width (m)
Parking prohibited with kerbing or hard shoulder	1.2
Roadway with unpaved shoulder or sloped drop-off	1.5
Parking permitted	1.8
Minimum width at intersections	1.5
Desirable width at intersections	1.8
Maximum width at intersections	2.0

Class 4 requirements

- Accommodated on the roadway, shared with vehicular traffic and indicated by road signs only.
- Maximum vehicle speeds of 50 km/h, but preferably lower than 40 km/h.
- Desirable shared lane width of 4.5 m, with an absolute minimum shared lane width of 4.2 m
- Provided on streets with low traffic volumes, no through traffic and no parallel parking.
- Not provided for use by young cyclists.

- Ensure proper maintenance, especially pavement edges.
- Provide a smooth transition from pavement to the gutter pan.

7.3.1.2 Surfaces

NMT surfaces should be free of dust and mud with good drainage. Surfaces should be comfortable and safe. Paving should be well finished off, especially around poles and other potential obstructions.

7.3.1.3 Railings

Where there are vertical drops greater than 0.8 m or slopes steeper than 1:2 within 1 m of the edge of pathways, handrails should be provided. The recommended height of these railings is 1 m. In areas where pedestrians should not cross, handrails could be investigated for safety purposes.

7.3.1.4 Intersections

Intersections and crossings are high-risk areas for pedestrians. Safe and efficient pedestrian crossings are crucial to reducing pedestrian risk. The detailed design of pedestrian crossings should be included where relevant in all road designs and signal designs.

Pedestrian crossings should be marked. Medians should be sufficiently wide to accommodate pedestrians if applicable.

A sufficient number of pedestrian crossings should be provided. In areas with high pedestrian demand or where alternative crossings along priority routes are not sufficiently safe, a pedestrian bridge may be warranted.

Pedestrian crossings at intersections:

The following considerations need to be made during the design of intersection pedestrian crossings:

- Minimum crossing width of 2.4 m (preferred 3 m).
- Crossing should be located a minimum distance of 1 m from the stop line.
- Crossing lanes road markings are 100 mm wide, spaced 0.5 m/1.5 m.
- Crossing width should be 1.6 m from the through-traffic movement.

Mid-block crossings:

Provided at locations to support pedestrian desire lines:

- Ensure availability of stopping sight distance.
- Consider the provision of a stop bar on multi-lane facilities.
- Restrict parking adjacent to a crosswalk.
- Provide kerb extensions, not encroaching into the cycle path.
- Use reflective materials on kerbs.

- Provide wheelchair ramps or at-grade channels with kerbs and medians.
- Use zebra crosswalk markings for increased visibility.
- Construct a speed table where appropriate.
- Consider advance warning signs for vehicle traffic.
- Consider kerb extensions with illumination and warning signs on vehicular approaches to increase visibility.
- Provide high-visibility crosswalks at locations with high pedestrian flows and/or identified as hazardous locations.

Pedestrian refuge island:

Provides refuge to pedestrians crossing a roadway either at an intersection or mid-block crossing.

- The island should extend through the crosswalk, serving as a guide to turning vehicles and creating space for signage.
- Provide a kerb cut for wheelchair accessibility.

Pedestrian grade separation:

Provided at locations with very high pedestrian volumes (such as modal transfer facilities), roads with high vehicular volumes and across freeways.

- Ramps should be universally designed and positioned to promote the use of the facility.
- Measures should be implemented to deter jaywalking, such as the provision of median barriers.
- Lighting should be provided.
- A pedestrian over-pass is preferred above the provision of a culvert.
- The design should promote safety and security.

Table 7.6: Pedestrian grade separation specifications

Facility	Width (m)	Height (m)
Pedestrian bridges	2.0	5.2
Pedestrian subways		
<ul style="list-style-type: none"> • Length: 14 m or less 	2.1	2.4
<ul style="list-style-type: none"> • Length: 14 m to 24 m 	2.4	2.4
<ul style="list-style-type: none"> • Length: more than 24 m 	3.0	3.0
Shared pedestrian/bicycle subways		
<ul style="list-style-type: none"> • Pedestrian walkway 	2.0	2.5
<ul style="list-style-type: none"> • Cycle walkway 	3.0	2.5

7.3.1.5 Lighting

Lighting should be provided for pedestrians, especially in areas with high pedestrian demand after dark. Lighting should be provided separately from street lighting as there are different light height requirements for pedestrian walkways.

7.3.2 Universal access design principles

7.3.2.1 Overview

Universal access in non-motorized transport (NMT) refers to the accessibility of transport-related activities and the use of NMT infrastructure by all individuals. It is essential to consider vulnerable users to ensure easy movement for everyone. Vulnerable users encompass various groups such as the elderly, visually impaired individuals, hearing-impaired individuals, children, wheelchair users, and those with learning disabilities. The design of all NMT infrastructure should incorporate universal access principles to accommodate the needs of these users.

While this chapter outlines some universal access principles, it is important to note that the detailed design of NMT infrastructure in the MMM should adhere to all applicable legal requirements and practice standards whenever possible. By doing so, the infrastructure can effectively promote accessibility and inclusivity for all individuals.

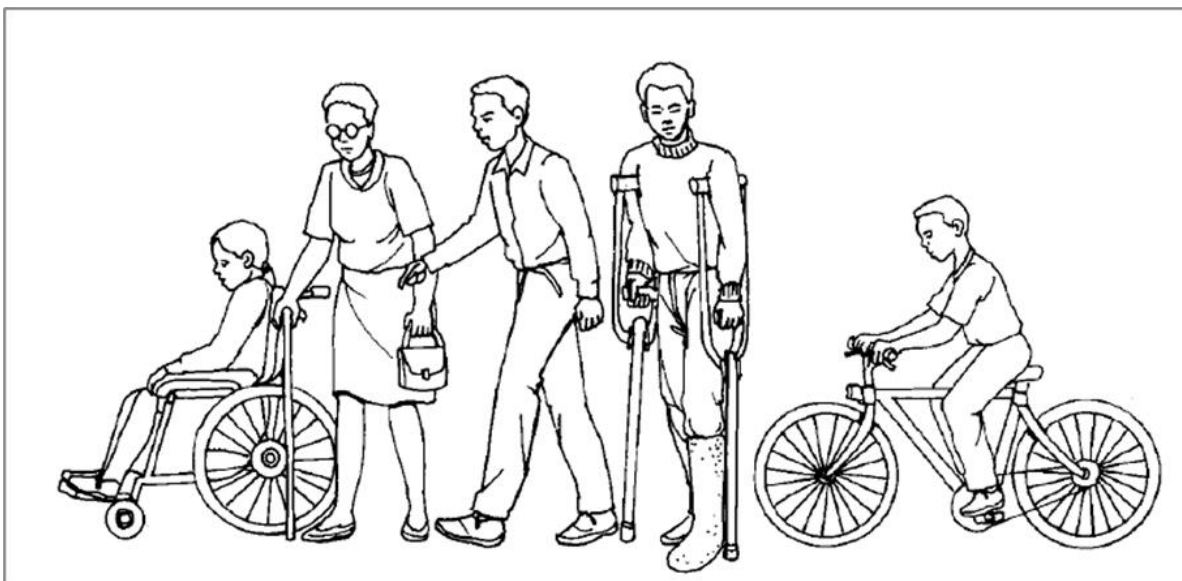


Figure 7.10: Persons requiring universal access

7.3.2.2 Road crossings

Dropped kerbs and/or kerb ramps are essential at any point where pedestrians or cyclists need to cross a road. These features primarily cater to individuals using wheelchairs, as well as those pushing objects such as prams or wheelbarrows, and can also benefit individuals with mobility impairments. It is crucial to provide dropped kerbs and kerb ramps at all road junctions, midblock crossings, medians, islands, and any other location where a kerb needs to be crossed, without any exceptions.

The installation of ramps should be a standard practice for newly constructed and improved roads and streets. Additionally, there should be programs in place to retrofit existing roads and streets with appropriate kerb ramps/dropped kerbs. Existing kerb ramps that do not meet the required standards should be upgraded as necessary. These dropped kerbs/ramps should span the full width of the crossing, meaning that each corner of the intersection should have two ramps installed perpendicular to the face of the kerb, rather than a single ramp facing diagonally into the intersection. Tactile guidance blocks, which contrast in color with the rest of the sidewalk, should be provided at the kerb ramps. Refer to the examples and typical detail provided below for further guidance.

In pedestrian precincts, the crossings should be demarcated with a distinct surface to assist visually impaired individuals and to highlight the prominence and importance of pedestrians in those zones.

At signalised intersections, audible signals can be installed to assist pedestrians with visual impairments in safely crossing the road.

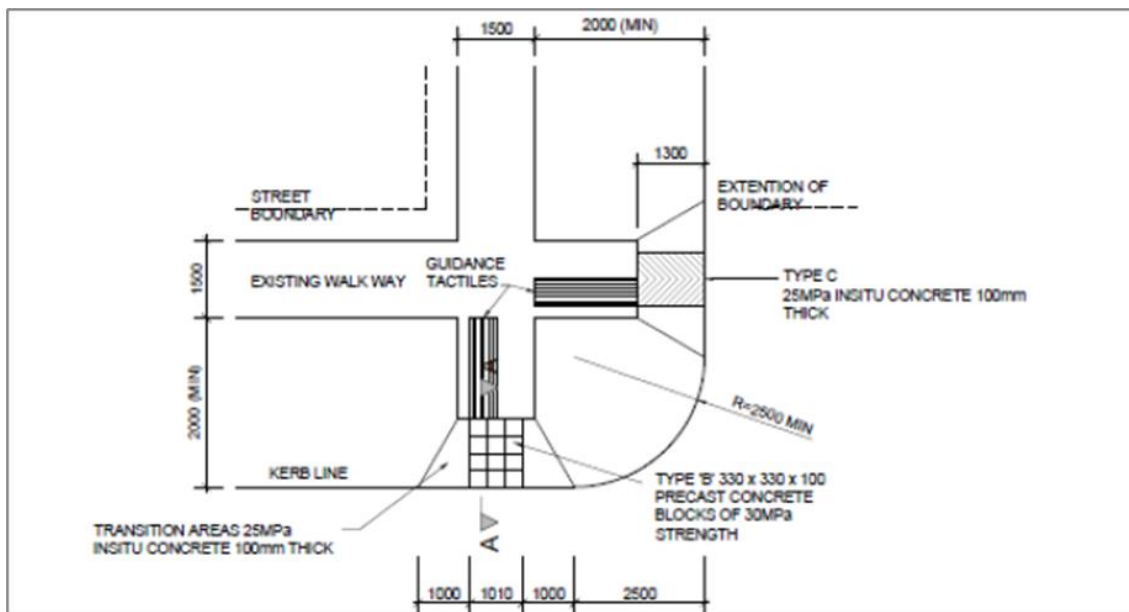


Figure 7.11: Example of universal access at an intersection crossing

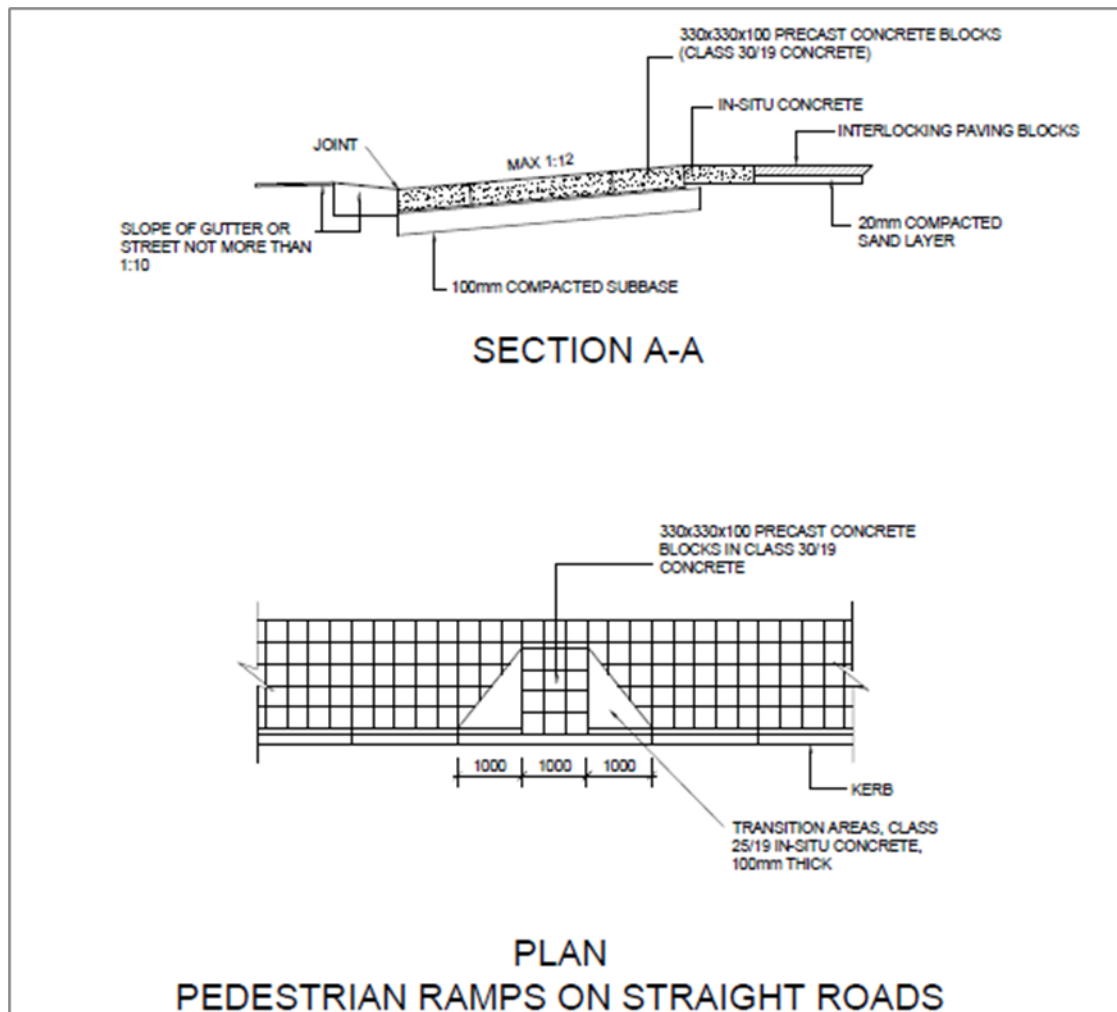


Figure 7.12: Pedestrian ramp detail

7.4 ROAD NETWORK INFRASTRUCTURE STRATEGY

7.4.1 Mangaung Metropolitan Municipality

The condition of the existing roads is discussed below. According to the Mangaung Road Asset Management System data, there are more gravel roads than there are surfaced roads. Concrete roads are negligible.

Table 7.7: MMM total road network

Road type	Total km	Total (%)
Gravel road	2 229.46	63.32%
Block paving	094.36	2.67%
Concrete paving	000.16	0.00%
Flexible pavement	1 204.03	34.13%

The majority of gravel roads is due for maintenance as they are in a very poor state.

Table 7.8: General condition of gravel roads

Gravel road		
General condition	Total km	Total (%)
1. Very good	000.00	0%
2. Good	000.16	0%
3. Fair	271.19	12.17%
4. Poor	537.99	24.13%
5. Very poor	1 419.67	63.69%

The block paved roads are relatively in fair condition. Routine maintenance is required.

Table 7.9: General condition of paved roads (block paving)

Block paving		
General condition	Total km	Total (%)
1. Very good	8.9	9.43%
2. Good	38.77	41.09%
3. Fair	30.03	31.82%
4. Poor	9.26	9.81%
5. Very poor	7.4	7.84%

The 0.16 km of concrete road is in very poor condition.

Table 7.10: General condition of paved roads (concrete roads)

Concrete paving		
General condition	Total km	Total (%)
1. Very good	0	0%
2. Good	0	0%
3. Fair	0	0%
4. Poor	0	0%
5. Very poor	0.16	100%

The flexible pavement roads are relatively in fair condition. Routine road maintenance is required.

Table 7.11: General condition of paved roads (flexible pavement)

Flexible pavement		
General condition	Total km	Total (%)
1. Very good	248.16	20.61%
2. Good	405.94	33.71%
3. Fair	247.05	20.51%
4. Poor	155.55	12.92%
5. Very poor	147.33	12.24%

According to Road Asset Management System data report the total maintenance cost will amount to R13.151 billion for all types of roads.

Table 7.12: Total roads maintenance cost (MMM)

	Amount (r)				
	Functional class				
	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	Total
Surface type					
13 mm and slurry (thin Cape seal)	R0,00	R0,00	R0,00	R1 861 813 819,20	R1 861 813 819,20
Asphalt	R1 605 575 672,90	R668 879 915,94	R2 361 324 412,49	R1 754 460 399,28	R6 390 240 400,61
Double seal (aggregate size unknown)	R0,00	R0,00	R0,00	R2 603 893 325,95	R2 603 893 325,95
Single seal (aggregate size unknown)	R0,00	R0,00	R0,00	R2 295 254 940,22	R2 295 254 940,22
Total maintenance cost (Rands)					R13.151 Billion

In line with NATMAP 2050, there is a strategic need to upgrade all gravel roads in all district municipalities in the Free State.

7.4.2 SANRAL

In 2016, SANRAL appointed Royal Haskoning DHV to conduct a transport model study for the proposed outer ring road in Bloemfontein, Free State. The EMME software package was used to develop the model. Traffic surveys were done in 2014 at strategic points. These traffic counts were compared with SANRAL traffic volumes at SANRAL counting stations to improve the model results.

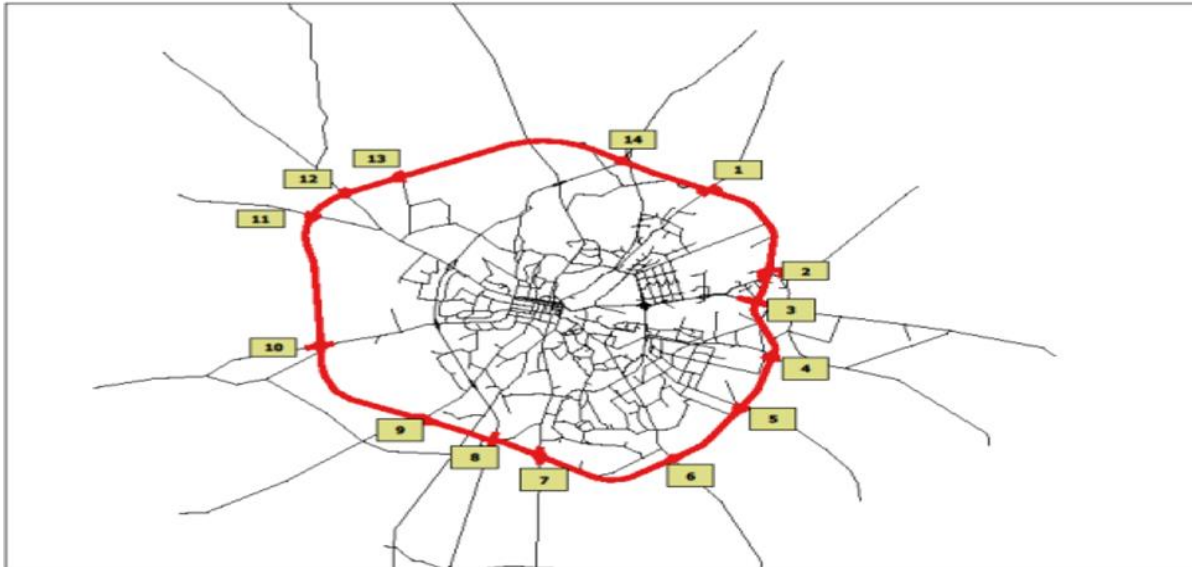


Figure 7.13: Mangaung Outer Ring Road

The transport study of the outer ring road recommended the following:

- Introduce southern ramps on the N1 and Ring Road Northern Section.

It must be noted that the transport study for the outer ring road does not take into consideration the traffic volumes that will be generated from the following proposed township establishment in the vicinity of the outer ring road:

- Turflaagte Township
- Bloemside Phase 7
- Caleb Motshabi
- Vista Park

7.5 EMERGENCY MEDICAL SERVICE ROUTES STRATEGY

Emergency routes are designed to provide mobility with fewer interruptions on the road. Speed humps and unnecessary stops have the potential to minimise the response time by the emergency services to save lives. Through a stakeholder consultation process, there was a meeting with MMM Emergency Medical Services. Through this meeting, it was clear that the majority of township roads are inaccessible to emergency services due to the very poor condition of these roads. The Road Asset Management System data also reveals that 63.69% of gravel roads are in very poor condition. The map in Annexure D shows roads that were identified as problematic by the emergency medical services team.

CHAPTER 8:

TRAVEL DEMAND MANAGEMENT STRATEGY

The chapter on Travel Demand Management Strategy aims to assist the MMM to assess various issues, problems, trends and performance standards revealed by the TR. It further aims to present or establish the present transport demand and estimate the future transport demand. The outcomes of the assessment will assist the municipality to identify issues of capacity concerning roads and public transport facilities. This report deals particularly with the road-based private and public transport capacity. It further concentrates on road capacity and less so on public transport facilities' operational and capacity requirements.

8.1 BACKGROUND

Based on the analysis of the land use data undertaken, the MMM is expected to generate additional traffic trips in excess of 100 000 pcu/h by end of the year 2032 if all planned developments were to be realised. It is apparent that the future trips cannot be accommodated by both the existing and planned road network.

Government and local government should investigate other solutions and strategies outside capital-intensive infrastructure solutions. The Free State Province has the vision to prosper through the provision of sustainable community safety, mobility, road infrastructure and management of government motor transport. Various government policies provide or recognise the need to look outside the latter. This is covered in policies such as the National Transport Act of 2000 and the Public Transport Strategy of 2009. These policies encourage the use of public transport and NMT as means to achieve sustainable transport. They also encourage the promotion of public transport over private car usage.

As a departure point, the Free State Public Transport Act, 2005 (Act No 4 of 2005) states that the planning and development of public transport as a tool for restructuring society to:

- (i) enable and encourage workers to reside nearer to their places of work, especially where locational disadvantages were created by previous discriminatory policies;
- (ii) encourage residential areas to be located nearer to work areas;
- (iii) promote easier movement of persons in the province;
- (iv) promote and encourage the use of NMT in the province;
- (v) promote urban renewal, densification and mixed land uses; and
- (vi) discourage urban sprawl and promote the development of compact urban structures.

8.2 WHAT ARE TRANSPORT DEMAND MANAGEMENT STRATEGIES

TDM means the use of strategies to inform and encourage travellers to maximise the efficiency of a transportation system leading to improved mobility, reduced congestion, and lower vehicle emissions.

8.3 NEED FOR TRAVEL DEMAND MANAGEMENT

Through the combination of land use and demand model exercises undertaken in this study, the quantity of traffic volumes expected to be generated by future developments planned within the MMM demands that other methods than capital-intensive infrastructure provision should be sought. The options to be explored should be designed around the following:

- discouragement of private car usage; and
- encouraging the use of public transport and NMT.

TDM should further assist municipalities to manage and reduce congestion with only limited expenditure on capital-intensive infrastructure. This will further assist in assisting municipalities reduce amongst others energy consumption and pollution per capita.

8.4 TRANSPORTATION SYSTEM IN MANGAUNG METROPOLITAN MUNICIPALITY

The transportation system in the MMM is made up of roads, railways, airports and others, which include walking.

8.5 BASIS OF TRAVEL DEMAND MANAGEMENT PROPOSED IN THIS REPORT

The following formed the basis of TDM strategies:

- demand model;
- best practices both local and global;
- local knowledge and experience; and
- available legislative and policy requirements.

The following are limitations to the development of TDMs:

- no inputs from stakeholders, including the project steering committee; and
- limited information on implemented TDM strategies locally.

8.6 FINDINGS OF THE DEMAND MODEL

The demand model undertaken indicated that the risk of congestion and lack of capacity will be experienced in the medium to long term if all planned developments were to be realised. The majority of planned developments within the MMM are scattered around the Bloemfontein CBD. The rest of the areas within the MMM are expected to operate effectively within an acceptable volume/capacity percentage below 95%. The medium to long-term 2036 volume/capacity percentage for the Bloemfontein CBD and surroundings is shown in Figure 8.1.

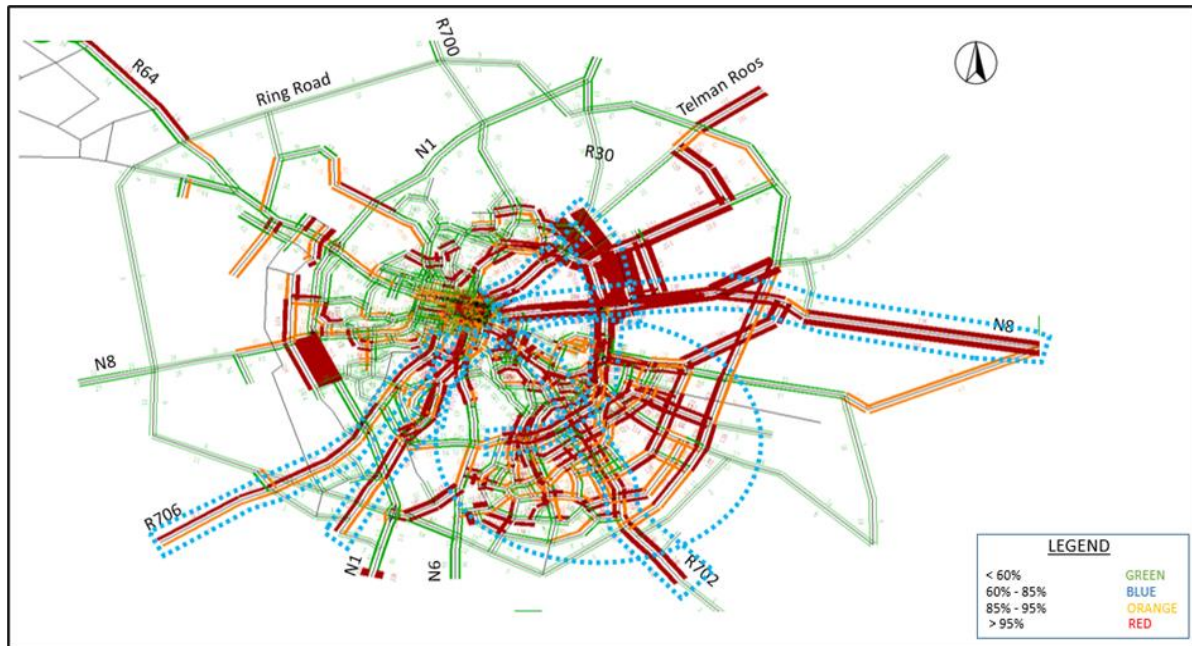


Figure 8.1: Long-term 2036 volume/capacity percentage

The corridors shown in blue will be affected by a future increase in traffic and will require substantial upgrading. The forecasting conducted further indicates that even with additional road capacity, the demand will not be fully addressed. The corridors affected are:

- Dr Belcher Road;
- N8 CBD–Thaba Nchu;
- Oliver Tambo Road;
- Ferreira Road;
- R64; and
- entire M10 corridor.

8.7 SET OF FACTS

The following facts are noted:

- The bulk of the roads where capacity constraints are expected in future are four-lane dual carriageway roads.
- Mangaung has a car-centric culture.
- The bulk of future land uses as per the SDF is residential.
- The areas in the north of the city are low density.
- There is a total of 20–39% car ownership in the areas south of the CBD.

8.8 PROPOSED TRAVEL DEMAND MANAGEMENT STRATEGIES

It should be accepted that radical strategies that involve financial penalties should not be considered at this stage. It would be highly inappropriate given the current economic position of the country, the province, the metropolitan municipality and the City of Bloemfontein. Consideration should be given though to parking taxes, particularly in the CBD. The CBD and the university precinct attract the majority of car trips in Bloemfontein. The introduction of such a policy has not discouraged car users in other cities such as Johannesburg. The City of Johannesburg had introduced a paid parking policy until recently. The non-payment culture that has engulfed the entire country was mentioned as one of the factors that affected the policy. Law enforcement was also mentioned as another factor. If a parking policy was to be considered in Bloemfontein, a buy-in from stakeholders such as law enforcement and businesses would be key to its success.

Considering the above, the TDM strategies proposed for MMM centre around two strategies:

- mobility options; and
- land use.

8.8.1 Mobility options

The metro is already served by various modes of transport. It has been established that there are areas that have a car ownership ratio below 30%. Some of these areas are located in the southern part of the CBD close to the CBD and other attractions. The following mobility strategies are proposed:

8.8.1.1 Public transport

The appropriate public transport strategy for the MMM is a road-based system. Road-based public transport is provided by buses, MBT and meter taxis. According to the MMM City Wide Integrated Public Transport Plan 2020, all trips are made as follows:

- 50% – public transport;
- 20% – private transport;
- 23% – walking; and
- 1% – other.

The same document proposes the implementation of an IPTN with buses forming the backbone of the service. It is therefore proposed that the IPTN be implemented in full. It is further proposed that the following areas be prioritised:

- Meadows corridor;
- Dr Belcher corridor;
- Moshoeshoe corridor;
- Hyperama corridor; and
- Bayswater corridor.

For the success of the IPTN, relevant supporting infrastructure should be provided to provide for the paradigm shift from private cars to public transport. Park-and-ride provision are key in enabling public transport and enabling the envisioned shift. It is therefore proposed that park-and-ride facilities

should be provided at strategic locations. These facilities should also provide for cyclists. There should be a clear integration plan for public transport and NMT. NMT plays a crucial role in the success of public transport as a strategy as it provides the crucial last mile trip.

8.8.1.2 Non-motorised transport

NMT plays a crucial role in the chain of public transport. It primarily fulfils the last mile of a journey. It is also considered the cheapest means of travel for both the supply of infrastructure and journey costs. It is also considered to have the lowest carbon footprint in comparison to other means of travel. It is therefore proposed that NMT forms part of the TDM.

The university in particular provides an opportunity for the provision of commuter NMT. The distances between places of residence and the campus are manageable. The distance to other places such as Langenhovenpark, Vista Park and Rocklands are manageable. The provision of the infrastructure should integrate with that of public transport to have a seamless system. This should further allow for bicycles to be permitted on buses. There should be areas designated for the storage of bicycles at stations where park-and-ride are provided. Commuter NMT should be encouraged within a 5 km buffer as shown in Figure 8.2.

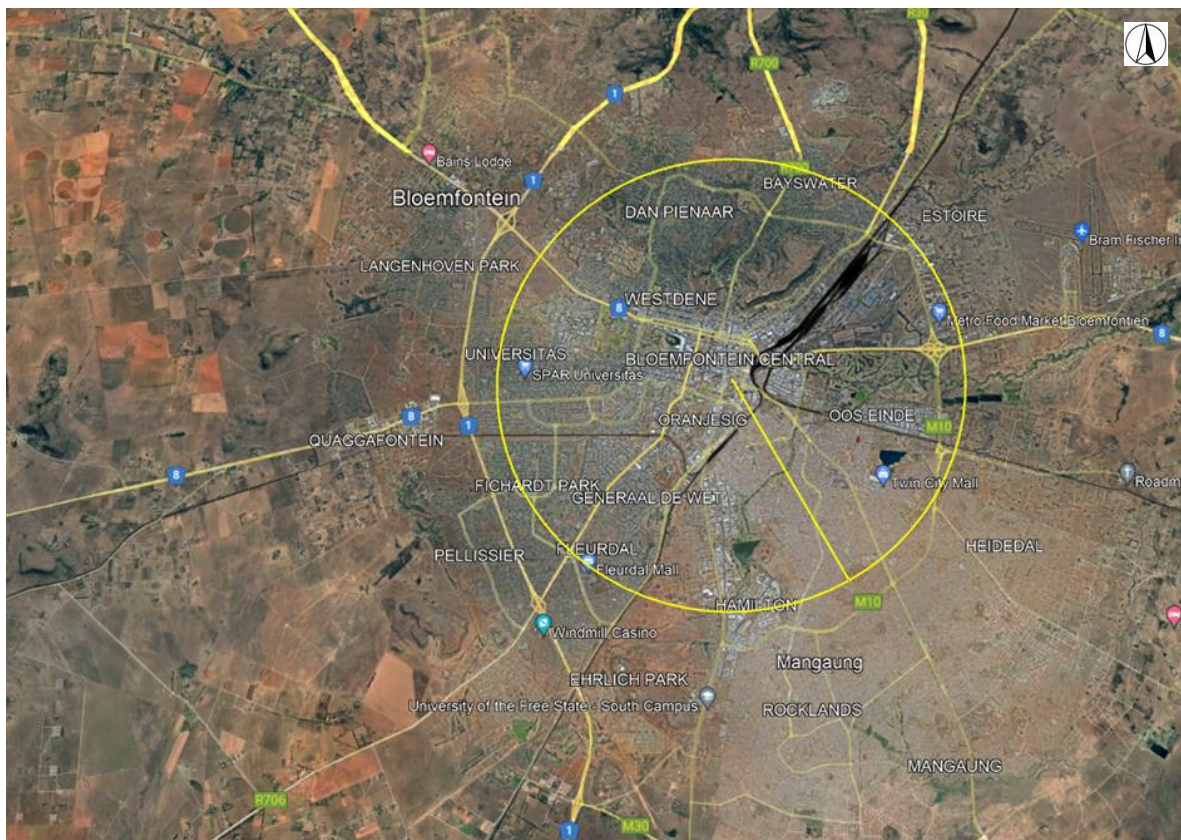


Figure 8.2: Commuter NMT Buffer

Furthermore, the safety and security of NMT users should be improved. Aspects such as lighting, quality of the pavement, and police visibility are critical in the successful implementation of this strategy.

8.8.1.3 Flexitime

Flexitime talks to employers providing some flexibility on the work schedule. This is usually in a form of allowing employees to either start their day early and leave early or start a bit later in the morning and finish later in the afternoon or evening. The benefit of this is that flexibility allows for the employees to start their trips either before or after the peak but the intention is for them to avoid the peak hour traffic. This is ideal for the municipality as it will reduce the number of trips to be catered for on the road network thereby reducing delays caused by lack of capacity.

This is ideal for the MMM. One of the biggest generators of trips in the metro is the university. The university could be approached and requested to consider a trip reduction programme by providing a flexible programme where most of the classes start or end outside peak hours.

8.8.1.4 Work from home

Work from home entails that employers, where possible, allow staff to work from home. This succeeded during the COVID-period in other sectors and less so in others. The strategy on its own proved to be a success in significantly reducing the number of vehicles on the road network. This was evident in a lot of cities, including big cities such as Johannesburg, Durban and Cape Town.

Similar to the flexitime approach, big employers might have to be approached and persuaded to adopt the work-from-home strategy for it to succeed. Some of the factors affecting this strategy include:

- job categories or type;
- tools of trade or lack thereof;
- data requirement; and
- employee needs such as support for junior staff.

Some of the gains of the work-from-home strategy:

- savings for both employer and employees;
- reduced traffic and congestion on roads;
- flexibility for parents and young families; and
- improved productivity levels.

8.9 LAND USE MANAGEMENT

The metro should pursue a land use strategy that encourages mixed and compact land use developments. The type of land use required should enable trip reduction and encourage internal trips through walking and NMT. TOD should be encouraged particularly along corridors where IPTN will operate. This should include the corridors proposed for prioritisation in this report.

CHAPTER 9: NON-MOTORISED TRANSPORT PLAN

9.1 INTRODUCTION

There is a vast account of access and mobility challenges within South Africa. Transport is the backbone of South Africa's socioeconomic activities, enabling the movement of people and goods. Apartheid spatial planning left a legacy of transport networks that is poorly integrated, and the majority of indigent people are living in places far from work in the periphery. The 20% of income received by indigent people, is mostly spent on public transportation. Most rural people have no access to road infrastructure or reliable public transport systems.

In South Africa, like other developing and emerging economies, the transportation burden faced by the rural, peri-urban and urban communities daily is real and substantial. Mobility and access to social services and the economic mainstream come at a high social and economic cost.

Growing urbanisation, congestion and demand for fossil fuel dictate a need for policymakers to start looking seriously at developing, implementing and promoting NMT as alternative and viable mode of transport.

NMT plays a significant role in attaining a sustainable transportation system. Recognising the needs and objectives of pedestrians and public transport users is important for the integration of a sustainable transport system for the city.

NMT involves human and animal-powered transportation that includes activities such as walking, cycling, rickshaws, skating/rollerblading, shopping trolleys, manual wheelchairs and animal-drawn carts. To meet the demands of a growing city, the city has to promote and develop NMT both as a valuable mode of transport, as well as a means to encourage and grow liveable communities.

This NMT chapter aims to provide guidance on the planning and design for safe pedestrian, bicycle, and other alternative low-carbon modes of transport, both across and alongside roads and streets. Furthermore, it aims to promote and create liveable streets, balance the needs of all users, contribute to liveable communities and provide guidance on infrastructural improvements that attract private investment and encourage pedestrian activity.

This report provides the current state of NMT in the MMM. It reviews the ITP prepared in 2006 and analyses the impact of the current IPTN on NMT.

The intention, therefore, is to identify gaps in the CITP such as growth in public transport services, and new areas incorporated into the MMM area so that it may guide the development of the PTP.

9.1.1 Purpose and requirements for a non-motorised transport plan

As stipulated in section 36 of the National Land Transport Act, 2009 (Act No. 5 of 2009), all planning authorities are required to prepare an integrated transport plan for their service areas. The MMM is categorised as a schedule 1 municipality. Therefore, as a planning authority, it is required to prepare

a CITP. *The objective of the NMT plan is to provide the planning authority with strategies to improve accessibility and increase the use of non-motorised transport.*

According to the minimum requirements for the preparation of CITPs, the purpose of the NMT plan is to provide:

- Measures to promote walking and cycling in the municipality.
- Map of the proposed walking and cycling network.
- Plans to upgrade the existing road network to better accommodate walking and cycling.
- Measures to encourage residents to walk or cycle instead of using motorised transport.
- Five-year programme for building an NMT network and promoting behaviour change.

9.1.2 Objectives and principles of non-motorised transport

In striving to meet the NMT policy objectives, the transport planning authorities should be guided by the following broad principles:

- Integration of NMT into the transport system including transport and spatial planning.
- Development of infrastructure and maintenance standards that recognise NMT as an essential mode of transport.
- Facilitation of NMT as a feeder system to other modes of transport.
- Allocation of adequate and sustainable funding for the promotion and development of NMT.
- Promotion of NMT as a reliable, healthy, affordable, accessible and safe transport mode.
- Reduction of the number of traffic fatalities of vulnerable NMT users.
- Ensure that traffic calming is part of the overall transport strategy for the area.
- Ensure that traffic calming is accommodated and applied at the correct road hierarchy level.
- Provide communication channels for the public to participate in the calming process.
- Improve the efficiency and safety of the road network without compromising costs.
- Protect residential areas and the residents from unwanted through traffic and associated dangers.
- Moderate extraneous traffic behaviour.
- Promote road safety.

In summary, poor facilities and lack of awareness discourage the use of NMT, whereas improving conditions may increase demand. One of the key objectives increasing NMT activity and improving the perception of NMT usage is the creation of a high-quality NMT environment.

9.2 STATUS QUO OF NON-MOTORISED TRANSPORT

9.2.1 Background

A large portion of the metro's population still walks long distances and cycles on a daily basis to access their place of work, attend school, shop or for leisure purposes. To better understand the reason for walking or cycling one should consider the demographics of the city as well as the availability and accessibility of efficient and cost-effective transport systems within the confines of the city.

The majority of individuals who walk long distances daily are scholars. Several surveys were conducted on NMT users including pedestrians, cyclists and others. The trip purpose (reason for travel) and other details can be obtained from the results of the household travel survey, which was conducted during 2016/17 to assist with the planning and the design of the IPTN. To fully understand the population's demand to walk, proper investigations are required to assess their reason for walking, the time of the activity, how often and particularly the distances they have to walk to get to their final destinations. This information will assist the city in determining the walking desire lines, and the volumes of pedestrians to better understand the city's need to provide adequate NMT infrastructure along important corridors.

A limited number of routes were surveyed during the MMM IPTN (2015–2036) process with the primary aim of ensuring adequate NMT infrastructure along IPTN routes to improve accessibility. This approach was necessary to ensure that adequate NMT infrastructure will be available in future to further promote the MMM's status as "the walking city".

9.2.2 Modal split for all trips

The Free State's primary means of transport is walking. According to the 2020 National Household Travel Survey, 33.2% of all morning peak-hour trips in the province were made by walking (cars account for 32.4% and MBT for 20.7%). This was a 2.7% increase in the number of walking trips from the province compared to 2013.

The MMM, however, does not directly reflect the statistics of the province. In 2020, approximately 41% of all trips were undertaken via MBT, followed by 32% being done on foot and finally 15% via private car (Figure 9.1). Despite the statistics, the MMM was regarded as the "walking city" because more than 17% of work-related trips were conducted entirely on foot in 2013.

In 2020, 33% of work-related trips were made via MBT, 17% on foot and 11% via bus. The cycling trips accounted for approximately 1% of the modal share of all trips within the municipality.

The 2019 MMM IPTN though, conducted seven-day questionnaires. Respondents of all ages were asked how many times they had used the different modes of transport during the preceding seven days. The results are slightly different to those of the National Household Travel Survey as noted in Figure 9.2.

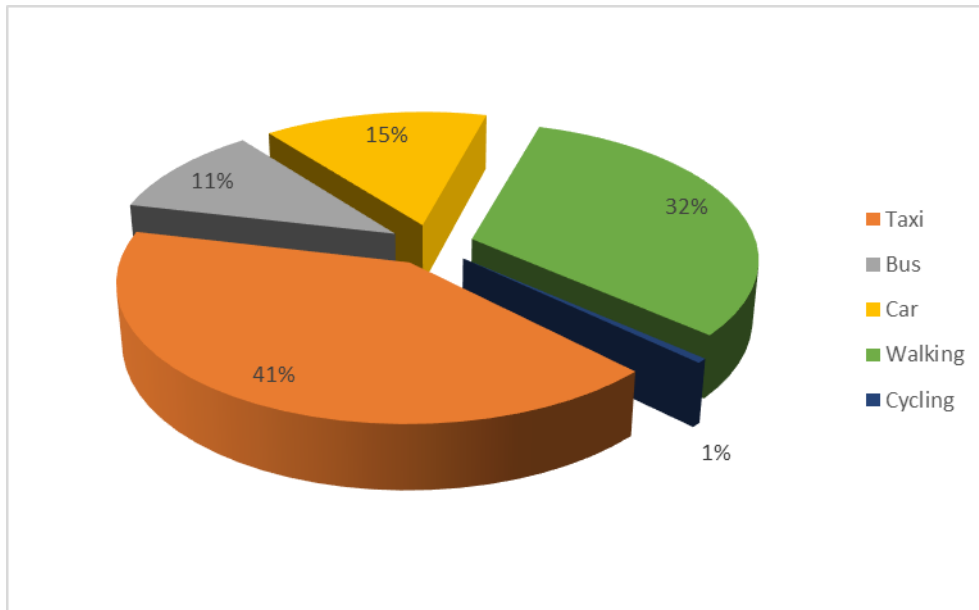


Figure 9.1 Modal split for all trips in Mangaung

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

(Source: MMM IPTN 2019)

Figure 9.2: Analysis of the number of trips by different modes over seven days

9.2.3 Income effects on non-motorised transport

Figure 9.3 illustrates the impact of income on the chosen mode of transport. The majority of low-income individuals used MBT and walking for all their journeys. The 43% of the population earning R500 or less use the MBT, compared to 41% of the same population who walked. In contrast, 58% of the people earning R30 000 or more choose to use private cars. Whilst 21% of this population walked.

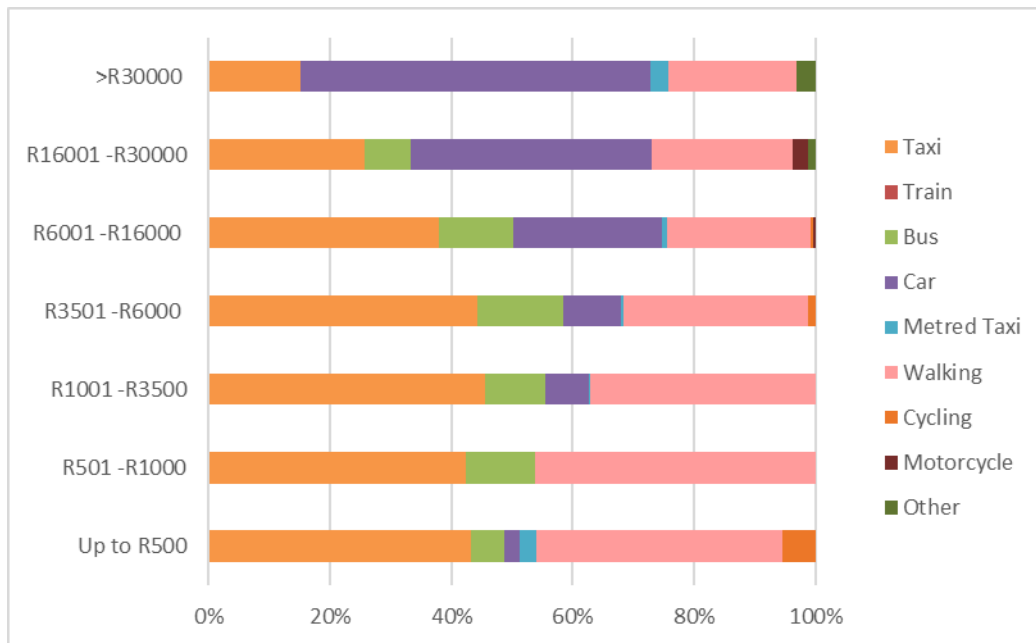


Figure 9.3: Mode use per income group in Mangaung Metro Municipality

9.2.4 2022 non-motorised transport counts

Pedestrian counts show that the afternoon peak starts at 14:30 and ends at 18:00. This was to be expected as this is often the time learners travel home, followed by traffic from workers in the late afternoon.

Given that the majority of NMT traffic originated from Bloemfontein and Thaba Nchu, it was deemed essential to determine how these two areas influence the MMM's overall travel patterns.

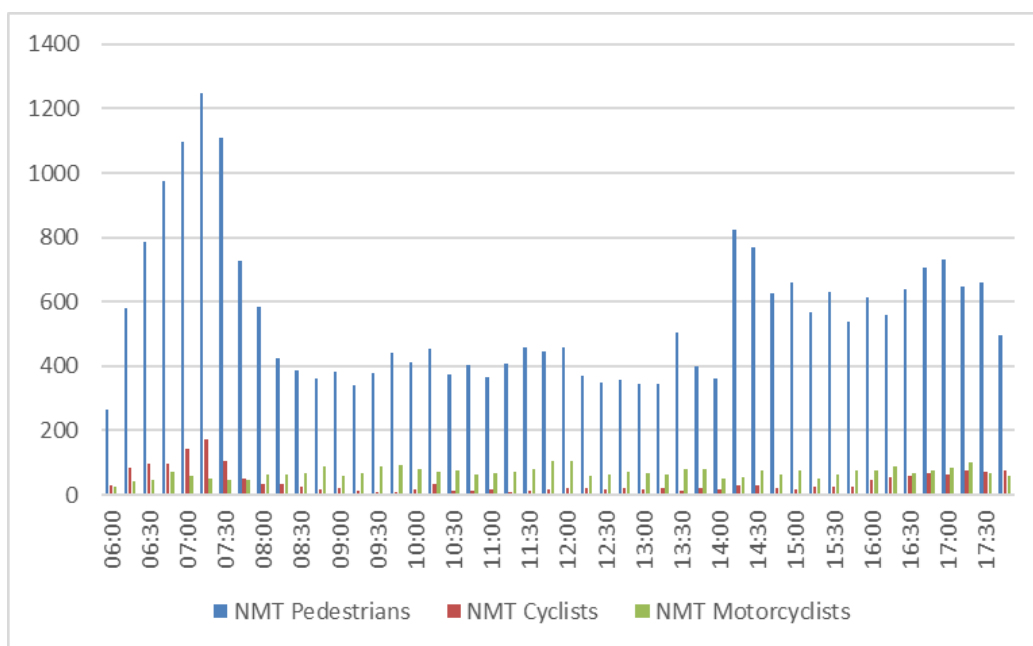


Figure 9.4: Non-motorised transport counts taken over a 12-hour period in the MMM

Similar to the pattern established from the counts in the MMM, with the morning peak beginning at 06:30 and ending at 08:30, as shown in Figure 9.5, this trend is observed for both traffic entering and exiting Bloemfontein throughout the count. Similarly, the off-peak traffic for all three modes did not fall considerably.

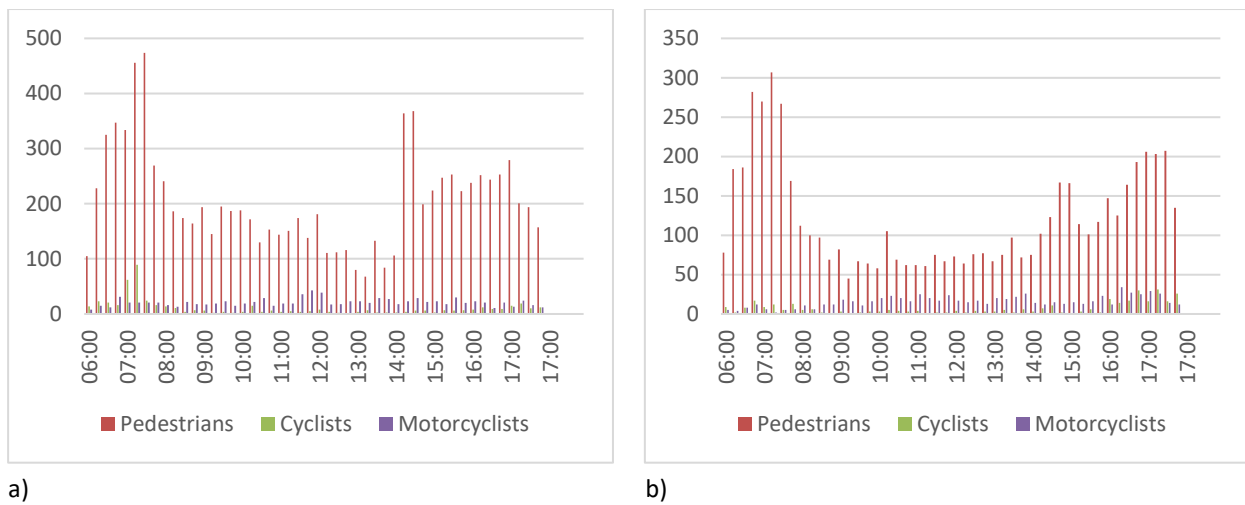


Figure 9.5: Non-motorised transport counts taken over 12-hour period a) into Bloemfontein and b) out of Bloemfontein

Figure 9.6 demonstrates that, in the case of Thaba Nchu, more NMT traffic entered the town than left during the traffic count. Between 07:30 and 10:00, there is an influx of motorcyclists. The pedestrian influx occurred between 12:00 and 18:00. As for the NMT traffic exiting the city, there is minimal activity apart from 06:00 and 07:30 in the morning and between 13:00 and 13:30.

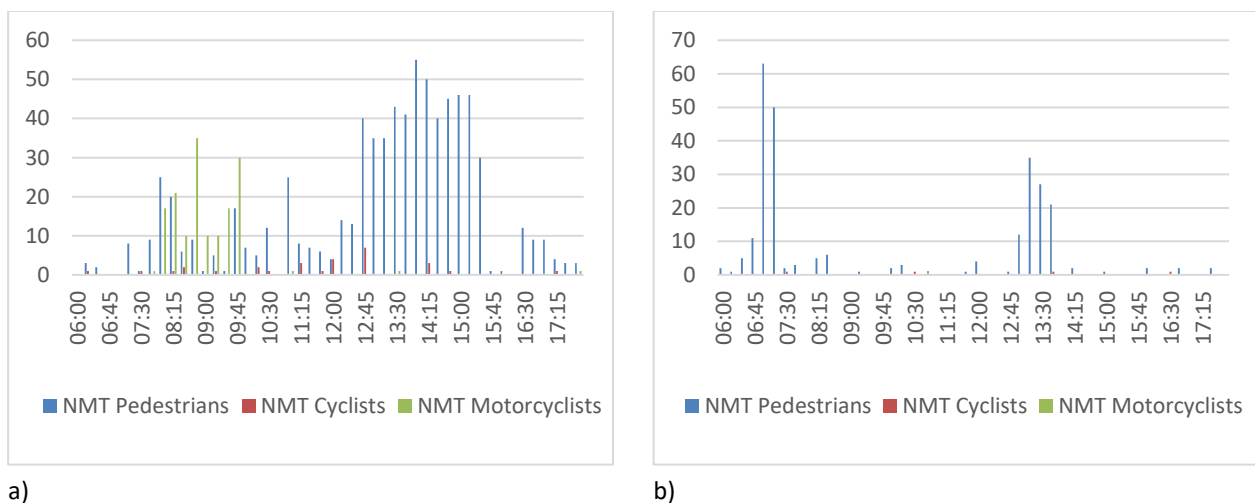


Figure 9.6: Non-motorised transport counts taken over 12-hour period a) into Thaba Nchu and b) out of Thaba Nchu

The findings discussed above indicate that there is a current demand for high-quality NMT infrastructure in every town, particularly in the larger and more populous towns such as Thaba Nchu and Bloemfontein.

9.2.5 Factors influencing mode choice

The respondents were also questioned on the factors that influence their mode choice. The results are displayed in Figure 9.7 and showcase that travel time was responsible for 27% of mode choice, ahead of comfort and flexibility at 23%. Travel costs accounted for 17%.

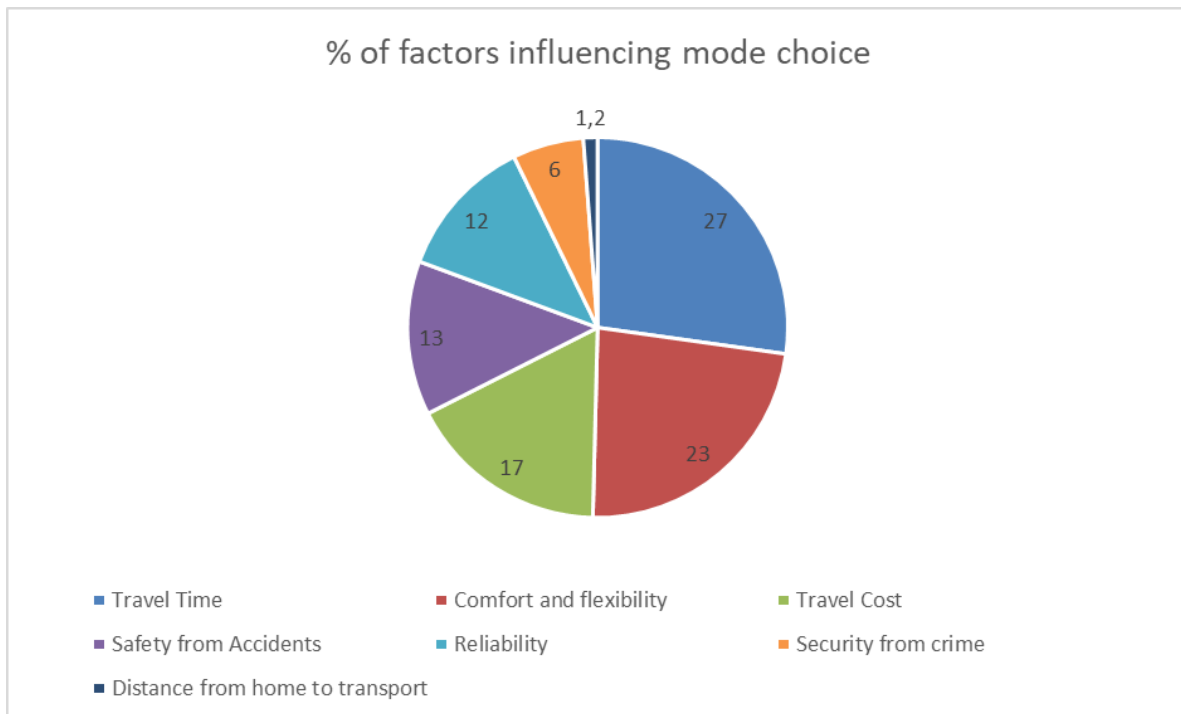


Figure 9.7: Factors influencing modal choice

9.2.6 Non-motorised transport and the future land use planning in Mangaung Metropolitan Municipality

The objective of a needs assessment is to ensure that the planned infrastructure complements the area's requirements. Consequently, this necessitates a breakdown of the land use and traffic levels in each of the towns of the MMM.

9.2.6.1 Non-motorised transport needs assessment for Bloemfontein

Bloemfontein is the largest of the towns within the MMM, consisting primarily of residential neighbourhoods on the city's outer periphery and the CBD in the middle. The CBD consists of industrial zones, shopping facilities and schools, as well as the University of the Free State, which is adjacent to the city centre.

The city is served by two national highways, the N1 and the N8, as well as a railway line that runs through the city centre. The railway line that runs through the city centre is part of Bloemfontein's public transportation system, and the station is located near Peet Street public transport facility. In the entire city, there are approximately five informal and formal public transport facilities that provide access to minibus taxis, trains, or buses. The largest public transport facility is located on Peet Street, which serves both MBTs and trains. The other facilities provide access to shopping malls, while the

facility on Jochem van Bruggen Street and Kellner Street provide access to facilities utilised by the area's local population.

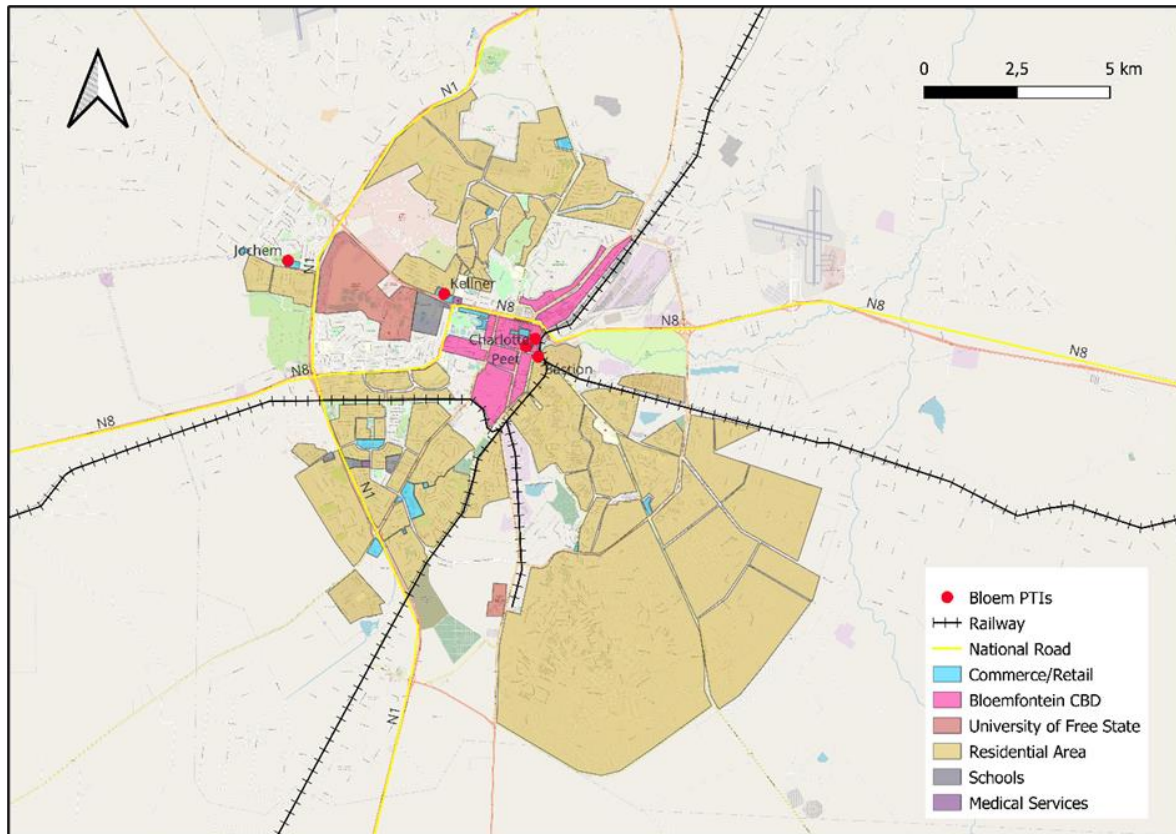


Figure 9.8: Bloemfontein land use and points of interest

Based on the preceding findings, locations of interest for traffic counts were identified. These locations were deliberately situated along roads close to the city's CBD, extending outward toward the residential neighbourhoods. Figure 9.8 shows the traffic count locations described. Based on the location of the traffic counts, the highlighted Bloemfontein NMT network was identified as points of interest. The focal points were roads of class 3 or higher.

Table 9.1 provides a comprehensive summary of the counts that were recorded throughout 12 hours. It can be noted that the NMT traffic volumes are highest in the vicinity of the city centre and begin to decrease further from the city centre. This is to be expected based on the travel patterns of the MMM, as most of the work and educational facilities are located near the city centre.

Table 9.1: Traffic volumes at points of interest in Bloemfontein

Location	Travelling in	Travelling out	Location	Travelling in	Travelling out	Location	Travelling in	Travelling out
C1	1 959	1 323	C12	264	101	P10	108	137
C2	1 154	705	C21	47	87	M1		
C3	2 170	975	P1	0	0	M2	480	279
C4	554	387	P2	831	528	M3	31	24
C5	1 223	688	P3	1 082	1 471	M4	4	10
C6	54	108	P4	87	73	M5	91	86
C7	1 201	570	P5	108	159	M6	163	146
C8	48	48	P6	55	24	M7	1	3
C9	16	25	P7	498	440	M8	34	172
C10	236	238	P8	38	78	M9	531	634
C11	1082	716	P9	63	80	B1	0	0

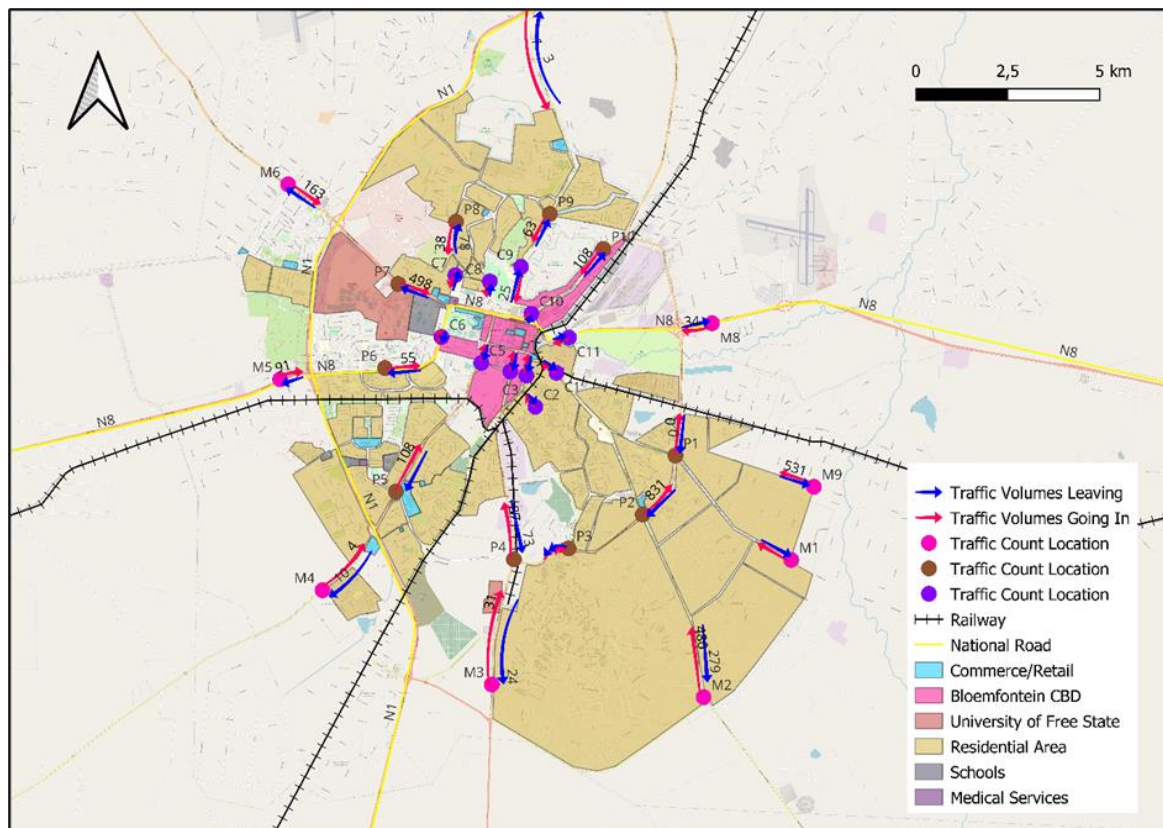


Figure 9.9: Pedestrian traffic volumes in Bloemfontein

The towns of Thaba Nchu and Botshabelo are considerably smaller than Bloemfontein. However, as previously mentioned, the NMT trips in these towns are worthwhile for an investigation for prospective intervention. The land use map for the two towns is depicted in Figures 9.10 and 9.11. Similarly to Bloemfontein, the majority of the towns are comprised of residential neighbourhoods. However, in Thaba Nchu, the CBD is a modest area where locals can shop at the mall located there.

9.2.6.2 Non-motorised transport needs assessment for Thaba Nchu and Botshabelo

The northern end of Thaba Nchu is spanned by a railway, while the southern end is traversed by the N1 via residential neighbourhoods. Although the railroad traverses the city, it is not a component of the public transportation system. The Thalsta Taxi Rank near the mall, and the long-distance taxi rank are the two primary public transport facilities in Thaba Nchu. The Thalsta Taxi Rank is a formal stop with designated taxi and bus bays, but the long-distance taxi rank is an informal stop located on a vacant field. It is important to note that institutions such as schools and medical services are not located close to the designated city centre, creating challenges for the implementation of NMT infrastructure at the local level.



Figure 9.10: Thaba Nchu land use and points of interest

In Botshabelo, the CBD is located on the northern end of the city, and it is traversed by the N8 which runs adjacent to the city. The retail stores and other commercial facilities are located between the residential areas of the city, almost to the centre. There is only one public transport facility in Botshabelo, located in the Reahola Shopping Centre. It is a formalised facility with designated bays for taxis and buses.

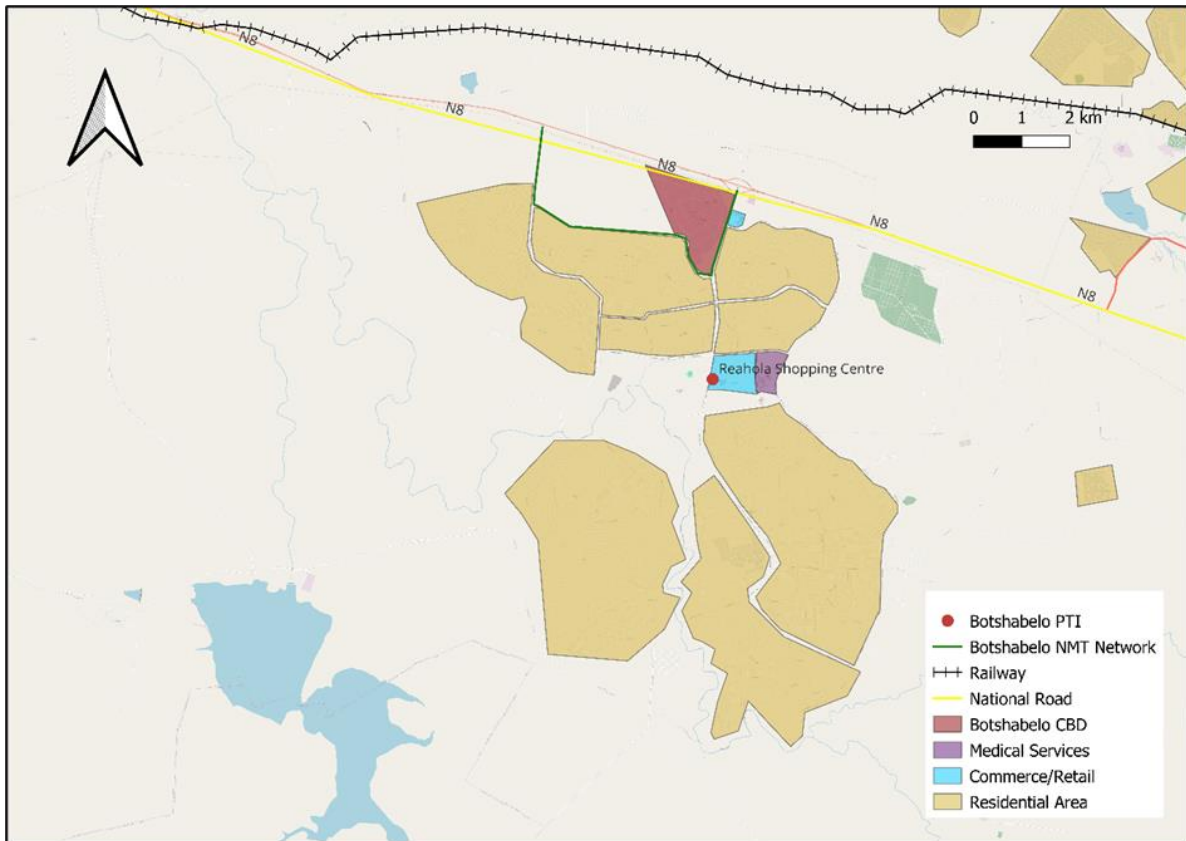


Figure 9.11: Botshabelo land use and points of interest

The strategy for the locations where the counts were conducted in the two cities was designed to determine the NMT requirements primarily through the respective CBDs. The locations were also picked to determine the amount of pedestrian traffic that leaves the towns and the amount of pedestrian traffic that enters the towns.

Figures 9.12 and 9.13 show the pedestrian volumes encountered in Botshabelo and Thaba Nchu on the day of the count. The central section of Thaba Nchu has the highest pedestrian volume compared to the outermost locations where counts were conducted, where the volumes begin to decline for both inbound and outbound pedestrian traffic.

In Botshabelo, the counts were conducted close to the urban edges, and while there is limited information about the pedestrian traffic closer to the CBD, it is worth noting that on the day of the counts, Botshabelo had more pedestrian traffic entering than Thaba Nchu.

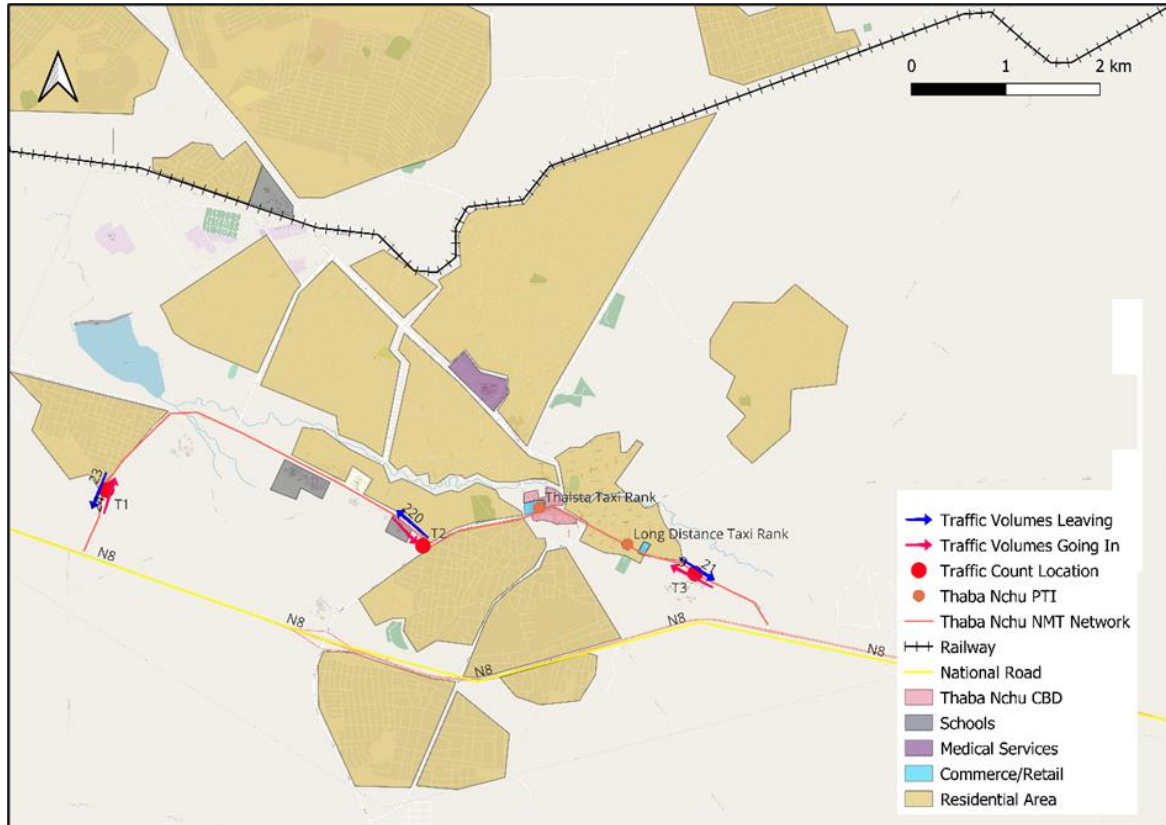


Figure 9.12: Pedestrian traffic volumes in Thaba Nchu

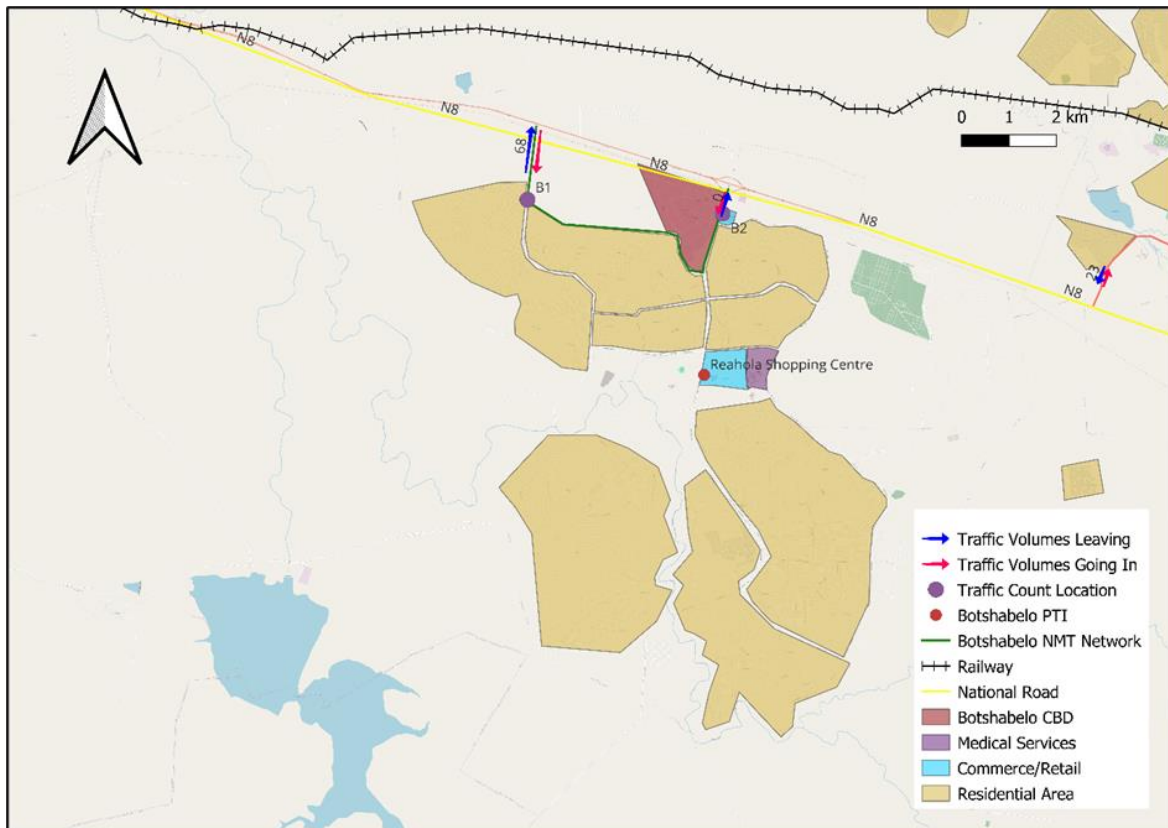


Figure 9.13: Pedestrian traffic volumes in Botshabelo

9.3 THE CITY'S NON-MOTORISED TRANSPORT STRATEGY

The MMM recognises NMT as an integral component of the transport network. Maintaining and expanding demand for NMT produces numerous benefits for the community, which can be broken down into the categories of transport, the environment, health, tourism, and recreation. NMT helps to make cities livelier and busier places to be.

Mangaung has a CITP for the years beginning in 2013 to 2036. The IPTN plan is explored in depth as part of the CITP. The development of a NMT network for the municipality will coincide with the rollout of an IPTN, however, certain areas will be given priority due to the implementation of the system. It was determined that the NMT infrastructure will be built within 500 m of the IPTN routes.

9.3.1 Non-motorised transport vision, goals and policy statements

The vision of the NMT implementation within the municipality is that it should be promoted and developed to reduce carbon emissions, promote a modal shift towards more sustainable modes, and developing low-cost mobility options.

The NMT policy recognises that rural NMT matters are different from those in urban environments. The policy will address the needs of pedestrians (currently the largest NMT mode), to encourage people to cycle more, road safety matters, the role of NMT in rural/peri-urban areas and address the needs of persons with disabilities.

9.3.2 Non-motorised transport strategy elements

The elements of the NMT strategy are listed and detailed in Figure 9.14:

- Provide a safe and efficient pedestrian and bicycle network.
- Implement a comprehensive NMT network linked to the IPTN.
- Promote local economic development.
- Encourage streetscape beautification of current areas.
- Improve mobility and connectivity.



Figure 9.14: Non-motorised transport strategy themes

9.3.3 Strategic actions based on the non-motorised transport themes

The five key themes of the NMT strategy have been extrapolated in Table 9.2 to show the strategic action linked to each theme, as well as the indicator for monitoring and evaluation.

Table 9.2: Theme, strategic action and indicators for the NMT strategy

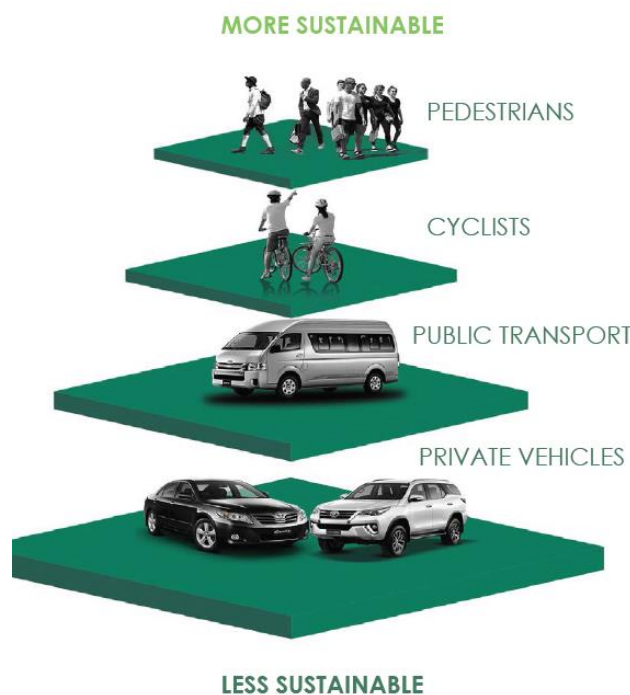
THEME	STRATEGIC ACTION	INDICATOR
Provide a safe and efficient pedestrian and bicycle network	Clear marking of NMT access ways including signage and wayfinding for route planning and orientation.	Evaluation of wayfinding and signage systems to see if it is acceptable or not.
	Promote universal access and design and implementation on all transportation infrastructure and facilities.	Universal access audits conducted annually on all NMT infrastructure.
	Design the NMT network taking current and latent demand into account, paying particular attention to origin and destination data.	Number of km of NMT facilities that link households to urban amenities and public services.
Promote local economic development	Design NMT network to target areas of greatest opportunity for mobility cost reduction.	Establish baseline data regarding the cost of current trips that could be replaced by NMT trips. Conduct before and after surveys.
	Improve access to affordable bicycles.	Number of bicycles distributed, with associated training and ongoing use evaluated.
	Design a local economic development NMT programme, including small-scale bicycle maintenance stores, low-cost bicycles and other enterprise development opportunities.	Design of LED NMT programme, Council approval, and implementation.
Implement a comprehensive NMT network linked to the IPTN	Design an integrated NMT network that serves the entire walking and cycling journey.	Number of km of NMT facilities. Traffic counts: rate of increase (decrease) in NMT users on facilities.
	Integrate NMT into the entire travel chain (including bicycle parking, shade, street furniture, bikes-on-board public transport).	Implementation of NMT integration programme (number of bicycle parking opportunities, number of public transport vehicles, on the 'right' routes, that permit bikes-on-board during off-peak times.
	Engage with all stakeholder groups, including user communities, rail, scheduled bus services and BRT, and the minibus transport sector, to ensure that NMT network meets users' needs for completeness.	Number of stakeholder meetings and engagement; quality of feedback.
Streetscape beautification	Involve Parks Unit and Urban Planning Unit in the rollout of NMT projects within the MMM. Elements such as tree planting, urban design should be a part of every NMT project. Provide and maintain infrastructure to improve co-ordinated infrastructure planning and maintenance.	Appointment of urban designers with every NMT project rolled out. Ensure involvement of Parks and Planning Units/departments in NMT projects.
Improve mobility and connectivity	Ensure direct NMT routes are provided to key land uses within the city.	Number of direct routes rolled out to key destinations/land uses.
	Provide low-cost mobility options that will decrease travelling time for NMT users.	Decrease in travel time for current NMT users.

9.3.4 Non-motorised transport design guidelines for Mangaung Metropolitan Municipality

9.3.4.1 Background

The main purpose of the proposed NMT Guideline is to provide guidance on the planning and design for safe pedestrian, bicycle, and other alternative low-carbon modes of transport, both across and alongside roads and streets. Furthermore, the guideline will strengthen the provision of well-designed bicycle and pedestrian facilities and infrastructure to improve the physical environment and safety of NMT users.

9.3.4.2 Separation of non-motorised transport traffic with vehicular traffic



Planning for NMT modes, such as walking, and cycling should be an integral part of transport planning of any city. Historically, however, data collection regarding NMT modes has been limited in the South African context. According to the National Household Travel Survey (Statistics South Africa 2013).

In the case of the MMM as highlighted in the above sections, walking comprises the most mode of travel in the CBD and periphery. Therefore, in the CBD, it is important to ensure continuous safety.

Figure 9.15: Hierarchy of transport mode in a sustainable integrated public transport network

9.3.4.3 Mode separation requirements for different road classification

The South African Road Classification and Access Management Manual was published in 2012 by the SANRAL under the auspices of the Roads Co-ordinating Body of the Committee of Transport Officials, a committee that falls under the auspices of the Department of Transport. It provides technical recommendations for highways and deals with highway engineering.

It states that one of the most important benefits of access management is road safety. Access to roads should be controlled because an increased number of accesses leads to higher accident rates.

Section 3.6 of the manual deals with road classification and provides for a six-class functional road classification system. It also provides for a numbering system for roads. A sixth class of roads has been added to provide for NMT and specifically pedestrian walkways called *Class 6 rural walkways* being

paths that provide essential pedestrian and NMT access to the road network. They are typically informal, rarely constructed and are generally the result of frequent use. Significantly, cycle paths are not included in the manual. The classification is as follows:

Table 9.3: The road classification system

Number	Function	Description
Class 1	Mobility	Principal arterial
Class 2	Mobility	Major arterial
Class 3	Mobility	Minor arterial
Class 4	Access/activity	Collector street
Class 5	Access/activity	Local street
Class 6	Access/activity	Walkway

As indicated above, the document identifies class 6 roads as *non-motorised access ways*.

Section 8.5 of the manual deals with pedestrians and cyclists. It states that pedestrian and cycle facilities should be provided anywhere where there is a reasonable expectation that such facilities will be used, even if the number of pedestrians and cyclists is relatively low. One-way cycle lanes of 1.8 m wide (1.2 m minimum) should be provided where necessary on mobility roads by widening the carriageway or be incorporated in the pedestrian footway if there is one. Two-way off-road cycle lanes need to be 2.5 m to 3.5 m wide.

Section 10.8 of the manual deals with traffic calming in residential streets and provides retrofitting techniques. One objective is to facilitate cycle use. Therefore, the MMM is recommended to showcase mode separation requirements in line with the Road Classification Manual.

Table 9.4: The mode separation requirements as per road classification

ROAD CLASSIFICATION		BICYCLE	PEDESTRIANS
1	Freeway/Principal arterial	Total separation	Total separation
2	Major arterial	Total separation	Total separation
3	Minor arterial	Partial separation	Total separation
4	Collector street	Marked separation	Partial separation
5	Local street	Priority streets/mixed	Partial separation/mixed

It is recommended that the mixing of cycling and motorised traffic is an option on local streets where speeds and speed differentials are low. The speed limits on access streets with significant bicycle and pedestrian volumes be reduced from 60 km/h to 40 km/h, in line with the design speed, as the impact of accidents reduces vastly at this speed. Traffic calming measures and appropriate law enforcement to implement lower speeds will be essential.

9.3.4.4 Sidewalk and bicycle lane infrastructure guidelines

The NMT Facilities Guideline of the Department of Transport 2015 provides the following design parameters that should be used when establishing the location of pedestrian and bicycle facilities:

Walking

Walking is a convenient mode of transport for distances up to 500 m. In the South African context, average trips to public transport are 1.3 km (Hitge and Vanderschuren 2015). Most people would prefer walking trips shorter than 1–2 km. Guidelines for acceptable walking distances, when planning pedestrian facilities are provided in Table 9.5.

The average speed of pedestrians in the United States is approximately 1.5 m/s (TRB 2000). For design purposes, provision must be made for the slower pedestrian and the following speeds should be used for design purposes (SARTSM): 1.2 m/s for normal operating conditions, and 1.0 m/s for a significant proportion of pedestrians that are elderly or disabled.

Table 9.5: The acceptable walking distances to infrastructure facilities or nodal points or road access points

Acceptable walking distances (DoT Guideline, 2003)	
To road and street crossings	50-100m
Parking to building entrances	100m
Public Transport Stops	300m – 800m
Community facilities and parks facilities and parks	400m
Public Transport stops	500m - 1000m

(Source: Department of Transport guideline 2015)

9.3.4.5 Cycling

Acceptable cycling distances depend on various factors such as gradient, climate, trip purpose and others. Most cyclists would, however, prefer cycling distances shorter than 5 km.

The design of bicycle facilities depends on the speed at which cyclists travel. These aspects include horizontal curvature and stopping sight distance. Design speeds for different downhill gradients are given in Table 9.6.

Table 9.6: The design speed for different downhill gradients

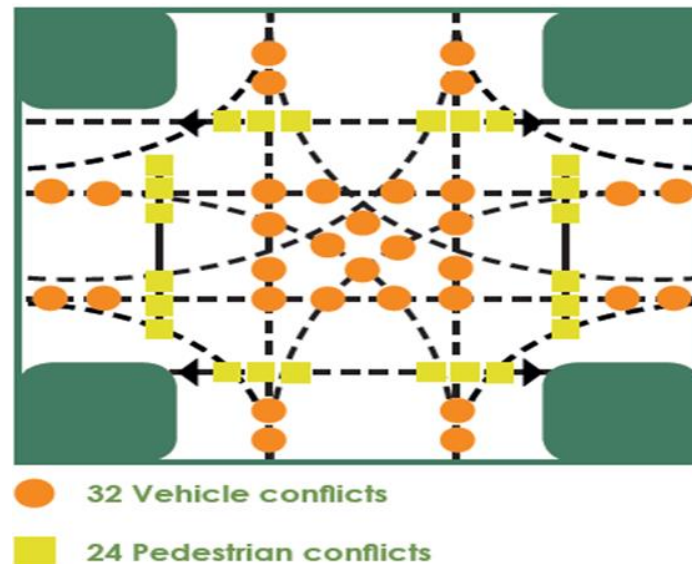
Design speed for different downhill gradients (DoT Guideline, 2003)	
Downhill Grades	Design Speed
<3%	30km/h
3% to 7%	40km/h
>7%	50km/h
Reduce design speed by 10 km/h at locations, such as road junctions	

(Source: Department of Transport guideline 2015)

9.3.4.6 Intersections

Intersections are the typical nodes where the lines of two or more origins and destinations meet. As various modes of transport desire to go in different directions, intersections are the spatial areas where the conflicts between these directions materialise. A simple one-lane-per-direction intersection without cycle lanes, has typically 32 motorised transport and 24 pedestrian conflict points.

As cyclists are combined with motorised transport in this situation, they face high levels of road safety risk at each of these 32 points, while pedestrians face high levels of road safety risk at the 24 indicated conflict points. The risk increases as the speed and volume of motorised transport increase. Most accidents happen at intersections, thus minimising pedestrian/vehicle conflicts by integrating pedestrians into the design is critical. Facilities provided will depend on pedestrian demand, traffic volumes, vehicle speeds, vehicle gaps, distance to the nearest crossing point (whether pedestrians can cross without travelling more than 120–180 m to another crossing point), the opportunity to concentrate pedestrian crossings at one point, part of a route identified in the NMT plan, a significant benefit to public transit, part of a school walking route, etc. Some of the interventions to improve safety and efficiency include grade separation, signalisation, kerb bulb-outs and median refuge islands to minimise crossing distance, removal of slip lanes to reduce the free flow of vehicles through the intersection, improve sight distance, traffic calming circles, raised intersections, special paving, just to name a few.



9.4 PROPOSED WALKING NETWORK

The primary objective of NMT in the MMM is to promote movement between origins and public transport facilities. The objective of the NMT infrastructure plan is therefore to design for infrastructure within a 500 m radius of the current public transport interchanges. The purpose of the plan is to identify NMT projects, prioritise and cost them for implementation. The plan was predominantly focused on shared facilities.

9.4.1 Proposed pedestrian infrastructure

The following pedestrian infrastructure modifications are part of the proposed pedestrian network:

- zones selected for the improvement of pedestrian facilities; and
- enhancements to the pedestrian infrastructure that are intended to be implemented at existing and future public transport facilities.

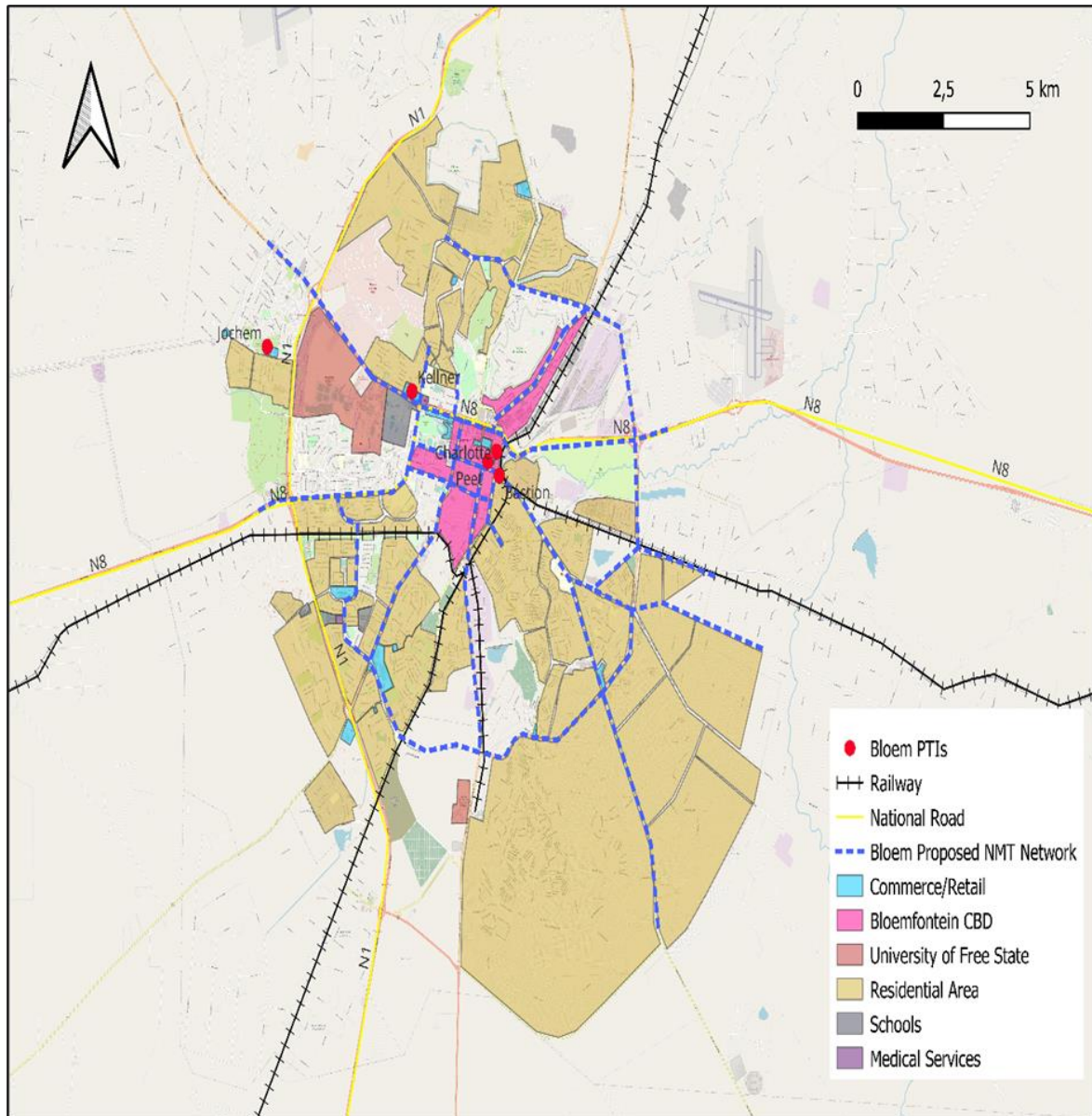


Figure 9.16: Proposed pedestrian infrastructure in Bloemfontein

9.4.2 Programme for building non-motorised transport networks

The NMT programme rollout plan is set out in Table 9.7.

Table 9.7: Non-motorised transport rollout programme

Mangaung NMT programme rollout			
City	Road description	Area/Suburb	Type of improvements
Bloemfontein	Peet Street construction of new and rehabilitation of existing NMT facilities	Bloemfontein Central	Pedestrian improvements
Bloemfontein	Fort Street rehabilitation of existing NMT facilities	Bloemfontein Central	Pedestrian improvements
Bloemfontein	Fort Street rehabilitation of existing NMT facilities	Westdene	Pedestrian improvements
Bloemfontein	Nelson Mandela Drive construction of new and rehabilitation of existing NMT facilities	Groenvlei, Langenhovenpark, Westdene	Pedestrian improvements
Bloemfontein	General Dan Pienaar Drive improvements to existing NMT facilities to improve safety	Bloemfontein Central	Pedestrian improvements
Bloemfontein	1 st Avenue improvements to existing NMT facilities to improve safety	Bloemfontein Central	Pedestrian improvements
Bloemfontein	Raymond Mhlaba Street improvements to existing NMT facilities to improve safety	Bloemfontein Central	Pedestrian improvements
Botshabelo	Main road construction of new NMT facilities	Botshabelo	Pedestrian improvements
Thaba Nchu	Brand Street construction of new NMT facilities	Thaba Nchu	Pedestrian improvements
Thaba Nchu	Van Riebeeck Street construction of new NMT facilities	Thaba Nchu	Pedestrian improvements

9.5 RECOMMENDATIONS

9.5.1 Recommendations from public health and ethics perspective

NMT guidelines are largely significant in the context of the MMM and should be adopted by public transport practitioners as they imply mortal fatality scenarios. The guidelines should disseminate across all practitioners in the built environment sphere and be enriched with inputs from all internal and external key stakeholders.

9.5.2 Recommendations from the non-motorised transport governance model

- Foster champions in all private and public sectors who will be fully responsible for the implementation and the operations of NMT provision.

- Breakdown of the silo approach towards providing solutions to NMT promotion.
- Include citizen scientists such as midibus taxi drivers in the promotion and education of NMT guidelines and road safety elements.

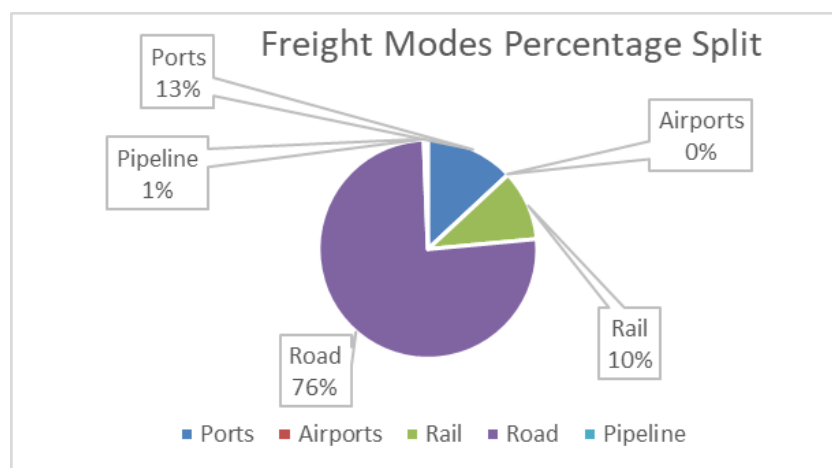
9.5.3 Recommendations for public transport and integrated non-motorised transport by-laws

- The MMM require approved integrated public transport and NMT by-laws for law enforcement on the public transport and NMT corridor. The by-laws will address NMT and the current public transport plans approach.
- NMT by-laws are critical as they address informal traders' policies and by-laws, universal access standards and requirements, and illegal street parking on NMT walkways.

CHAPTER 10: FREIGHT STRATEGY

10.1 BACKGROUND: SOUTH AFRICAN CONTEXT

Freight is defined as the moving of goods from one point to another and is seen as significant as it encourages competition and production by extending the spatial boundaries of commodity and labour markets. In South Africa, a significant proportion of freight movement is provided by parastatals by roads, railways, ports, pipelines and aviation. The percentage split between the respective freight modes is illustrated in Figure 10.1.



(Source: Department of Transport 2017)

Figure 10.1: Freight modes

In 2013, 1.53 billion tonnes of freight were transported by road in South Africa, representing 76% of the total amount of freight transported, with the balance of freight in the country having been transported through ports (13%), rail (10%), pipelines (1%) and airports (0,02%). The roads carry the majority share of freight when compared to other modes, followed by shipping, and then rail. The National Transport Plans and relevant parastatal entities intend to rebalance this unequal split to maximise the efficiencies of each mode in support of socioeconomic development.

10.1.1 Introduction

The legislative requirement for the preparation of integrated transport plans is found in the National Land Transport Act, 2009 (Act 5 of 2009) (NLTA). The 2016 Minimum Requirements for the Preparation of ITPs sets out the types of plans that the different types of municipalities would need to prepare. Furthermore, the minimum requirements provide the technical guidelines for the preparation of all components of the ITP.

10.1.2 Purpose and requirements for a freight strategy

For the status quo report, the minimum requirements for the freight strategy will be used to assess the municipality's existing strategies, plans and policies regarding freight transport and their

alignment with the minimum requirements of the freight strategy. The status quo report will serve the purpose of identifying gaps based on the minimum requirements for the development of the freight strategy, which include the following:

- description of the main freight traffic routes in the municipality;
- description of problems caused by or inhibiting freight movement;
- description of routes identified for travel by vehicles transporting abnormal loads and dangerous/hazardous goods;
- state measures currently in place to deal with overloading;
- measures to promote the seamless movement of goods; and
- measures to avoid conflict with other road traffic in the case of road freight.

10.1.3 Mangaung Local Municipality Integrated Transport Plan 2006–2011

The report states that the municipality's goals are synchronised with the goals of the National White Paper on Transport policy, which was considered in the development of the ITP. The ITP's objective was to utilise the demand to propose the development of transport facilities based on the available infrastructure and national and provincial guidelines for transport facilities.

The information received from the National Traffic Information System (NATIS 0000) revealed that 18 072 trucks were registered in the province. Among others, the commodities reported to be transported the most in 2003 included mining products, chemicals, rubber, plastic products, and non-metallic products.

The same distribution of goods was assumed for the MMM as that of the Free State Province. The NATIS also revealed that 27% of freight was transported by rail and 73% by road. The required information could not be obtained from freight stakeholders. The freight route recognised by the ITP is the route along the N1 around Bloemfontein. This route is used to transport goods between Cape Town and Johannesburg.

The information received for the 2005/2006 financial year from Spoornet (now Transnet) revealed that agricultural products were transported the most from Bloemfontein, followed by metals. The goods transported to Bloemfontein included petroleum, cement, and agricultural products. Transnet indicated that there were no plans in place to change the current operations at the time.

The ITP also considered linkages with other government land use planning. The Motheo SDF proposed the prioritisation of rail freight. The necessity of a freight strategy was revealed during public participation held as part of the development of the ITP. The community highlighted that heavy vehicles use local roads, thereby causing damage.

The development of a freight strategy was therefore proposed by the ITP. The development of a Hazardous Goods Movement Strategy was also proposed as one of the projects for the municipality to implement.

10.1.4 National freight logistics strategy

The report stated that freight transport by rail had not increased over the years, instead road freight attracted new customers. This is a result of poor operational performance by rail, as well as theft and vandalism of the rail infrastructure. The main issues raised by customers were time, reliability, equipment availability, price structure and rolling stock issues. **There is now also theft, vandalism and sabotage of rail infrastructure.**

The finding made was that approximately 70–80% of freight is transported by road as it proved to be more flexible than rail. The main issues raised by road freight customers were customer service, industry competition, labour practice and fleet costs.

The Gauteng–Cape Town corridor was highlighted as one of the corridors requiring special attention due to capacity shortfalls. Tables 10.1 and 10.2 illustrates the difference between the rail and road freight commodity per the link.

Table 10.1: Rail freight commodity per major link

NETWORK LINK	FREIGHT COMMODITIES	RAIL TONNE (MT)
Gauteng–Durban	containers, steel, cars, coal, manganese, fuels, perishables	24
Gauteng–Cape Town	cars, grains, containers, perishables, cement, steel	11
Gauteng–Musina	foods, fuels, vehicles, cement, perishables, beverages	4.5
Gauteng–Tlokweng	fuels, cement, containers, vehicles, food	2
Gauteng–Ressano Garcia	mineral ore, fruit, sugar, timber, cars, paper	7
Cape Town–Namibia	fish, containers, fertilisers, cement, machinery	0
Cape Town–Port Elizabeth	cars, fuels, fruit, perishables, steel, tyres	0.3
East London–Durban	beverages, foods, fuels, vehicles	0
Durban–Pongola	containers, fuel, chemicals, timber	5.2
Winburg–Harrismith	maize, livestock, perishables, steel, containers	0
Gauteng–Upington	foods, cement, steel, machinery, vehicles, perishables	0.7
East London–Bloemfontein	vehicles, steel, grains	1.6
George–Colesberg	fuels, grains, perishables	0
Britstown–Nakop	food, cement, steel, machinery, cars, perishables	0.7
Gauteng–Swaziland	beverages, cement, coal, vehicles, grains, sugar	0
Thaba Nchu–Maseru	containers, fuel, cement, grains, coal, foods	0
Ermelo–Richards Bay	coal, steel, timber, chrome	78
Sishen–Saldanha	iron ore, lead	62

(Source: National Freight Logistics Strategy 2015)

Table 10.2: Road freight commodity per major link

NETWORK SECTION	FREIGHT COMMODITIES	ROAD TONNE (mt)
Gauteng-Durban	containers, steel, cars, coal, manganese, fuels, perishables	44
Gauteng-Cape Town	cars, grains, containers, perishables, cement, steel	15
Gauteng-Musina	foods, fuels, vehicles, cement, perishables, beverages	12
Gauteng-Tlokweng	fuels, cement, containers, vehicles, food	6
Gauteng-Ressano Garcia	mineral ore, fruit, sugar, timber, cars, paper	8
Cape Town-Namibia	fish, containers, fertilisers, cement, machinery	4
Cape Town-Port Elizabeth	cars, fuels, fruit, perishables, steel, tyres	37
East London-Durban	beverages, foods, fuels, vehicles	6
Durban-Pongola	containers, fuel, chemicals, timber	7
Winburg-Harrismith	maize, livestock, perishables, steel, containers	5.8
Gauteng-Upington	foods, cement, steel, machinery, vehicles, perishables	2.1
East London-Bloemfontein	vehicles, steel, grains	1.2
George-Colesberg	fuels, grains, perishables	1.6
Britstown-Nakop	food, cement, steel, machinery, cars, perishables	0.2
Gauteng-Swaziland	beverages, cement, coal, vehicles, grains, sugar	38
Thaba Nchu-Maseru	containers, fuel, cement, grains, coal, foods	3
Ermelo-Richards Bay	coal, steel, timber, chrome	0
Sishen-Saldanha	iron ore, lead	0

(Source: National Freight Logistics Strategy 2015)

The report highlights the following strategic issues facing the corridor:

- costs of roads: truck traffic also negatively impact road capacity and safety for all road users;
- availability of diesel;
- personnel and staffing;
- poor rail reliability limits the use of rail as line haul and road freight as a feeder service; and
- reliability, transit time and the operating cost of rail are adversely impacted by locomotive changes.

The report stated rail's performance gap must close to avoid over saturation and further constraints on the road corridor. At the time the National Freight Logistics Strategy was prepared, the quality of freight infrastructure and operations was insufficient to sustain a world-class logistics system.

The stated vision of the National Freight Logistics Strategy was informed by the vision stated in the White Paper on National Transport Policy. The development of the strategic framework considered social, economic and environmental factors. The following objectives were listed among others:

- lowering of transport costs;
- development of efficient transport systems;
- development of infrastructure;
- overloading control;

- removal of infrastructural bottlenecks;
- improving access to rural producers;
- reduction of congestion; and
- reduction of infrastructure damage.

Therefore, a transport sector that contributes to sustainable socioeconomic growth and development would mean that the objectives have been met. The development of this strategy considered several policies from the National Department of Transport, Department of Public Enterprises and Department of Trade and Industry.

The principles that were considered include:

- Ownership of infrastructure, the majority of which is to be retained by the government. The responsibility of providing infrastructure was allocated to the government due to its better placement.
- Management of infrastructure, the government was considered the overall manager of infrastructure with the private sector participating on a case-by-case basis. The difficulty of private sector infrastructure managers was also noted.
- Operations on infrastructure, multiple operators (public and private) on the infrastructure are encouraged, this is to promote competition.
- Regulatory structure of three regulators namely, the economic regulator, the safety and environment regulator, and the security regulator.
- Skills development and skills enhancement with the programme forming part of the strategy implementation.

10.1.4.1 Strategic implementation

The success of the strategy depends on the gap between the political and technical acceptance of the strategy and its implementation. The Inter-Departmental Task Team on Logistics is required to fill the role of the guardian of the strategy's implementation, while the Economic Ministerial and Director-General clusters oversee the strategy's implementation.

The formalisation of the appropriate governance and management of the strategy's implementation was emphasised. As the overseer of the implementation, the ministerial cluster is required to hold the Department of Transport and the Inter-Departmental Task Team on Logistics accountable for implementing the strategy. A freight and logistics system master plan must be designed and implemented by a technical team.

The institutional arrangements, regulatory structures and roles set out in the strategy should be developed and specified by the Inter-Departmental Task Team on Logistics. The report states that institutional restructuring and market structure reform would occur in phases. The strategy was

planned to be partially implemented using existing legal instruments, governance frameworks and regulatory instruments.

The four elements of the Transnet strategy were considered, and these are strategic redirection, balance sheet restructuring, improved corporate governance, and revised risk and performance management. The report stated that the message communicated to the market must be consistent, and the message that the freight environment within which Transnet's strategy is developed and implemented is defined by the National Freight Logistics Strategy.

The importance of a coherent freight system master plan was emphasised as this is required to predict system capacity and supply. The master plan to be developed by the Department of Transport should incorporate all current and planned freight and common-use infrastructure. The level of disintegration, duplication and misalignment between planning authorities was noted as a concern. The lack of accurate forecasts of demand for freight services was also noted as a concern. The report stated that the Department of Transport must develop a range of freight demand scenarios.

Key rail corridors must be brought to a level where they provide an effective alternative to road freight. One of the crucial decisions to be made included the enhancement of multi-modal solutions and inter-modal facilities for the Durban and Cape Town corridors. The report stated that improved rail performance is required on the Cape Town corridor, and improvement is also required on selected single-carriageway portions of the N1. The Department of Transport was advised to establish corridor management structures after completing the baseline analysis of the corridors. The development of a corridor optimisation strategy was also noted as part of the corridor management structure's responsibilities.

10.1.5 Legislative framework and policies

10.1.5.1 National Land Transport Act, 2009 (Act No. 5 of 2009)

Section 36 of the NLTA stipulates that all planning authorities are required to prepare an integrated transport plan for their service areas. The MMM is gazetted as a Schedule 1 municipality. Therefore, as a planning authority, it is required to prepare a CITP.

The CITP should be prepared in accordance with the requirements. The minimum requirement for the preparation of ITPs, which were gazetted in 2016, stipulates that the CITP must consist of a chapter detailing the freight strategy of the municipality. The transport register should describe the main freight traffic routes in the municipality, problems caused by or inhibiting freight movement, routes identified for travel by vehicles transporting abnormal loads and dangerous goods and measures currently in place to deal with overloading.

Section 34(1) of the Act stipulates that the Minister of Transport must prepare a National Land Transport Strategic Framework to guide land transport planning country-wide. The framework provides the policy and transport strategy for the country.

Section 37 of the Act stipulates that the planning authority must develop a freight strategy that covers the transporting of goods to, from and through their planning areas by rail, road and pipeline. A plan

for the movement of dangerous substances contemplated in section 2(1) of the Hazardous Substances Act, 1973 (Act No. 15 of 1973) must form part of the freight strategy.

10.1.5.2 Hazardous Substances Act, 1973 (Act No. 15 of 1973)

As stipulated in section 37(2) of the NLTA, the freight strategy must include a plan for the transportation of substances contemplated in section 2(1) of the Hazardous Substances Act, 1973 (Act No. 15 of 1973).

The descriptions of the hazardous substances are as follows:

- any substance or mixture of substances which, in the course of customary or reasonable handling or use, including ingestion, might, by reason of its toxic, corrosive, irritant, strongly sensitizing or flammable nature or because it generates pressure through decomposition, heat or other means, cause injury, ill-health or death to human beings, to be a Group I or a Group II hazardous substance;
- any electronic product to be a Group III hazardous substance; and
- any radio-active material to be a Group IV hazardous substance.

10.1.5.3 National Land Transport Strategic Framework 2017

The pressure on road infrastructure is excessive due to carrying freight that could be carried on the rail. There is an imbalance of 88% of the freight moved by road and 12% moved by rail, which results in underutilised rail infrastructure and intermodal facilities.

The National Land Transport Strategic Framework's vision is to provide safe, reliable, effective, and fully integrated transport operations and infrastructure, which will best meet the needs of freight customers through the following:

- Increased value to customers through increasing comprehensive business by improving reliability and transit for freight and by lowering transport system costs.
- Increased profitability and sustainability in the transport industry by decreasing the distorting effects of cross-subsidisation, increasing the potential to reinvest, promoting value-based competition, and internalising externalities to the maximum degree possible.
- A decreased burden on the *fiscus* by funding non-commercial activities.

The objectives of the National Land Transport Strategic Framework are as follows:

- Reduce the cost of freight logistics and influence market forces to transform industry practice and behaviour while maintaining profitable operations.
- Address the competition between rail and road freight and address the modal imbalance by facilitating the potential mode shift between the modes and by addressing road congestion and road safety.

10.1.5.4 National Transport Master Plan 2050

The main objective of freight transport was stated to achieve economic efficiency in the movement of goods. The report considered the State of Logistics survey conducted in 2013. The survey found that 76% of freight was transported by road and 10% by rail. The intention of the National Transport Master Plan was stated as to rebalance this unequal split.

The expansion of the road freight industry resulted in high-value commodities and other goods that are normally transported by rail being transported by road. The report stated that the rail market share was negatively affected by operational policy constraints, which resulted in its decline. The rail's inefficiency was said to be caused by reduced accessibility, safety and damage, reliability, time and cost.

The deterioration of the road network and traffic congestion caused by heavy vehicles has led to the development of the Road-to-Rail strategy by Transnet. The report referred to the Road Freight Strategy and stated that certain commodities should only be transported by rail. These commodities included timber, sugar, cement, zinc, coal, grain, liquid bulk and car parts. The necessity of improving the overload control system was emphasised. The levels of overloading were noted as a common concern for both national and provincial authorities.

The author highlighted the lack of information with regard to road freight volumes, operators, commodities, and movements as a problem faced by planning authorities; a problem that could be resolved by an effective registration and licensing system.

The report stated that Transnet's market demand strategy is aimed at improving operational inefficiencies through capital investment, expanding rail, increase in capacity, improvements in productivity and operational efficiency and a shift from road to rail. All this will result in additional capacity, growth in freight, cost reduction, and operational and productivity improvements.

The highlighted road freight operational constraints included, the cost of roads, availability of diesel, personnel and staffing, externalities, and forecasting of road and rail freight. Several factors were listed as potential causes of growth in freight (increased future freight volumes) including population, industrial growth, mining development, power generation and expansion of port capacity.

The report noted that the increase in road freight traffic will result in increased pressure on the already ineffective overload control system. The three factors affecting the level of effectiveness of the overload control system were listed as the probability of being apprehended, the severity of the penalty and the likelihood of prosecution. The Department of Transport was said to be developing a national transport databank and a national freight databank to address the ongoing concern of the lack of road freight data.

The proposed rail freight strategies considered the Green Paper on National Rail Policy, the Road-to-Rail strategy by Transnet, Road Freight Strategy and the National Freight Logistics Strategy. The rail freight strategies proposed in the National Transport Master Plan were as follows:

- widening the investment base through the introduction of policies;
- developing operational, technical, and managerial skills;

- research to inform national policies on rail development;
- creating a legislative framework for sustainable intermodal rail freight systems;
- evaluating the role of electrified railways, technical and economic evaluation; and
- investigating the use of branch lines in rural areas.

The road freight strategies proposed in the National Transport Master Plan were as follows:

- research to address several concerns, including a sustainable road freight infrastructure funding system, operator competence, logistics systems and infrastructure planning for major ports, availability of fuel, and regulatory framework;
- establishing weighbridges along road network;
- road user cost recovery through the development of effective methods;
- effective operator regulation through the creation of required structures; and
- effective provincial management of road freight operations quality.

The following interventions were proposed to assist with effective freight planning:

- information systems based on real observed data; and
- economic modelling.

10.1.5.5 Green Transport Strategy for South Africa (2018–2050)

The strategy encourages the shifting of freight to the rail to reduce direct greenhouse gas emissions. The long-term vision includes restricting long-distance freight that has been identified by the National Freight Logistics Strategy to rail. This will also be done with the development of green corridors in the road networks. Such corridors promote the use of clean and efficient technologies in the freight industry. The short-term strategy set out is to achieve a 30% shift of freight transport from road to rail. The shifting of road freight to rail will also reduce road freight traffic and the pressure on road infrastructure.

10.2 FREIGHT TRANSPORT PLAN

10.2.1 Introduction

The Free State is exploiting its strategic position as the most centrally placed province in South Africa to advance the transport and logistics industry. Several national roads pass through the province: the busy N3 connects Gauteng to the ports of Durban and Richards Bay; the N1 and N5 highways lead to the seaports of Port Elizabeth and East London, with the N1 ending in the port in the City of Cape Town; and the N8 connects Kimberley, the capital of the Northern Cape Province, to Maseru, the capital of Lesotho, via Bloemfontein, the capital of the Free State Province.

To achieve maximum economic efficiency in the flow of goods should be the goal of every mode of freight transportation. The primary focus of freight transport should be on developing conditions that

are conducive to achieving this purpose. In 2013, around 76% of South Africa's freight was moved throughout the country using the country's road network.

10.2.2 Objectives

The city's goals for freight transport are as follows:

- transport by rail rather than by road should be prioritised along major routes;
- grow the MMM economy and generate employment by providing a business-friendly environment;
- enhance the safety of freight transport and delivery in the MMM;
- reduce the negative effects on the environment to generate positive outcomes regarding freight delivery.

10.2.3 Data Collected of freight in the Mangaung Metropolitan Municipality (2022)

This section provides an overview of the current freight activities in the MMM based on data collected over a 12-hours at various locations. Freight transport within the metropolitan area can be split into heavy or light industrial and commercial transport. They are currently served by the general transport network. Table 10.3 list the major industrial freight centres within the Mangaung metropolitan area and data collected over 12-hours. The data reveals the number of light and heavy freight vehicles observed on specified routes in each area. There are more light freight vehicles in the MMM, although the margins are minimal, with the two modes split almost evenly. Bloemfontein is the largest city in terms of freight.

Table 10.3: Freight mode split in the MMM

	Freight transport	
	Light freight	Heavy freight
Bloemfontein	3867	2545
Botshabelo	86	171
Dewetsdorp	119	119
Soutpan	5	11
Thaba Nchu	162	225
Wepener	126	209
Other	5621	5066
Total	9986	8346

Figure 10.2 depicts the total freight counts conducted for each town in the MMM. Bloemfontein is the most active within the municipality in terms of freight transport, with around 35% of all freight going to or coming from there. While the remaining towns, except Soutpan, have comparable numbers with very small differences. Soutpan, on the other hand, is the least active, with only 16 freight trucks recorded in the town, the majority of which, over 70%, are heavy freight.

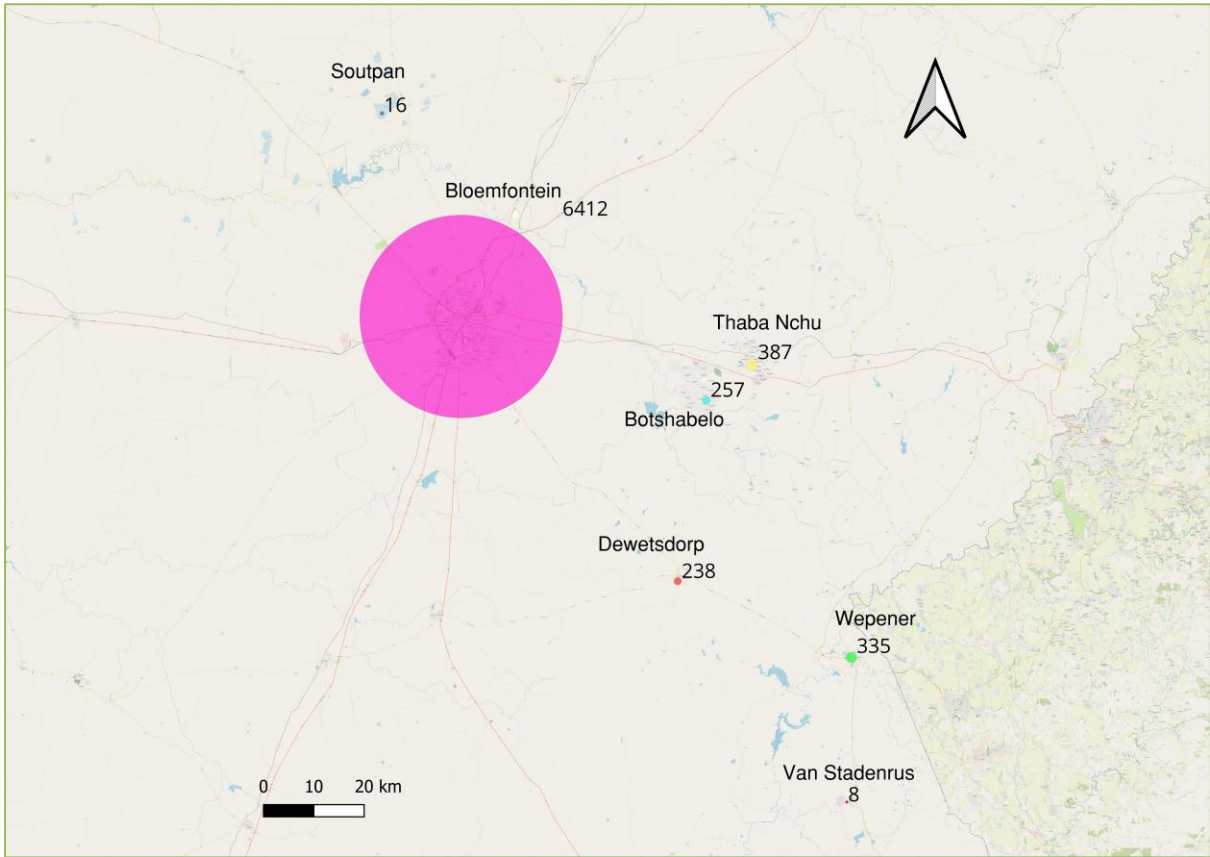


Figure 10.2: Map depicting the freight counts in each town

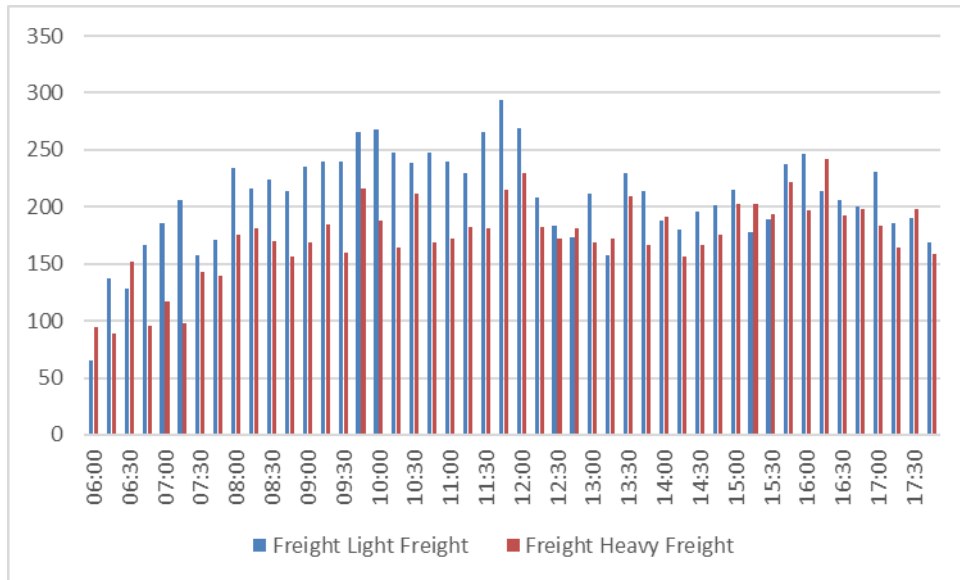


Figure 10.3: Mangaung freight transport over 12-hour count

According to Figure 10.3, there is no obvious pattern for when freight traffic in the MMM peaks; rather, there is a surge in morning freight traffic that persists throughout the day for both light and heavy freight vehicles. Figure 10.4 gives a closer look at Bloemfontein's traffic patterns, which account for the majority of the freight traffic in the MMM.

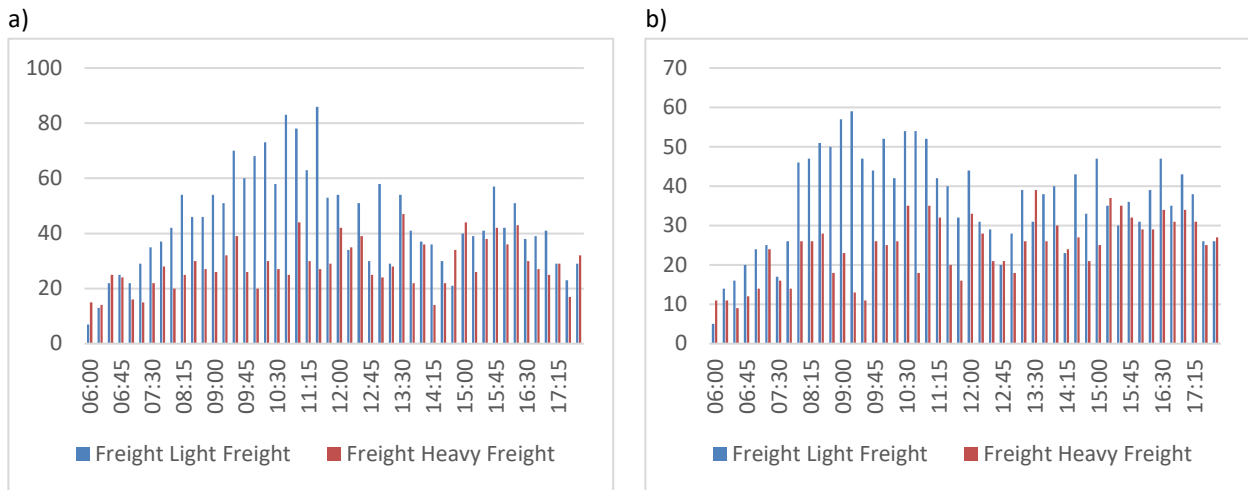


Figure 10.4: Freight counts taken over 12-hour period a) into Bloemfontein and b) out of Bloemfontein

As observed in Figure 10.4, the pattern of freight traffic into Bloemfontein becomes more distinct between 10:00 to 12:00. Even if the differences between peak and off-peak traffic are minimal, it is evident that the busiest hours are a two-hour window between late morning and early afternoon. Similarly, the traffic leaving Bloemfontein does not exhibit a clear peak hour pattern; rather, the traffic increases at the start of the count at 06:00 and, despite fluctuations throughout the day, the margins are so closely related that the traffic volumes are sustained throughout the day.

10.2.4 Routes for moving goods

In accordance with Subsection 37(2) of the NLTA, the city's Freight Transport Strategy specifies routes for transferring goods to encourage their smooth flow and avoid confrontation with road traffic. These routes are indicated in Figure 10.5.

Because travel distances are short and trucks offer flexible, inexpensive, and easily adaptable urban solutions, the road is the main mode of freight transit, particularly for intra-city freight. Long-term, the city would want to see more long-distance freight transported by rail.

Over the past two decades, the areas surrounding the Transnet precinct have attracted major freight and logistics-related development. This favourable trajectory must be exploited and expanded towards the airport node located to its east as part of a concerted effort to generate considerable economic growth and job creation in the eastern parts of Bloemfontein, particularly in the districts next to the Mangaung Township.

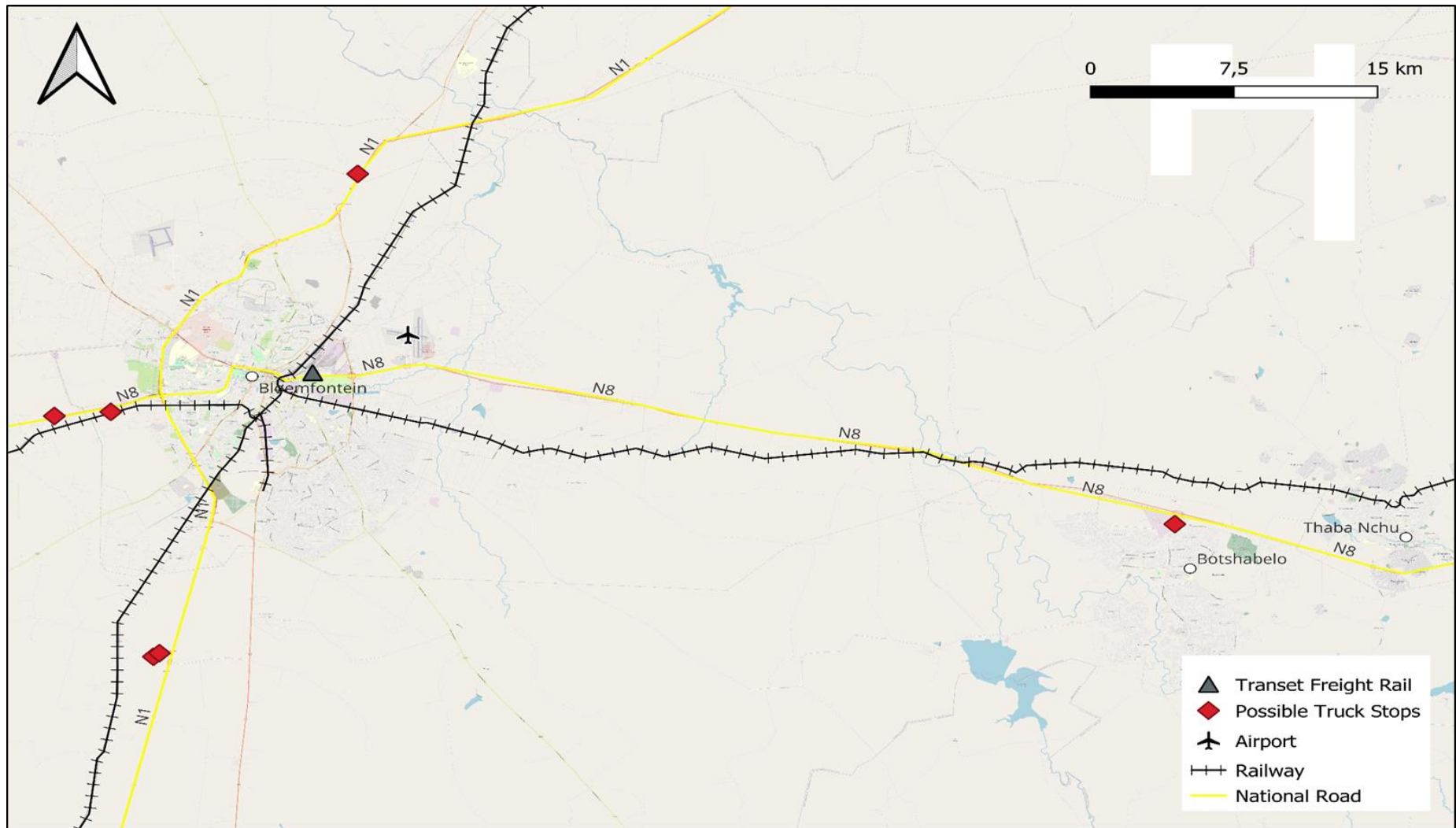


Figure 10.5: Key freight routes

10.2.5 The city's freight transport strategy

10.2.5.1 Overview of the Mangaung Metropolitan Municipality's freight transport delivery issues

- The contribution of freight transportation to traffic congestion and the resulting air pollution and carbon emissions is a significant negative economic consequence.
- The negative social impact of freight transportation includes the physical effects of pollution emissions on public health (death or sickness), the injuries and deaths caused by freight traffic accidents, noise, visual intrusion, and other quality-of-life issues.
- The availability of accurate statistics on the movement of products in South African cities is often limited. To decide on local measures and policies for future planning and the monitoring of urban freight movements, as well as to decide on local measures and policies for monitoring urban freight movements, the MMM requires reliable and accessible statistical data on urban freight movements.
- Countless road accidents involving freight trucks are attributable to brake failure, blown tyres, and other vehicle problems, which is a clear indicator that operators are not meeting their responsibilities regarding the roadworthiness of their vehicles. Some vehicle inspection stations are also responsible for issuing roadworthy certificates to vehicles that are not to standard.
- The inadequate provision of loading bays that are either improperly planned or, in some situations, utilised by motorists is one of the challenges freight vehicle operators and drivers encounter.

10.2.5.2 Strategic focus areas

The vision for the city's Freight Transport Strategy is that freight transport within the MMM and the city's functional area is safe and efficient, serves the needs of the local and regional economy without compromising the access and mobility needs of fellow road users, and that freight operators comprehend and comply with regulations concerning road safety, emissions, route and road asset preservation, and the user-pays principle. The city's Freight Transport Strategy is based on an examination of eleven focal areas:

- dangerous goods;
- abnormal loads;
- overloading;
- traffic congestion;
- road safety;
- freight emissions and air quality; and
- rail freight.

The MMM is accountable for the effective planning, implementation, and co-ordination of road-based freight in and through its entire area. The MMM has limited authority over provincial and national freight routes, rail freight, port operations, the development of freight regulations, law enforcement, and the severity of penalties. However, it can support and encourage co-operation between

stakeholders and play a significant advocacy role. The actions will be continuously monitored, evaluated, and reviewed. MOUs with various spheres of government are required, to strengthen law enforcement within MMM jurisdiction.

10.2.5.3 Identification of freight system challenges and gaps

Freight industries work diligently to ensure the transportation of goods, without any interruptions of time delay and damage. However, the industry activities are also impacting on the road infrastructure such as increased budgetary requirements for maintenance, rehabilitation and upgrades, due to damage caused by heavy vehicles. Road freight is a significant contributor to road crashes, injuries and fatalities on our roads.

10.2.5.3.1 Road freight challenges: lack of regional connectivity and poor road safety

The metropolitan regional connectivity is one of the challenges identified with the unavailability of accessibility to other areas due to the unavailability of proper infrastructure. The continuous effects of the inadequate road infrastructure result in the accelerated wear and tear of the vehicles which causes a high maintenance cost for freight vehicles. Figure 10.6 illustrates the relatively uneven distribution of roads across the various areas and an overall appreciation of where the majority of roads are located.

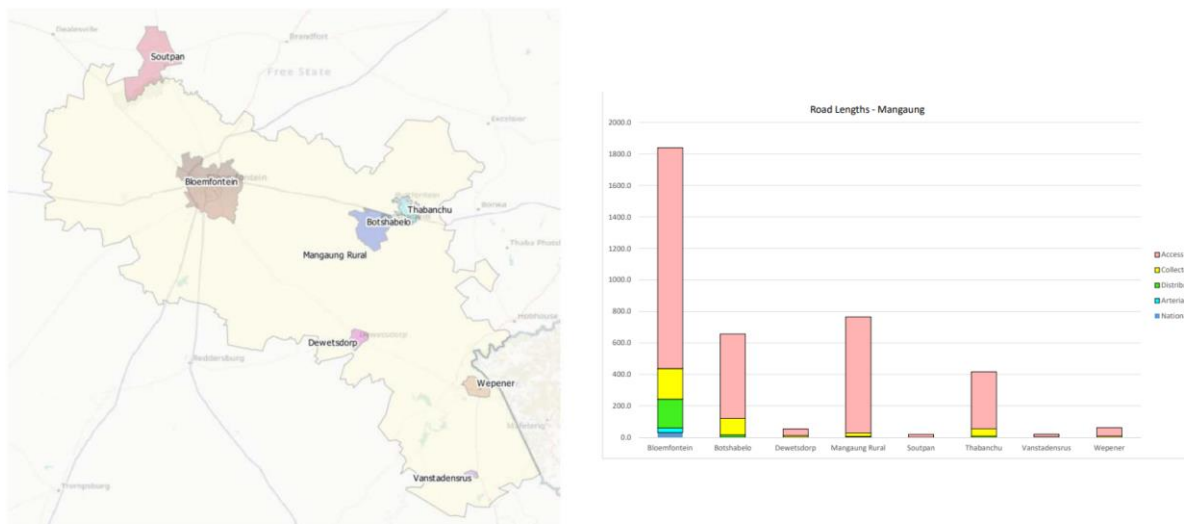


Figure 10.6: Lack of road freight regional connectivity

In terms of the movement of goods along the roads in the MMM; the metro contains a total of 3 831 km of roads of which 2 200 km are unpaved. The road asset register, in Table 10.4, illustrates that generally around 60% of the MMM road network in different regions of the municipality are in a poor or very poor condition, with the comparison of the Wepener area having the worst conditions to Bloemfontein area having the best.

Table 10.4: General road conditions per region

Municipality	Road Asset Roll-up Condition (km)					Total
	1 - Very Good	2 - Good	3 - Fair	4 - Poor	5 - Very Poor	
Bloemfontein	1	39	599	410	790	1 839
Botshabelo	2	26	126	149	354	656
Dewetsdorp	0	2	5	10	36	54
Mangaung Rural	6	6	82	181	490	765
Soutpan	0	0	2	4	13	19
Thabanchu	0	15	136	91	174	416
Vanstadensrus	0	0	3	4	13	20
Wepener	0	1	3	10	47	61
Grand Total	9	89	957	858	1 917	3 831

The long-term maintenance plan of the poor condition roads is an identified gap within the system and is required to be addressed through the drafting of a Road Asset Management Policy. The policy will holistically, achieve three objectives:

- maintain and extend the lifespan of the paved roads to minimise the rehabilitation processes;
- rehabilitate roads at required points; and
- ensure that the road standards are commensurate with the functional class of the road.

The other road freight challenges and significant gaps include but are not limited to:

- a) continuous rise in fuel prices;
- b) cost of logistics;
- c) lack of carbon footprint contribution in caring for the environment; and
- d) lack of skilled workers in the business.

10.2.5.3.2 Rail freight challenges

In summary, the overall rail freight challenges comprise the following:

- worn out rails;
- weld problems;
- internal defects, and
- corrugations and rolling contact fatigue initiated problems such as surface cracks, head checks, squats, spalling and shelling. If undetected and/or untreated these defects can lead to rail breaks and derailments.

10.2.5.4 Investigation measures to shift freight from road to rail

- An important element of the strategic policy direction of the rail modal shift is to focus on improving the quality and the application of demand management mechanisms, and to align

all of these elements with the policy processes currently taking place in the transport environment.

- A requirement of a capacity-driven dedicated rail network strategy and implementation.
- To rectify the unbalanced 89% to 11% modal split between road and rail freight in line with current policy processes in the transport sector such as the white paper on national rail policy. Rail organisations and policymakers can take the following steps in reversing the declining modal share of rail by considering:
 - implementing modern management concepts and making rail a customer-oriented business;
 - focussing on core offerings of rail, with specialisation and standardisation for seamless logistics;
 - developing a strategy for one-stop-shop logistics through full-service packages or collaboration with non-traditional partners;
 - developing a detailed understanding of logistics chains and cost drivers for core customers;
 - familiarising with national and global logistics trends;
 - understanding spatial planning and land use measures encouraging clustering of logistics activities close to railway corridors; and
 - utilise subsidies and incentives to influence the attractiveness of a particular mode of transport service.

10.2.5.5 Mangaung Metropolitan Municipality’s proposed strategies and objectives

The following eight freight movement strategies and activities are proposed:

<p>Strategy 1: Develop and adopt a freight transport master plan</p>	<p>Strategy 2: Develop a service monitoring system</p>	<p>Strategy 3: Construct road freight intermodal infrastructure and facilities</p>	<p>Strategy 4: Develop a load management strategy in collaboration with Provincial government</p>
<p>Strategy 5: Develop a hazardous goods strategy plan</p>	<p>Strategy 6: Develop a cost optimisation plan for freight operations</p>	<p>Strategy 7: Maintain a central knowledge base</p>	<p>Strategy 8: Develop a freight internal governance structure</p>

The strategies are underpinned by some objectives. It should be noted that the objectives can be grouped into two categories, namely:

- 1) short–medium term objectives
- 2) long term objectives

Short–medium term objectives are those that are more easily implementable and can be seen as relatively “quick wins” with a significant impact.

Long term objectives are more concerned with strategic-level decisions and generally are more difficult to implement and take time to reap significant changes in the freight strategy system.

10.2.5.5.1 Strategy 1: Develop and adopt a freight transport master plan

The MMM will focus its efforts on developing and adopting a master plan that incorporates the various freight transport service modes within the city. Ensuring a sustainable proposed modal split share across the regional context of the city. This can be achieved through the following:

Objective 1 (short–medium term): Reinforce the integration principles of the NLTA and ensure compliance with the CIP and Operational Plan policy documents.

Objective 2 (short–medium term): Develop a freight regional management plan.

Objective 3 (short–medium term): Review and refine a list of freight congestion areas and develop strategies and plans for congestion management.

Objective 4: (long term): Draft and initiate transport strategy by-laws, which will incorporate the freight transport masterplan.

10.2.5.5.2 Strategy 2: Develop and adopt a service monitoring system

The MMM should emphasise designing an efficient and reliable freight service. This can be achieved through the following:

Objective 1 (short–medium term): Develop a data management, control and storage system.

Objective 2 (short–medium term): Develop and work towards achieving key performance indicators for the system as per contractual agreements and implement penalties for lack of adherence to these indicators.

Objective 3: (short–medium term): Initiate a freight corridor protection plan, which will comprise a law enforcement service plan. It is necessary to improve law enforcement to enhance freight regulation, as well as to properly police freight facilities.

10.2.5.5.3 Strategy 3: Construct road freight intermodal infrastructure and facilities

Objective 1 (short–medium term): Identify suitable sites for the construction of truck stop facilities by the industry, with accompanying infrastructure for value-added services such as medical facilities, fuel and repair facilities, and overnight facilities.

Objective 2 (short–medium term): Development of intermodal infrastructure and support facilities on the outskirts of the city.

Objective 3 (short–medium term): Develop a freight road maintenance plan.

10.2.5.5.4 Strategy 4: Develop a load management strategy

Objective 1 (short–medium term): Formulate a complete strategy for load management that incorporates weighbridge location, functionality, efficiency, and information technology solutions and ensure greater operator awareness of the consequences of overloading.

10.2.5.5.5 Strategy 5: Develop a hazardous goods strategy plan

Objective 1 (short–medium–long term): Start a project to compile a list of the most important needs for the transportation of dangerous goods by freighters, the South African Police Service, and any other relevant stakeholders.

10.2.5.5.6 Strategy 6: Develop a cost optimisation plan for freight operations

Objective 1 (short–medium term) Reduce the design specification of facilities, road and pavement improvements and other conducive areas for more cost-effective implementation of the various infrastructure components.

Objective 2 (long term): Consider spatial development tools and land use conditions to incentivise development on freight corridors.

10.2.5.5.7 Strategy 7: Maintain a central knowledge base

The MMM needs to retain institutional knowledge or institutional memory for its effective use within the organisation.

Objective 1 (short–medium–long term): Develop an in-house quality management system (similar to ISO 9001:2015) of policies, processes and procedures that will assist in planning and executing the freight strategy system.

Objective 2 (long term): Ensure that knowledge and know-how are translated into system procedures to ensure continuity in the system roll-out and prevent institutional knowledge and memory from leaving the MMM.

10.2.5.5.8 Strategy 8: Develop an internal governance structure

The MMM needs to develop a strong internal governance procedure to prevent system and financial failure.

Objective 1 (short–medium term): Develop an organisational framework and identify the role and composition of the management body and committees formed.

Objective 2 (short–medium term): Develop communication protocols that assist with an efficient flow of information between the management body, committees and technical workstreams to ensure system co-ordination and integration.

Objective 3 (short–medium–long term): Develop communication protocols that assist with risk identification and management, internal alert procedures, etc.

Objective 4 (short–medium–long term): Develop protocols that assist with fast-tracking decision-making. This includes the provision of concise and accurate information to allow a critical review of the information and informed decision-making.

10.2.6 Strengths, opportunities, weaknesses and threats affecting the freight strategy

Strengths	Weaknesses
<ul style="list-style-type: none"> • Regional connectivity. • Enhancing economies of scale (freight-related industries support the local economy). 	<ul style="list-style-type: none"> • Limited funding for maintenance of roads or infrastructure projects. • No skills transfer or freight championship within the planning of the freight strategy.
Opportunities	Threats
<ul style="list-style-type: none"> • Partnerships with local delivery companies to address delivery issues. • Main streets in the CBD should integrate into the freight corridor re-design. • Need a freight strategy champion and skills transfer. 	<ul style="list-style-type: none"> • Increased movement of hazardous materials.

CHAPTER 11: OTHER TRANSPORT-RELATED STRATEGIES

11.1 INTRODUCTION

In addition to the other strategies referred to in this CITP, strategies and plans related to the following topics were developed (as per the Minimum Requirements for the Preparation of ITPs):

- Review on traffic impact studies;
- public transport safety and security;
- road user safety;
- law enforcement (road traffic and public transport regulation);
- tourism;
- accessible transport system
- rural transport; and
- green transport strategy.

11.2 REVIEW ON TRAFFIC IMPACT ASSESSMENTS

11.2.1 Approach to reviewing traffic impact assessments

For any land-use change application, the MMM has a standard process that is followed through town planning application to receive and review traffic impact studies. The required traffic reports can be classified into the following categories depending on the trips generated:

Table 11.1: Traffic reports

Trips generated	Traffic report required	Comment
Less than 50 trips	Traffic impact motivation report and site assessment required	No capacity analysis required
More than 150 trips	Traffic impact study and site assessment required	Capacity analysis required

The MMM has a standardised framework for undertaking traffic impact assessments.

The latest Land Use Scheme requirement is that all applications must be submitted with the site development plan (SDP). For less than 50 trips, it is required to distinguish between low-level volume trips and high-level volume trips. A criterion used to distinguish between low-level volume trips and high-level volume trips requires further investigation to be supported by Transport Planning Directorate. The MMM does not allow low-level traffic volume applications on arterial roads. This is made clear during the pre-consultation application with the town-planner. A pre-assessment traffic letter should be provided at the pre-application consultation to investigate if the intended application

complies with basic traffic and transport principles of access spacing, access separation, access width, and minimum throat length allowed. The Transport Planning directorate strictly adheres to traffic and transport planning principles without any leniency. This entails that all fundamental requirements must meet the minimum standards outlined in the latest TMH16 Vol2 (South African Road Traffic Signs Manual). No exceptions or relaxations are granted in this regard.

Arterial roads experiencing significant demand for new developments necessitate a comprehensive examination to ascertain their suitability for a service road. Such an investigation holds the potential to foster favorable growth within the municipality, while also creating opportunities for job creation.

As the responsible authority for local roads, the MMM does not possess the jurisdiction to directly comment on or review applications concerning roads under the purview of other road authorities, such as the Provincial department and SANRAL. However, in situations where access is granted through these external road authorities, but the impact of generated traffic extends to local roads, the role of the MMM is limited to reviewing the trip generation and capacity analysis component of the TIA that specifically affects the local road network.

11.2.2 Standards and regulations used by Mangaung Metropolitan Municipality

The MMM has officially adopted the latest TMH16, and TMH17 manuals as the basis for analyzing and evaluating traffic impact assessments. The majority of traffic engineering and transport planning requirements can be found in TMH16 Volume 2. In cases where the manual grants power to the local authority regarding the required standards, consultation with the MMM's Transport Planning directorate is necessary. It is important to note that these latest manuals supersede the previous manuals, signifying their updated and authoritative status.

The following standards and regulations are used by the MMM:

- A minimum level of service of D must be maintained for intersection design inclusive of all individual movements.
- Parking on sidewalks and angled on-street parking will not be allowed as part of the MMM requirements. Existing parking implemented in this manner in the past should be converted to parallel parking where necessary.
- Vehicle accesses: Full frontage accesses (wider than 8.5 m) to individual properties will not be allowed on arterial and collector roads. Full frontage accesses wider than 8.5 m will also NOT be allowed on local or activity streets.
- Loading facilities for all developments must always be provided on-site except in the CBD where the provision of on-street loading facilities can be considered with proper motivation (i.e. safe and not causing traffic operational problems). Parking on sidewalks, medians and angled on-street parking will not be allowed as part of the MMM requirements. Existing parking implemented in this manner in the past should be converted to parallel parking or removed where necessary.

- The MMM will only adopt a minimum 13 m road reserved width, though TMH16 allows for a minimum of 10 m.

11.2.3 Road Classification

The TRH26 manual is utilized to classify roads based on their respective functions. According to the TRH26 manual, the efficiency of the road network is measured by the level of accessibility it offers. Accessibility is determined by a combination of mobility and convenient access. Annexure D provides the road classification map in accordance with the guidelines outlined in TRH26.

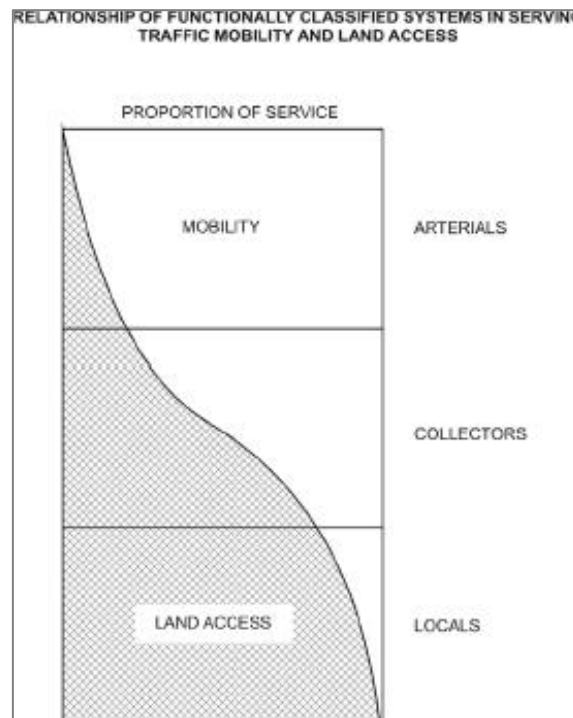


Figure 11.1 Relationship of functionally classified systems in serving traffic mobility and land access

11.2.4 Trip generation calculation

TMH17 is used to calculate generated trips by the proposed land-use change. Where trip generation rates are not provided, consultation with the MMM is required to determine if according to MMM Transport Planning, there is a need to investigate the peak hour where trip rates are not provided.

The IPTN map showing all IPTN routes needs to be adopted by the metro where transit node corridor adjustment factors need to be implemented. The phasing of the IPTN routes is important to align with the land use application period. Annexure D has public transport routes map within the Metro as according to the IPTN.

11.3 PUBLIC TRANSPORT SAFETY AND SECURITY

The public transport operational plan is discussed in Chapter 6 and public transport infrastructure is discussed in Chapter 7.

Throughout the MMM, safety and security with regard to the current public transport system has proven to be problematic. Public transport safety and security should be focussed on operations at public transport facilities and on-board public transport vehicles.

To improve public transport safety and security, the following strategies are proposed.

11.3.1 Public transport facilities

- Installation of appropriate lighting at public transport facilities to improve personal security.
- Provision of furniture such as shelters, benches and waste bins at public transport facilities.
- Provision of infrastructure that would separate commuters from moving traffic such as kerbs, railings or bollards at public transport facilities and stops.
- Rollout of security services at public transport facilities.
- Cleaning up of public transport facilities to create clean, open, well-lit environments.

11.3.2 Non-motorised transport facilities leading to public transport facilities

- Installation of appropriate lighting on NMT routes leading to public transport facilities.
- Keeping the NMT routes leading to public transport facilities clean, unobstructed, and well-lit.
- Providing traffic calming infrastructure such as raised pedestrian crossings and speed bumps at critical areas around public transport facilities where pedestrians are likely to cross.
- Providing traffic calming infrastructure around schools and areas where children are most likely to commute.

11.3.3 Public transport vehicles

For the proposed IPTN system, the following public transport vehicles strategy is required:

- The rollout of security services at public transport facilities.
- The rollout of public transport vehicle law enforcement to ensure that public transport vehicles are roadworthy and fit for safe operation.
- The rollout of public transport vehicle law enforcement to ensure that public transport vehicle operators are legally operating vehicles.
- Ensure that the MMM IPTN route functionality assessment and recommendations are implemented to ensure adequate coverage and appropriate OLs are assigned to the correct routes.

The following extract from the Integrated Public Transport Plan 2015–2036 (volume 3B):

“Fleet Deployment Strategy:

- *The fleet will comprise of 22-, 80- and 120 seat vehicles;*
- *19-metre articulated low entry (Euro V) diesel-powered (initially) – 120 passenger capacity;*
- *12-metre standard low entry (Euro V) diesel-powered (initially) – 80 passenger capacity*
- *Smaller vehicles for feeders. – 22 passenger capacity.”*

11.4 ROAD USER SAFETY STRATEGY

Road user safety is the responsibility of all its users including drivers, pedestrians, cyclists and motorcyclists. Road user safety campaigns should focus on the following:

Drivers

- drivers need to abide by traffic laws such as speed limits, traffic signals and stop signs;
- drivers should not be operating vehicles under the influence of alcohol, drugs or heavy medication;
- Drivers should refrain from road rage;
- pedestrians must enjoy the right of way when crossing at pedestrian crossings;
- being vigilant of their surroundings at all times; and
- avoid being distracted by issues such as cell phone use.

Vehicle roadworthiness

It is the responsibility of each driver to ensure that the vehicle, which is being operated, is roadworthy and in acceptable working condition.

Heavy vehicle roadworthiness

- Weighing stations are required on the N8 to check that trucks are not overloaded.
- Rest areas are also required to ensure that drivers get sufficient rest before they can continue with their journey on the national road.

Pedestrian safety

- Pedestrians should take responsibility for their own safety as far as possible.
- Pedestrians should avoid being out on the streets under the influence of alcohol, drugs or heavy medication.
- Pedestrians should obey traffic laws and avoid jay-walking and always be vigilant of motorists.
- Pedestrians should ensure that they are visible to all other road users.

Education of all road users from an early age

- Looking both ways before crossing a road;

- only crossing the roads at designated areas;
- having respect for all road users, being considerate, patient and courteous; and
- setting an example of safe road usage for children.

11.4.1 Road safety initiatives

Road crash data is very difficult to source with the new POPI Act. The N8 between Bloemfontein and Thaba Nchu is notorious to fatal accidents. Dr Belcher Road experiences high collisions between MBTs with NMT. Most of the high-mobility corridors need to be investigated in terms of accident statics.

The proposed Road Safety Initiative for the MMM is as follows:

- roadblocks;
- fatigue awareness;
- average speed over distance camera system;
- central communication centres to track the movement of patrol motor vehicles on any roadway;
- alcohol evidentiary centres;
- driver safety tips;
- signage and awareness;
- other road safety initiatives:
 - facilitates roadside communication at roadblocks;
 - offer road safety education and awareness programmes;
 - provide driver education and training;
 - distribute road safety products (pamphlets for targeted road user groups);
 - facilitates high school debates; and
 - establish scholar patrols and seatbelt convincer demonstrations.

It is recommended that the MMM adopt these strategies and implement them as far as possible.

In terms of safety, the N8 between Bloemfontein and Thaba Nchu is proposed to be converted into a dual carriageway. A dual carriageway will eliminate 100% of head-on collisions, and ultimately reduce accident statistics.

11.5 LAW ENFORCEMENT STRATEGY

11.5.1 Objectives of road traffic and public transport regulation

The appropriate authorities such as the South African Police Service, Provincial Traffic Police, and the local Traffic Police need to ensure law enforcement in terms of the following:

- Road user safety:
 - speeding;
 - drunk driving; and
 - abiding to traffic laws.

- Public transport usage:
 - security at ranks;
 - overloading and roadworthiness of public transport vehicles; and
 - abiding to traffic laws.

- NMT:
 - abiding to traffic laws;
 - jay-walking; and
 - security at crime hotspots.

- Freight vehicles:
 - abiding to traffic laws; and
 - overloading.

11.5.2 Summary of recommendations

The following strategies are recommended:

- Install speed cameras in area where there's recorded high operating speed,
- The MMM Traffic Department should acquire additional portable speed-measuring equipment; and
- The MMM Traffic Department should conduct regular roadblocks.

11.6 TOURISM

The strategy must describe transport improvements and measures that will serve tourists specifically and facilitate an increase in tourism in the area. Tourists visiting the province usually opt for the self-drive option when it comes to choosing a mode of transport. Reasons for this include the independence afforded by not having to rely on public transport and also safety. The municipality should still provide efficient and safe modes of public transport to tourists who prefer to make use of it. The municipality needs to improve its transport sector to be more integrated and tourist-friendly.

11.6.1 Roads

The road infrastructure in the municipality, as well as some public tourist attractions/amenities that are on the main tourism routes, are in dire need of attention. Inaccessible accommodation and attraction establishments represent further obstacles in the physical environment and affect tourism performance. There are challenges surrounding communication and resolutions from the government's side on this matter.

11.6.2 Intervention strategy

- Develop an integrated transport solution for the tourism sector.
- Engage with private and public transport companies to create linkages between attractions and activities.
- Develop a park-and-ride concept on the outskirts of the major towns.
- Identify and prioritise the main tourist routes that need repairs/maintenance within each municipality.
- Routine maintenance of roads is vital in providing access and safe driving conditions to tourists.
- Ensure the cleanliness of public roads.
- The Tourism Marketing Authority, Tourism Department and municipalities should communicate on this issue and produce solutions as attractions are losing business because of these challenges.
- Current tourism routes must link to major roads.

11.7 ACCESSIBLE TRANSPORT SYSTEM

11.7.1 Objectives of accessibility

To improve the lives of all South Africans, it is essential to improve accessibility to the transport system. This will in turn provide access to work opportunities, education opportunities and healthcare opportunities for people of all income groups including people with special needs.

Public transport facilities should be easily accessible to commuters by ensuring that public transport pick-up/drop-off points are located within walking distance from their destination.

In rural areas, the comfortable walking distance for people to walk to public transport stops/facilities is 1 km. Therefore, the aim should be to have public transport stops/facilities that are located at least 1 km from settlements.

Universal access or universal design refers to the ease with which all people can gain access to transport. This would include people who are visually impaired, hearing impaired, make use of wheelchairs, pushchairs, and people who have any form of physical or mental disabilities. It would also include people travelling with young children, infants, prams, or pregnant women. Public transport vehicles should be accessible to all the above-mentioned people to have a universally accessible transport system.

11.7.2 Summary of recommendations

In addition to the universal access design principles recommended in Chapter 7, the following strategies are recommended:

- An accessibility study and detailed precinct master plan for the various nodes within the MMM focussed on ensuring adequate NMT and public transport stops and shelters within 1km walking distance of the point of origin are provided.
- A feasibility study to provide information on transport options to passengers in an affordable manner.

11.8 RURAL TRANSPORT STRATEGY

The national Department of Transport has undertaken a review of the Rural Transport Strategy. Rural communities within South Africa have been under-serviced and interventions have been unsuccessful and not sustainable in the past. The implementation of the Rural Transport Strategy must be implemented in every province.

The Rural Transport Strategy highlights the strategic implementation of quality transport infrastructures and services to rural communities. It highlights a set of interventions to improve accessibility and mobility, institutional coordination, and coordination of funding systems. The Rural Transport Strategy's implementation framework serves as a guideline for municipalities to accelerate transport development in rural areas.

11.8.1 General guiding principles

The Rural Transport Strategy has established the following guiding principles:

- Inclusiveness with respect to all critical rural access needs, which includes economic and social needs of rural communities and other disadvantaged groups and universal access planning for public transport.
- Alignment and linkage with integrated development initiatives, focusing on the NDP and IDP.
- Developmental effectiveness, referring to the direct impact of rural roads and public transport on job creation, enterprise development, provision of general capacity building for the social development of communities, access to socioeconomic participation, mainstreaming of rural economies into a broader provincial gross domestic product and improved rural livelihoods.
- Sustainability, regarding the transport system itself and well-researched investment decisions on local, provincial and national economies. Sustainability also requires that attention be given to the impact of the rural transport system on the wider social, economic and biophysical environment.
- Action-orientation and cohesion relating to the need to move beyond strategising, planning and regulatory frameworks to implement a more balanced and integrated delivery system.

11.8.2 Rural Transport Implementation Framework

From the Rural Transport Strategy there is a Rural Transport Implementation Framework that has five pillars, namely:

- Alignment with the NDP, Comprehensive Rural Development Programme and IDP framework:
 - alignment of rural transport interventions with broader government priorities; and
 - linkage with local economic development, poverty alleviation and other social service delivery programmes.
- High-leverage focus projects and promotion of IPTN plans:
 - provision of rural transport infrastructure;
 - provision of rural transport services; and
 - provision of NMT and intermediate means of transport.
- Regulations and safety.
- Capacity building and monitoring.
- Funding.

11.8.3 Mangaung Metropolitan Municipality’s rural infrastructure projects

According to the municipality’s Rural Development Plan of 2020, the following key projects were identified to unlock the rural economy and provide access to markets and potential value chains for emerging farmers and rural communities.

Table 11.2:MMM’s rural infrastructure projects

Time Frame	Focus Region	Cluster	DESCRIPTION	DISTANCE
Short-Term (5 Yr.)	3	2	Pave road from Thaba Nchu to Paradys	± 10 km
	3	5	Pave road from Gladstone to junction with main road between Thaba Nchu and Black Mountain.	± 10 km
Medium-Term (5-10 Yr.)	3	1	Pave existing road from Bultfontein to Feloana	± 7 km
	3	4	Pave road from Sediba A towards Rooifontein up to existing paving.	± 8 km
	3	5	Pave road from Gladstone to junction with main road between Thaba Nchu and Black Mountain and re-surface existing road between Thaba Nchu and Black Mountain Resort	± 15 km
Long Term (15 – 20)	3	2, 3 & 4	Pave road from Paradys to Kgalala and Talla via Morago, as well as to Sediba A via Morago.	± 60 km
	3	5	From Balaclava towards Thaba Nchu up to Gladstone junction.	± 15 km

The provincial department needs a rural road maintenance strategy where a service provider is appointed every three years to maintain and improve the quality of gravel roads.

Recently, the municipality’s rural development has embarked on the development of an application that will inform the rural roads maintenance strategy. Table 11.3 gives a guideline in terms of technical aspects for the development of the application to be used mostly by farmers and community members. The TRH20 manual gives a guideline in terms of defects on gravel roads.

Table 11.3:Free State Province rural maintenance strategy

Main defects	Location (GPS)	Road type (national, regional, tertiary, secondary, private)	Road number	Defects category	Geo-referenced photo
Potholes				Single pothole	
				Isolated (pothole every 10 m)	
				Scattered (pothole every 2 m)	
Riding quality				Poor (travel speed less than 50 km/hr)	
				Very poor (travel speed less than 20 km/hr)	
Drainage				Water-ponding	
				Erosion	
				Slipperiness	
				Blocked culverts	
				Daylighting rivers/streams/culverts	
				Earth channels not maintained	
Structural				Damaged bridge	
				Damaged culverts	
				Damaged concrete drains	
Road signs				Missing signs	
				Damaged signpost	
				Damaged road sign board	
Surface cracks				Less than 150 mm thickness cracks	
				Between 100 mm and 150 mm thickness cracks	
				More than 150 mm thickness	
Damaged trees				Tree branches extending to the road	
				Tree roots extending to the road	
Un-wanted objects				Litter	
				Dead animals	
				Big stones/obstructions	
Dustiness				Excessive loose material	
				Gravel loss	
Fence				Damaged fence	
				Missing fence	

11.9 LEARNER TRANSPORT STRATEGY

The majority of the routes to farm schools are inaccessible within the jurisdiction of the MMM.

11.9.1 Intervention strategies

The following routes were identified as the most inaccessible in the MMM:

- Route no. M039/2022; Bloemfontein–School (Willows); distance (54.2 km); number of learners 20.
- Route no. M013/2022; Bloemfontein–School (K.Khakhau); distance (71.2 km); number of learners 22.
- Route no. M050/2022; Thaba Nchu–School (Sediti); distance (71 km) number of learners 71.

11.10 MANGAUNG CENTRAL BUSINESS DISTRICT PARKING DEMAND

The general street pattern within the CBD is grid-iron, however moving toward the outskirts of the CBD, a cobweb pattern is observed. The streets within the CBD are mostly one-way traffic, of which the general advantages are increased safety by reducing the number and severity of crashes and reducing conflicts at intersections. The disadvantages include increased travel distance, wider pedestrian crossings and driver confusion. One-way traffic also forces vehicles to increase their mileage because they are not directed on the most direct routes.

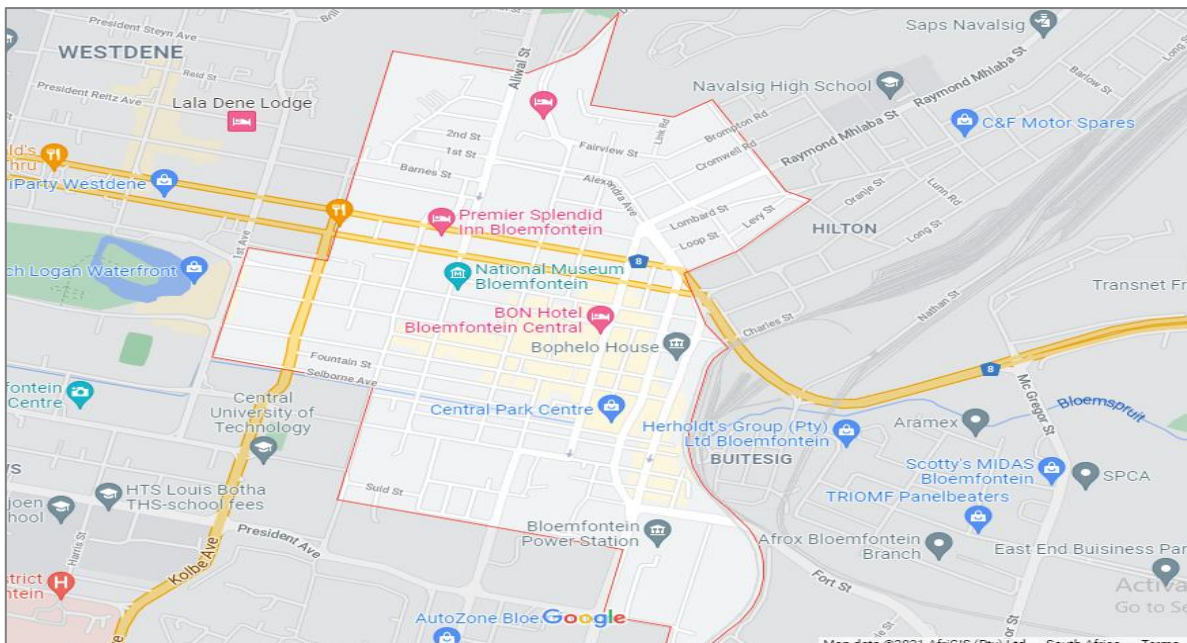


Figure 11.2: Bloemfontein CBD

The CBD in Bloemfontein consists of the following roads:

- N8 which leads to Zastron street and Nelson Mandela Drive;
- the R700 leading to Alexandra Avenue and Aliwal Street;
- the M12 leading to Harvey Road and Hanger Street; and
- the M30 leading to Church Street.

Centrally within the CBD, the main streets are Henry Street, Charles Street, Merriam Makeba Street, Charlotte Maxeke Street, St Andrews Street, Fontein Street, Selborne Avenue, Peet Avenue, Douglas Street and Goddard Street. According to Tom Tom Surveys, the most congested streets are more central and include Hanger Street, Harvey Road, Charles Street, Charlotte Maxeke Street, East Burger

Street, St Georges Street, West Burger Street, St Andrews Street, Aliwal Street and Church Street. It is only specific sections of these streets that are congested. The congestion on specific roads is due to that section of the street being the final destination to shopping malls, driving schools, educational institutions, government buildings such as the Department of Correctional Services and Department of Water Affairs, the Post Office, and banks.

To achieve sustainability in parking, there are three pillars that must be met, namely economic, social and environmental. An increase in economic activity leads to an increase in congestion, resulting in increased pollution in the environment. A modal shift from private to public transportation will greatly benefit the reduction of parking demand. A well-planned public transport system that serves the public from their residential areas to their various destinations, that is reliable, arrives onsite, safe, and secure will attract the shift from private vehicle use.

Table 11.4:MMM parking demand study

Streets	Parking demand (space hour) D $D = \sum_{i=1}^N (n_i t_i)$	Parking supply (space hour) S $S = f \sum_{i=1}^N (t_i)$	Spaces needed
Charlotte Maxeke Street	784.818	483.728	34
St Andrews Street	257.9	352.54	29
St Georges Street	379.6	284.5	11
Elizabeth Street	121.6	64	7
Fichardt Street	361.7	226.9	15
Charles Street	474.1	258.1	24
East Burger Street	515	326	58
Hanger Street	411.8	191.5	25

The parking demand study, despite indicating a high demand for parking within the CBD, does not necessarily justify the need for additional parking infrastructure. Rather, the purpose of the study was to highlight the challenges associated with parking and emphasize the importance of implementing an efficient and reliable public transport system as a solution. The focus is on addressing the root cause of the parking struggle by promoting alternative modes of transportation, reducing reliance on private vehicles, and encouraging modal shift towards public transport. By prioritizing the development of a robust public transport system, the aim is to alleviate the parking issues within the CBD and provide commuters with viable and sustainable transportation options.

11.10.1 Type of commercial activities per street

Charles Street:

The most congested street sections of Charles Street are on the western side, located outside the Sanlam Plaza entrance as well as Middestad Mall. The urban activities along the street include a shopping mall, ANC offices, barber shops and food shops. The on-street available parking is parallel parking, though motorists illegally use the loading zone as 45 degrees-angled parking. There is also an off-street parking garage available which is paid parking, though it is seldom used. The carriageway is dual with two-way traffic.

St Georges Street:

On St Georges Street, the main urban activities include the tertiary institution Motheo College, car dealerships, churches, small shops, accommodation and barber shops. The available parking is on-street and is angled at 90 degrees parallel parking. Off-street parking is available at the tertiary institution but is privately used by students and lecturers. The carriageway is a single carriage with two-way traffic.

St Andrews Street:

St Andrews Street is one of the busiest streets in the CBD. Taking a large part of the space bordered on the southern side of St Andrews Street is Hoffman Square, a seating area for civilians with free available wifi as well as a bus stop. The street also consists of smaller shopping centres, food shops, the city Post Office, banks, government buildings and a tertiary college. Parallel on-street parking is available, though motorists mostly park illegally on the bus reservation. Off-street parking is available for employees at government buildings and the Post Office. The carriageway is a three-lane carriage one-way direction.

Charlotte Maxeke Street:

Charlotte Maxeke Street, another of the busiest streets, borders Hoffman Square on the northern side. The street accommodates banks, vendors, shopping malls, small shops/stalls and government buildings. The type of parking available is parallel on-street parking, as well as private off-street parking. The carriageway is a three-lane carriage one-way direction.

Merriam Makeba Street:

Merriam Makeba Street is congested towards the eastern side, especially towards the western entrance of the mall. There are 90 degrees on-street parking available, but the taxis reserved the parking as taxi stops. The urban activities on this road include large retail malls, a government building, salons, residential flats, historic buildings, and also accommodates an off-street parking building. The off-street parking is paid for, and according to a police officer, the South African Police must rent parking space at a fee due to the unavailability of parking for the police officers in the CBD. There is also on-street parking available, though most of the parking has been unofficially reserved for metered taxis. The carriageway is single with a two-way direction.

Fichardt Street:

Fichardt Street has high urban activity with no off-street parking except for the parking that belongs to a church. The employees working on the street have no demarcated or off-street parking provided. The urban activities include salons, a funeral parlour, a shopping centre subdivided into many smaller shops, a hotel, furniture shops and retail stores. The parking availability on Fichardt Street is minimal and it is a short street, and mostly illegal parking takes place. There is no parking for employees, yet the street has a high capacity of employees working at their respective businesses. There is high urban activity, including furniture shops that require delivery vehicles to load and transport furniture. The loading zones are used by motorists as 45 degrees parking. The off-street parking available on this street is a private parking area, which is underused. The street is a dual carriage with one-way traffic.

East Burger Street:

East Burger Street is a long street travelling through the eastern side of the CBD. There is a high occupancy of metered taxis with reserved 90 degrees parking, though this parking was not originally a taxi reservation. The urban activity on the street includes the Bon Hotel, the eastern side of the Sanlam Plaza, shopping centres, retail shops, salons, vendors, restaurants, the city Post Office, medical facilities, and a pharmacy. The street name stops at the 90 degrees of Peet Avenue, then Fraser Street begins. The type of parking at East Burger Street is parallel parking and the available off-street parking is reserved for employees working at the Post Office. There is also off-street paid parking for public use, supplied by the Sanlam Plaza. According to an employee at the medical centre located on the street, there is no reserved parking for employees and they, therefore, make use of paid parking at Sanlam Plaza. The street is a dual carriageway with one-way traffic.

CHAPTER 12: SUMMARY OF LOCAL INTEGRATED TRANSPORT PLANS IN THE CASE OF DISTRICT MUNICIPALITIES

According to the NLTA, this chapter, which deals with the summary of Local Integrated Transport Plans is only applicable to ITP at the district level where it outlines the summary of the transport implementation budgets and programmes over five years within the district municipality. This chapter is exempted from the CIP.

CHAPTER 13: FUNDING STRATEGY AND SUMMARY OF PROPOSALS AND PROGRAMMES

Chapter 13 of the CIP must contain all the proposals, projects and programmes provided for in the plan, together with the financial implications of each of the subsidies and operational costs.

13.1 STRUCTURE OF FUNDING BACKGROUND

It is necessary to look into the funding strategy for the municipality to explore possible funding avenues for the project implementation.

13.1.1 Municipal revenue assignment

The municipality generate revenue through **property rates**, which are used for municipal governance and administration, as well as for the provision of services. Another form of generating revenue is through **user charges**, which are imposed primarily to recover the costs of service provision, such as electricity, water, sanitation, and solid waste.

13.1.2 Intergovernmental transfers

Through the **Local Government Equitable Shares**, revenue can be generated to achieve the delivery of services. The intergovernmental transfer funds also aim at bridging the gap between local government's poor ability to raise revenue, and their mandate to deliver basic needs.

The **Conditional Grants** are provided by the national government to both the provinces and municipalities to achieve a specific objective. To determine which municipalities are to receive the grants, the Department of Public Works uses a combination of poverty indicator-based targeting at various scales. They explore the municipal applications as well as recommendations by the project design and selection team.

The purpose of the **Municipal Infrastructure Grant** is to supplement municipal capital projects to eradicate backlogs in basic municipal provision. This grant continues to be the best source of funding for transport projects due to the favourable condition of road infrastructure spending imposed thereon. In the cases of proclaimed provincial roads, the province is required to fund 80% of the project.

The **Neighbourhood Development Partnership Grant** is in place to provide municipalities with capital subsidies for property developments in townships and new residential developments, which includes the construction or upgrading of community facilities, and where appropriate, attract private sector funding and inputs.

The **Public Transport Infrastructure and System Grant** is aimed at providing funding for municipalities to accelerate the planning, establishment, construction and improvement of new and existing public transport and NMT infrastructure and systems.

The **Public Transport Network Grant (PTNG)** was established by the Department of Transport and National Treasury to provide funding for projects that supports the Public Transport Strategy and Action Plan (2007). Since the MMM IPTN is currently in its implementation phase, it is believed that

this grant is already activated. It can be concluded that Phase 1 (Planning), Phase 2 (Business Plan), and Phase 3 (Design Development) have been completed.

The **Extended Public Works Programme Incentive Grant for Municipalities** is specifically intended to fund labour-intensive employment through projects that maximise job creation and skills development. The grant will benefit road projects that require block paving for surfacing, as well as a surfacing of the sidewalks using labour-intensive methods.

The **Municipal System Improvement Grant** is designed to assist municipalities in building in-house capacities to perform their functions and stabilise institutional and governance systems. It is possible to spend the funds on the design and implementation of systems such as GIS and transport models that would increase the capacity of the municipality in performing its constitutional duties. Given the backlog within the MMM, this grant can be utilised to address the shortcomings in the delays experienced in the review of transport infrastructure assessments.

The other structures of funding, which include commercial lending by obtaining the funds through debt will not be discussed.

13.2 SUMMARY OF TRANSPORT PROJECTS (IDP) – CURRENT IDENTIFICATION

The Municipal Finance Management Act (2003) (MFMA), together with the Municipal Systems Act (2000) ensure that municipalities' priorities, plans, budgets, implementation actions and reports are properly aligned. The Acts also identify the main components of the financial management and accountability cycle and how they ought to be aligned. For the purposes of this report, the following are applicable:

- The Integrated Development Plan (IDP) sets out the municipality's goals and development plans, which need to be aligned with the municipality available resources. Council adopts the IDP and undertakes an annual review and assessment of performance based on the annual report
- The three-year budget sets out the revenue raising and expenditure plan of the municipality for approval by council. The allocation of funds needs to be aligned with the priorities in the IDP.

It is therefore a legal requirement that financial implications for the IDP (and thus its sector plan the CIP) are reported over a three-year period. From the current draft of the 2022/2027 IDP, the following is a list of transport related projects:

Engineering services

- Upgrade of road 2029 from gravel road to surfaced road – 4.4 km.
- Upgrade of road 437 from gravel road to surfaced road – 8 km.
- Upgrade of road 601 from gravel road to surfaced road – 5.6 km.
- Upgrade of Bochabela Street from gravel road to surfaced road – 2 km.
- Upgrade of Bochabela Street from gravel road to surfaced road – 1.6 km.

- Upgrade of Main Road 11388 and 11297 from gravel road to surfaced road – 1.9 km.
- Upgrade of Road 3824 Botshabelo West from gravel road to surfaced road – 5.2 km.
- Upgrade of Mapangwana Street in Freedom Square from gravel road to surfaced road – 2 km.
- Upgrade of Sand du Plessis Road from gravel road to surfaced road – 3 km.
- Upgrade of Lefikeng and Roma Streets from gravel road to surfaced road – 2.6 km.
- Upgrade of Zim Street Phase 2 Kagisano from gravel road to surfaced road – 2.4 km.

Public safety

- Speed law enforcement cameras – handheld cameras.
- Speed law enforcement cameras – fixed cameras.
- Parking meters.
- Un-roadworthy vehicles Road Safety Project.
- Law enforcement projects and patrols.

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- IPTN Phase 1 – trunk routes.
- IPTN Phase 2 – trunk routes.
- Bus stops.
- Intelligent Transport System.
- Open bus stations (bus stop shelter).
- IPTN transfer facilities.
- IPTN bus depot – building works.
- IPTN bus depot – civil works (Phase 2).
- Hauweng bus turnaround point – University of the Free State.

13.3 SUMMARY OF TRANSPORT PROJECTS – CITP

The analysis of the Transport Register has revealed a clear need for additional public transport infrastructure projects aimed at improving the overall transport systems. The identified gaps and deficiencies in the current transportation infrastructure highlight the necessity for strategic investments and developments. By undertaking these additional projects, the aim is to enhance the efficiency, reliability, and accessibility of public transportation services, ultimately meeting the growing demands of the population and addressing existing transport challenges. The ultimate goal is to create a robust and integrated public transport system that effectively serves the needs of the community, facilitates sustainable mobility, and contributes to the overall development and well-being of the metropolitan area. The following projects are identified:

- Convert the current rank facility that is un-used into a holding area,
- Construct a new mini-rank facility at Dewertsdorp,
- Construct a new mini-rank facility at Vanstadensrus,

- Construct a new mini-rank facility at Soutpan,
- Phase 01 IPTN should be prioritised to be in operation
- Rollout IPTN Phase 2
- Roads Transport Masterplan
- Mode Choice Road Masterplan
- Investigation of Service roads on arterial roads
- Road Safety Investigations
- Emergency Routes Maintenance
- Maintenance Cost – Class 1 Roads
- Maintenance Cost – Class 2 Roads
- Maintenance Cost – Class 3 Roads
- Maintenance Cost – Class 4 Roads
- Route viability studies for rural roads
- N8 – Dual Carriageway between Bloemfontein and Botshabelo
- Route no. M039/2022 maintenance; Bloemfontein–School (Willows); distance (54.2 km)
- Route no. M013/2022 maintenance; Bloemfontein–School (K.Khakhau); distance (71.2 km)
- Route no. M050/2022 maintenance; Thaba Nchu–School (Sediti); distance (71 km)

The table on the following page gives the list of projects within the MMM, Estimated Cost, Source of Funding, and their Priority Level. High priority projects are to be implemented within the next 3 years. Medium priority projects are to be implemented within the next 5 years.

Project Name, Proposal, or Programme	Estimated Cost	Funding Source	Priority Level
Roads Transport Masterplan	R7,000,000.00		High Priority
Mode Choice Road Masterplan	R1,880,000.00		High Priority
Service Roads on Arterial Roads Investigation	R980,000.00		High Priority
Road Safety Investigations	R1,988,8220.00		Medium Priority
New Rank Facility – Soutpan	R26,180,000.00		Medium Priority
New Rank Facility – Dewertsdorp	R26,180,000.00		Medium Priority
New Rank Facility – Vanstadenrys	R26,180,000.00		Medium Priority
Emergency Routes Maintenance	R908,000,000.00		High Priority
Maintenance Cost – Class 1 Roads	R1,605,575,672.90		High Priority
Maintenance Cost – Class 2 Roads	R668,879,915.94		High Priority
Maintenance Cost – Class 3 Roads	R2,361,324,412.49		High Priority
Maintenance Cost – Class 4 Roads	R8,515,422,484.65		High Priority
IPTN Phase 1 – trunk routes.	R50,000,000.00		High Priority
IPTN Phase 2 – trunk routes.	R67,000,000.00		High Priority
Bus stops.	R2,000,000.00		High Priority
Intelligent Transport System.	R13,000,000.00		High Priority
Open bus stations (bus stop shelter).	R10,000,000.00		High Priority
IPTN transfer facilities.	R12,500,000.00		High Priority
IPTN bus depot – building works.	R92,500,000.00		High Priority
IPTN bus depot – civil works (Phase 2).	R55,000,000.00		High Priority
Hauweng bus turnaround point – University of the Free State.	R5,000,000.00		High Priority
Un-roadworthy vehicles Road Safety Project.	R500,000.00		High Priority
Law enforcement projects and patrols.	R400,000.00		High Priority
Route viability studies for rural roads	R800,000.00		Medium Priority
N8 – Dual Carriageway	R370,000,000.00		Medium Priority
Route no. M039/2022; Bloemfontein–School (Willows); distance (54.2 km)	R81,000,000.00		Medium Priority
Route no. M013/2022; Bloemfontein–School (K.Khakhau); distance (71.2 km)	R106,000,000.00		Medium Priority
Route no. M050/2022; Thaba Nchu–School (Sediti); distance (71 km)	R106,500,000.00		Medium Priority

Upgrade of road 2029 from gravel road to surfaced road – 4.4 km.	R24,500,000.00		Medium Priority
Upgrade of road 437 from gravel road to surfaced road – 8 km.	R57,900,000.00		Medium Priority
Upgrade of road 601 from gravel road to surfaced road – 5.6 km.	R40,198,365.00		Medium Priority
Upgrade of Bochabela Street from gravel road to surfaced road – 2 km.	R7,000,000.00		Medium Priority
Upgrade of Bochabela Street from gravel road to surfaced road – 1.6 km.	R15,806,450.00		Medium Priority
Upgrade of Main Road 11388 and 11297 from gravel road to surfaced road – 1.9 km.	R14,000,000.00		Medium Priority
Upgrade of Road 3824 Botshabelo West from gravel road to surfaced road – 5.2 km.	R18,558,399.00		Medium Priority
Upgrade of Mapangwana Street in Freedom Square from gravel road to surfaced road – 1.8 km.	R13,500,000.00		Medium Priority
Upgrade of Sand du Plessis Road from gravel road to surfaced road – 2 km.	R21,486,000.00		Medium Priority
Upgrade of Lefikeng and Roma Streets from gravel road to surfaced road – 2.6 km.	R18,680,728.00		Medium Priority
Upgrade of Zim Street Phase 2 Kagisano from gravel road to surfaced road – 2.4 km.	R17,273,346.00		Medium Priority
Nelson Mandela Bridge	R17,273,346.00		Medium Priority
First Avenue Pedestrian Bridge	R33,214,497.00		Medium Priority
Verenigin G Avenue – Extension Bridge over Rail	R1,000,000.00		Medium Priority
Verenigin G Avenue – Extension Roads	R1,500,000.00		Medium Priority

Reseal of Streets/ Speed Humps	R105,000,000.00		Medium Priority
Rehabilitation of Zastron Street	R69,500,000.00		Medium Priority
Rehabilitation of Nelson Mandela Street	R23,000,000.00		Medium Priority
Upgrading of Intersection George St & Pres Brand	R4,500,000.00		Medium Priority
Upgrading of Dr Belcher/ Macgregor	R6,000,000.00		Medium Priority
Upgrading of Victoria & Kolbe Intersection	R14,000,000.00		Medium Priority
Replacement of Obsolete and illegal signage and traffic signal	R18,300,000.00		Medium Priority
Upgrading of Kokozela Street - Rocklands	R6,000,000.00		Medium Priority
Upgrading of Bobo Street	R6,000,000.00		Medium Priority
Upgrading of Ramailane Street	R6,000,000.00		Medium Priority
Upgrading of OR Thambo Street	R6,000,000.00		Medium Priority
Upgrade of T1419B Road 6	R6,300,000.00		Medium Priority
Speed law enforcement cameras – handheld cameras.	R6,000,000.00		Medium Priority
Speed law enforcement cameras – fixed cameras.	R1,000,000.00		Medium Priority
Parking meters.	R800,000.00		Medium Priority
Traffic Control Church Street	R700,000.00		Medium Priority
Install Stop sign at junction – Frans Kleynhans and Kenilworth Street	R20,000.00		Medium Priority

CHAPTER 14: STAKEHOLDER CONSULTATION

The stakeholder engagement process is one of the critical components within the CITP project and statutory requirement. Several stakeholders were identified in carrying out and achieving the desired outcome, especially within the transport sector.

Projects of this nature require comprehensive consultation to ensure stakeholders give support for the overall project objective.

Stakeholder engagement is a complex process because of the different natures of stakeholders, thus we learned during this process that flexibility was crucial in dealing with a host of diverse views, which may be cultural, political or ethnic and we had to deal with them skilfully.

The identified key stakeholders are as follows:

1. Taxi associations:
 - 1.1 Greater Bloemfontein Taxi Association (GBTA)
 - 1.2 Botshabelo Amalgamated Taxi Association (BATA)
 - 1.3 Qibing Taxi Association (QTA)
 - 1.4 Thaba Nchu Taxi Alliance (TTA)
 - 1.5 Motheo Region Taxi Association (Region)
 - 1.6 Tshwaraganang Scholar Transport Association
 - 1.7 SANTACO (Free-State)
2. IBL (Interstate Bus Lines)
3. Transnet (Freight Unit)
4. SANRAL
5. ACSA – (Bram Fischer Airport)
6. Department of Police, Roads and Transport (Free State Provincial Government)
7. Learners' Needs Assessment (please find attached a list of schools that participated in the survey)
8. Emergency Medical Services, Free State Department of Health. (Public Transport Sector/Taxi Industry)

The initial stages of our stakeholder engagement with the taxi industry coincided with the election period of the majority, if not all, of the taxi associations within the jurisdiction of the project. i.e. MMM.

The above-mentioned process assisted the stakeholder engagement team to work closely with associations during this transitional phase and enabled us to forge new relationships beyond the election phase, which yielded positive outcomes in achieving the desired results of us having access to conduct surveys and transport infrastructure audits. Below are highlights from the meeting with the MMM and the follow-up/progress on each item:

14.1 GREATER BLOEMFONTEIN TAXI ASSOCIATION

The initial phase of our strategic planning in carrying out a consultation process with the taxi industry was to start with the most complex to less complex environments of the industry. For the first three months the focus was more on forging a relationship with the GBTA which happens to be the biggest association within the jurisdiction of the MMM.

On the 3rd of December 2022, Q&A Consulting reported that various meetings with GBTA were held, however, no data collection work could be undertaken since the election process for the new executive was ongoing. The GBTA were yet to elect their new executive, and it was not clear when that process would be concluded.

The GBTA elections were concluded and they requested that Q&A Consulting had a meeting with the new chairperson on the 25th of February 2022 to introduce the project and also to outline the type of surveys that needed to be undertaken with regards to public transport within their Bloemfontein territory. Plans were made to meet with the regional executive and other smaller associations.

08 April 2022: Q&A Consulting had a meeting with the new chairperson and public relations officer of GBTA and they made an undertaking that the association would be mobilising their marshals for preparation of the rank surveys.

05 May 2022: The GBTA public relations officer will schedule a meeting with the chairperson of the GBTA to mobilise their marshals for the preparation of the rank surveys. The Passenger Movement Surveys and Infrastructure Audits within the jurisdiction of GBTA were successfully carried out and concluded in May 2022.

14.2 QIBING TAXI ASSOCIATION

Q&A Consulting held an introductory meeting with QTA on the 9th of November 2021, and the association welcomed the project, however, requested that Q&A Consulting should write a letter to the province (SANTACO-Free State) and the Motheo Region before the work could commence. On the 8th of April 2022, the project team met with the Regional Taxi Council, who have then indicated that surveys may proceed with QTA. A follow-up meeting was arranged, and an invitation was extended to the Region to co-opt some of its executive members to accompany us to Wepener (Qibing) in an attempt to be allowed to finalise the infrastructure audits. We were met by the QTA chairperson who blatantly refused to allow us to conclude the remaining aspects of the project. In consultation with both the client (MMM) and the FSDoT, there was the commitment to an intervention to resolve the impasse involving the Qibing taxi rank infrastructure audit and surveys. It was envisaged that the audits would happen during the 1st week of October 2022.

14.3 SANTACO

03 February 2022: Q&A Consulting wrote a letter to the provincial office of SANTACO as well as the region, to officially introduce the CIP project and request that they should send out a communication to all taxi associations within the MMM so that the relevant surveys and activities could be undertaken.

14.4 INTERSTATE BUS LINES

29 November 2021: The Q&A team held a meeting with a delegation from IBL and a list of information was provided with a list required for the CITP but referred Q&A Consulting to the Department of Transport since they are the custodians and the relevant transport authority to whom they submit all their data monthly. Concerns were raised about the delay in writing to the Department of Transport regarding the IBL data. Q&A Consulting indicated that they would prioritise this item in the coming days and would provide progress updates in the next meeting. Q&A Consulting had officially written to the FSDoT and awaited a response from Mr Ubane, however, given the delays and getting feedback, Q&A Consulting suggested that the MMM should perhaps intervene. The meeting with the Department of Transport took place and a request for IBL data was eventually released to the Q&A technical team for processing and analysing.

Q&A Consulting team indicated that they intend to support the analysis and outcome of the IPTN and the assessments will not be repeated. Furthermore, there was a need for a household survey to be done for more detailed and accurate planning and analysis of the Traffic Demand Model. He also mentioned that the household survey is not part of the current scope of the CITP Report.

14.5 TRANSNET AND PASSENGER RAIL AGENCY OF SOUTH AFRICA (PRASA)

A meeting with Transnet took place on the *1st of December 2021*. Transnet was provided with a list of information required for the CITP and they promised to avail relevant information. It was further reported that Transnet also promised to assist in contacting PRASA for their passenger statistics.

It was reported that the information requested from Transnet was still outstanding and a follow-up would be made.

14.6 SANRAL

A meeting with SANRAL took place on the *2nd of February 2022*, and it was a successful engagement. The main points of discussion with SANRAL were the RHDHV Demand Model, freight information, and safety concerns along the N8 section 11.

With regards to freight information, it was noted that SANRAL directed Q&A Consulting to the provincial Department of Transport since they keep the road freight data. SANRAL requested Q&A Consulting to send them a letter stipulating the information required from them.

Q&A Consulting received the information requested from SANRAL. It was also noted that arrangements were yet to be made for further engagements with SANRAL regarding the project. With regards to the freight data required, it was noted that the consultation with the provincial Department of Transport should be prioritised. Airports Company South Africa (ACSA) – Bram Fischer Airport

Q&A Consulting indicated that a meeting with ACSA was scheduled for the *8th of December 2022*.

ACSA provided Q&A Consulting with the passenger statistics from April 2019 to November 2021.

During the Project Steering Committee meeting held on the *4th of February 2022*, ACSA committed to providing Q&A Consulting with their master plan document and their historical passenger statistics, which dated as far back as 2010.

ACSA provided Q&A Consulting with their master plan document and their historical passenger statistics, which dated as far back as 2012.

14.7 DEPARTMENT OF POLICE, ROADS AND TRANSPORT (FREE STATE PROVINCE)

Emphasis was made on prioritising a formal correspondence to the FSDoT requesting the information needed for the CITP project.

It was noted that arrangements for a meeting would still be made. It was after relentless persuasion and effort between the client and consultant that a fruitful engagement with this critical stakeholder eventually happened. These efforts resulted in a meeting between a high delegation from the department, the municipality, and the consultant on the *4th of May 2022*.

It was resolved in that meeting that the department will be invited to participate in the Project Steering Committee and subsequently in the formalisation of the Local Transport Forum that happened on the *13th of May 2022*. The department also released and shared both the IBL data and the Public Transport Register with the consultant.

14.8 DEPARTMENT OF ECONOMIC, SMALL BUSINESS DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS (DESTEA)

15 August 2022: Tourism if relevant: the strategy must describe transport improvements and measures that will serve tourists specifically and facilitate an increase in tourism in the area. Tourists visiting the province usually opt for the self-drive option when it comes to choosing a mode of transport. Reasons for this include the independence afforded by not having to rely on public transport and also safety. The province should still provide efficient and safe modes of public transport to tourists who prefer to make use of public transport. The province needs to improve its transport sector to be more integrated and tourist-friendly.

14.8.1 Emergency medical service

On the *28th of June 2022*, the initial meeting with the Free State Department of Health Emergency Medical Services was held at the Psychiatric Complex, to give details about the CITP and to incorporate the emergency medical services inputs in the project. The emergency medical services team comprised units from Bloemfontein, Botshabelo and Thaba Nchu.

The biggest challenge highlighted by them is the issue of access due to the bad condition of roads for their medical personnel across the municipality, and the Thaba Nchu Tribal Authority Land, being the hardest hit area, especially during the rainy season.

On the *30th of June 2022*, we engaged regarding the route identification process, which will be incorporated into the technical report.

14.9 NEW INSTITUTIONAL ARRANGEMENT

New institutional arrangements if required to establish the Transport Forum to be envisaged in the Public Transport Strategy to manage and regulate the public transport system.

**ANNEXURE A:
SUMMARY OF TRANSPORT REGISTER**

ANNEXURE A: TRANSPORT REGISTER

The Transport Register can be accessed by clicking on the Link Below. Alternatively, this information can be requested from Q&A Consulting (info@qaconsulting.co.za).

LINK: [Annexure A - Transport Register](#)

FULL PATH: https://qaconsultingcoza389-my.sharepoint.com/:f/g/personal/tsepo_qaconsulting_co_za/EISL5ugpLZlCkq-9VScQhEBCjfAV77Maa0dzVnb3uyeew?e=1miEMY

**ANNEXURE B:
SATURN DEMAND MODEL REPORT**

ANNEXURE B: Demand Model Report

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1 Introduction

The minimum requirements for the preparation of the Integrated Transport Plans of 2016 states that the CITP must consist of the following chapters:

- Introduction;
- Transport Vision and Objectives;
- Summary of the Transport Register;
- Spatial Development Framework;
- Transport Needs Assessment;
- Public Transport Plan;
- Transport Infrastructure Strategy;
- TDM Strategy;
- NMT Plan;
- Freight Transport Strategy;
- Other Related Strategies;
- Summary of Local ITP's;
- Funding Strategy and Summary of Proposals & Programmes; and
- Stakeholder Consultations.

The transport needs chapter aims to assist the Metro to assess issues, problems, trends and performance standards revealed by the Transport Register. It further aims to present or establish present transport demand and estimate future transport demand. The outcomes of the assessment will assist the municipality identify issues of capacity in relation to roads and public transport facilities. This report deals particularly with road based transport and infrastructure capacity. It further concentrates on road capacity and less so on public transport facilities operational and capacity requirements.

2 Model and Approach

2.1 Purpose

The purpose of the demand model was to to assess and estimate the number of trips by different modes within the Metropolitan Municipality for the short to medium term (2027 & 2037). Further to this, the assessment was conducted to ensure that the transport infrastructure and operations can support future transport demand.

2.2 Model Choice

It was understood that the Mangaung Metropolitan Municipality was in a position of a calibrated SATURN demand model that was previously used to estimate demand during the Integrated Public Transport Network (IPTN) project.

SATURN is primarily a multi-function traffic assignment modelling software suite with additional facilities for matrix manipulation and demand estimation from counts. It is equally applicable to strategic, regional or district wide studies as it is to detailed city models where the combination of simulation and assignment is particularly important.

This model was deemed suitable to assist the team achieve the goal of estimating both present and future demand. The SATURN IPTN Model is characterised by a buffered network. The model extent is shown in Figure 1.

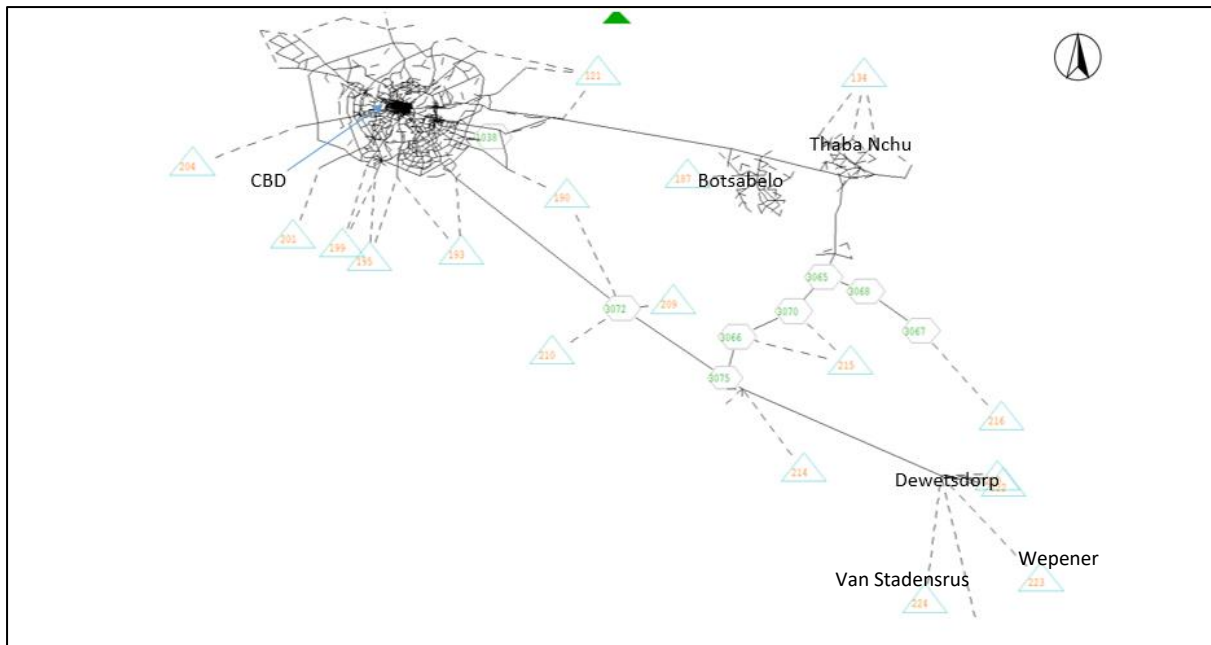


Figure 1: Model Extent

The model extent covers areas such as Botsabelo, Thaba Nchu, Dewetsdorp, Wepener, Van Stadensrus and the entire Bloemfontein CBD. It should be noted that at this level of the CIP, only major roads such as Class 1, 2 & 3 were modelled.

The demand aspect of the model was made up of a person's matrix. The SATURN IPTN Model as stated in the IPTN report was not used in its conventional capacity (a traffic model simulating the performance of intersections under the given vehicular traffic demand) but instead was used as an assignment tool and for its analysis capabilities. The person's public transport trip matrix was developed and assigned onto the road network using the All or Nothing assignment to visualise travel patterns as recorded in the Household Travel Surveys. Considering the above, the IPTN model in its current form in this CIP could only be utilised for the network and matrices.

2.2.1 Network Updates

The purpose of the model as outlined above was to assist quantify, estimate demand and analysed capacity of the road infrastructure within the Mangaung Metropolitan Municipality. The model should further assist determine a proper travel demand strategy for the municipality. In order to achieve this, the network coding had to consider link capacities. This required that all Class 1, 2 and 3 roads be coded accordingly in order to consider capacity constraints. Figure XXX below depicts the number of lanes per link.

2.2.2 Matrix Development

a) Background

The SATURN IPTN Model demand matrices were in a form of person's trips. The intention of the IPTN Model was to estimate passenger demand on links based on the matrix derived from Household Travel Surveys and conventional data collection. For the matrix to be fit for purpose as a prior matrix for use in this study, the matrix was split into Cars, Bus, Heavies and walk modes based on the modal split identified in the 2015-2036 City Wide Integrated Public Transport Plan, 01 July 2019 report. Thereafter, the matrix was converted into car volumes using capacities as follows:

- Car = 1 passenger;
- Taxi = 14 Passengers;
- Bus = 75 (60 seating & 15 standing); and
- Trucks = 1 passenger.

Once the mode choice volumes had been established, another exercise to convert the volumes into Passenger Car Units (PCU's) was undertaken. This was done in order to convert the matrix into a single level matrix. The PCU factors used were as follows:

- Car = 1 unit;
- Taxi = 2 units;
- Bus = 3 units; and
- Trucks = 3 units.

The resultant matrix was used as a prior matrix during the matrix adjustment phase of the modelling process. The process undertaken to convert the matrices from person's to passenger car unit matrix ensured that the Origin and Destination proportion of the matrices remained unchanged.

b) Data Collection

The model was constructed with substantial data including household travel data. The intention of the team will be to update the model with latest information and adjust the matrix using the latest traffic count information. The following information was collected for use in the updating of the model:

- 12 hour Screenline Counts
 - ✓ Vehicle Occupancy
 - ✓ Classified Counts
- 12 hour Non-Motorised Transport Counts

The data collected and used in the model is shown in Appendix A of this report. The data collected was classified as follows:

- Private Car;
- Minibus Taxi;
- Metered Taxi;
- Freight (Heavies);
- Bus; and
- Walk.

c) Model Calibration

Model calibration is the iterative process of adjusting the road network parameters of the model and/or travel demand so that it represents realistic traffic routings and speeds on the road network within an acceptable degree of realism. The purpose of the model calibration process is to assess whether the model is robust enough to simulate the anticipated change in traffic patterns based on changes in the road network and/or zone structure. The calibration process included the following activities:

- Adjustments to link speeds and capacities;
- Adjustments to zone sizes and centroid connectors; etc.

In order to ensure that the model simulated the existing travel patterns and demand, an iterative approach referred to as matrix adjustment was undertaken. The process involves the matching of observed flows (traffic counts) versus model flows. The calibration criteria typically applied in South Africa are the standards defined in the UK Department of Transport’s Design Manual for Roads and Bridges (DMRB). The key requirements of this are as shown in Table 1.

Table 1: UK Department of Transport’s Validation / Calibration Criteria

Criteria	Acceptability Guideline
Assigned Hourly flows compared with observed flows: Individual flows within 15% for flows 700-2,700 vph Individual flows within 100 vph for flows < 700 vph Individual flows within 400 vph for flows > 2700 vph	> 85% of the cases > 85% of the cases > 85% of the cases
GEH statistic: Individual flows: GEH < 5	> 85% of the cases
Correlation analysis, modelled vs observed values: Correlation coefficient , R Slope of the best fit regression line	0.95 (R-squared > 0.903) between 0.9 and 1.10

It is generally accepted that traffic models should achieve 85% of links with flows within the Flow Criteria, as well as 85% of links with a GEH of less than 5. The GEH statistic is based on a comparison of observed and modelled flows and is used as an indicator of "goodness of fit". The form of the GEH statistic is as follows:

$$GEH = \sqrt{2(M - C)^2 / (M + C)}$$

Where:

M = modelled flow; and

C = observed flow (or count).

The matrix estimation process was employed within the calibration to adjust the travel pattern to the observed traffic counts. This process adjusted trip-ends using available observed traffic counts to give the best-fit matrix. This process is dependent on several factors including the quality of the prior matrix, traffic routing and the order and consistency of the observed traffic counts. The results of the process is shown in Table X.

Criteria	Acceptability Guideline
Assigned Hourly flows compared with observed flows: Individual flows within 15% for flows 700-2,700 vph Individual flows within 100 vph for flows < 700 vph Individual flows within 400 vph for flows > 2700 vph	> 85% of the cases > 85% of the cases > 85% of the cases
GEH statistic: Individual flows: GEH < 5	> 85% of the cases
Correlation analysis, modelled vs observed values: Correlation coefficient , R Slope of the best fit regression line	0.95 (R-squared > 0.903) between 0.9 and 1.10

The calibration results indicate that all the calibration criteria with relation to traffic flows and GEH has been met for the 2019 AM Hour. It is concluded that the model does provide a sufficiently realistic representation of the 2022 traffic flows. This correlation analysis results shown in Figure x further shows that there is close relationship between the modelled and observed flows in the model. The AM Peak Hour of the model shows R-Square of 0.953 and a slope of 0.97 thereby meeting both the goodness of fit calibration criteria.

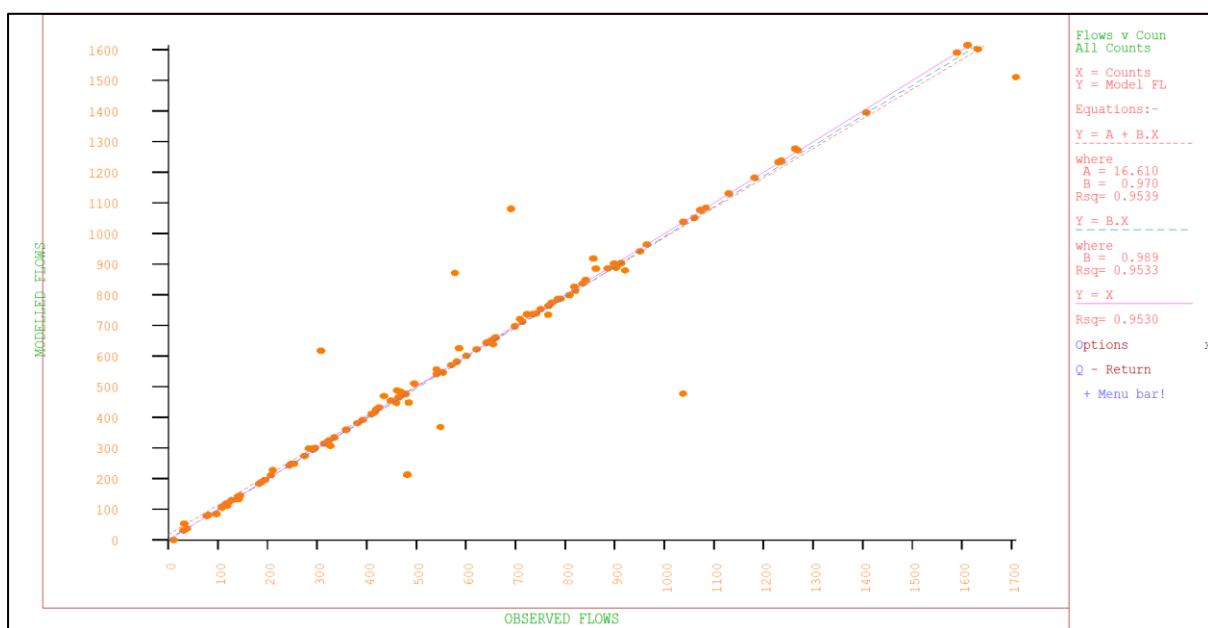


Figure 2: AM Peak Hour Modelled Flows vs Observed (Counts)

d) Validation Measures

Validation involves a similar process to the matrix adjustment process except that the data used for matrix estimation is not used in this process. This is the data is usually left out during the initial stage for use in the validation process in order to determine the robustness of the model. In this assignment, budgetary constraints were such that only a handful of information could be collected. Considering the constraints, validation was undertaken by use of link analysis in order to check network flows vs observed. Link analysis was further used to check the origin and destination apportionments in order to ensure that attraction zones and generating zones are depicted as such in the model.

2.3 Base Year 2022 Flows

The 2022 Base Year AM Peak Hour Flows are shown in Figure 3.

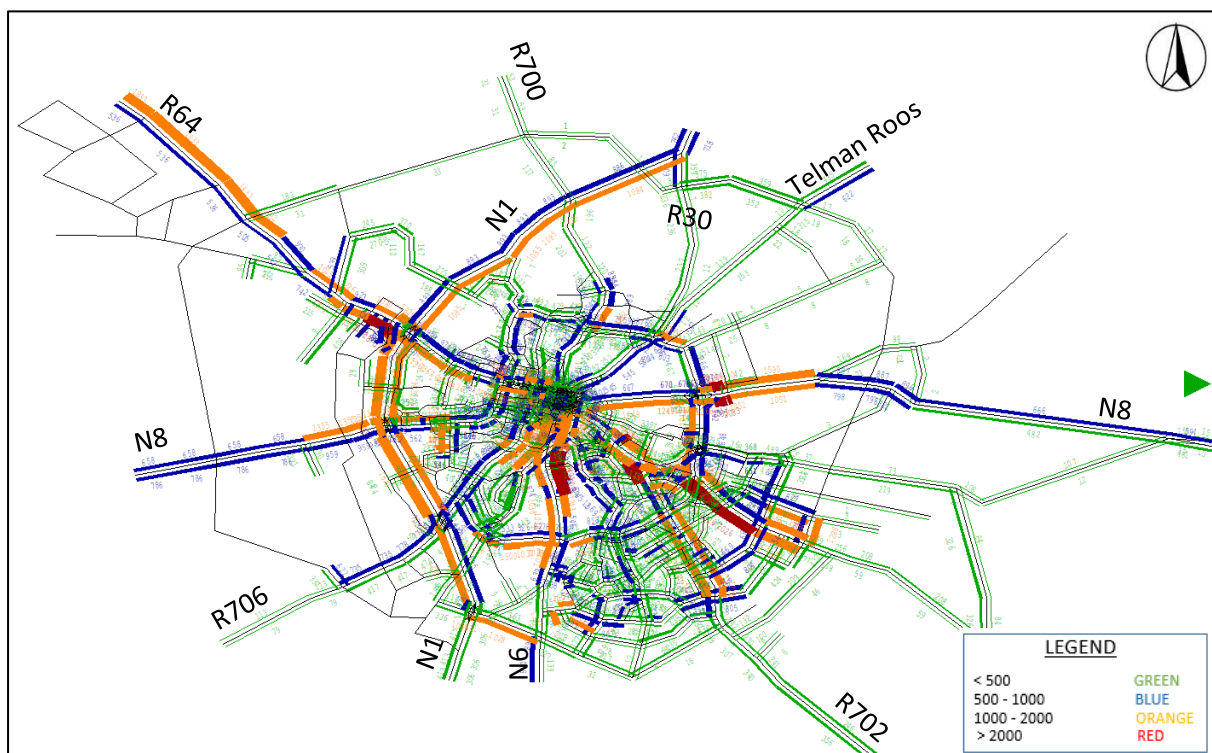


Figure 3: 2022 AM Peak Hour Flows (PCU/h)

Generally, the traffic volumes on the road network around the Mangaung Metropolitan Municipality are low to medium according to the observed flows (traffic counts). The road network traffic in the order current Road Hierarchy is summarised as follows:

N1: A Class 1 National Road that carries traffic in the ranging between 0 and 2000 pcu/h. The highest traffic volumes recorded during the AM Peak hour was 1 840 pcu/h between the R706 & N8 links and interchanges.

N8 East: A Class 1 National Road that carries traffic ranging from low and 2000 pcu/h. The volumes on the N8 east increases to around 2 000 pcu/h in sections closer to the airport and the CBD. The highest volumes recorded during the AM Peak hour was 2 083 pcu/h in the section closer to the airport and the M10 interchange.

N8 West: A Class 1 National Road that carries traffic in the ranging between 0 and 2000 pcu/h. The highest traffic volumes recorded during the AM Peak hour was 1 359 pcu/h closer to the Makro Bloemfontein retail centre.

R64: A Class 2 Provincial Road that carries traffic in the ranging between 0 and 2000 pcu/h. The highest traffic volumes recorded during the AM Peak hour was 1 833 pcu/h around the Langenhoven Park area.

R64: A Class 2 Provincial Road that carries traffic in the ranging between 0 and 2000 pcu/h. The highest traffic volumes recorded during the AM Peak hour was 1 833 pcu/h around the Langenhoven Park area.

Dr Balchere Road: A Class 3 Road that carries traffic in the ranging between 0 and over 2000 pcu/h. The highest traffic volumes recorded during the AM Peak hour was 2 162 pcu/h around the Pelonomi Academic Hospital area.

R706: A Class 3 Road that carries traffic in the ranging between 0 and 1000 pcu/h. The highest traffic volumes recorded during the AM Peak hour was 1 108 pcu/h around the Hospital Park area.

2.4 Base Year 2022 V/C Statistics

The 2022 Base Year AM Peak Hour V/C statistics are shown in Figure 4.

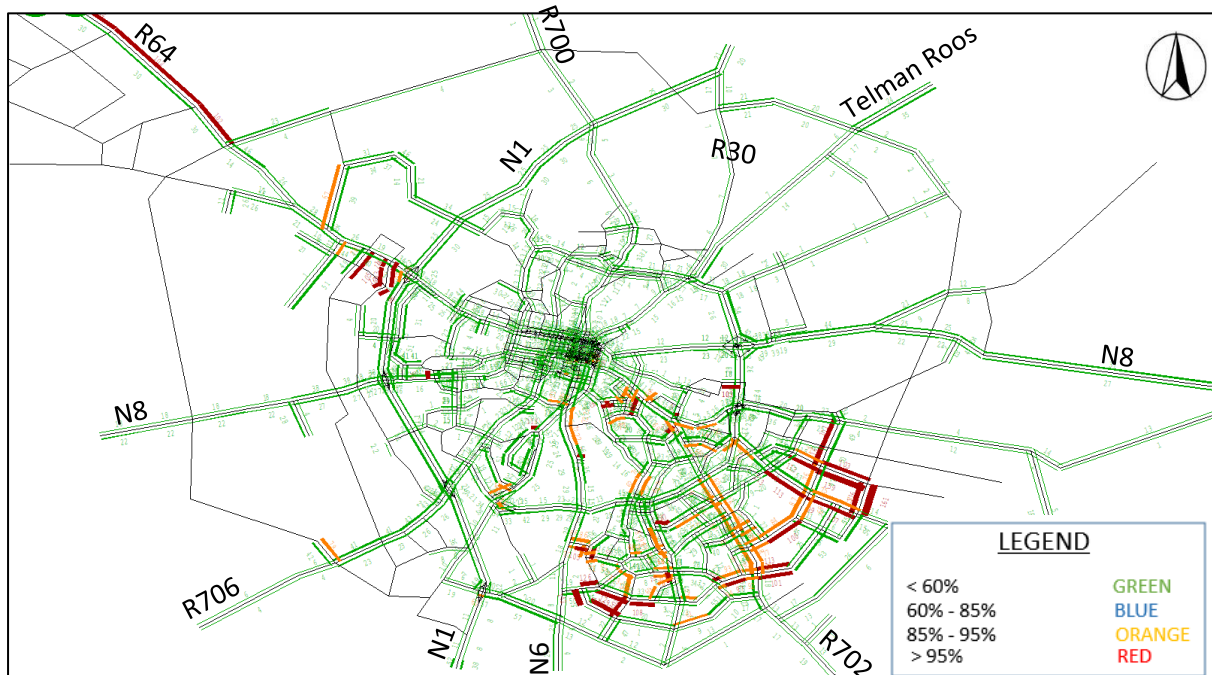


Figure 4: 2022 Base Year V/C (%)

Much of the road network around the Mangaung Metropolitan Municipality currently operates below 60% capacity. It should be borne in my mind that the V/C mentioned in this report is relation to demand versus supply. The network was tested as a buffer network without associated constraints such as intersections and controls. There were pockets where capacity was shown to be around and above in some instances 95% as shown in Figure 4. The small streets around the Rocklands area are shown to be operating at capacities around 95% and beyond.

The road network around the areas of Botshabelo, Thaba Nchu and Dewertsdorp operates at capacities below 60%.

2.5 Future Demand

The CITP demand model must project future traffic and transport demand based on land uses. The land use information should be that used in the development of the Spatial Development Plan for the Metropolitan Municipality. Once assigned onto the transport infrastructure including the road network, the model needs to assist determine and project capacity shortages and test possible the suitability of possible mitigation measures. The model should also assist in the development of a suitable Travel Demand Strategy for the Metropolitan Municipality.

2.5.1 Future Land Uses and Trip Generation

The future land uses that formed part of the CITP model is shown in Table 2.

Table 2: Future Land Uses

	Land Use	Description	Extent	Trip Rates	Total Trips	% Split		New trips		Zone	Dev year	Term
						IN	OUT	IN	OUT			
1	Liquinda	Housing development within the airport precinct	8 700,00	0,85	7 395,00	0,25	0,75	1 848,75	5 546,25	700	2025 - 2036	Short to Medium
2	Bramfischer International Airport Precinct	Residential	966,60	0,85	821,61	0,25	0,75	205,40	616,21	701	>2036	Long Term
		Retail	966 600,00	0,034	32 864,40	0,50	0,50	16 432,20	16 432,20	702	>2036	Long Term
		Warehousing	966 600,00	0,005	4 833,00	0,60	0,40	2 899,80	1 933,20	703	>2036	Long Term
		Office	805 500,00	0,021	16 915,50	0,85	0,15	14 378,18	2 537,33	704	>2036	Long Term
3	Estoire	Housing development	9 500,00	0,85	8 075,00	0,25	0,75	2 018,75	6 056,25	705	2025 - 2036	Short to Medium
4	Vista Park	Housing development	3 500,00	0,85	2 975,00	0,25	0,75	743,75	2 231,25	706	2025 - 2036	Short to Medium
5	Langehoven Park	Housing development	5 597,00	0,85	4 757,45	0,25	0,75	1 189,36	3 568,09	707	2025 - 2036	Short to Medium
6	Cecilia Park	Housing development	1 900,00	0,85	1 615,00	0,25	0,75	403,75	1 211,25	708	2025 - 2036	Short to Medium
7	Shannon	Housing development	31 390,00	0,85	26 681,50	0,25	0,75	6 670,38	20 011,13	709	>2036	Long Term
					106 933,46			46 790,32	60 143,15			

The South African Committee of Transport Officials (COTO) TMH17 Volume 1 Trip Data Manual recommends trip generation rates for various kind of land uses. The future land uses for the Mangaung Metropolitan is centred around the Bloemfontein CBD, the airport and other places such as Rocklands and Langehoven Park. It should be noted that these are developments earmarked for the short to medium term. There are other developments such as the xxxx (Enock to add the name) to be located on the north western side of Bloemfontein. This development is expected around the 2040 which beyond the period investigated in this report. The planned developments are expected to generate traffic in excess of 106 000 trips during the AM and PM Peak hours as shown in Table 2.

2.5.2 Trip Distribution

The planned developments forming part of this model are shown in Table 2. They are mostly scattered around the Bloemfontein Central Business District with a large concentration around the Airport area. Bloemfontein remains as a single node city with the main attraction being the Central Business District and the University. Light Industrial areas are located on the south, west and north of the City. There are light industrial pockets within both Botshabelo and Thaba-Nchu. The City is mainly surrounded by residential areas on all sides. The Central Business District is by nature the attraction point while the residential areas on the north, south, east and west generates labour trips. In light of the above, the trip distribution for future trips was as flows:

Development	Type	Direction		Distribution	Trips (vph)		TOTAL
		Direction	Details		IN	OUT	
Liquinda	Residential	West	N8 towards the Rail Precinct and other areas	15%	277	832	1109
		North	N8 to CBD	50%	924	2773	3697
		North-West	North towards Soutpan	5%	92	277	369
		South-East	N8 towards Botshabelo / Thaba-Nchu	6%	111	333	444
		South	N1 South	6%	111	333	444
		North	N1 North	6%	111	333	444
		South	N6 South	6%	111	333	444
		South	R702	6%	111	333	444
Braamfischer International Airport Precinct	Residential	West	N8 towards the Rail Precinct and other areas	15%	31	92	123
		North	N8 to CBD	50%	103	308	411
		North-West	North towards Soutpan	5%	10	31	41
		South-East	N8 towards Botshabelo / Thaba-Nchu	6%	12	37	49
		South	N1 South	6%	12	37	49
		North	N1 North	6%	12	37	49
		South	N6 South	6%	12	37	49
		South	R702	6%	12	37	49
	Retail	North	N1 North	5%	822	822	1644
		South	N1 South	5%	822	822	1644
		North-West	N8 West	5%	822	822	1644
		East	N8 East towards Botshabelo	10%	1643	1643	3286
		North	Northern Suburbs	20%	3268	3286	6572
		South	Southern Suburbs	20%	3268	3286	6572
		South-West	South Western Suburbs	20%	3268	3286	6572
		South	R702	5%	822	822	1644
		South	N6 South	5%	822	822	1644
	Warehousing	North	N1 North	5%	145	97	242
South		N1 South	5%	145	97	242	

		North-West	N8 West	5%	145	97	242
		East	N8 East towards Botshabelo	10%	290	193	483
		North	Northern Suburbs	20%	580	387	967
		South	Southern Suburbs	20%	580	387	967
		South-West	South Western Suburbs	20%	580	387	967
		South	R702	5%	145	97	242
		South	N6 South	5%	145	97	242
		South	R706 South	5%	145	97	242
	Office	North	N1 North	5%	719	127	846
		South	N1 South	5%	719	127	846
		North-West	N8 West	5%	719	127	846
		East	N8 East towards Botshabelo	10%	1438	254	1692
		North	Northern Suburbs	20%	2876	507	3383
		South	Southern Suburbs	20%	2876	507	3383
		South-West	South Western Suburbs	20%	2876	507	3383
		South	R702	5%	719	127	846
		South	N6 South	5%	719	127	846
South		R706 South	5%	719	127	846	
Estoire	Residential	North East	N8 towards the Rail Precinct and other areas	15%	303	908	1211
		Central	CBD	50%	1009	3028	4037
		North	North towards Soutpan (R700)	5%	101	303	404
		East	N8 towards Botshabelo	6%	121	363	484
		South	N1 South	6%	121	363	484
		North	N1 North	6%	121	363	484
		South	N6 South	6%	121	363	484
		South	R702 South	6%	121	363	484
Vista Park	Residential	North	N1 North	10%	74	223	297
		Central	CBD	40%	298	893	1191
		North West	University area	20%	149	446	595

		North East	Airport Precinct and areas	10%	74	223	297
		North West	N8 West areas	5%	37	112	149
		North East	N8 East towards Botshabelo	5%	37	112	149
		North	North of the CBD	5%	37	112	149
		South	N1 South	5%	37	112	149
Langenhoven Park	Residential	North	N1 North	10%	74	223	297
		South	N1 South	10%	74	223	297
		Central	CBD	35%	260	781	1041
		North East	North towards the Rail Precinct and areas	15%	112	335	447
		North	Areas in the North of CBD	5%	37	112	149
		South	N6 South	5%	37	112	149
		East	N8 East	5%	37	112	149
		North-East	North Eastern areas around the airport precinct	15%	112	335	447
Cecilia Park	Residential	North	N1 North	10%	74	223	297
		South	N1 South	10%	74	223	297
		Central	CBD	35%	260	781	1041
		North East (Central)	North-eastern areas of the CBD around the Rail Precinct	15%	112	335	447
		North West (Central)	North-western areas of the CBD	5%	37	112	149
		South	N6 South	5%	37	112	149
		East	N8 East towards Botshabelo	5%	37	112	149
		North East	Areas around the Airport Precinct	15%	112	335	447
Shannon	Residential	North East	Areas around the Airport Precinct	15%	112	335	447
		East	N8 East towards the CBD	50%	372	1116	1488
		North	North towards Soutpan	5%	37	112	149
		East	N8 East towards Botshabelo	6%	45	134	179

		South	N1 South	6%	45	134	179
		North	N1 North	6%	45	134	179
		South	N6 South	6%	45	134	179
		South	South along R702	6%	45	134	179

Based on the above, the Central Business District (CBD) is expected to attract the bulk of the future trips. The bulk of the trips is expected to on roads such as the N1, N8, R706, Dr Belcher Road, R702.

2.5.3 Trip Assignment

Traffic assignment involves determining the percentage of traffic that will use specific routes in the network. The assignment of trips to the road network is based on Stochastic User Equilibrium assignment, which assumes that traffic arranges itself on congested networks such that the routes chosen by individual drivers are those with the minimum perceived cost; routes with perceived costs in excess of the minima are not used. It is therefore more likely that “perceived costs” would influence route choice as opposed to pure generalized costs as used in an equilibrium assignment algorithm. The estimated auto O-D trip matrix was assigned on the established road network to derive link volumes and intersection turning volumes.

2.5.4 Traffic Growth

A traffic growth rate is applied to background traffic in order to determine the anticipated increase in Base Year traffic by a predefined Design Year. The COTO TMH 17 Manual provides typical growth rates to be used for growth areas based on the existing/anticipated rate of growth, as indicated in Table 8-4.

Development Area	Growth Rate
Low Growth Areas	0% – 3%
Average Growth Areas	3% - 4%
Above Average Growth Areas	4% - 6%
Fast Growing Areas	6% - 8%
Exceptional High Growth Areas	>8%

The Mangaung Metropolitan Municipality can be classified as a low growth area. The areas around the Bloemfontein Central Business District can be classified as above growing areas with the majority of planned developments scattered around the CBD. If the two contrasting growth patterns are taken onto account, the Mangaung Metropolitan municipality on average can be classified as a low to average growing area. The average growth rate used to forecast the background traffic was 2.5% per annum.

2.5.5 Scenarios Analysed

In this CIP, the modelling and land use analysis was grouped into two scenario years. These were short term and long term. The short term scenario looked at the developments land uses that could be rolled out in the short to immediate future. The long term looked at developments planned in the long term. The following scenarios for future were analysed:

- Base Year 2022 + short term development;
- Base Year 2022 + short term development (with Ring Road); and
- Horizon Year 2036 + long term development; and
- Horizon Year 2036 + long term development (with Ring Road).

2.5.5.1 Base Year 2022 + short term developments

Flows (pcu/h)

The 2022 Base Year + short term developments AM Peak Hour Flows are shown in Figure 5.

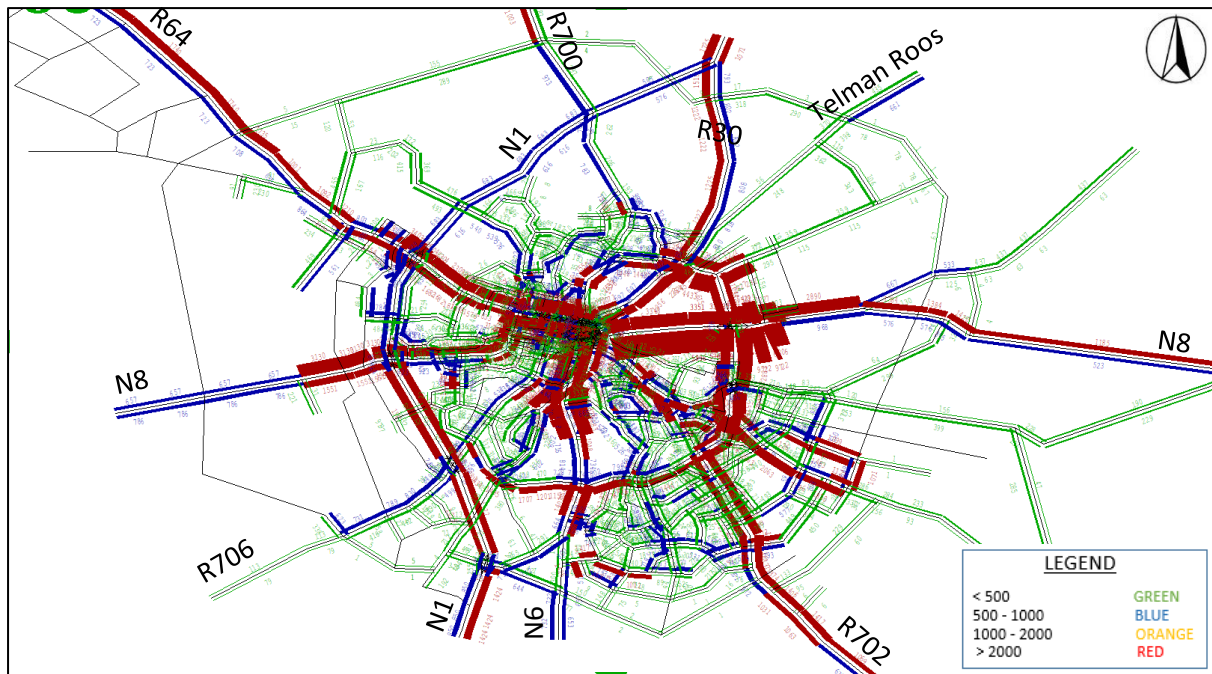


Figure 5: Short Term Flows (PCU/h)

The highest volumes expected once all developments earmarked for the short term are as follows:

- N8 East Eastbound – 3 340 pcu/h;
- N8 East Westbound – 5 596 pcu/h;
- R30 Northbound – 1 225 pcu/h;
- R30 Southbound – 808 pcu/h;
- R700 Northbound – 1 003 pcu/h;
- R64 Eastbound – 1 740 pcu/h;
- R64 Westbound – 708 pcu/h;
- N8 West Eastbound – 3 130 pcu/h;
- N8 West Westbound – 1 551 pcu/h;
- R706 Eastbound – 789 pcu/h;
- R706 Westbound – 416 pcu/h;
- N1 Northbound – 1 556 pcu/h;
- N1 Southbound – 1 222 pcu/h;

Flow Over Capacity Percentages (V/C)

The 2022 Base Year + short term developments AM Peak Hour V/C percentages are shown in Figure 5.

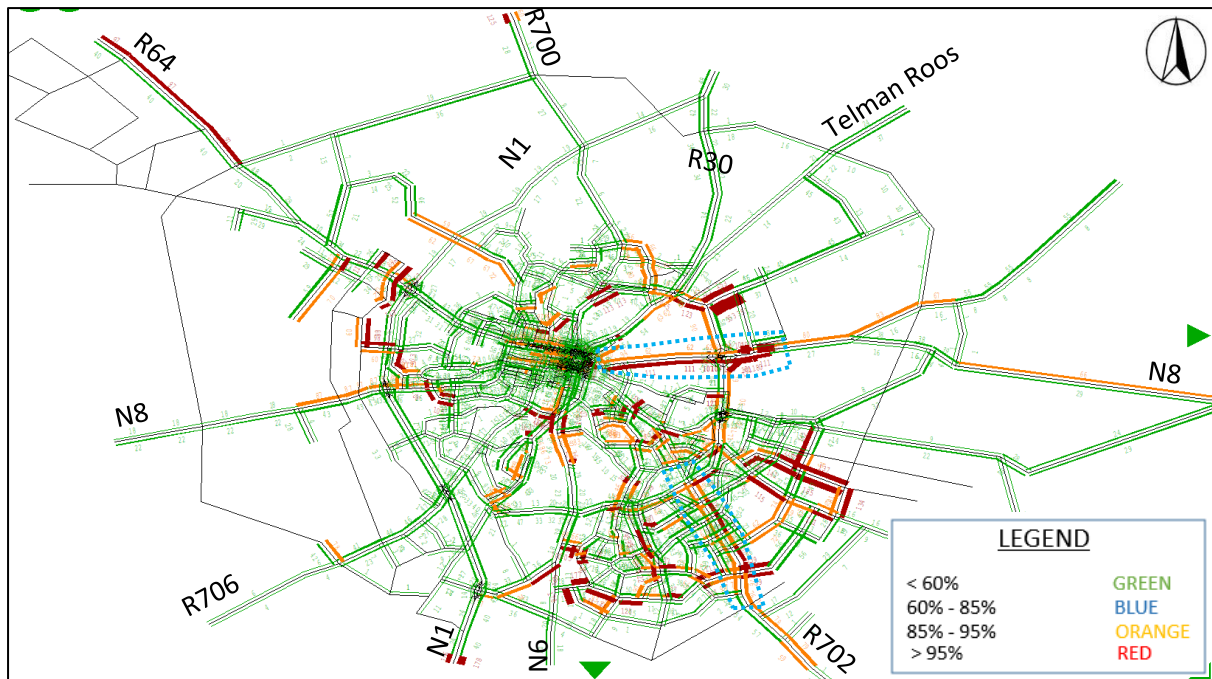


Figure 6: Short Term V/C (%)

Figure 6 above depicts the expected capacity in future once all developments earmarked for short term development are realised. Generally, the road network is expected to operate below 95% which is acceptable. The are pockets that are expected to be above capacity. These are shown in Figure 6 circled in blue:

- Dr Belcher Road; and
- N8 East closer to the airport.

2.5.5.2 Base Year 2022 + short term developments (With Ring Road)

Flows (pcu/h)

The 2022 Base Year + short term developments AM Peak Hour Flows are shown in Figure 7.

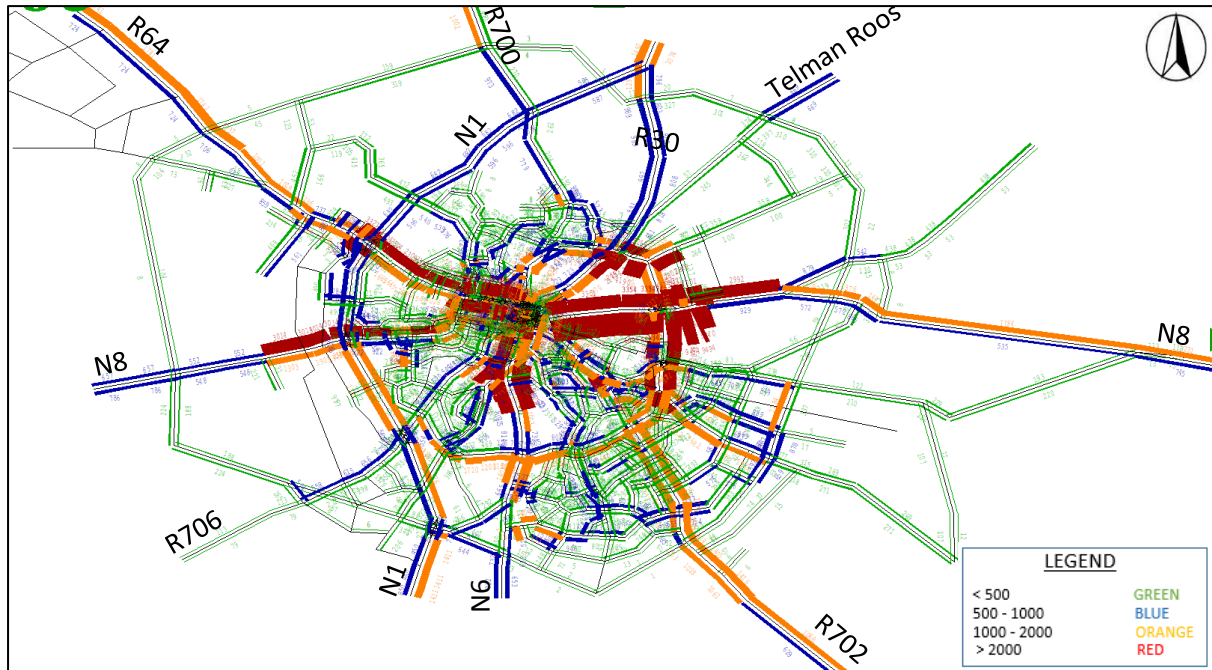


Figure 7: Short Term Flows with Ring Road (PCU/h)

The planned Ring Road around the City of Bloemfontein is expected to carry low volumes of trips below 500 pcu/h.

Flow Over Capacity Percentages (V/C)

The 2022 Base Year + short term developments AM Peak Hour V/C percentages are shown in Figure 5.

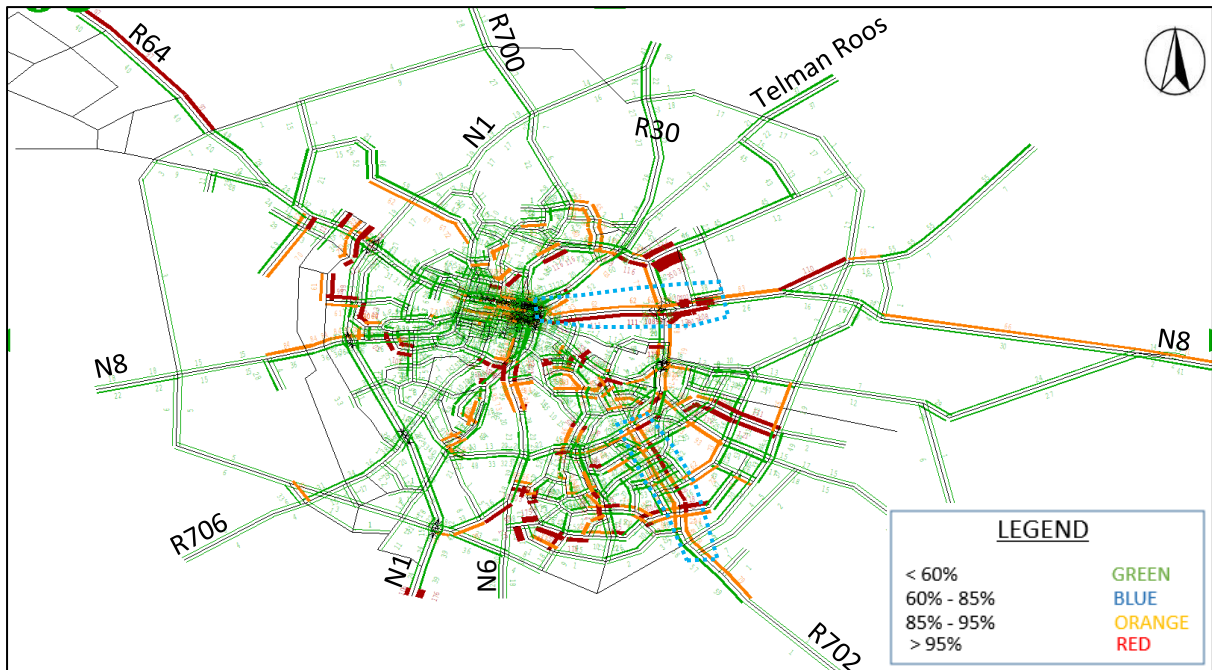


Figure 8: Short Term V/C (%)

As depicted by Figure 8 above, the introduction of the Ring Road is not expected to make a notable difference on the capacity of the road network around the Bloemfontein CBD. This is due to the fact that the majority of the trips generated by future development will be attracted to the CBD.

2.5.5.3 Horizon Year 2036 + long term developments

Flows (pcu/h)

The Horizon 2036 Year + long term developments AM Peak Hour Flows are shown in Figure 9.

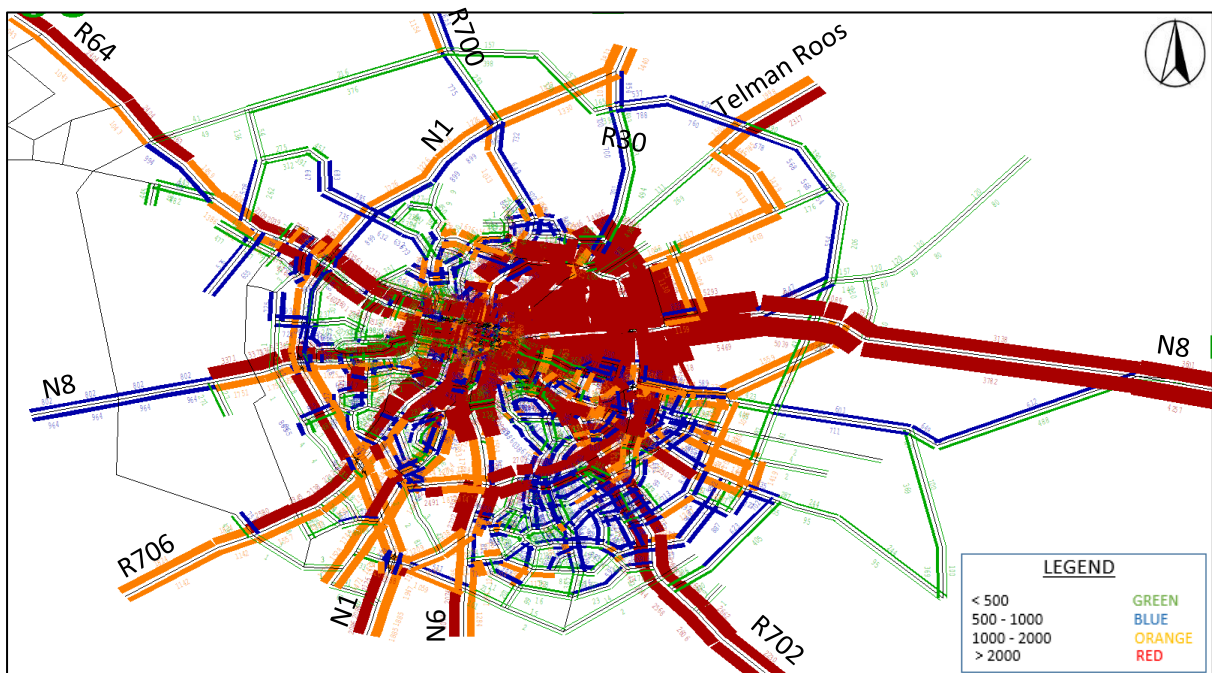


Figure 9: Long Term Flows (PCU/h)

The highest volumes expected once all developments earmarked for the short term are as follows:

- N8 East Eastbound – 5 293 pcu/h;
- N8 East Westbound – 5 566 pcu/h;
- R30 Northbound – 700 pcu/h;
- R30 Southbound – 494 pcu/h;
- R700 Northbound – 1 154 pcu/h;
- R64 Eastbound – 1 629 pcu/h;
- R64 Westbound – 1 043 pcu/h;
- N8 West Eastbound – 3 571 pcu/h;
- N8 West Westbound – 2 602 pcu/h;
- R706 Eastbound – 2 580 pcu/h;
- R706 Westbound – 1 557 pcu/h;
- N1 Northbound – 2 356 pcu/h;
- N1 Southbound – 1 947 pcu/h;

Flow Over Capacity Percentages (V/C)

The Horizon Year + long term developments AM Peak Hour V/C percentages are shown in Figure 10.

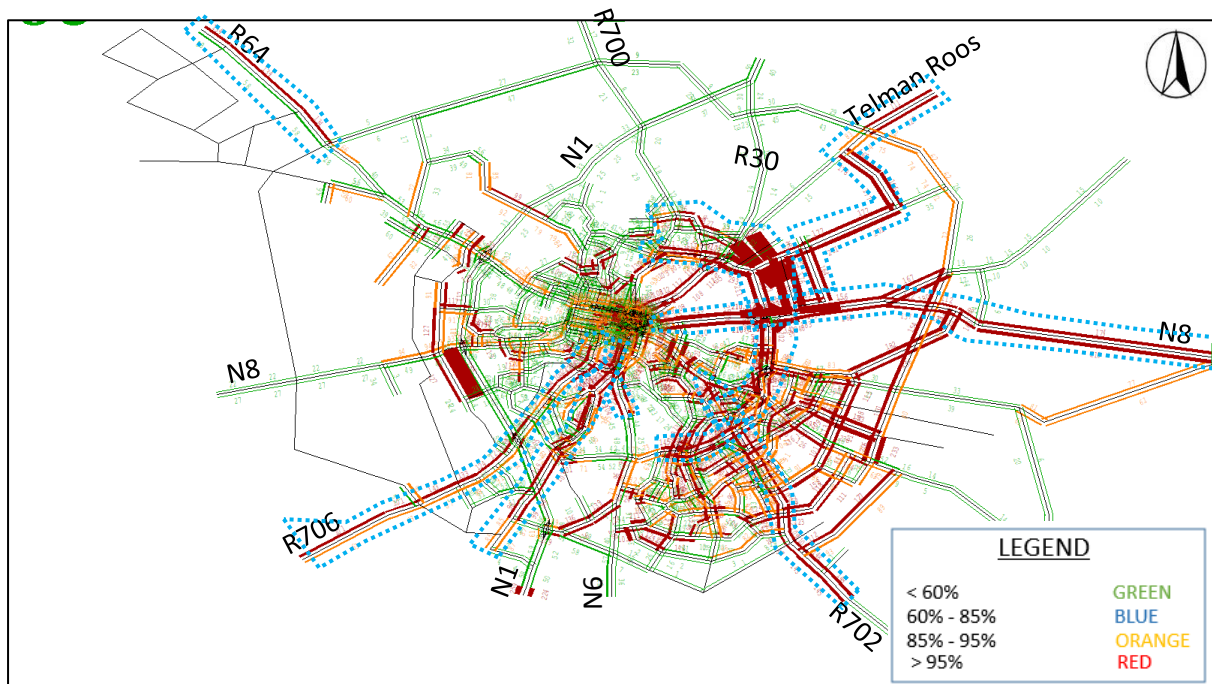


Figure 10: Long Term V/C (%)

Figure 6 above depicts the expected capacity in future once all developments earmarked for long term development are realised. The following corridors are expected to operate at poor V/C above 95%:

- N8 East Corridor from Botshabelo to CBD;
- Dr Belcher Corridor;
- Ferreira Road Corridor;
- Currie Avenue Corridor;
- R64 Corridor;
- Telman Roos Corridor; and

- The M10 Corridor.

2.5.5.4 Horizon Year 2036 + Long term developments (With Ring Road)

Flows (pcu/h)

The 2036 Horizon Year + long term developments AM Peak Hour Flows are shown in Figure 11.

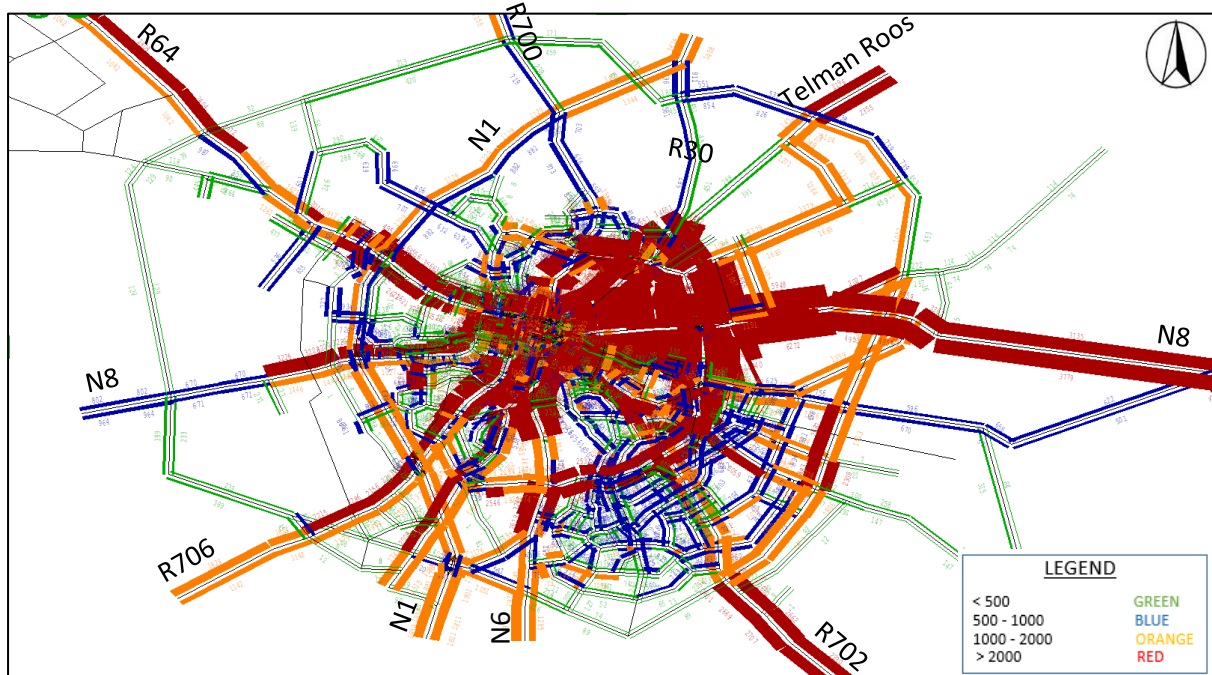


Figure 11: Long Term Flows with Ring Road (PCU/h)

The planned Ring Road around the City of Bloemfontein is expected to carry low volumes of trips below 500 pcu/h. The eastern section is expected to carry traffic above 1 000 pcu/h. This will provide additional capacity which will assist in keeping the traffic bound for the south out of internal roads and roads that go through the CBD.

Flow Over Capacity Percentages (V/C)

The 2022 Base Year + short term developments AM Peak Hour V/C percentages are shown in Figure 5.

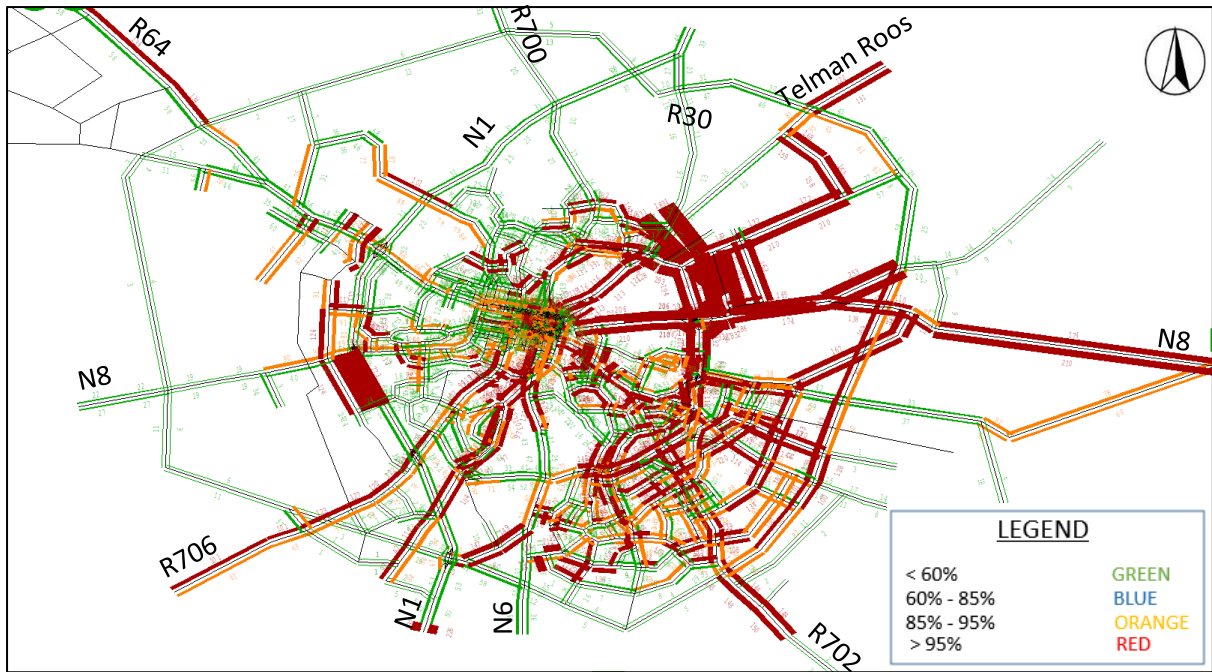


Figure 12: Short Term V/C (%)

As depicted by Figure 12 above, the introduction of the Ring Road will provide additional capacity on the eastern part around the CBD. The introduction of this road should be priorities in order to unlock capacity particularly on the east part of the City.

2.6 Recommendations to Accommodate Future Demand and Unlock Potential Development

The analysis undertaken indicate that substantial number of trips will be generated in future if the envisaged developments are realised. A total of 106 933 trips are expected to be generated by planned developments. Using a saturation flow of 1800 per lane, the expected trips will require approximately 59 additional lanes. This clearly demonstrates that a response beyond additional road capacity through building of additional roads is required. It should further be borne in mind that the additional capacity is required in areas in and around the Bloemfontein CBD.

The road network supporting the Bloemfontein CBD is made of high order roads such the N1, N8, Dr Belcher Drive, OR Tambo Road, Currie Avenue and other high order roads. Some of these roads are already 2 to 3 lanes per direction. It is therefore proposed that amongst upgrading of certain roads to improve capacity, other solutions should be considered. The following are some of the solutions proposed to improve capacity and unlock potential development in the Mangaung Metropolitan Municipality:

- Additional lanes on both sides of the N8 (Botshabelo – CBD Corridor);
- Reduce the need to travel by introducing other solutions such as Work from Home;
- Encourage mixed use development for new applications;
- Implement the proposed IPTN proposals immediately;
- Extend IPTN to other corridors such as the Currie Avenue and OR Tambo Road;
- Encourage Non-Motorised Transportation in areas in close proximities to the CBD such as Rocklands, Vista Park, Langenhoven Park; and
- A detailed Roads Masterplan should be developed for the Bloemfontein CBD Area.

**ANNEXURE C:
LEARNERS' NEED ASSESSMENT RESULTS**

LEARNERS NEEDS ASSESSMENT SURVEYS

Questionnaire

Questions	Description	Response (Tick Your Selected Answer)	
Q1	Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)	Yes	
		No	
Q2	If yes, how frequent or efficient is the public transport?	Rarely (Once a Month)	
		Occasionally (Once a Week)	
		Very Frequently (Almost Every day)	
Q3	What do you use public transport for?	School	
		Health Care Facility	
		Work	
		Malls (Shopping, eating and entertainment)	
		Business	
		Other	
Q4	How often do you make use of public transport?	Rarely (Once a Month)	
		Occasionally (Once a Week)	
		Very Frequently (Almost Every day)	
Q5	How much time do you spend waiting for public transport?	0-5 minutes	
		5-10 minutes	
		10-15 minutes	
		More than 15 minutes	
Q6	How much time do you spend travelling to your destination, using public transport?	Less than 15 minutes	
		15 - 20 minutes	
		20 - 30 minutes	
		30 - 60 minutes	
		More than 60 minutes	
Q7	Most common mode of public transport that you use:	4+1	
		Mini-Bus-Taxi (MBT)	
		Bus	
		Rail	
		Air Transport	
		Maritime Transport	
Q8	On average, how much do you spend on public transport per month?	Less than R50	
		R50 - R100	
		R100 - R200	
		More than R200	
Q9	If public transport is available and you do not use it, what is the reason?	Not Safe & Secure	
		Not Reliable	
		Not Convenient	
		Not Comfortable	

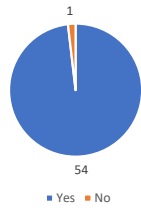
Questions Continue			
Q10	Is there public transport available to shopping centers/market places?	Yes	
		No	
Q11	Is there public transport available to a clinic or hospital?	Yes	
		No	
Q12	Is there public transport available to school or work place?	Yes	
		No	
Q13	Do you have a disability, difficulty or challenge?	Yes	
		No	
Q14	If yes, does the available public transport accommodate your disability, difficulty or challenge?	Yes	
		No	
Q15	Name a Public Transport Destination that you would like a service to:	Yes	
		No	
ADDITIONAL COMMENTS			
C1			
C2			
C3			
C4			
C5			

SUMMARY OF RESULTS

SCHOOL 1 - ACADEMY OF EXCELLENCE		
Q1	Yes	54
	No	1
Q2	Not Frequent or Efficient	6
	Moderately Frequent or Efficient	9
	Very Frequent or Efficient	29
Q3	School	39
	Health Care Facility	1
	Work	0
	Malls (Shopping, eating and entertainment)	5
	Business	0
	Other	0
Q4	Rarely (Once a Month)	5
	Occasionally (Once a Week)	2
	Very Frequently (Once a Day)	46
Q5	0-5 minutes	12
	5-10 minutes	9
	10-15 minutes	10
	More than 15 minutes	13
Q6	Less than 15 minutes	13
	15 - 20 minutes	4
	20 - 30 minutes	14
	30 - 60 minutes	17
	More than 60 minutes	0
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	47
	Bus	2
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	0
	5% - 10%	0
	10% - 15%	1
	More than 15%	21
Q9	Not Safe & Secure	4
	Not Reliable	0
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	4
Q10	Yes	53
	No	0
Q11	Yes	52
	No	3

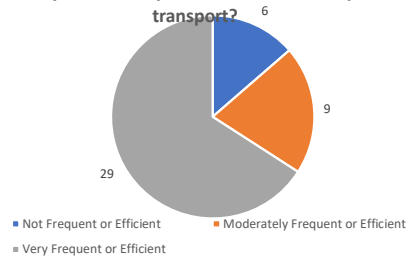
Q12	Yes	52
	No	2
Q13	Yes	1
	No	48
Q14	Yes	0
	No	0
Q15	The Location	2
	School	6
	Bainsvlei	1
	Mall	1
	Bayswater	2
	Kimberley	1
	Phase 5	1
	Home	1
	Suburbs	1
	Raceway Park	1

Q1 : Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



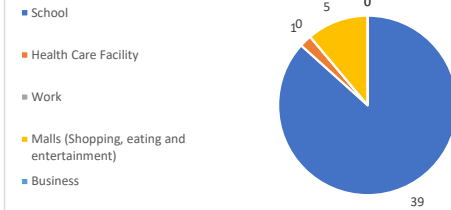
Public transport is readily available.

Q2 : If yes, how frequent or efficient is the public transport?



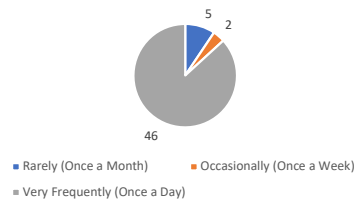
The available public transport was reported to be very frequent or efficient.

Q3 : What do you use public transport for?



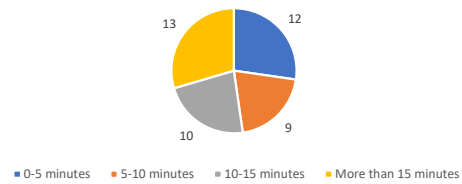
Public transport is mainly used for commuting to school by the learners and malls were their second destination of choice.

Q4 : How often do you make use of public transport?



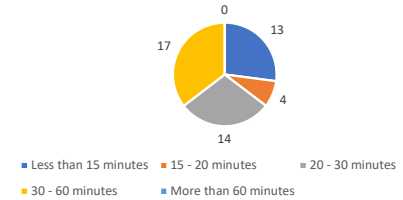
Majority of the learners reported using public transport at least once a day.

Q5 : How much time do you spend waiting for public transport?



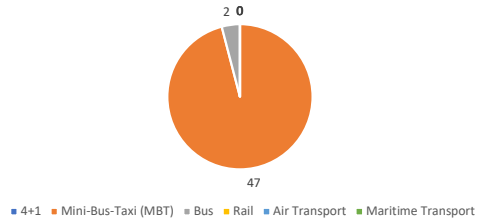
Most learners wait longer than 15mins for public transport.

Q6: How much time do you spend travelling to your destination using public transport?



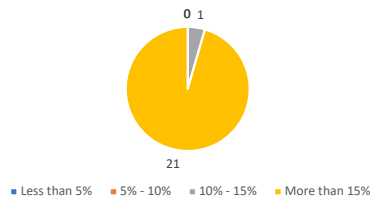
Commute to their destination takes anywhere between 30 to 60 minutes.

Q7 : Most common mode of transport you use?



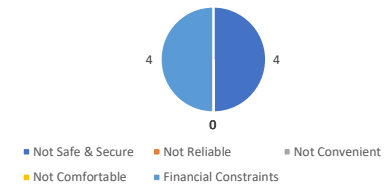
Mini bus taxis are the most common mode of public transport used followed by buses.

Q8 : What percentage of your income is spent on public transport?



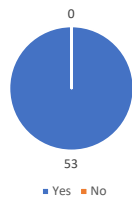
Learners reported using more than 15% of their income (allowance) on public transport.

Q9 : If public transport is available and you do not use it, what is the reason?



Learners reported financial constraints as reason for not using public transportation as well as it not being safe or secure.

Q10 : Is there public transport available to a shopping center/market place?



Learners reported that public transport is available to shopping centers and market places.

Q11 : Is there public transport available to a clinic or hospital?



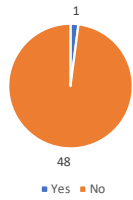
Learners reported that public transport is available to a clinic and hospital.

Q12 : Is there public transport available to school or work place?



Learners reported that public transport is available to school.

Q13 : Do you have a disability, difficulty or challenge?



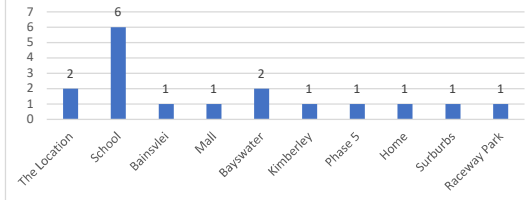
Majority of the learners do not have a disability, difficulty or challenge.

Q14 : If yes, does the available public transport accommodate your disability, difficulty or challenge?

■ Yes ■ No

No data captured.

Q15 : Name a public transport destination that you would like a service to:

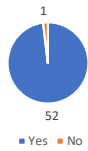


Learners reported needing transportation to school the most.

SCHOOL 2 - BREDNER HIGH SCHOOL		
Q1	Yes	52
	No	1
Q2	Not Frequent or Efficient	5
	Moderately Frequent or Efficient	5
	Very Frequent or Efficient	31
Q3	School	25
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	17
	Business	0
	Other	8
Q4	Rarely (Once a Month)	11
	Occasionally (Once a Week)	10
	Very Frequently (Once a Day)	21
Q5	0-5 minutes	9
	5-10 minutes	14
	10-15 minutes	6
	More than 15 minutes	16
Q6	Less than 15 minutes	6
	15 - 20 minutes	12
	20 - 30 minutes	4
	30 - 60 minutes	23
	More than 60 minutes	3
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	29
	Bus	16
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	0
	5% - 10%	0
	10% - 15%	0
	More than 15%	16
Q9	Not Safe & Secure	1
	Not Reliable	2
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	1
Q10	Yes	48
	No	4

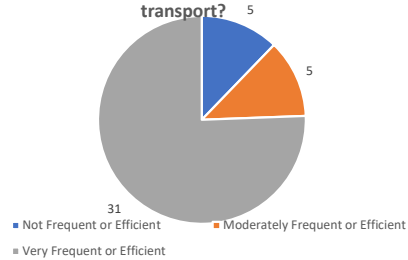
Q11	Yes	43
	No	9
Q12	Yes	46
	No	3
Q13	Yes	0
	No	50
Q14	Yes	0
	No	0
Q15	Woodlands	3
	School	3
	Police Station	1
	Bloemanda	1
	Botshabelo	1
	Hospital	1
	Feurall Mall	1
	Bloemfontein North	2
	Botanical Gardens	1
	Bayswater	1
	Hillside	1

Q1 : Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



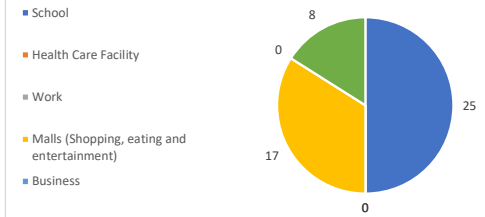
Public transport is readily available.

Q2 : If yes, how frequent or efficient is the public transport?



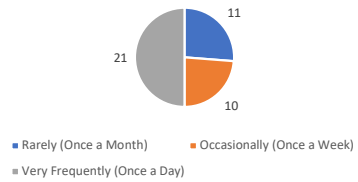
The available public transport was reported to be very frequent or efficient.

Q3 : What do you use public transport for?



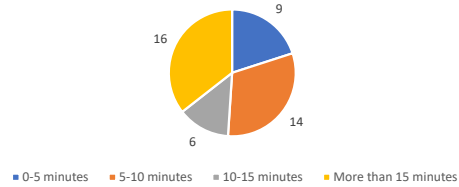
Public transport is mainly used for commuting to school by the learners and malls were their second destination of choice.

Q4 : How often do you make use of public transport?



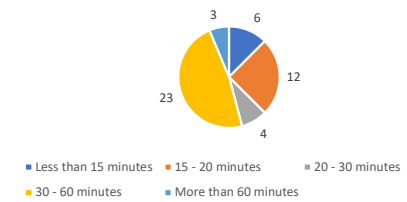
Majority of the learners reported using public transport at least once a day.

Q5 : How much time do you spend waiting for public transport?



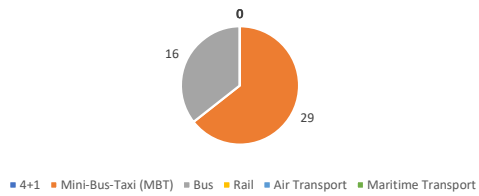
Most learners wait longer than 15mins for public transport.

Q6: How much time do you spend travelling to your destination using public transport?



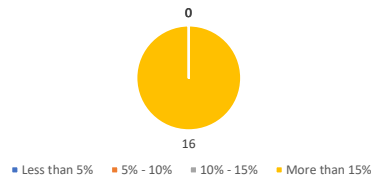
Commute to their destination takes anywhere between 30 to 60 minutes.

Q7 : Most common mode of transport you use?



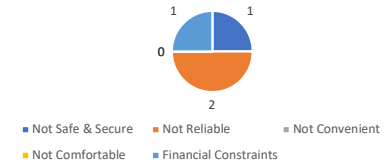
Mini bus taxis are the most common mode of public transport used followed by buses.

Q8 : What percentage of your income is spent on public transport?



Learners reported using more than 15% of their income (allowance) on public transport.

Q9 : If public transport is available and you do not use it, what is the reason?



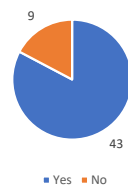
Learners reported that the main reason for not using public transport is because it is unreliable.

Q10 : Is there public transport available to a shopping center/market place?



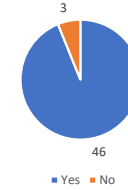
Learners reported that public transport is available to shopping centers and market places.

Q11 : Is there public transport available to a clinic or hospital?



Learners reported that public transport is available to a clinic and hospital.

Q12 : Is there public transport available to school or work place?



Learners reported that public transport is available to school.

Q13 : Do you have a disability, difficulty or challenge?



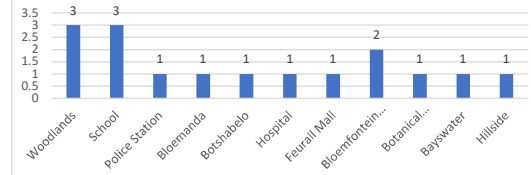
None of the learners reported a disability, difficulty or challenge.

Q14 : If yes, does the available public transport accommodate your disability, difficulty or challenge?



No data captured.

Q15 : Name a public transport destination that you would like a service to:



Learners reported needing transportation to Woodlands and school.

SCHOOL 3 - CHRISTIAAN DE WET CS		
Q1	Yes	30
	No	0
Q2	Not Frequent or Efficient	20
	Moderately Frequent or Efficient	1
	Very Frequent or Efficient	5
Q3	School	7
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	2
	Business	0
	Other	3
Q4	Rarely (Once a Month)	4
	Occasionally (Once a Week)	3
	Very Frequently (Once a Day)	8
Q5	0-5 minutes	1
	5-10 minutes	2
	10-15 minutes	2
	More than 15 minutes	13
Q6	Less than 15 minutes	7
	15 - 20 minutes	4
	20 - 30 minutes	2
	30 - 60 minutes	2
	More than 60 minutes	1
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	20
	Bus	0
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	3
	5% - 10%	2
	10% - 15%	1
	More than 15%	1
Q9	Not Safe & Secure	0
	Not Reliable	0
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	1
Q10	Yes	24
	No	2
Q11	Yes	27
	No	4

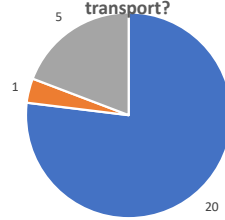
Q12	Yes	24
	No	6
Q13	Yes	0
	No	30
Q14	Yes	0
	No	0
Q15	Bloemfontein	8
	School	1
	Pretoria	1
	Taxi Rank	1

Q1 : Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



Public transport is readily available.

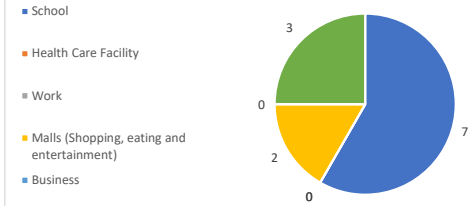
Q2 : If yes, how frequent or efficient is the public transport?



Not Frequent or Efficient Moderately Frequent or Efficient Very Frequent or Efficient

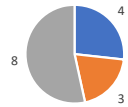
The available public transport was reported as not frequent or efficient.

Q3 : What do you use public transport for?



Public transport is mainly use for commuting to school.

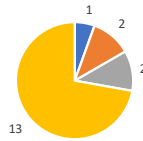
Q4 : How often do you make use of public transport?



Rarely (Once a Month) Occasionally (Once a Week) Very Frequently (Once a Day)

Majority of the learners reported using public transport at least once a day.

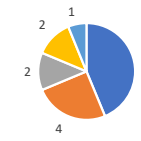
Q5 : How much time do you spend waiting for public transport?



0-5 minutes 5-10 minutes 10-15 minutes More than 15 minutes

Most learners wait longer than 15mins for public transport.

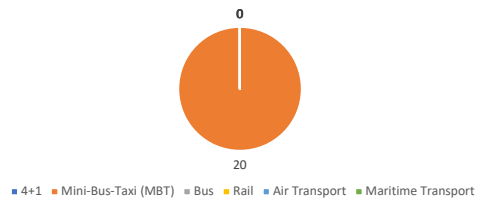
Q6 : How much time do you spend travelling to your destination using public transport?



Less than 15 minutes 15 - 20 minutes 20 - 30 minutes 30 - 60 minutes More than 60 minutes

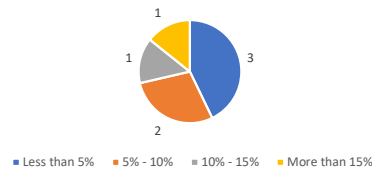
Commute to their destination takes less than 15mins.

Q7 : Most common mode of transport you use?



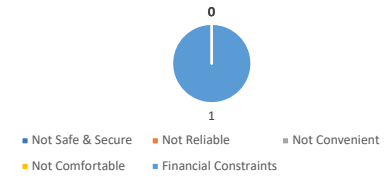
Mini bus taxis are the only mode of public transport used by the learners.

Q8 : What percentage of your income is spent on public transport?



Learners reported using less than 5% of their income (allowance) on public transport.

Q9 : If public transport is available and you do not use it, what is the reason?



Learners reported financial constraints as reason for not using public transportation.

Q10 : Is there public transport available to a shopping center/market place?



Learners reported that public transport is available to shopping centers and market places.

Q11 : Is there public transport available to a clinic or hospital?



Majority of learners reported that public transport is available to a clinic and hospital.

Q12 : Is there public transport available to school or work place?



Learners reported that public transport is available to school.

Q13 : Do you have a disability, difficulty or challenge?



■ Yes ■ No

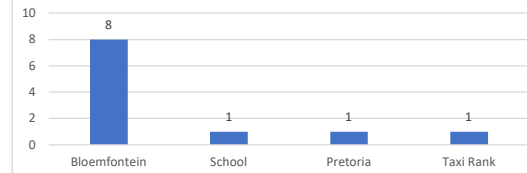
None of the learners reported a disability, difficulty or challenge.

Q14 : If yes, does the available public transport accommodate your disability, difficulty or challenge?

■ Yes ■ No

No data captured.

Q15 : Name a public transport destination that you would like a service to:



Learners reported needing transportation to Bloemfontein.

SCHOOL 5 - KAGISHO SECONDARY SCHOOL		
Q1	Yes	19
	No	1
Q2	Not Frequent or Efficient	1
	Moderately Frequent or Efficient	4
	Very Frequent or Efficient	9
Q3	School	9
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	12
	Business	
	Other	2
Q4	Rarely (Once a Month)	12
	Occasionally (Once a Week)	3
	Very Frequently (Once a Day)	4
Q5	0-5 minutes	9
	5-10 minutes	1
	10-15 minutes	5
	More than 15 minutes	6
Q6	Less than 15 minutes	4
	15 - 20 minutes	7
	20 - 30 minutes	7
	30 - 60 minutes	3
	More than 60 minutes	0
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	19
	Bus	1
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	5
	5% - 10%	1
	10% - 15%	3
	More than 15%	6
Q9	Not Safe & Secure	0
	Not Reliable	1
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	6
Q10	Yes	22
	No	2
Q11	Yes	19
	No	3

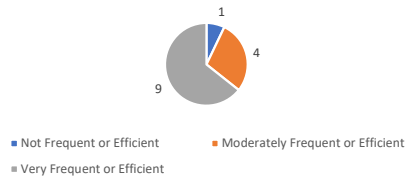
Q12	Yes	17
	No	7
Q13	Yes	5
	No	18
Q14	Yes	1
	No	0
Q15	Gauteng	1
	Town	3
	Rural Settlements	1
	Taxi Rank	1
	Mimosa Mall	1
	School	2
	Joe Slovo	1
	Naval Hill	1

Q1 : Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



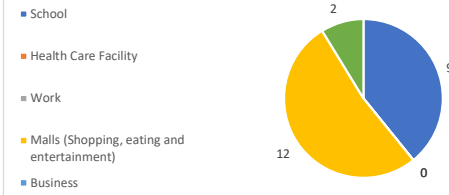
Public transport is readily available.

Q2 : If yes, how frequent or efficient is the public transport?



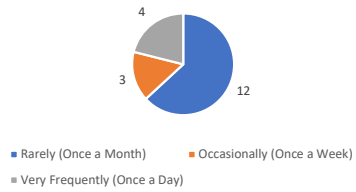
The available public transport was reported to be very frequent or efficient.

Q3 : What do you use public transport for?



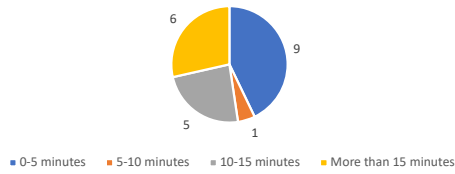
Learners mainly use public transport to go to the malls.

Q4 : How often do you make use of public transport?



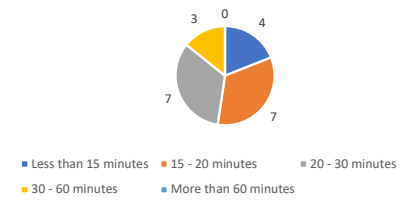
Majority of the learners reported using public transport at least once a month.

Q5 : How much time do you spend waiting for public transport?



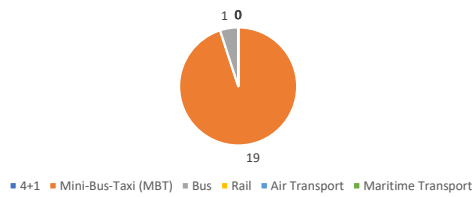
Most learners wait less than 5mins for public transport.

Q6 : How much time do you spend travelling to your destination using public transport?



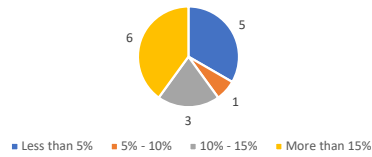
Commute to their destination takes anywhere between 15 to 20 minutes and 20 to 30 minutes.

Q7 : Most common mode of transport you use?



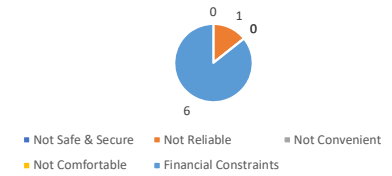
Mini bus taxis are the main mode of public transport used by the learners followed by buses.

Q8 : What percentage of your income is spent on public transport?



Learners reported using more than 15% of their income (allowance) on public transport.

Q9 : If public transport is available and you do not use it, what is the reason?



Learners reported financial constraints as the reason for not using public transportation followed by its unreliability.

Q10 : Is there public transport available to a shopping center/market place?



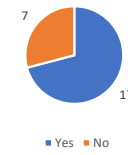
Learners reported that public transport is available to shopping centers and market places.

Q11 : Is there public transport available to a clinic or hospital?



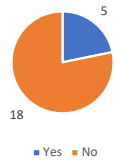
Majority of learners reported that public transport is available to a clinic and hospital.

Q12 : Is there public transport available to school or work place?



Majority of learners reported that public transport is available to school.

Q13 : Do you have a disability, difficulty or challenge?



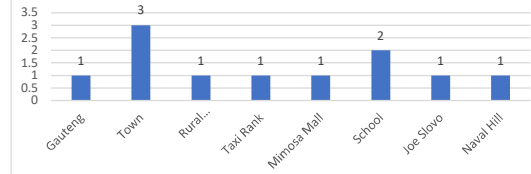
Majority of the learners reported not having a disability, difficulty or challenge.

Q14 : If yes, does the available public transport accommodate your disability, difficulty or challenge?



Learners reported that public transport accommodates their disability, difficulty or challenge.

Q15 : Name a public transport destination that you would like a service to:



Learners reported needing transportation to town and school.

SCHOOL 6 - KOPANONG SECONDARY SCHOOL		
Q1	Yes	54
	No	7
Q2	Not Frequent or Efficient	4
	Moderately Frequent or Efficient	29
	Very Frequent or Efficient	19
Q3	School	7
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	37
	Business	0
	Other	3
Q4	Rarely (Once a Month)	18
	Occasionally (Once a Week)	13
	Very Frequently (Once a Day)	20
Q5	0-5 minutes	12
	5-10 minutes	3
	10-15 minutes	0
	More than 15 minutes	1
Q6	Less than 15 minutes	1
	15 - 20 minutes	0
	20 - 30 minutes	11
	30 - 60 minutes	5
	More than 60 minutes	5
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	53
	Bus	1
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	1
	5% - 10%	0
	10% - 15%	2
	More than 15%	53
Q9	Not Safe & Secure	0
	Not Reliable	0
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	49
Q10	Yes	56
	No	5

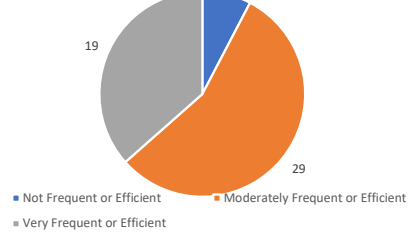
Q11	Yes	55
	No	5
Q12	Yes	44
	No	15
Q13	Yes	12
	No	44
Q14	Yes	5
	No	2
Q15	Town	7
	School	30
	Ipopeng	1
	Home	3
	Phase 5	3
	Durban	1
	Clinic	9
	Church	1
Townships	1	

Q1 : Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



Public transport is readily available.

Q2 : If yes, how frequent or efficient is the public transport?



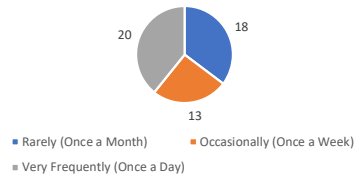
The available public transport was reported to be moderately frequent or efficient.

Q3 : What do you use public transport for?



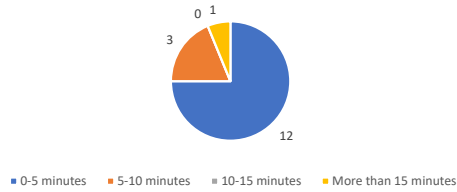
Learners mainly use public transport to go to the malls.

Q4 : How often do you make use of public transport?



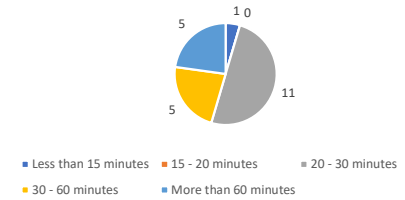
Majority of the learners reported using public transport at least once a day.

Q5 : How much time do you spend waiting for public transport?



Most learners wait less than 5mins for public transport.

Q6 : How much time do you spend travelling to your destination using public transport?



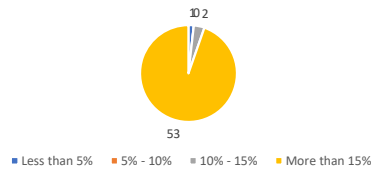
Commute to their destination takes anywhere between 20 to 30 minutes.

Q7 : Most common mode of transport you use?



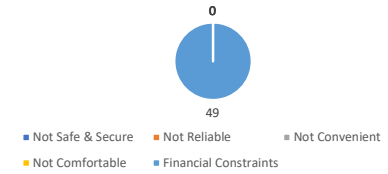
Mini bus taxis are the only mode of public transport used by the learners followed by buses.

Q8 : What percentage of your income is spent on public transport?



Learners reported using more than 15% of their income (allowance) on public transport.

Q9 : If public transport is available and you do not use it, what is the reason?



Learners reported financial constraints as the reason for not using public transportation.

Q10 : Is there public transport available to a shopping center/market place?



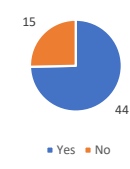
Learners reported that public transport is available to shopping centers and market places.

Q11 : Is there public transport available to a clinic or hospital?



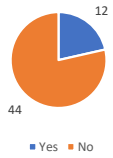
Majority of learners reported that public transport is available to a clinic and hospital.

Q12 : Is there public transport available to school or work place?



Majority of learners reported that public transport is available to school.

Q13 : Do you have a disability, difficulty or challenge?



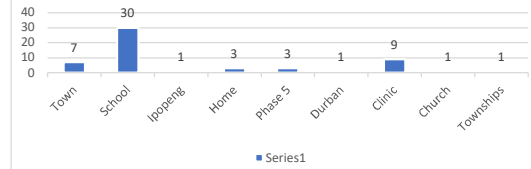
Majority of the learners reported not having a disability, difficulty or challenge.

Q14 : If yes, does the available public transport accommodate your disability, difficulty or challenge?



71% of learners reported that public transport accommodates their disability, difficulty or challenge.

Q15 : Name a public transport destination that you would like a service to:



Learners reported needing transportation to school and the clinic.

SCHOOL 7 - LOUW WEPENER CS		
Q1	Yes	41
	No	3
Q2	Not Frequent or Efficient	4
	Moderately Frequent or Efficient	6
	Very Frequent or Efficient	10
Q3	School	6
	Health Care Facility	3
	Work	0
	Malls (Shopping, eating and entertainment)	8
	Business	0
	Other	26
Q4	Rarely (Once a Month)	14
	Occasionally (Once a Week)	5
	Very Frequently (Once a Day)	12
Q5	0-5 minutes	2
	5-10 minutes	3
	10-15 minutes	5
	More than 15 minutes	29
Q6	Less than 15 minutes	20
	15 - 20 minutes	4
	20 - 30 minutes	2
	30 - 60 minutes	2
	More than 60 minutes	10
Q7	4+1	7
	Mini-Bus-Taxi (MBT)	27
	Bus	0
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	7
	5% - 10%	4
	10% - 15%	0
	More than 15%	7
Q9	Not Safe & Secure	0
	Not Reliable	3
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	18
Q10	Yes	30
	No	12
Q11	Yes	32
	No	9

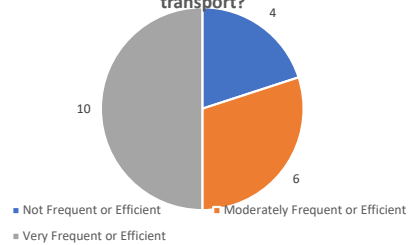
Q12	Yes	31
	No	8
Q13	Yes	4
	No	35
Q14	Yes	4
	No	0
Q15	Marikana	2
	Town	4
	Cape Town	1
	The Station	2
	School	2
	Sofaya	1

Q1 : Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



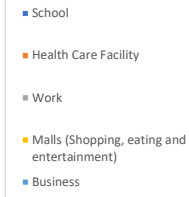
Public transport is readily available.

Q2 : If yes, how frequent or efficient is the public transport?



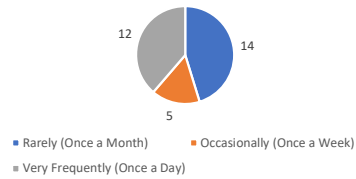
The available public transport was reported to be very frequent or efficient.

Q3 : What do you use public transport for?



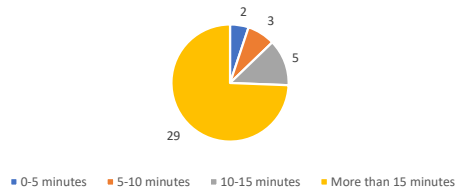
Learners mainly use public transport for other reasons not stated.

Q4 : How often do you make use of public transport?



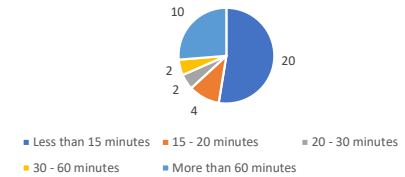
Majority of the learners reported using public transport rarely.

Q5 : How much time do you spend waiting for public transport?



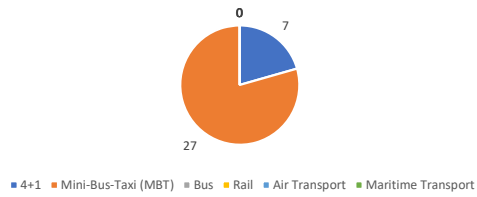
Most learners wait more than 15mins for public transport.

Q6 : How much time do you spend travelling to your destination using public transport?



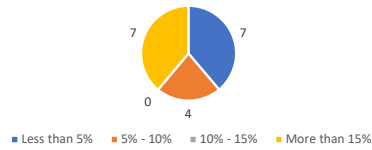
Commute to their destination takes less than 15mins.

Q7 : Most common mode of transport you use?



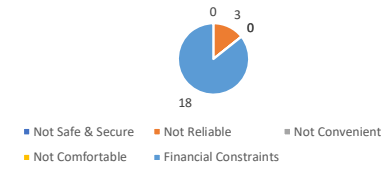
Mini bus taxis are the main mode of public transport used by the learners followed by 4+1 cabs.

Q8 : What percentage of your income is spent on public transport?



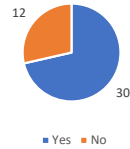
Some learners reported using less than 15% of their income (allowance) on public transport while others reported using more than 15%.

Q9 : If public transport is available and you do not use it, what is the reason?



Learners reported financial constraints as the reason for not using public transportation.

Q10 : Is there public transport available to a shopping center/market place?



Learners reported that public transport is available to shopping centers and market places.

Q11 : Is there public transport available to a clinic or hospital?



Majority of learners reported that public transport is available to a clinic and hospital.

Q12 : Is there public transport available to school or work place?



Majority of learners reported that public transport is available to school.

Q13 : Do you have a disability, difficulty or challenge?



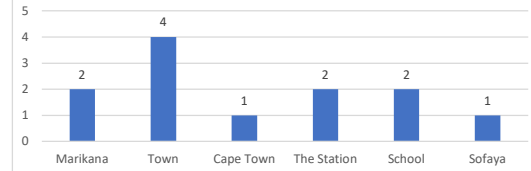
Majority of the learners reported not having a disability, difficulty or challenge.

Q14 : If yes, does the available public transport accommodate your disability, difficulty or challenge?



Learners reported that public transport accommodates their disability, difficulty or challenge.

Q15 : Name a public transport destination that you would like a service to:

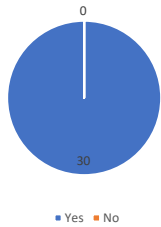


Learners reported needing transportation to town.

SCHOOL 8 - METSIMAPHODI SS		
Q1	Yes	30
	No	0
Q2	Rarely (Once a Month)	0
	Occasionally (Once a Week)	3
	Very Frequently (Almost Every day)	6
Q3	School	2
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	17
	Business	0
	Other	8
Q4	Rarely (Once a Month)	11
	Occasionally (Once a Week)	3
	Very Frequently (Almost Every day)	10
Q5	0-5 minutes	0
	5-10 minutes	0
	10-15 minutes	2
	More than 15 minutes	26
Q6	Less than 15 minutes	3
	15 - 20 minutes	4
	20 - 30 minutes	16
	30 - 60 minutes	1
	More than 60 minutes	1
Q7	4+1	13
	Mini-Bus-Taxi (MBT)	8
	Bus	0
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	2
	5% - 10%	12
	10% - 15%	6
	More than 15%	1
Q9	Not Safe & Secure	4
	Not Reliable	0
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	15
Q10	Yes	14
	No	15

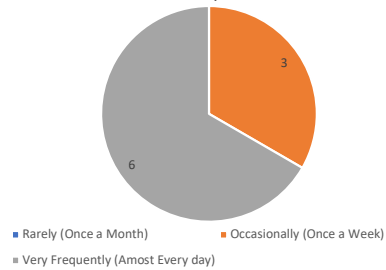
Q11	Yes	5
	No	24
Q12	Yes	8
	No	21
Q13	Yes	3
	No	24
Q14	Yes	3
	No	0
	Riverside	2
	Kgotha	1
	Mall	1
	School	1
	Clinic	0

Q1: Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



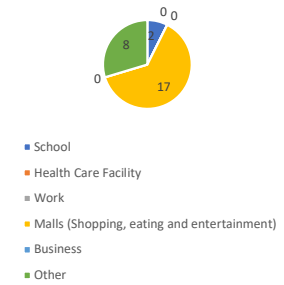
Q1: Public transport is available in this community

Q2: If yes, how frequent or efficient is the public transport?



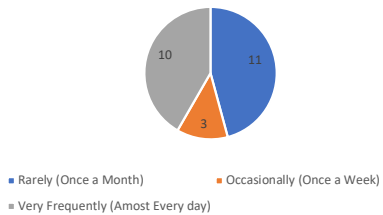
Q2: The available public transport is very frequent.

Q3: What do you use public transport for?



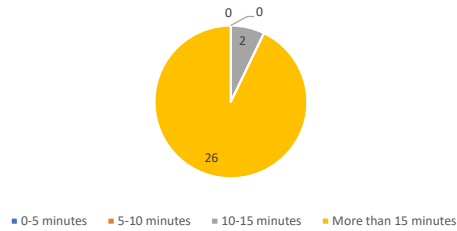
Q3: 60% of the learners indicated that public transport is mainly used for Malls (Shopping, eating and entertainment)

Q4: How often do you make use of public transport?



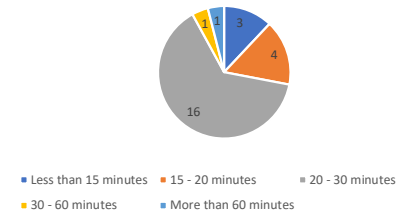
Q4: 42% of the learners make use of public transport frequently. 46% of the learners rarely make use of public transport.

Q5: How much time do you spend waiting for public transport?



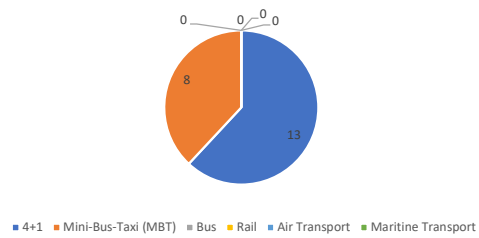
Q5: 93% of the learners spend more than 15 minutes waiting for public transport.

Q6: How much time do you spend travelling to your destination, using public transport?



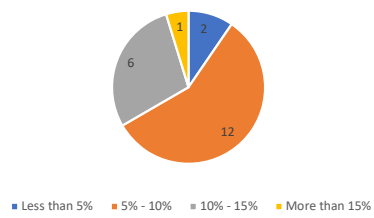
Q6: 64% of the learners spend 20-30 minutes travelling to their destinations using public transport.

Q7: Most common mode of public transport that you use:



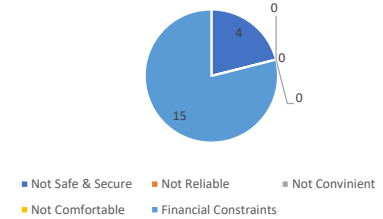
Q7: The most common mode of public transport used is 4+1.

Q8: What percentage of your income is spent on public transport?



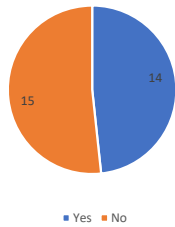
Q8: 57% of the learners spend more than 15% of their income on public transport.

Q9: If public transport is available and you do not use it, what is the reason?



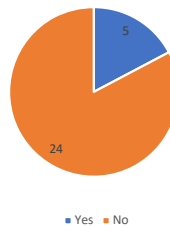
Q9: 78% of the learners do not use the available public transport due to financial constraints.

Q10: Is there public transport available to a shopping centre/market place?



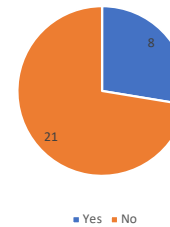
Q10: 48% of the learners indicated that there is no public transport to a shopping centre/market.

Q11: Is there public transport available to a clinic or hospital?



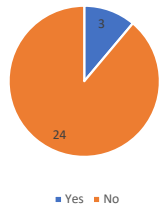
Q11: 17% of the learners indicated that there is no public transport to a clinic or hospital.

Q12: Is there public transport available to school or work place?



Q12: 28% of the learners indicated that there is no public transport available to school or work place.

Q13: Do you have a disability, difficulty or challenge?



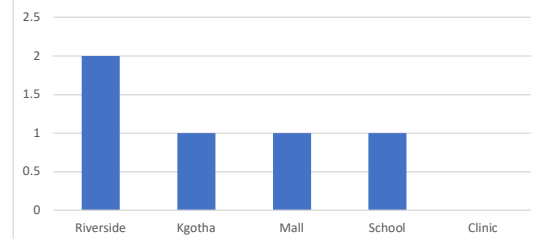
Q13: 11% of the learners indicated that they have a disability, difficulty or challenge.

Q14: If yes, does the available public transport accommodate your disability, difficulty or challenge?



Q14: 100% of those learners indicated that the available public transport accommodates their disability, difficulty or challenge.

Q15: Name a public transport destination that you would like a service to:

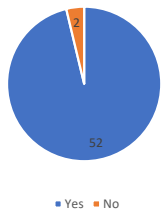


Q15: The public transport destinations learners would like a service to

SCHOOL 9 - MOROKA SECONDARY SCHOOL		
Q1	Yes	52
	No	2
Q2	Rarely (Once a Month)	3
	Occasionally (Once a Week)	3
	Very Frequently (Almost Every day)	21
Q3	School	21
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	15
	Business	0
	Other	5
Q4	Rarely (Once a Month)	12
	Occasionally (Once a Week)	8
	Very Frequently (Almost Every day)	25
Q5	0-5 minutes	7
	5-10 minutes	10
	10-15 minutes	4
	More than 15 minutes	24
Q6	Less than 15 minutes	11
	15 - 20 minutes	12
	20 - 30 minutes	10
	30 - 60 minutes	8
	More than 60 minutes	4
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	37
	Bus	8
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	3
	5% - 10%	1
	10% - 15%	0
	More than 15%	22
Q9	Not Safe & Secure	0
	Not Reliable	1
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	19
Q10	Yes	35
	No	11
Q11	Yes	39
	No	9

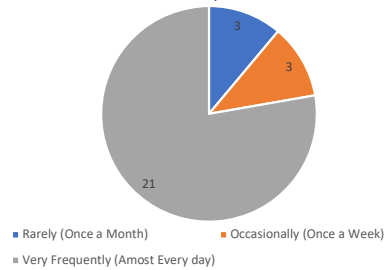
Q12	Yes	42
	No	6
Q13	Yes	6
	No	43
Q14	Yes	1
	No	4
Q15	Clinic	0
	Riverside	0
	Kgotha	0
	Mall	0
	School	0

Q1: Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



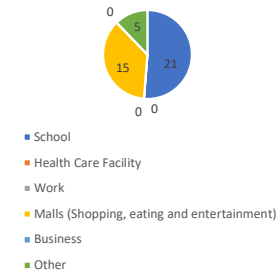
Q1: Public transport is available in this community

Q2: If yes, how frequent or efficient is the public transport?



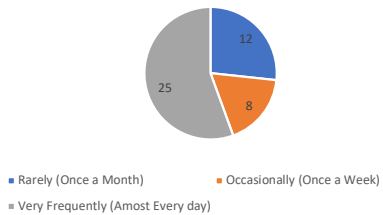
Q2: The available public transport is very frequent.

Q3: What do you use public transport for?



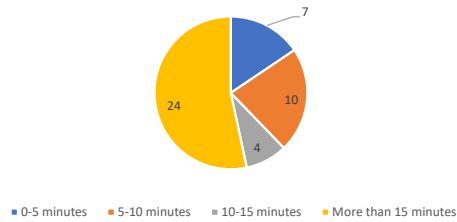
Q3: 51% of the learners indicated that public transport is mainly used for school.

Q4: How often do you make use of public transport?



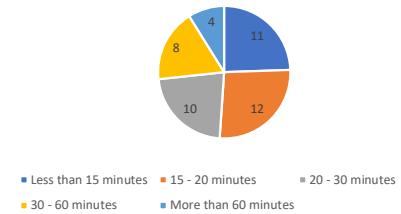
Q4: 56% of the learners make use of public transport frequently. 27% of the learners rarely make use of public transport.

Q5: How much time do you spend waiting for public transport?

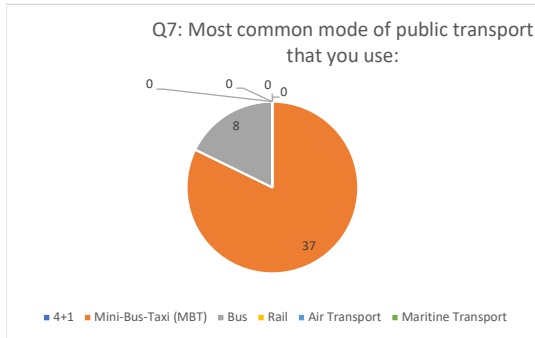


Q5: 53% of the learners spend more than 15 minutes waiting for public transport.

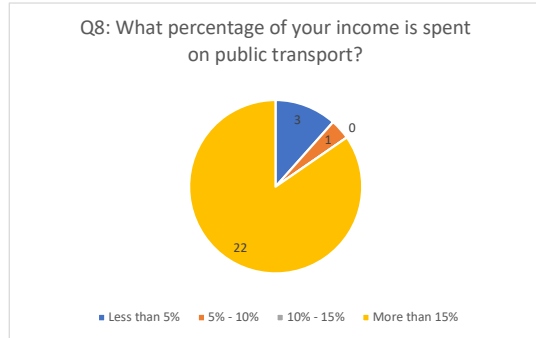
Q6: How much time do you spend travelling to your destination, using public transport?



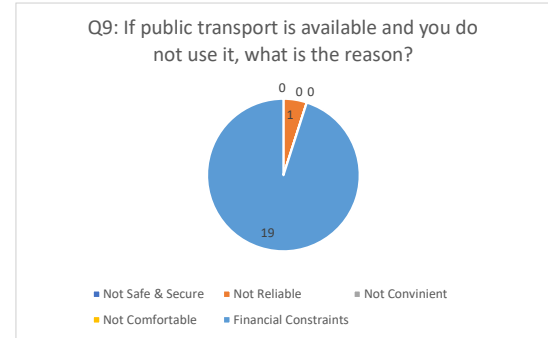
Q6: 27% of the learners spend 15-20 minutes travelling to their destinations using public transport.



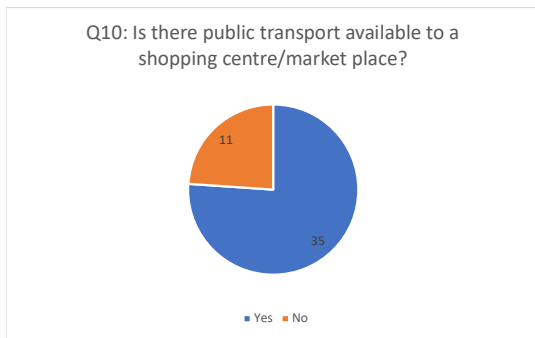
Q7: The most common mode of public transport used is Mini-Bus-Taxi.



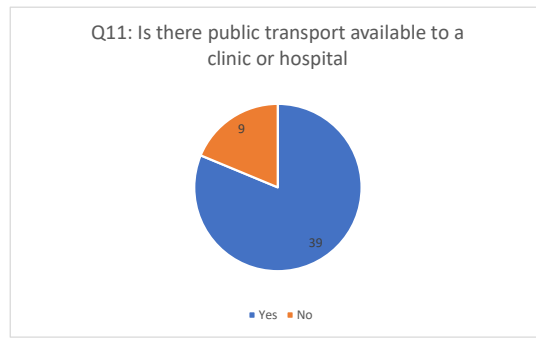
Q8: 85% of the learners spend more than 15% of their income on public transport.



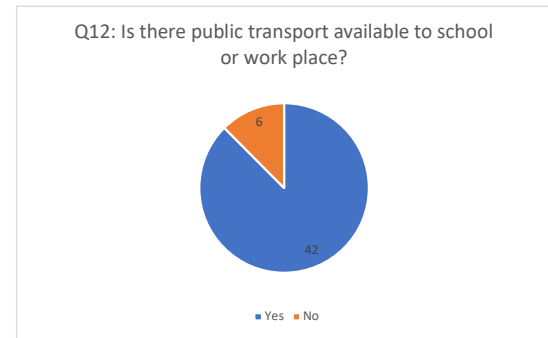
Q9: 95% of the learners do not use the available public transport due to financial constraints.



Q10: 24% of the learners indicated that there is no public transport to a shopping centre/market.

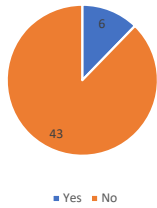


Q11: 19% of the learners indicated that there is no public transport to a clinic or hospital.



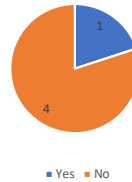
Q12: 13% of the learners indicated that there is no public transport available to school or work place.

Q13: Do you have a disability, difficulty or challenge?



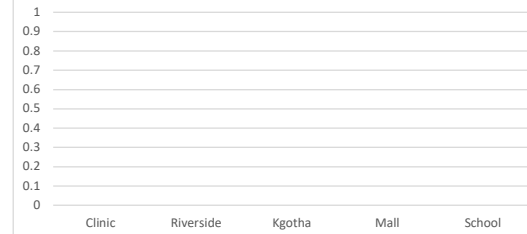
Q13: 12% of the learners indicated that they have a disability, difficulty or challenge.

Q14: If yes, does the available public transport accommodate your disability, difficulty or challenge?



Q14: 20% of those learners indicated that the available public transport accommodates their disability, difficulty or challenge.

Q15: Name a public transport destination that you would like a service to:

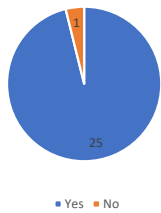


Q15: The public transport destinations learners would like a service to

SCHOOL 10 - QIBING SECONDARY SCHOOL		
Q1	Yes	25
	No	1
Q2	Rarely (Once a Month)	0
	Occasionally (Once a Week)	0
	Very Frequently (Almost Every day)	9
Q3	School	2
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	18
	Business	
	Other	4
Q4	Rarely (Once a Month)	4
	Occasionally (Once a Week)	7
	Very Frequently (Almost Every day)	7
Q5	0-5 minutes	6
	5-10 minutes	8
	10-15 minutes	1
	More than 15 minutes	12
Q6	Less than 15 minutes	8
	15 - 20 minutes	4
	20 - 30 minutes	2
	30 - 60 minutes	3
	More than 60 minutes	3
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	18
	Bus	0
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	2
	5% - 10%	8
	10% - 15%	0
	More than 15%	4
Q9	Not Safe & Secure	0
	Not Reliable	1
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	9
Q10	Yes	20
	No	6
Q11	Yes	21
	No	6

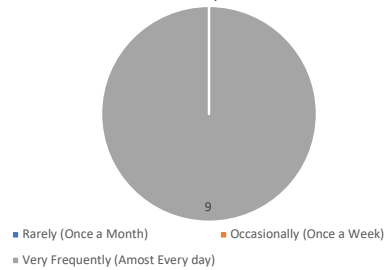
Q12	Yes	21
	No	4
Q13	Yes	6
	No	22
Q14	Yes	4
	No	1
Q15	School	2
	Town	1
	Clinic	0
	Mall	0
	Johannesburg	0

Q1: Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



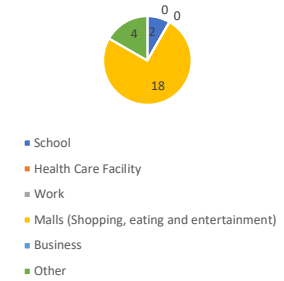
Q1: Public transport is available in this community

Q2: If yes, how frequent or efficient is the public transport?



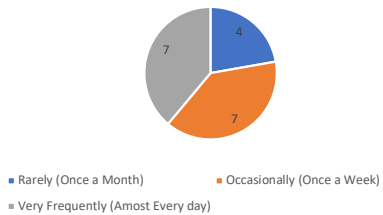
Q2: The available public transport is very frequent.

Q3: What do you use public transport for?



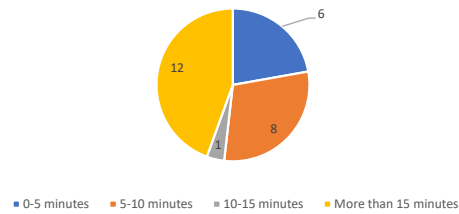
Q3: 75% of the learners indicated that public transport is mainly used for Malls (Shopping, eating and entertainment)

Q4: How often do you make use of public transport?



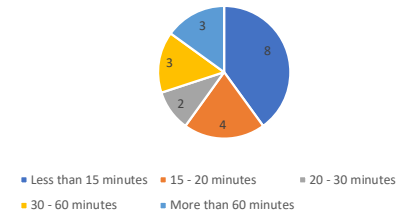
Q4: 39% of the learners make use of public transport frequently. 22% of the learners rarely make use of public transport.

Q5: How much time do you spend waiting for public transport?

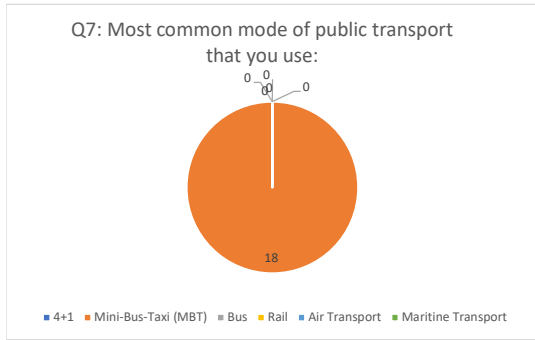


Q5: 44% of the learners spend more than 15 minutes waiting for public transport.

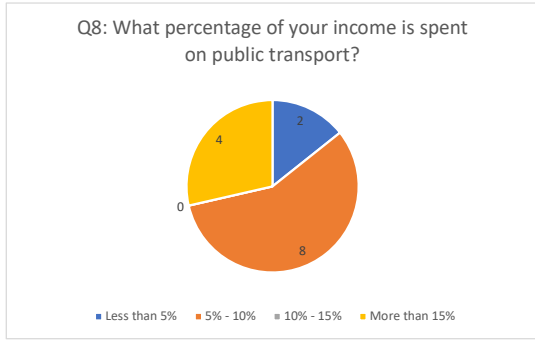
Q6: How much time do you spend travelling to your destination, using public transport?



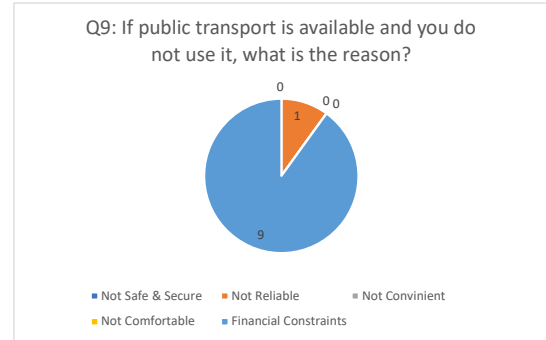
Q6: 40% of the learners spend less than 15 minutes travelling to their destinations using public transport.



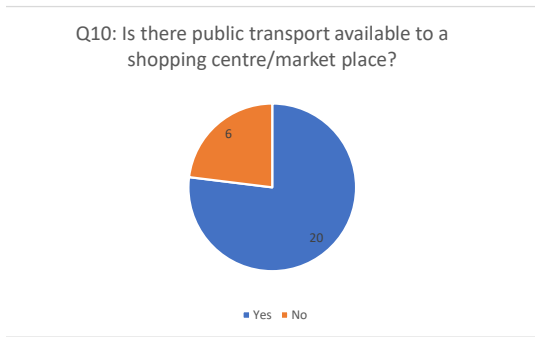
Q7: The most common mode of public transport used is Mini-Bus-Taxi.



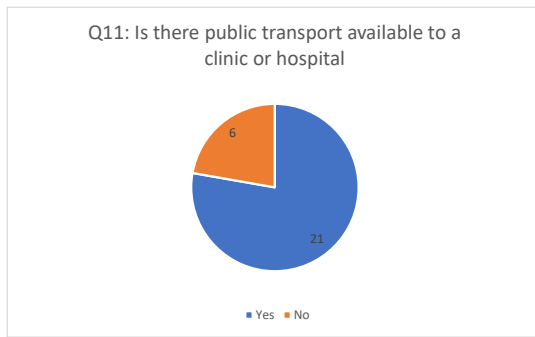
Q8: 57% of the learners spend 5%-10% of their income on public transport.



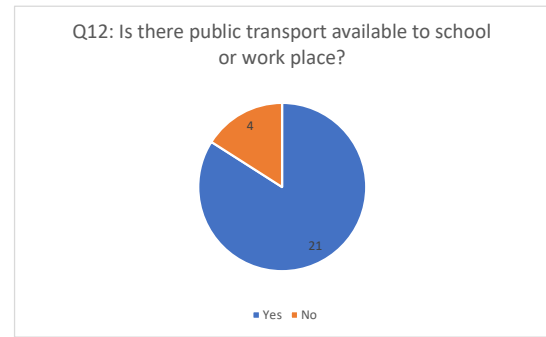
Q9: 90% of the learners do not use the available public transport due to financial constraints.



Q10: 23% of the learners indicated that there is no public transport to a shopping centre/market.

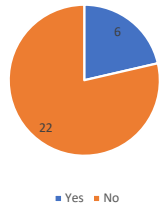


Q11: 22% of the learners indicated that there is no public transport to a clinic or hospital.



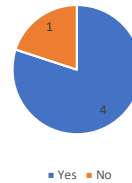
Q12: 16% of the learners indicated that there is no public transport available to school or work place.

Q13: Do you have a disability, difficulty or challenge?



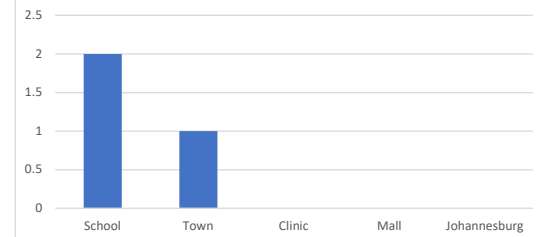
Q13: 21% of the learners indicated that they have a disability, difficulty or challenge.

Q14: If yes, does the available public transport accommodate your disability, difficulty or challenge?



Q14: 20% of those learners indicated that the available public transport accommodates their disability, difficulty or challenge.

Q15: Name a public transport destination that you would like a service to:

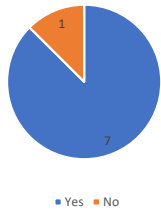


Q15: The public transport destinations learners would like a service to

SCHOOL 11 - SENTRAAL HS		
Q1	Yes	7
	No	1
Q2	Rarely (Once a Month)	0
	Occasionally (Once a Week)	0
	Very Frequently (Almost Every day)	6
Q3	School	8
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	0
	Business	0
	Other	0
Q4	Rarely (Once a Month)	0
	Occasionally (Once a Week)	0
	Very Frequently (Almost Every day)	7
Q5	0-5 minutes	1
	5-10 minutes	1
	10-15 minutes	0
	More than 15 minutes	5
Q6	Less than 15 minutes	0
	15 - 20 minutes	1
	20 - 30 minutes	1
	30 - 60 minutes	0
	More than 60 minutes	6
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	2
	Bus	0
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	0
	5% - 10%	1
	10% - 15%	0
	More than 15%	7
Q9	Not Safe & Secure	0
	Not Reliable	4
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	2
Q10	Yes	8
	No	0
Q11	Yes	7
	No	1

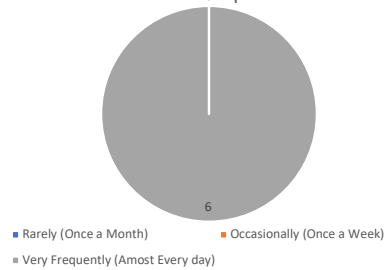
Q12	Yes	8
	No	0
Q13	Yes	0
	No	8
Q14	Yes	0
	No	0
Q15	Central Park	1
	Twin City	1
	Clinic	0
	Mall	0
	School	0

Q1: Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



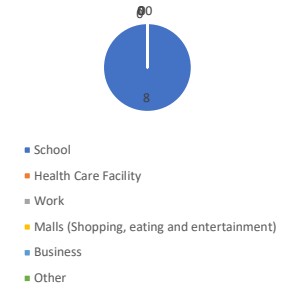
Q1: Public transport is available in this community

Q2: If yes, how frequent or efficient is the public transport?



Q2: The available public transport is very frequent.

Q3: What do you use public transport for?



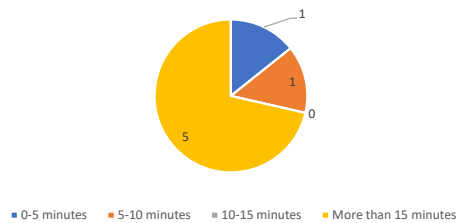
Q3: 100% of the learners indicated that public transport is mainly used for school.

Q4: How often do you make use of public transport?



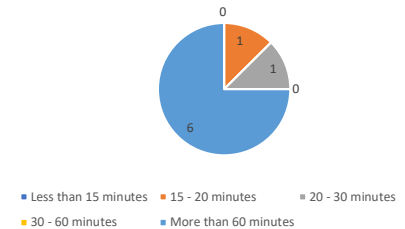
Q4: 100% of the learners make use of public transport frequently.

Q5: How much time do you spend waiting for public transport?

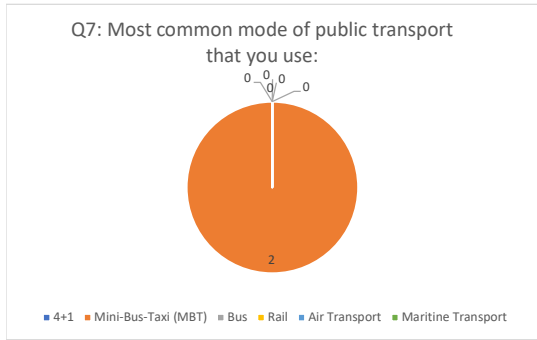


Q5: 71% of the learners spend more than 15 minutes waiting for public transport.

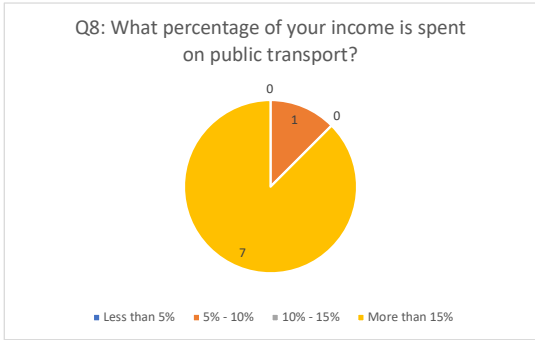
Q6: How much time do you spend travelling to your destination, using public transport?



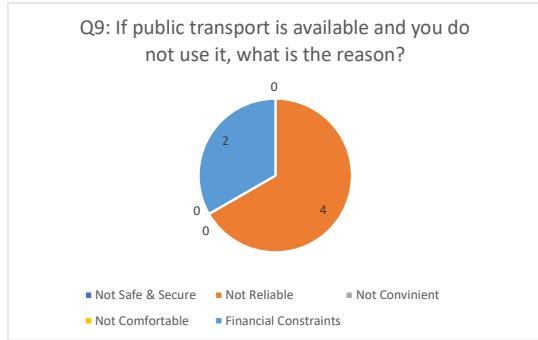
Q6: 75% of the learners spend more than 60 minutes travelling to their destinations using public transport.



Q7: The most common mode of public transport used is Mini-Bus-Taxi.



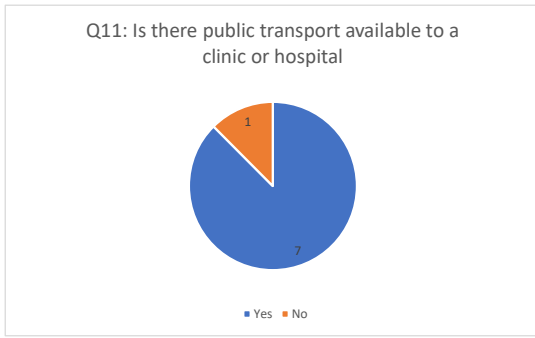
Q8: 88% of the learners spend more than 15% of their income on public transport.



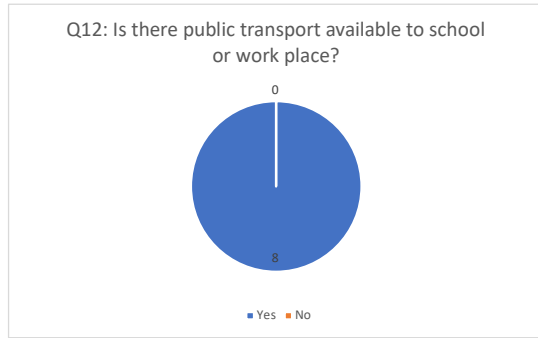
Q9: 67% of the learners do not use the available public transport due to it not being reliable.



Q10: 100% of the learners indicated that there is public transport to a shopping centre/market.



Q11: 13% of the learners indicated that there is no public transport to a clinic or hospital.



Q12: 100% of the learners indicated that there is public transport available to school or work place.

Q13: Do you have a disability, difficulty or challenge?



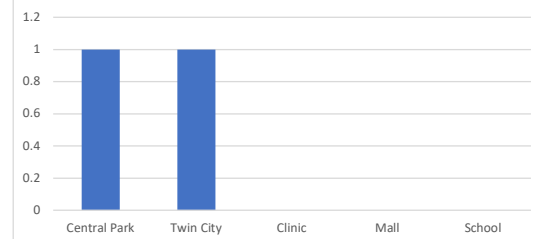
Q13: 100% of the learners indicated that they have no disability, difficulty or challenge.

Q14: If yes, does the available public transport accommodate your disability, difficulty or challenge?



Q14: Not applicable

Q15: Name a public transport destination that you would like a service to:

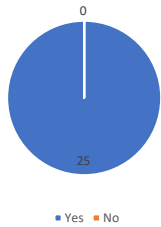


Q15: The public transport destinations learners would like a service to

SCHOOL 12 - SETJHABA SE MAKETSE CS		
Q1	Yes	25
	No	0
Q2	Rarely (Once a Month)	0
	Occasionally (Once a Week)	9
	Very Frequently (Almost Every day)	2
Q3	School	20
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	1
	Business	0
	Other	3
Q4	Rarely (Once a Month)	4
	Occasionally (Once a Week)	6
	Very Frequently (Almost Every day)	16
Q5	0-5 minutes	0
	5-10 minutes	6
	10-15 minutes	3
	More than 15 minutes	15
Q6	Less than 15 minutes	1
	15 - 20 minutes	4
	20 - 30 minutes	9
	30 - 60 minutes	8
	More than 60 minutes	3
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	26
	Bus	1
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	0
	5% - 10%	2
	10% - 15%	0
	More than 15%	17
Q9	Not Safe & Secure	0
	Not Reliable	6
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	6
Q10	Yes	24
	No	0
Q11	Yes	15
	No	9

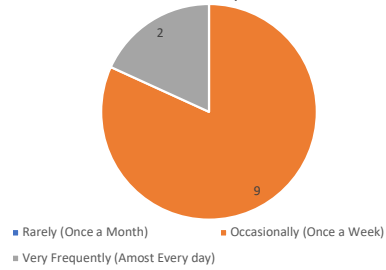
Q12	Yes	15
	No	8
Q13	Yes	4
	No	17
Q14	Yes	1
	No	2
Q15	School	5
	Clinic	1
	H2 Neighbourhood	1
	Mall	0
	Riverside	0

Q1: Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



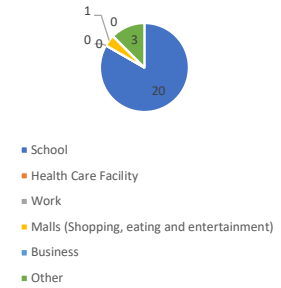
Q1: Public transport is available in this community

Q2: If yes, how frequent or efficient is the public transport?



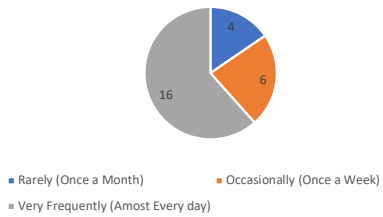
Q2: The available public transport is occasional.

Q3: What do you use public transport for?



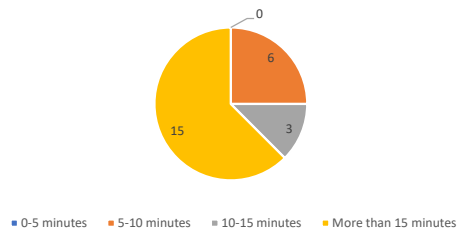
Q3: 83% of the learners indicated that public transport is mainly used for school.

Q4: How often do you make use of public transport?



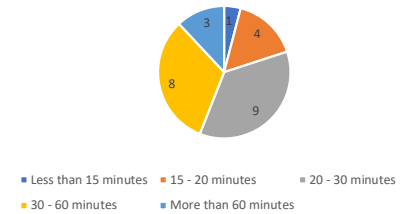
Q4: 62% of the learners make use of public transport frequently. 15% of the learners rarely make use of public transport.

Q5: How much time do you spend waiting for public transport?

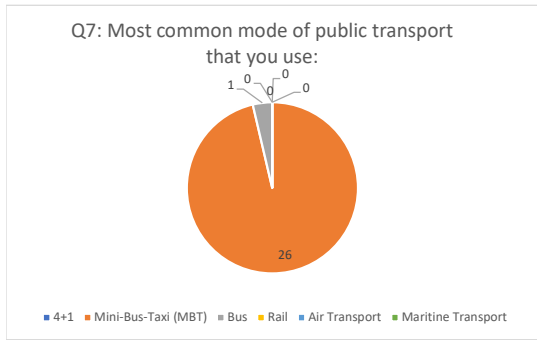


Q5: 63% of the learners spend more than 15 minutes waiting for public transport.

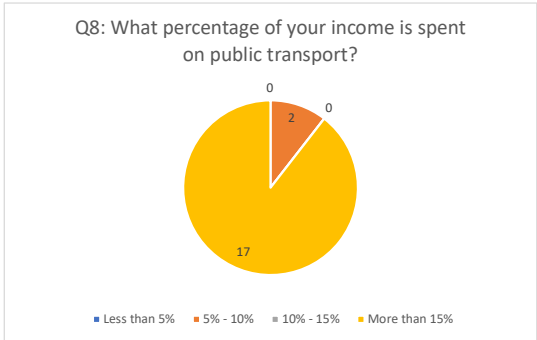
Q6: How much time do you spend travelling to your destination, using public transport?



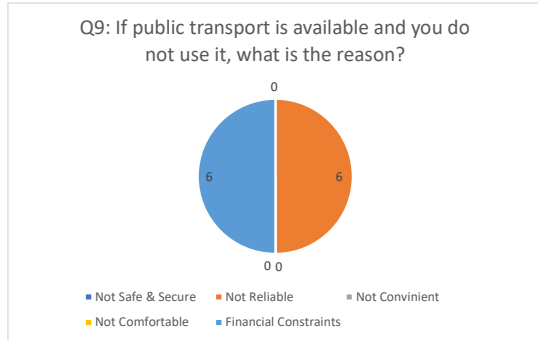
Q6: 36% of the learners spend 20-30 minutes travelling to their destinations using public transport.



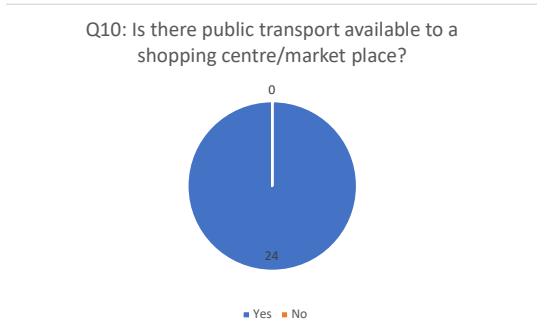
Q7: The most common mode of public transport used is Mini-Bus-Taxi.



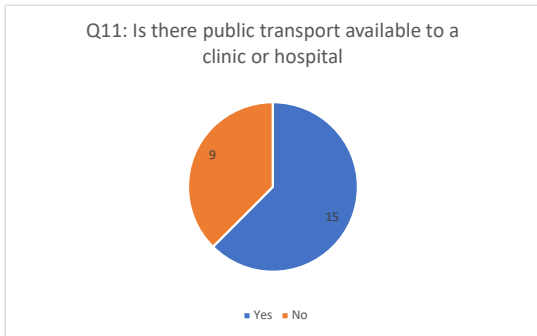
Q8: 89% of the learners spend more than 15% of their income on public transport.



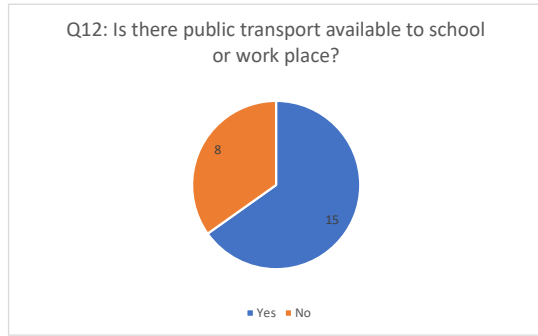
Q9: 50% of the learners do not use the available public transport due to financial constraints, and 50% do not use it due to it not being reliable.



Q10: 100% of the learners indicated that there is public transport to a shopping centre/market.

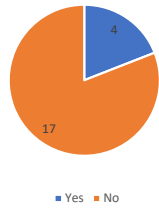


Q11: 38% of the learners indicated that there is no public transport to a clinic or hospital.



Q12: 35% of the learners indicated that there is no public transport available to school or work place.

Q13: Do you have a disability, difficulty or challenge?



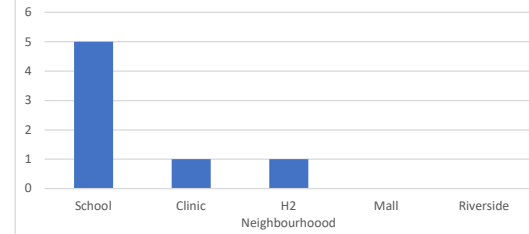
Q13: 19% of the learners indicated that they have a disability, difficulty or challenge.

Q14: If yes, does the available public transport accommodate your disability, difficulty or challenge?



Q14: 33% of those learners indicated that the available public transport accommodates their disability, difficulty or challenge.

Q15: Name a public transport destination that you would like a service to:

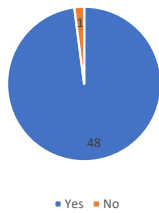


Q15: The public transport destinations learners would like a service to

SCHOOL 13 - THAPELONG SS		
Q1	Yes	48
	No	1
Q2	Rarely (Once a Month)	3
	Occasionally (Once a Week)	0
	Very Frequently (Almost Every day)	33
Q3	School	1
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	41
	Business	0
	Other	2
Q4	Rarely (Once a Month)	40
	Occasionally (Once a Week)	2
	Very Frequently (Almost Every day)	4
Q5	0-5 minutes	0
	5-10 minutes	1
	10-15 minutes	1
	More than 15 minutes	45
Q6	Less than 15 minutes	1
	15 - 20 minutes	16
	20 - 30 minutes	20
	30 - 60 minutes	2
	More than 60 minutes	10
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	45
	Bus	3
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	4
	5% - 10%	3
	10% - 15%	3
	More than 15%	39
Q9	Not Safe & Secure	0
	Not Reliable	0
	Not Convenient	0
	Not Comfortable	2
	Financial Constraints	5
Q10	Yes	29
	No	19
Q11	Yes	3
	No	43

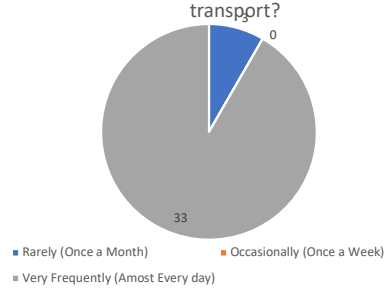
Q12	Yes	7
	No	41
Q13	Yes	4
	No	44
Q14	Yes	3
	No	0
Q15	Zastron	10
	Bloemfontein	9
	Virginia	1
	Wepener	4
	City	1
	Cape Town	1
	Hospital	1
	Gauteng Province	2
	Eastern Cape	1
	Durban	2

Q1: Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



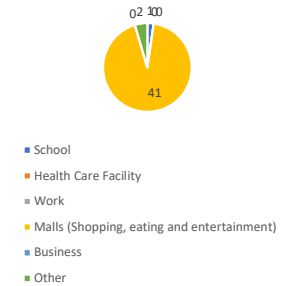
Q1: Public transport is available in this community

Q2: If yes, how frequent or efficient is the public transport?



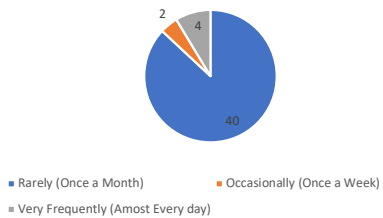
Q2: The available public transport is very frequent.

Q3: What do you use public transport for?



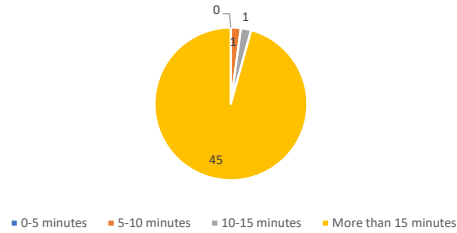
Q3: 93% of the learners indicated that public transport is mainly used for Malls (Shopping, eating and entertainment)

Q4: How often do you make use of public transport?



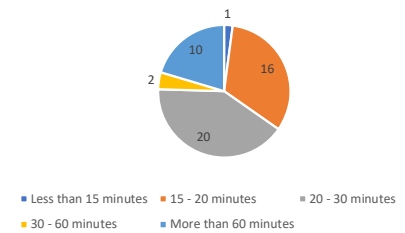
Q4: 9% of the learners make use of public transport frequently. 87% of the learners rarely make use of public transport.

Q5: How much time do you spend waiting for public transport?



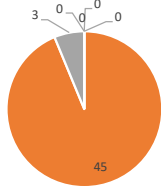
Q5: 96% of the learners spend more than 15 minutes waiting for public transport.

Q6: How much time do you spend travelling to your destination, using public transport?



Q6: 41% of the learners spend 20-30 minutes travelling to their destinations using public transport.

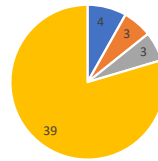
Q7: Most common mode of public transport that you use:



■ 4+1 ■ Mini-Bus-Taxi (MBT) ■ Bus ■ Rail ■ Air Transport ■ Maritime Transport

Q7: The most common mode of public transport used is Mini-Bus-Taxi.

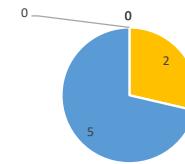
Q8: What percentage of your income is spent on public transport?



■ Less than 5% ■ 5% - 10% ■ 10% - 15% ■ More than 15%

Q8: 80% of the learners spend more than 15% of their income on public transport.

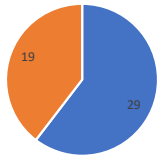
Q9: If public transport is available and you do not use it, what is the reason?



■ Not Safe & Secure ■ Not Reliable ■ Not Convenient
■ Not Comfortable ■ Financial Constraints

Q9: 71% of the learners do not use the available public transport due to financial constraints.

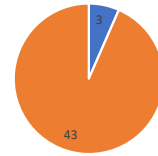
Q10: Is there public transport available to a shopping centre/market place?



■ Yes ■ No

Q10: 40% of the learners indicated that there is no public transport to a shopping centre/market.

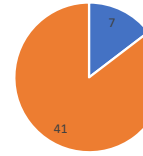
Q11: Is there public transport available to a clinic or hospital?



■ Yes ■ No

Q11: 7% of the learners indicated that there is no public transport to a clinic or hospital.

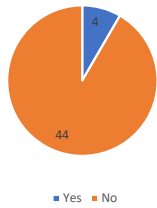
Q12: Is there public transport available to school or work place?



■ Yes ■ No

Q12: 15% of the learners indicated that there is no public transport available to school or work place.

Q13: Do you have a disability, difficulty or challenge?



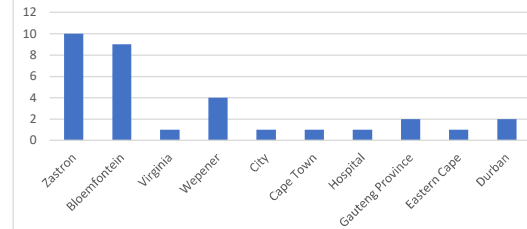
Q13: 8% of the learners indicated that they have a disability, difficulty or challenge.

Q14: If yes, does the available public transport accommodate your disability, difficulty or challenge?



Q14: 100% of those learners indicated that the available public transport accommodates their disability, difficulty or challenge.

Q15: Name a public transport destination that you would like a service to:



Q15: The public transport destinations learners would like a service to

SCHOOL 14 - TSOSELETSO SECONDARY SCHOOL		
Q1	Yes	62
	No	0
Q2	Rarely (Once a Month)	0
	Occasionally (Once a Week)	46
	Very Frequently (Almost Every day)	16
Q3	School	62
	Health Care Facility	0
	Work	0
	Malls (Shopping, eating and entertainment)	62
	Business	0
	Other	0
Q4	Rarely (Once a Month)	0
	Occasionally (Once a Week)	0
	Very Frequently (Almost Every day)	62
Q5	0-5 minutes	15
	5-10 minutes	17
	10-15 minutes	5
	More than 15 minutes	25
Q6	Less than 15 minutes	8
	15 - 20 minutes	12
	20 - 30 minutes	20
	30 - 60 minutes	15
	More than 60 minutes	7
Q7	4+1	0
	Mini-Bus-Taxi (MBT)	62
	Bus	0
	Rail	0
	Air Transport	0
	Maritime Transport	0
Q8	Less than 5%	0
	5% - 10%	46
	10% - 15%	0
	More than 15%	6
Q9	Not Safe & Secure	0
	Not Reliable	0
	Not Convenient	0
	Not Comfortable	0
	Financial Constraints	62
Q10	Yes	62
	No	0

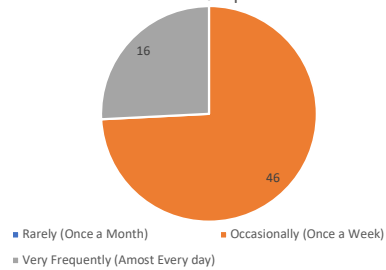
Q11	Yes	62
	No	0
Q12	Yes	62
	No	0
Q13	Yes	0
	No	62
Q14	Yes	0
	No	0
Q15	Clinic	
	Riverside	
	H2 Neighbourhood	
	Mall	
	School	

Q1: Is public transport (bus, taxi, bakkie) available to your community? (Even if it is occasionally)



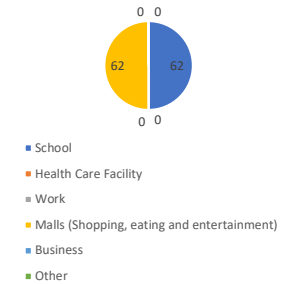
Q1: Public transport is available in this community

Q2: If yes, how frequent or efficient is the public transport?



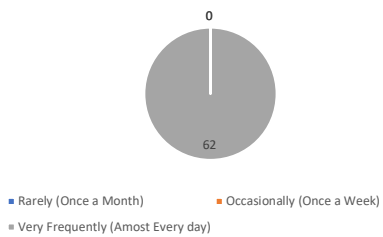
Q2: The available public transport is occasional.

Q3: What do you use public transport for?



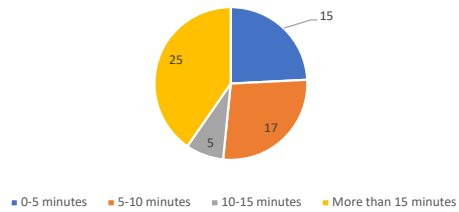
Q3: 50% of the learners indicated that public transport is mainly used for Malls (Shopping, eating and entertainment). 50% of the learners indicated that public transport is mainly used for school

Q4: How often do you make use of public transport?



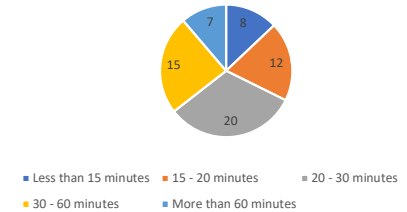
Q4: 100% of the learners make use of public transport frequently.

Q5: How much time do you spend waiting for public transport?

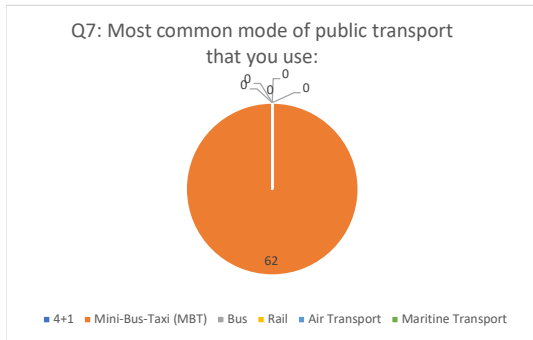


Q5: 40% of the learners spend more than 15 minutes waiting for public transport.

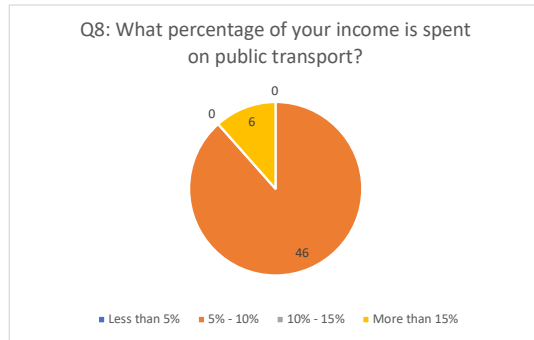
Q6: How much time do you spend travelling to your destination, using public transport?



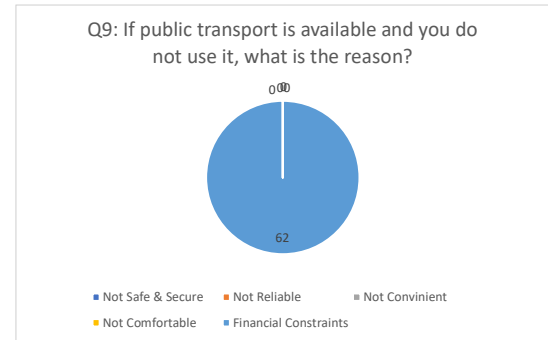
Q6: 32% of the learners spend 20-30 minutes travelling to their destinations using public transport.



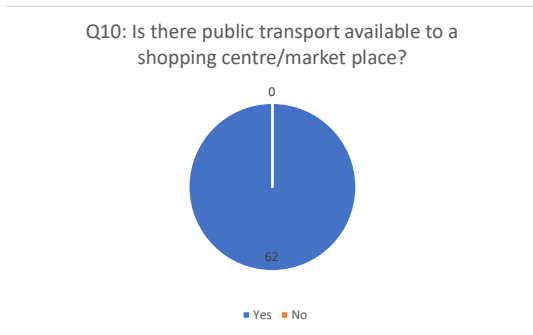
Q7: The most common mode of public transport used is Mini-Bus-Taxi.



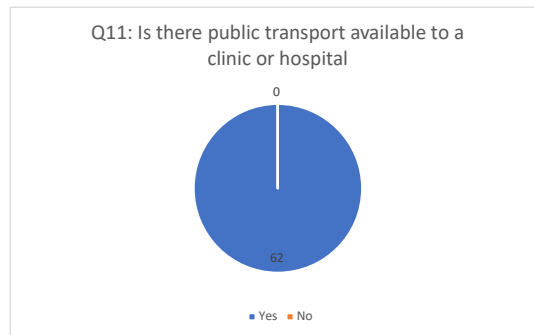
Q8: 88% of the learners spend 5%-10% of their income on public transport.



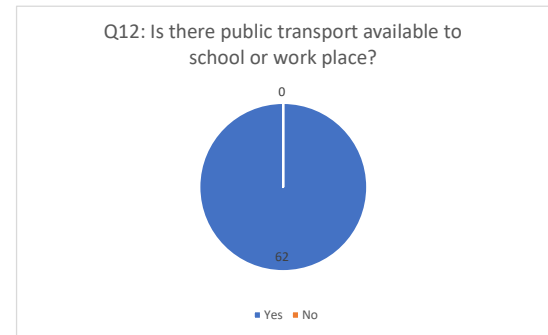
Q9: 100% of the learners do not use the available public transport due to financial constraints.



Q10: 100% of the learners indicated that there is public transport to a shopping centre/market.

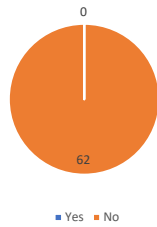


Q11: 100% of the learners indicated that there is public transport to a clinic or hospital.



Q12: 100% of the learners indicated that there is public transport available to school or work place.

Q13: Do you have a disability, difficulty or challenge?



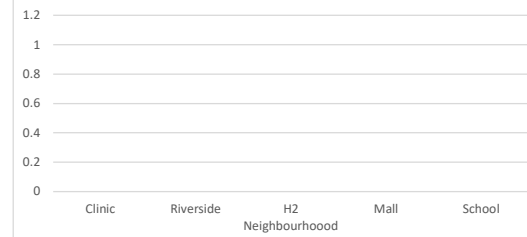
Q13: 100% of the learners indicated that they have no disability, difficulty or challenge.

Q14: If yes, does the available public transport accommodate your disability, difficulty or challenge?



Q14: Not applicable.

Q15: Name a public transport destination that you would like a service to:



Q15: The public transport destinations learners would like a service to

ANNEXURE D: MAPS

Annexure D

Maps

1. Mangaung Study Area
2. Bloemfontein Study Area
3. Botshabelo Study Area
4. Dewetsdorp Study Area
5. Soutpan Study Area
6. Van Stadensrus Study Area
7. Wepener Study Area

8. Bloemfontein IPTN
9. Botshabelo IPTN
10. Thaba Nchu IPTN

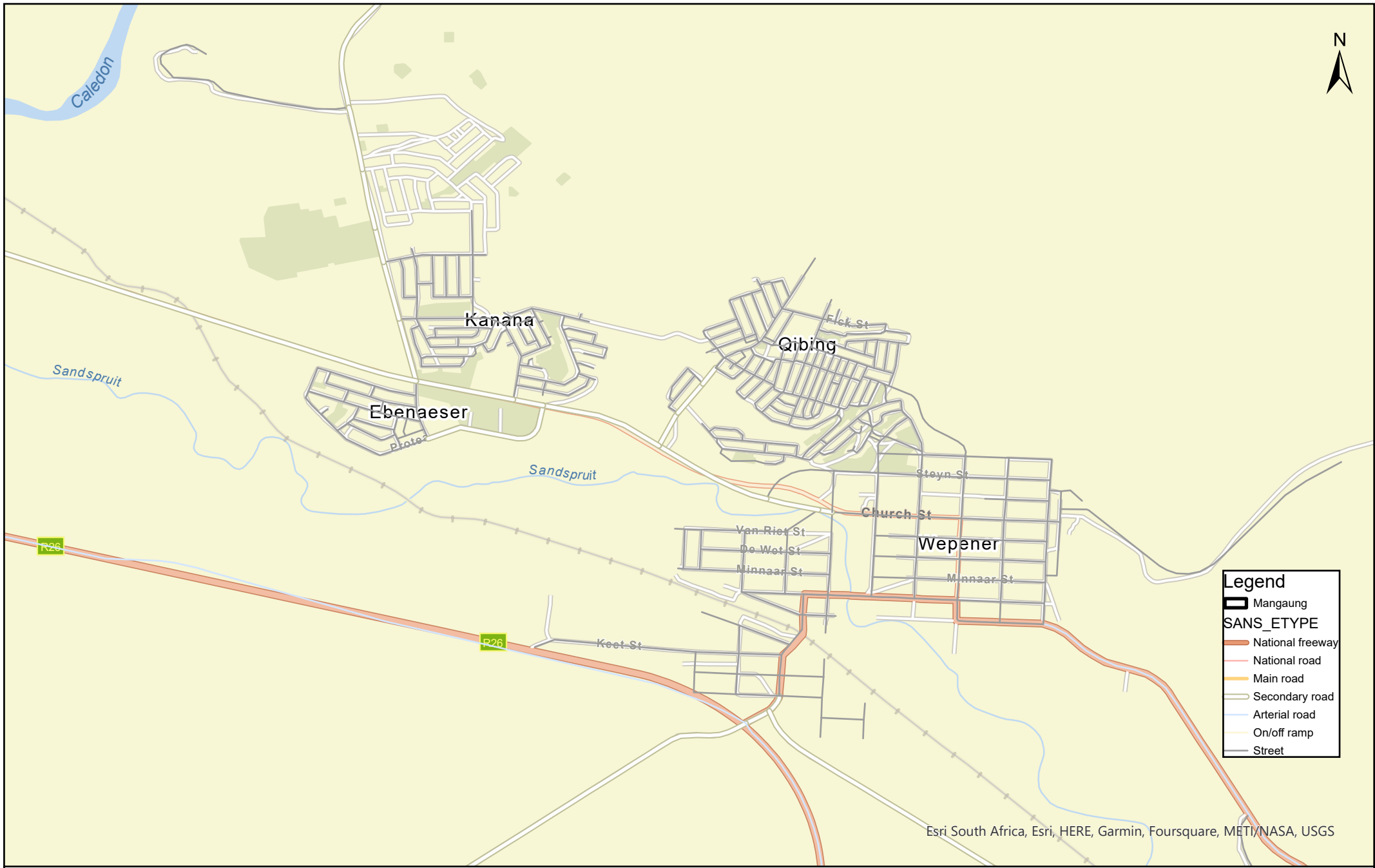
11. Bloemfontein Road Classes
12. Botshabelo Road Classes
13. Thaba Nchu Road Classes
14. Dewetsdorp Road Classes
15. Soutpan Road Classes
16. Van Stadensrus Road Classes
17. Wepener Road Classes

18. Bloemfontein Future Roads
19. Botshabelo Future Roads
20. Thaba Nchu Future Roads

21. Bloemfontein Schools
22. Botshabelo Schools
23. Dewetsdorp Schools
24. Van Stadensrus Schools
25. Wepener Schools

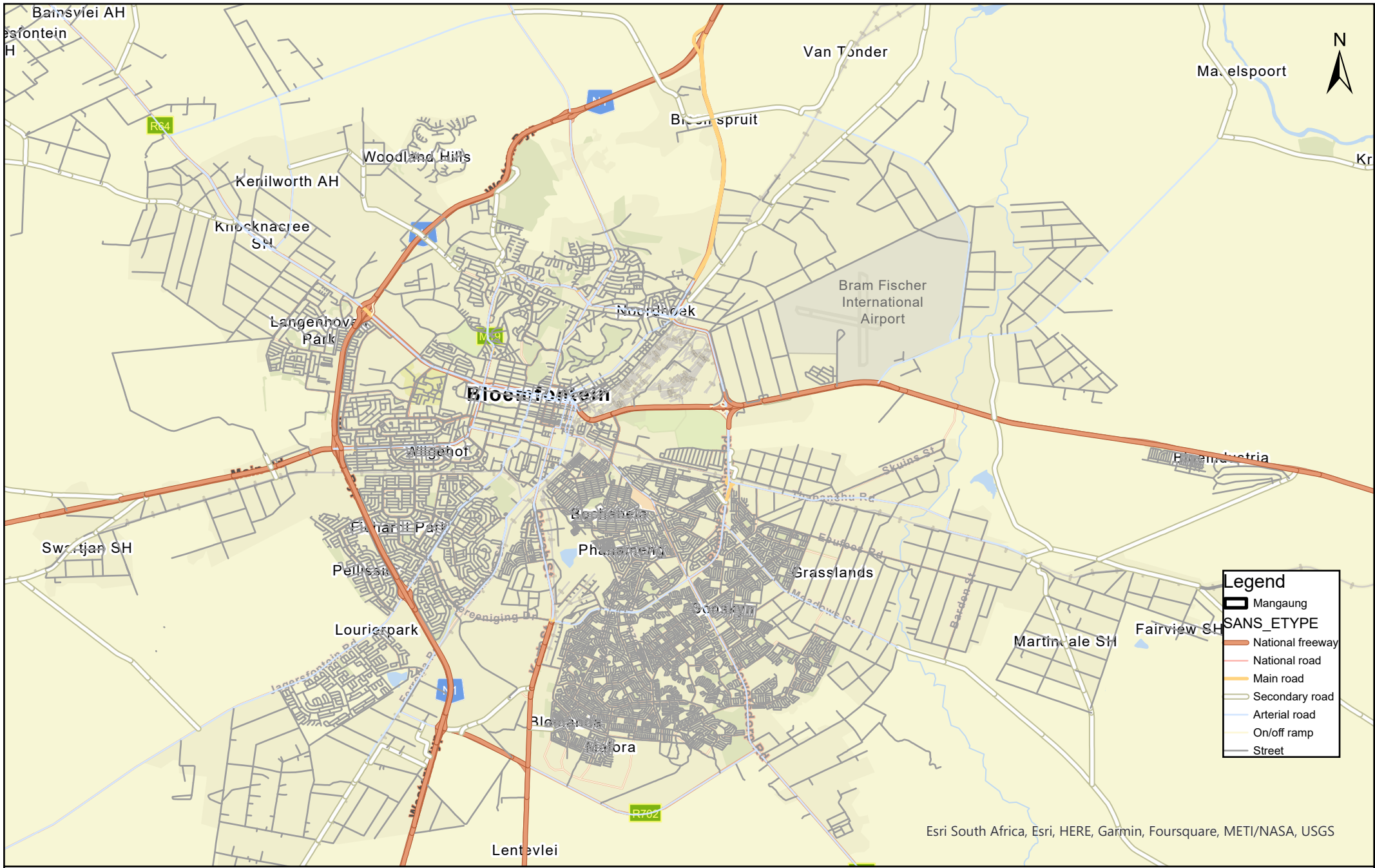
26. Bloemfontein Health Facilities
27. Botshabelo Health Facilities
28. Thaba Nchu Health Facilities

29. Bloemfontein Police
30. Botshabelo Police
31. Dewetsdorp Police
32. Soutpan Police
33. Van Stadensrus Police
34. Wepener Police



0 0.37 0.73 1.47 Kilometers

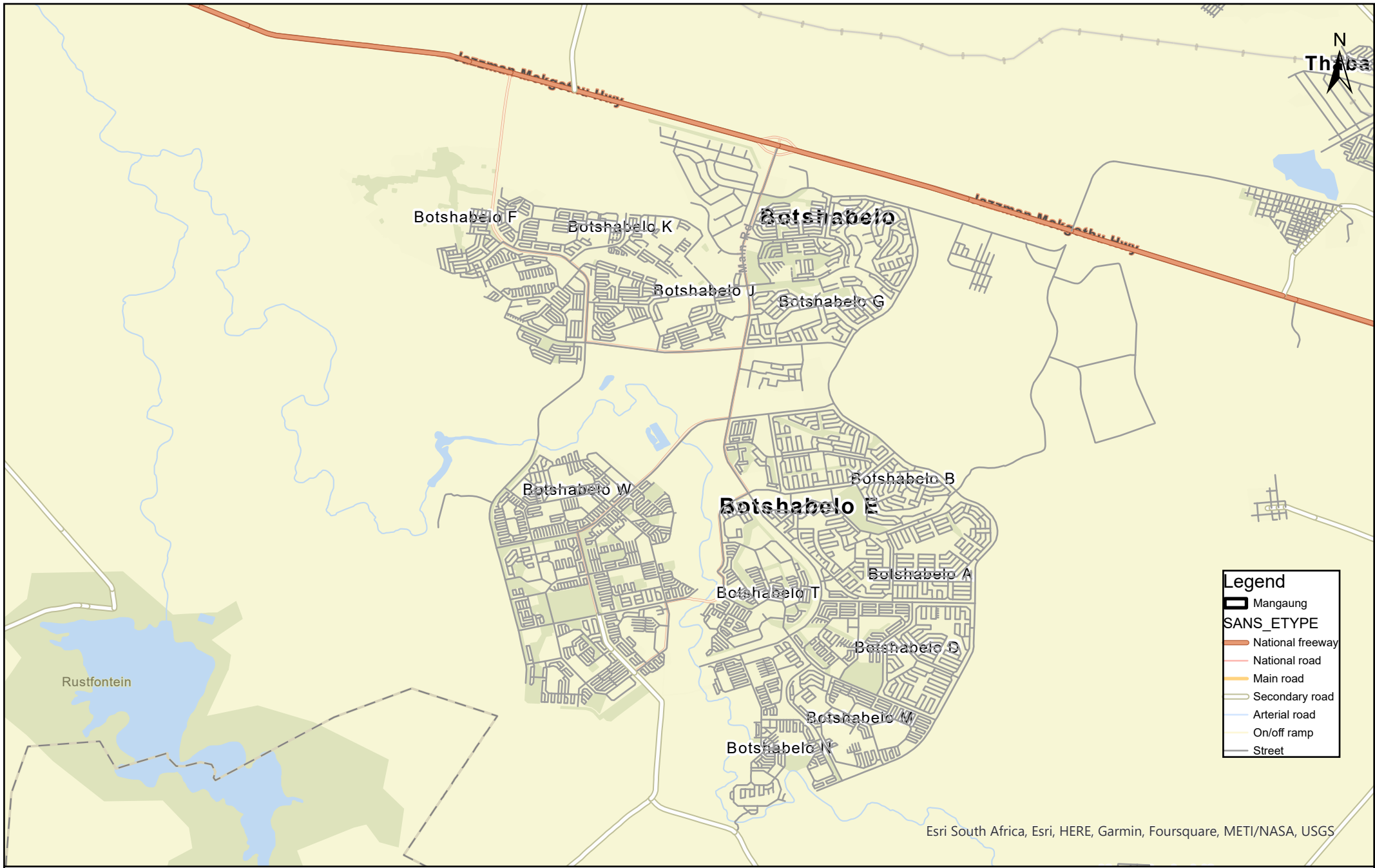
STUDY AREA: MANGAUNG METROPOLITAN MUNICIPALITY



0 2.02 4.05 8.1 Kilometers

STUDY AREA: MANGAUNG METROPOLITAN MUNICIPALITY
BLOEMFONTEIN

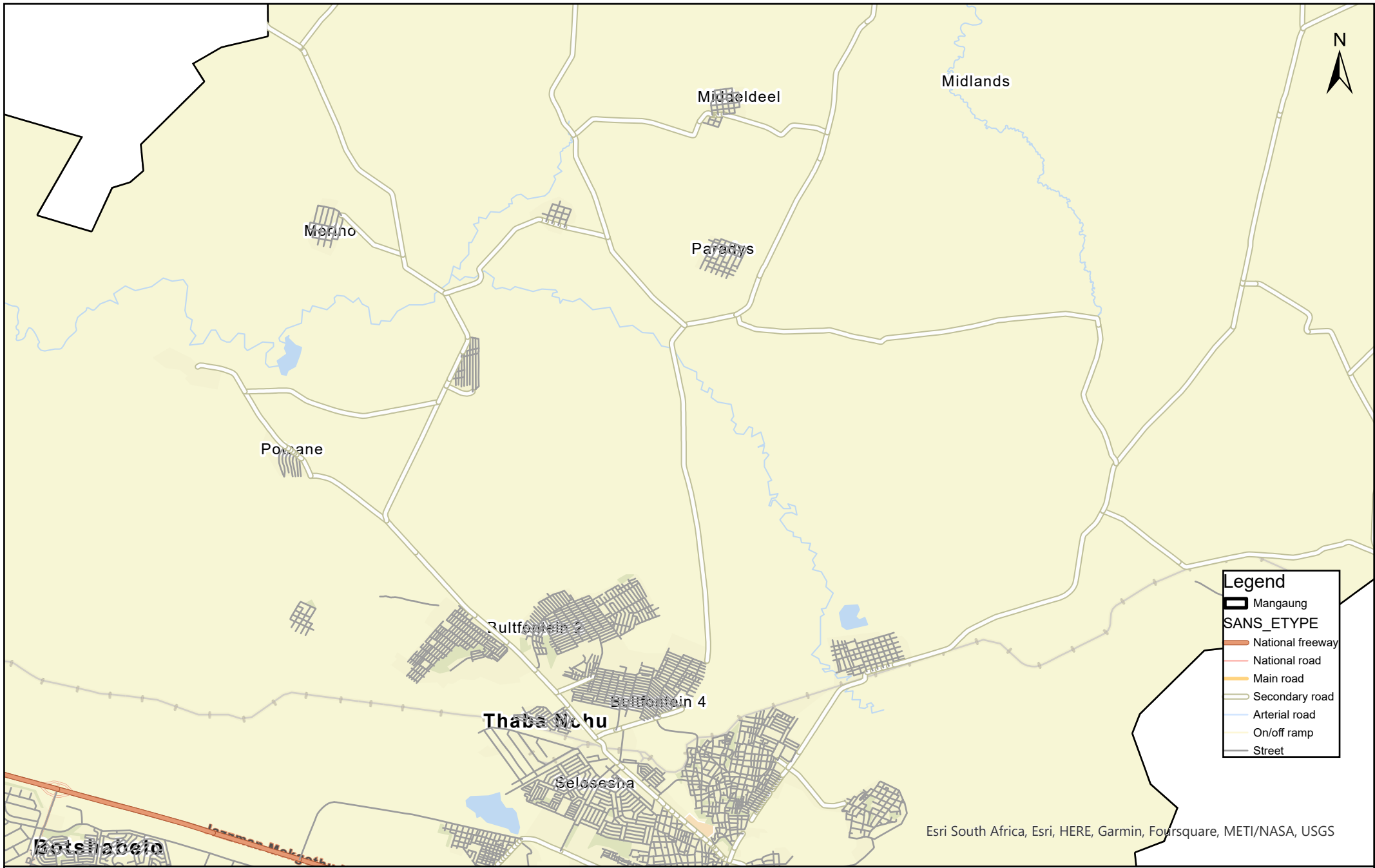
Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

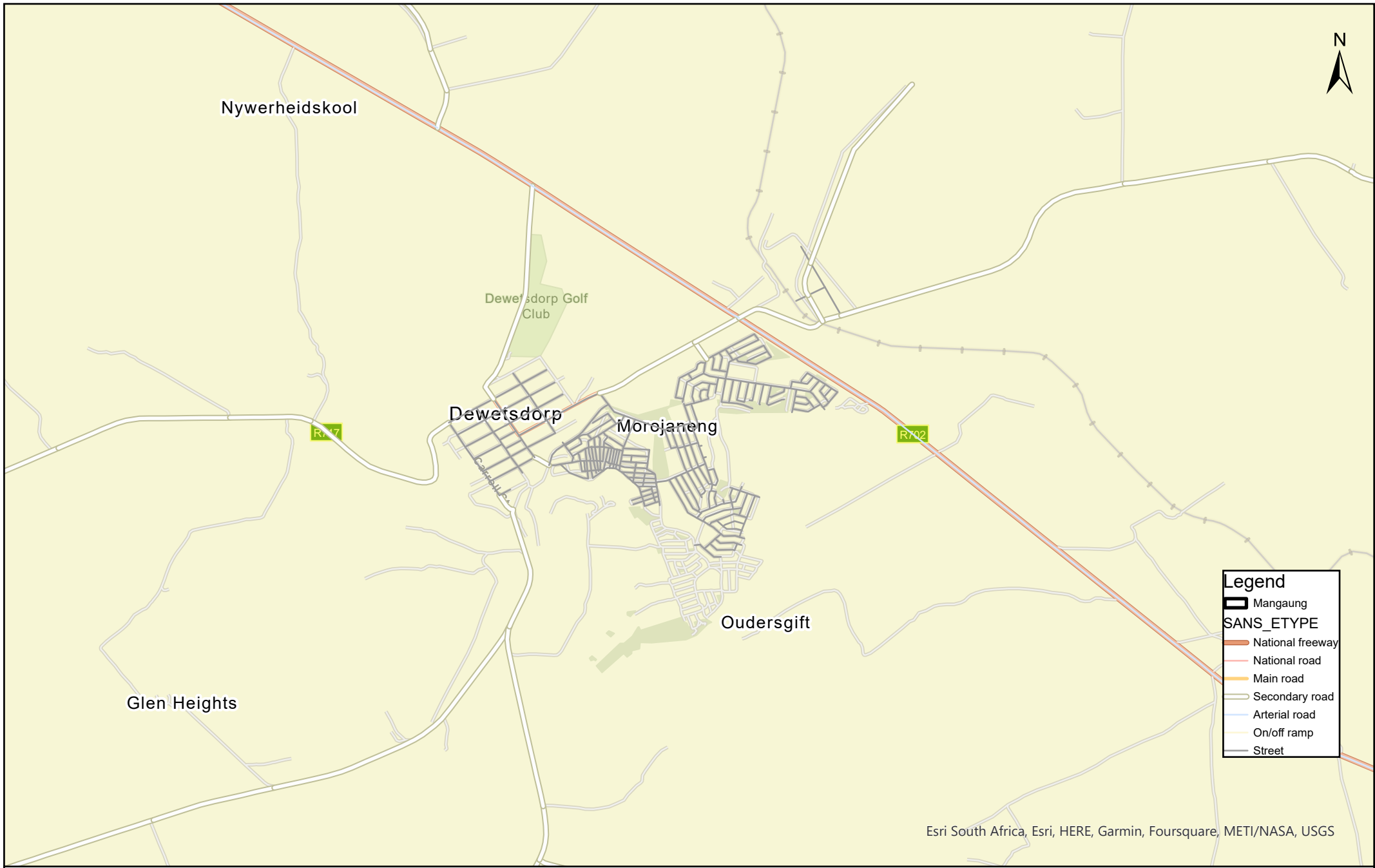
0 1.15 2.3 4.6 Kilometers

STUDY AREA: MANGAUNG METROPOLITAN MUNICIPALITY
BOTSHABELO

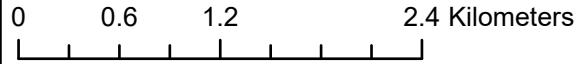


STUDY AREA: MANGAUNG METROPOLITAN MUNICIPALITY

THABA NCHU



Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



STUDY AREA: MANGAUNG METROPOLITAN MUNICIPALITY

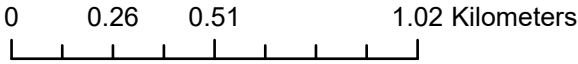
DEWETSDORP



Legend

- Mangaung
- SANS_ETYPE**
- National freeway
- National road
- Main road
- Secondary road
- Arterial road
- On/off ramp
- Street

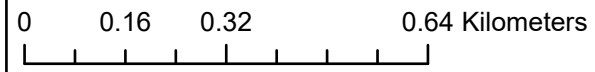
Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



STUDY AREA: MANGAUNG METROPOLITAN MUNICIPALITY
SOUTPAN

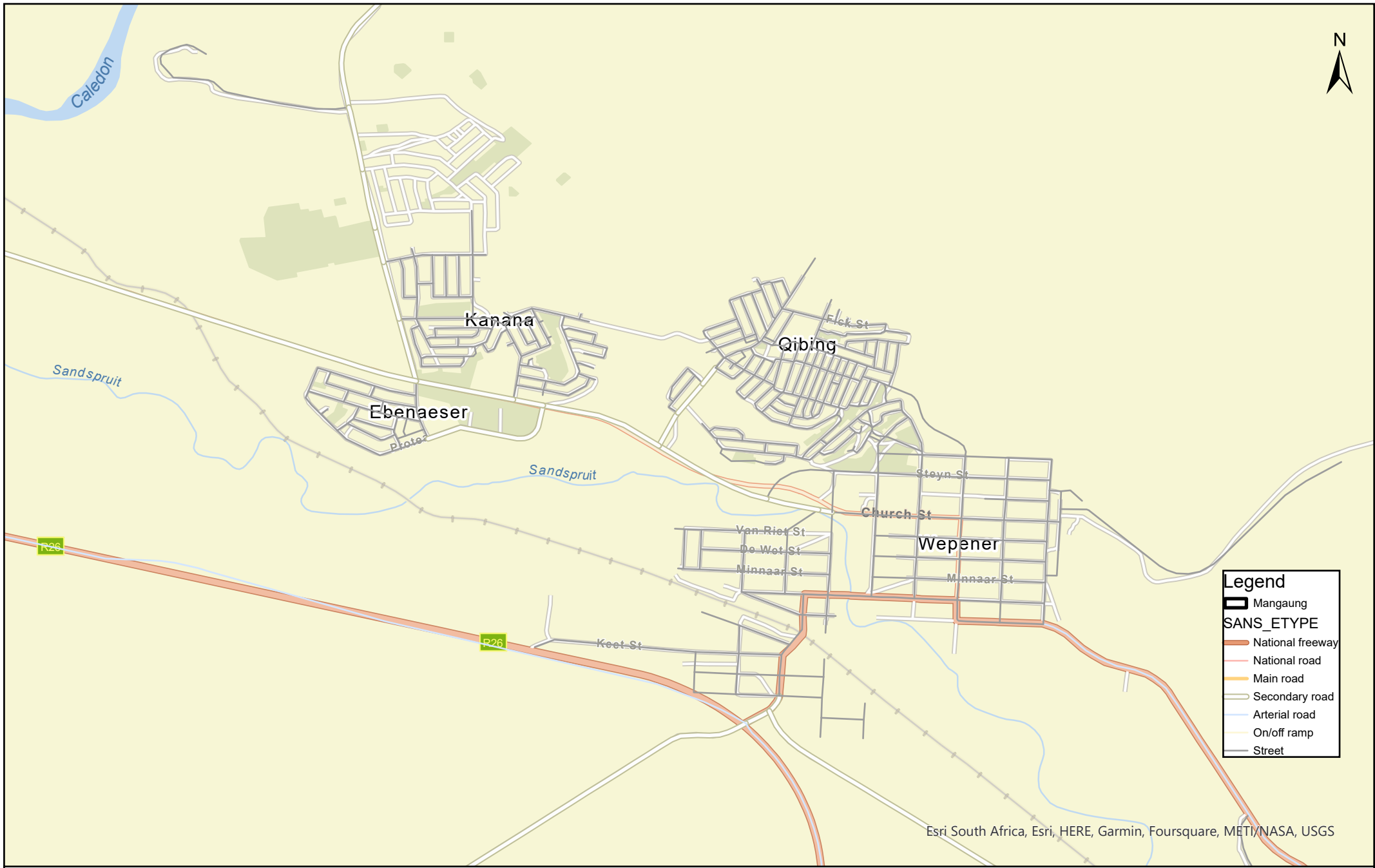


Esri Community Maps Contributors, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

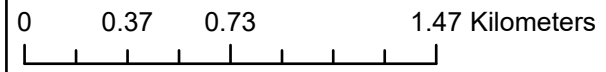


STUDY AREA: MANGAUNG METROPOLITAN MUNICIPALITY

VAN STADENSRUS



Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

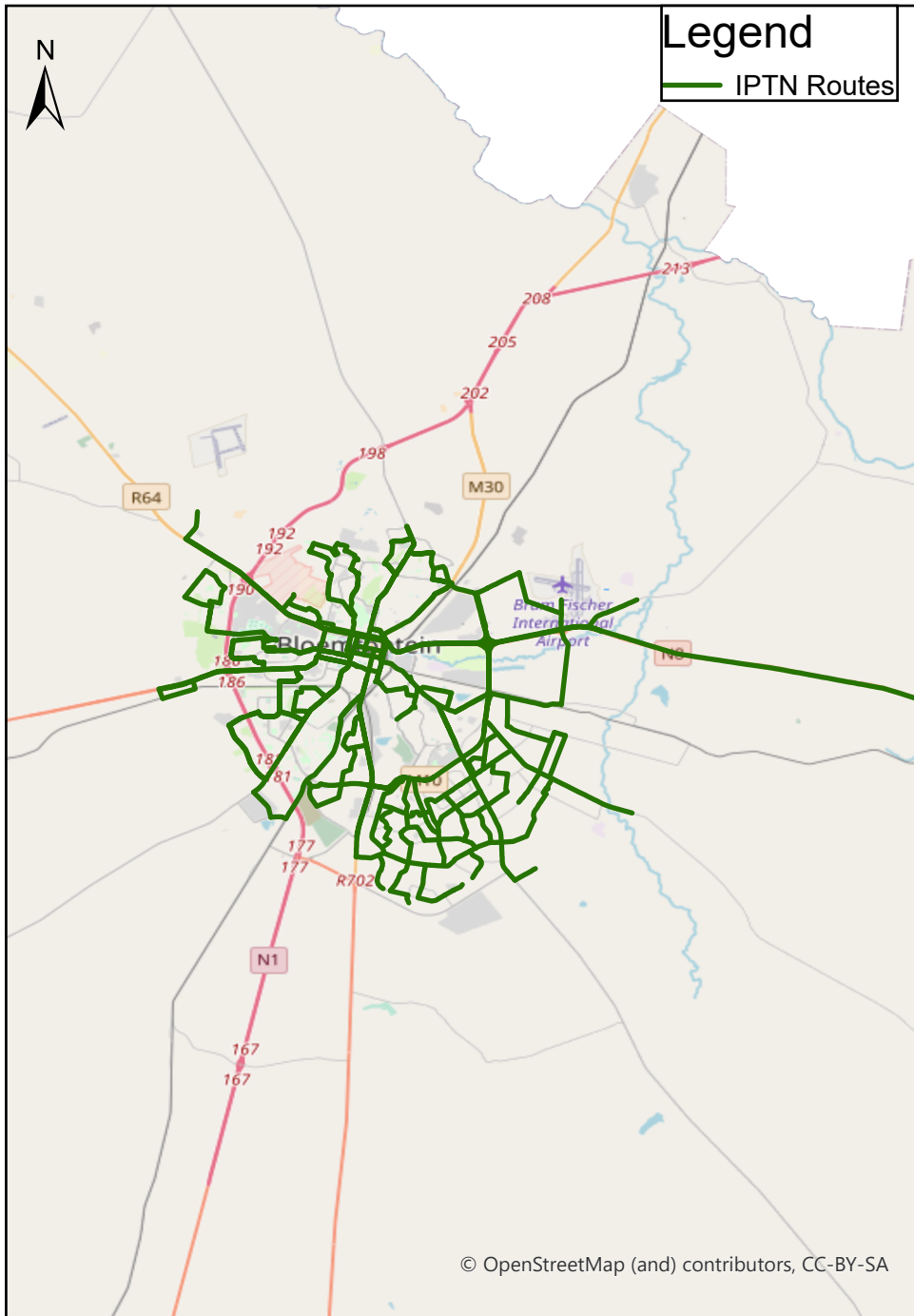


STUDY AREA: MANGAUNG METROPOLITAN MUNICIPALITY
WEPENER



Legend

 IPTN Routes



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Roads

- 1st Avenue
- 2nd Street
- 3rd Avenue
- Akademie Street
- Albrecht Street
- Alexandra Avenue
- Aliwal Street
- Andries Pretorius Street
- Arboretum Avenue
- Bankovs Boulevard
- Banting Street
- Banyane Street
- Benade Drive
- Berg Road
- Boersma Street
- Boorneef Street
- Brebner Road
- Brendar Street
- Brill Street
- Calliope Drive
- Chief Moroko Crescent
- Church Street
- Cooper Street
- Curie Avenue
- Curlewis Street
- D F Malherbe Avenue
- David Montoedi Street
- De Waal Road
- Deale Road
- Devis Street
- Dewetsdorp Road
- Dirk Opperman Street
- Ditira Street
- Dolf Van Niekerk Street
- Dr Belcher Road
- Du Bruyn Street
- Du Plessis Road
- Edeling Street
- Euufees Road
- Eric Rosendorf Drive
- Ethel Street
- Falck Street
- Ferreira Road
- Fleck Street
- Fleming Street
- Flockeman Street
- Fort Hare Road
- Fort Street
- Furstenburg Road

Roads

- G A Watermeyer Street
- Geelhout Drive
- General Dan Pienaar Drive
- Gilles Van De Wall Street
- Gladstone Road
- Gutsche Street
- Haldon Road
- Hamilton Road
- Hanger Street
- Harvey Road
- Heatherdale Road
- Hippocrates Avenue
- Jagersfontein Road
- James Dick Street
- Jochem Van Brugg Street
- Juta Street
- Kellner Street
- Kenilworth Road
- Kerk Street
- Khomo Street
- Kokerboom Avenue
- Kolbe Avenue
- Lebona Motsoeneng Street
- Leepile Street
- Lessing Avenue
- Lilyvale Street
- Louw Wepener Street
- Lucas Steyn Road
- Lyle Street
- M10 Road
- Magano Street
- Makhonofane Street
- Makoane Street
- Manaheng Street
- Maritz Street
- Markgraaff Street
- Masike Street
- Matlala Avenue
- Meadows Street
- Melville Drive
- Milner Road
- Mkuhlane Street
- Mnigisa Street
- Mokoakoa Street
- Monument Road
- Monyatsi Street
- Moshoeshoe Street
- Mothibi Street
- N P Van Wyk Louw Street

Roads

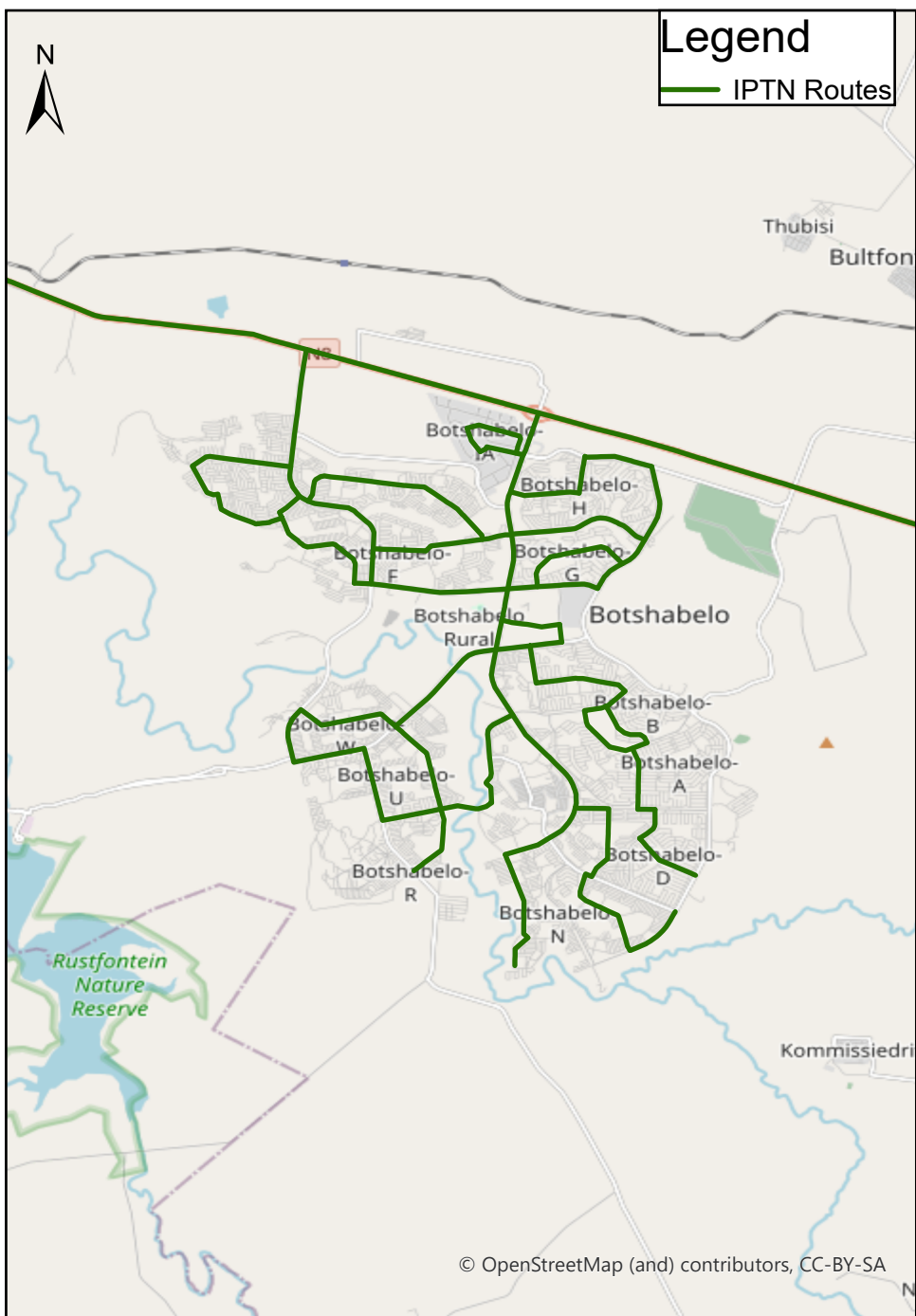
- N6 Freeway
- N8 Freeway
- Nelson Mandela Drive
- Normandie Avenue
- Ogilvie Thompson Street
- Olive Grinter Drive
- Olympus Drive
- P Ndoldlo Street
- Parfitt Avenue
- Parish Lane
- Park Road
- Pasteur Avenue
- Pellissier Drive
- Perm Street
- Poultney Street
- President Avenue
- President Boshof Street
- President Paul Kruger Avenue
- R64 Road
- R702 Road
- Rayton Road
- Rhodes Avenue
- Rose Avenue
- Rudolf Greyling Avenue
- Ryk Tulbach Street
- Saint Andrews Street
- Saint Georges Street
- Scholtz Street
- Senyane Street
- Sikonzo Street
- Skool Street
- Sonneblom Street
- Stals Road
- Stratford Street
- Taelo Molosioa Street
- Tau Street
- Thabanchu Road
- Tibbie Visser Street
- Toon Van Den Heever Street
- Totius Street
- Tsuene Street
- Victoria Road
- Volkspele Drive
- Warden Street
- Wilcocks Road
- Winkie Direko Street
- Witherow Avenue
- Wynand Mouton Avenue
- Zastron Street



MANGAUNG IPTN ROUTES BLOEMFONTEIN

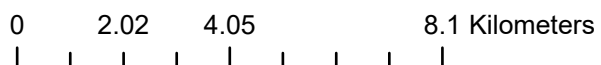


Legend
— IPTN Routes

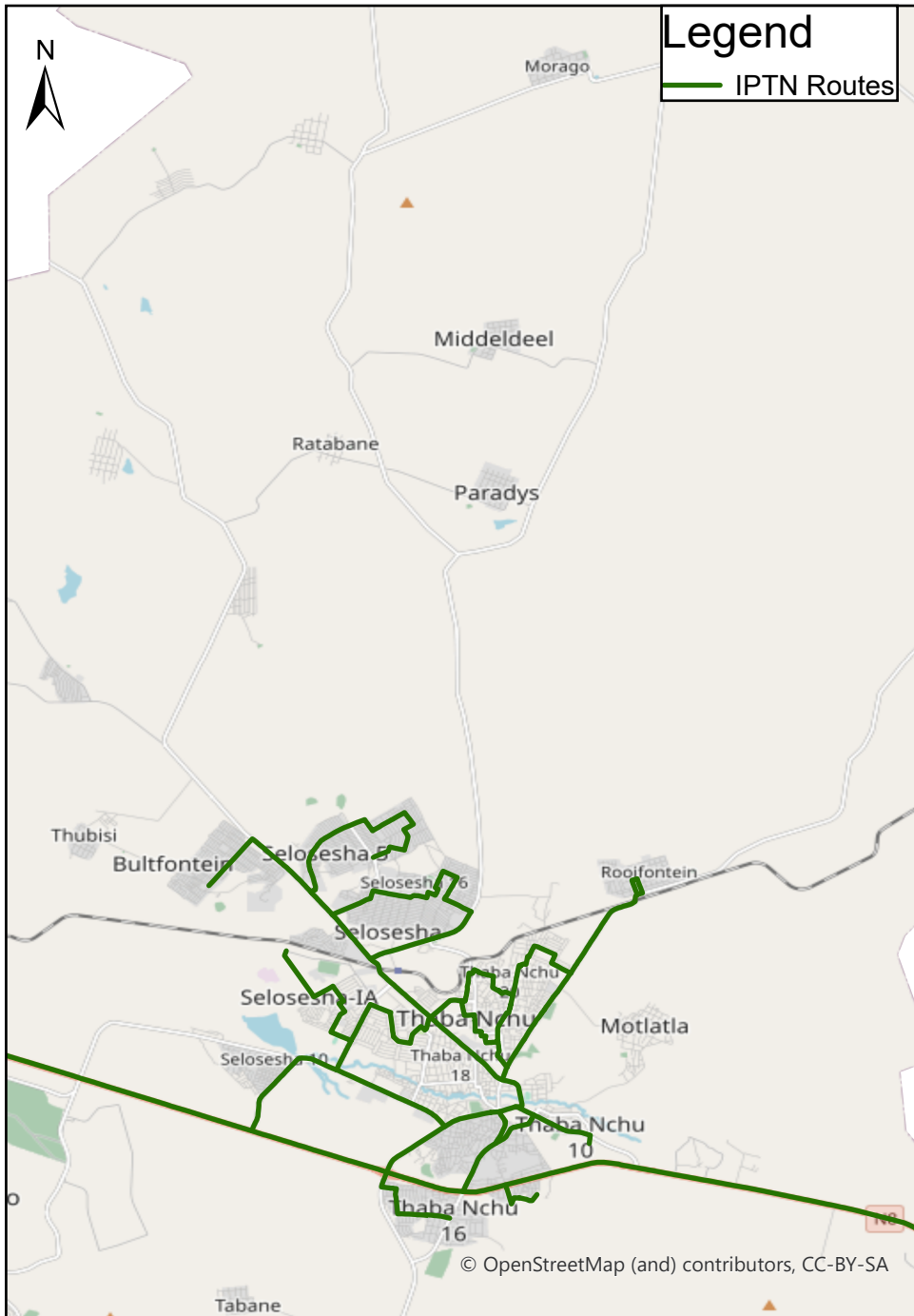


Roads

- Daddy Liphoko Road
- Duma Nokwe Road
- Jazzman Mokhothu Highway
- Lapri Phakamela Street
- Makhale Sebata Road
- Mzala Molise Road
- N8 Freeway
- Peter Mokaba Road
- Red Street
- Setumo Phakoe Road
- Simon Moletsane Senior Street
- Sipho Saliwe Street
- Thabo Mkhondwana Road
- Toloki Tshehlo Road



MANGAUNG IPTN ROUTES
BOTSHABELO

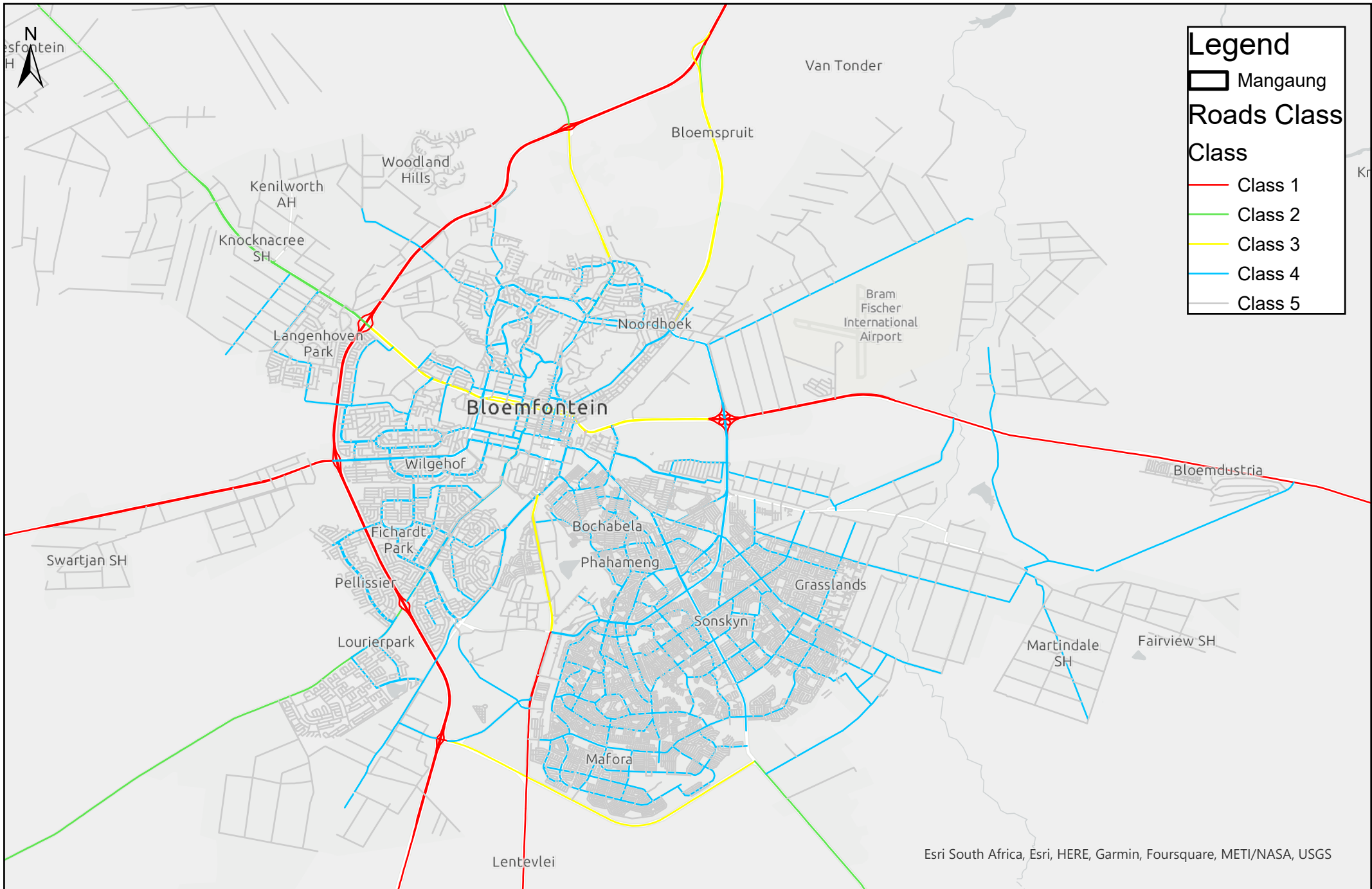


Roads


- Brand Street
- Hoog Street
- Jan Van Riebeeck Street
- Levitt Street
- Market Street
- N8 Freeway
- Slenyatso Nyareli Road,
- Station Street



MANGAUNG IPTN ROUTES
THABA NCHU








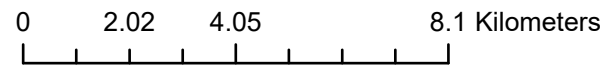
Legend

 Mangaung

Roads Class

Class

-  Class 1
-  Class 2
-  Class 3
-  Class 4
-  Class 5




MANGAUNG ROAD CLASSES

BLOEMFONTEIN

Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS








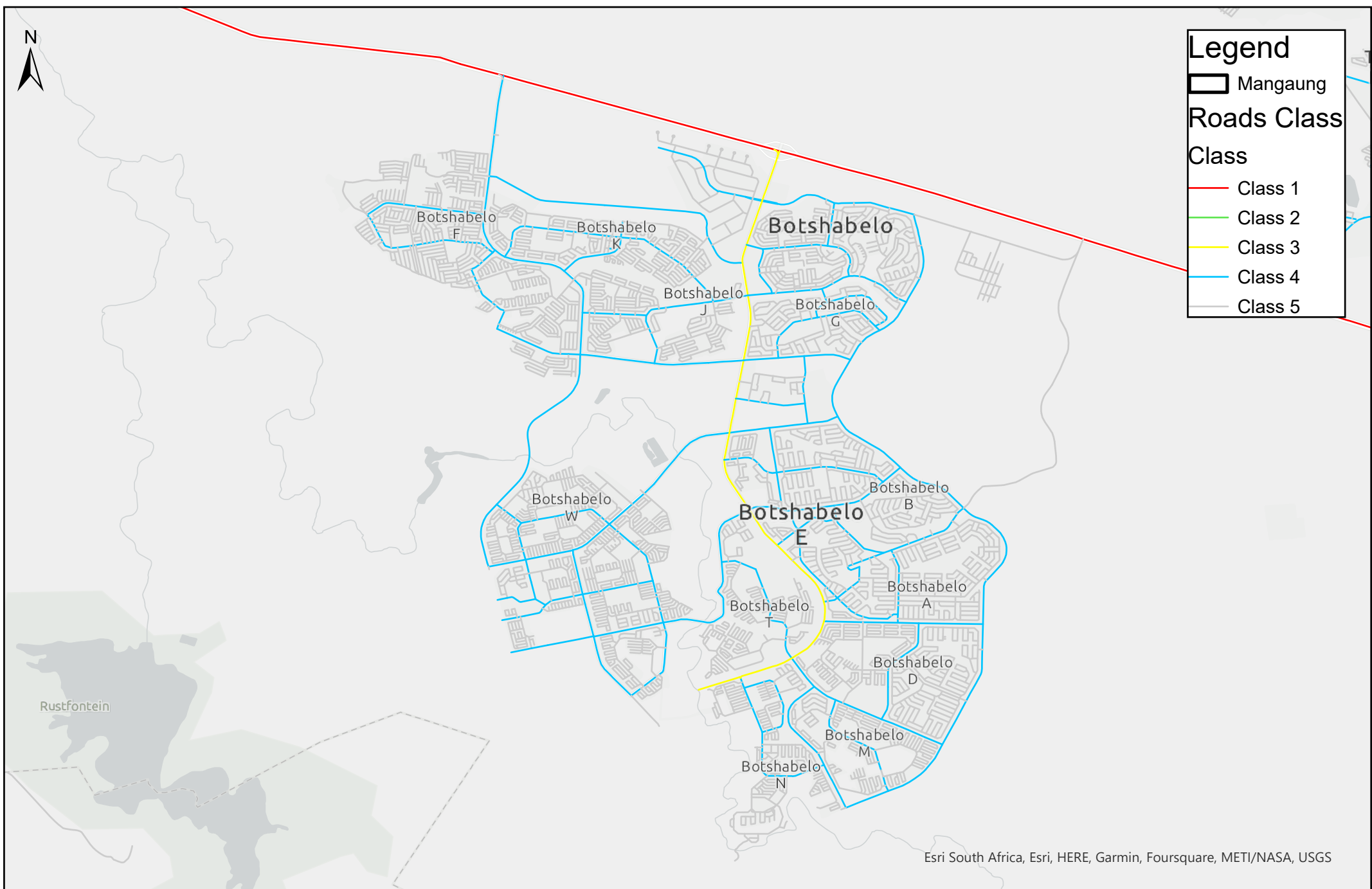
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 Mangaung

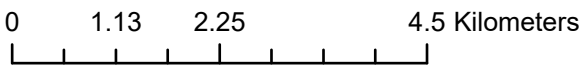
Roads Class

Class

-  Class 1
-  Class 2
-  Class 3
-  Class 4
-  Class 5

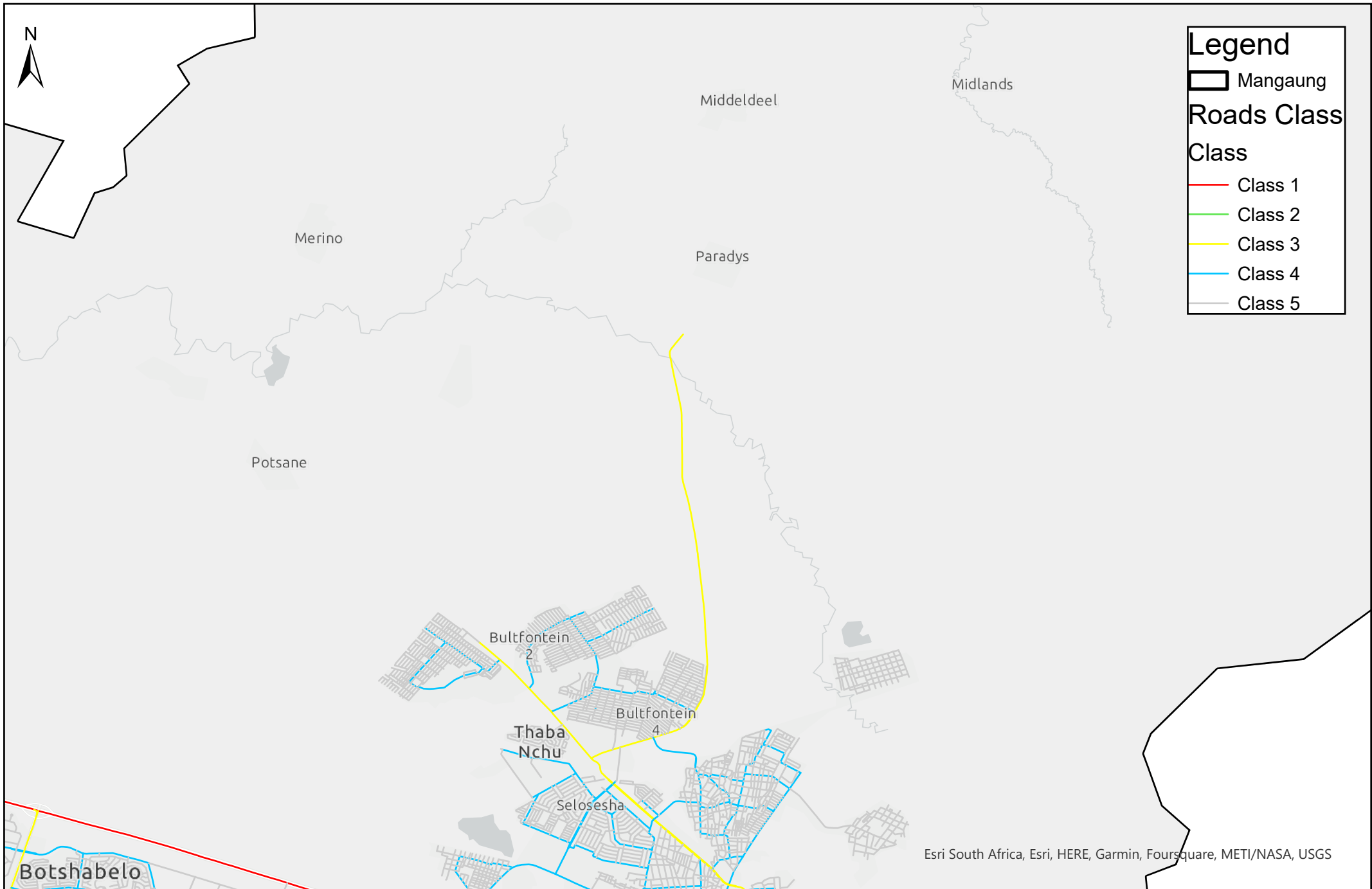


Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



MANGAUNG ROAD CLASSES

BOTSHABELO



0 1.35 2.7 5.4 Kilometers


MANGAUNG ROAD CLASSES

THABA NCHU








Nywerheidskool

Legend

 Mangaung

Roads Class

Class

-  Class 1
-  Class 2
-  Class 3
-  Class 4
-  Class 5

Dewetsdorp

Morojaneng

Oudersgift

Glen
Heights

Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

0 0.6 1.2 2.4 Kilometers




MANGAUNG ROAD CLASSES

DEWETSDORP








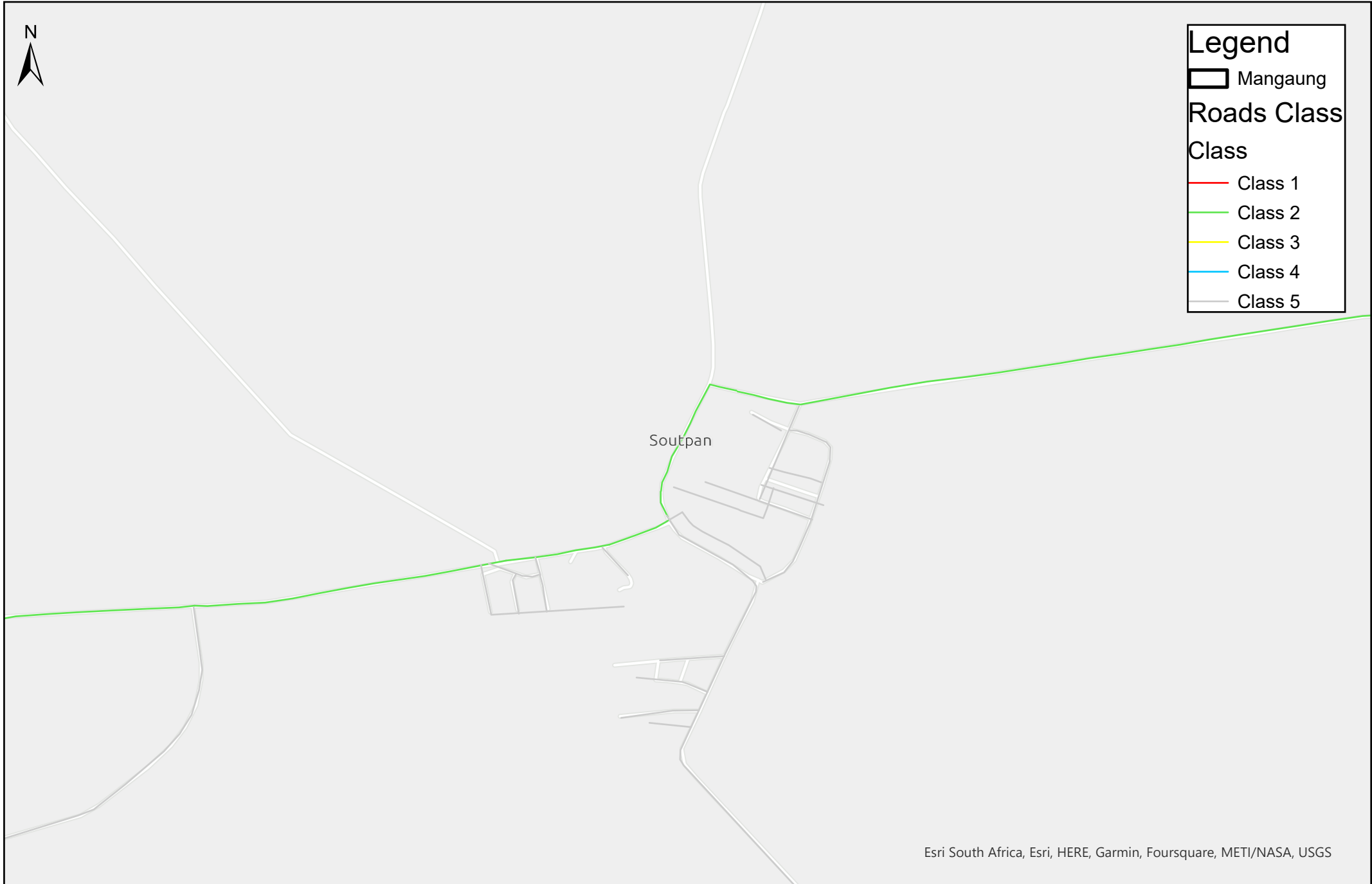
Legend

 Mangaung

Roads Class

Class

-  Class 1
-  Class 2
-  Class 3
-  Class 4
-  Class 5



Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

0 0.26 0.51 1.02 Kilometers




MANGAUNG ROAD CLASSES

SOUTPAN








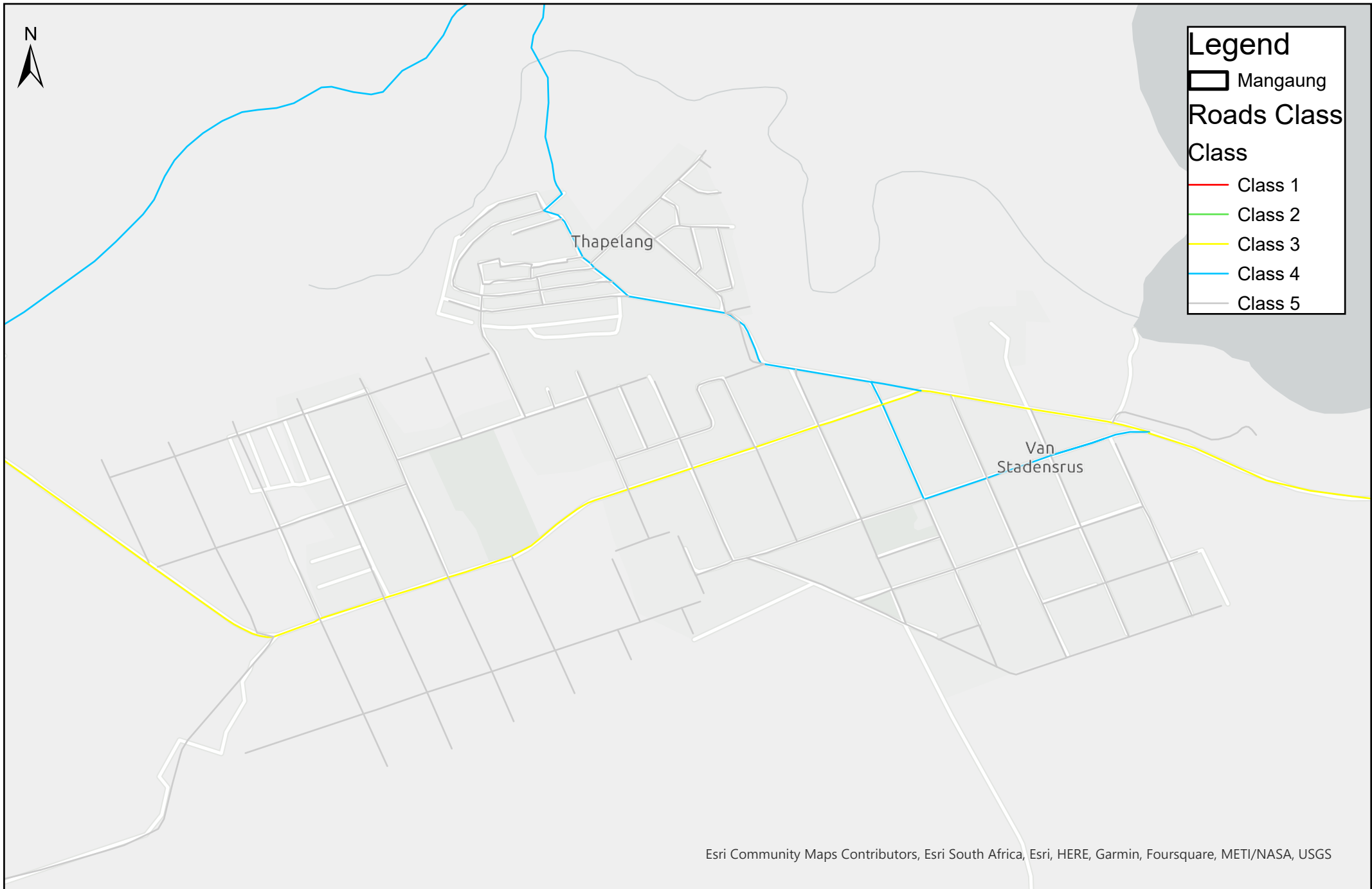
Legend

 Mangaung

Roads Class

Class

-  Class 1
-  Class 2
-  Class 3
-  Class 4
-  Class 5



Esri Community Maps Contributors, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

0 0.16 0.32 0.64 Kilometers




MANGAUNG ROAD CLASSES

VAN STADENSUS








Caledon

Legend

 Mangaung

Roads Class

Class

-  Class 1
-  Class 2
-  Class 3
-  Class 4
-  Class 5



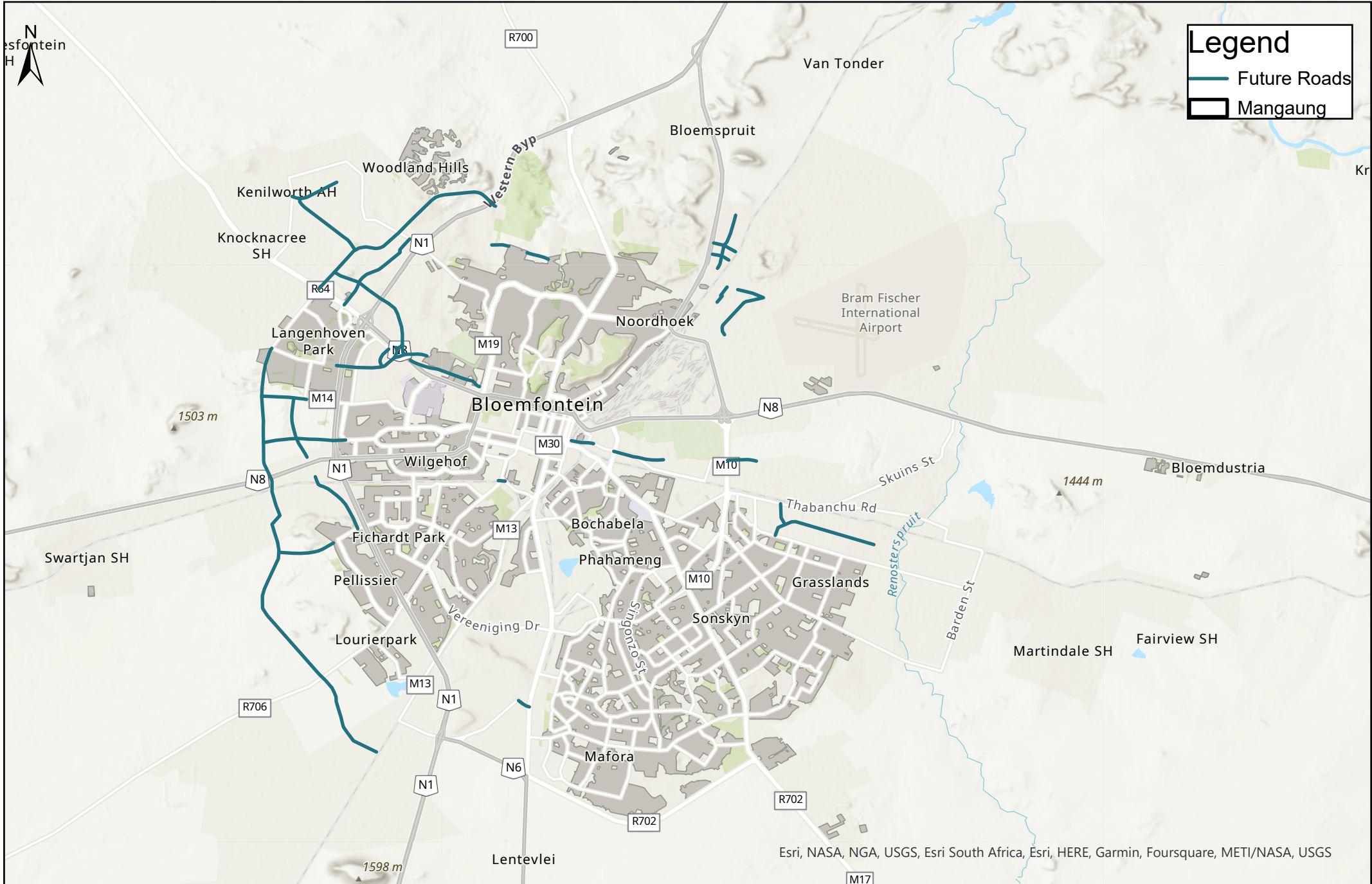
Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

0 0.35 0.69 1.39 Kilometers

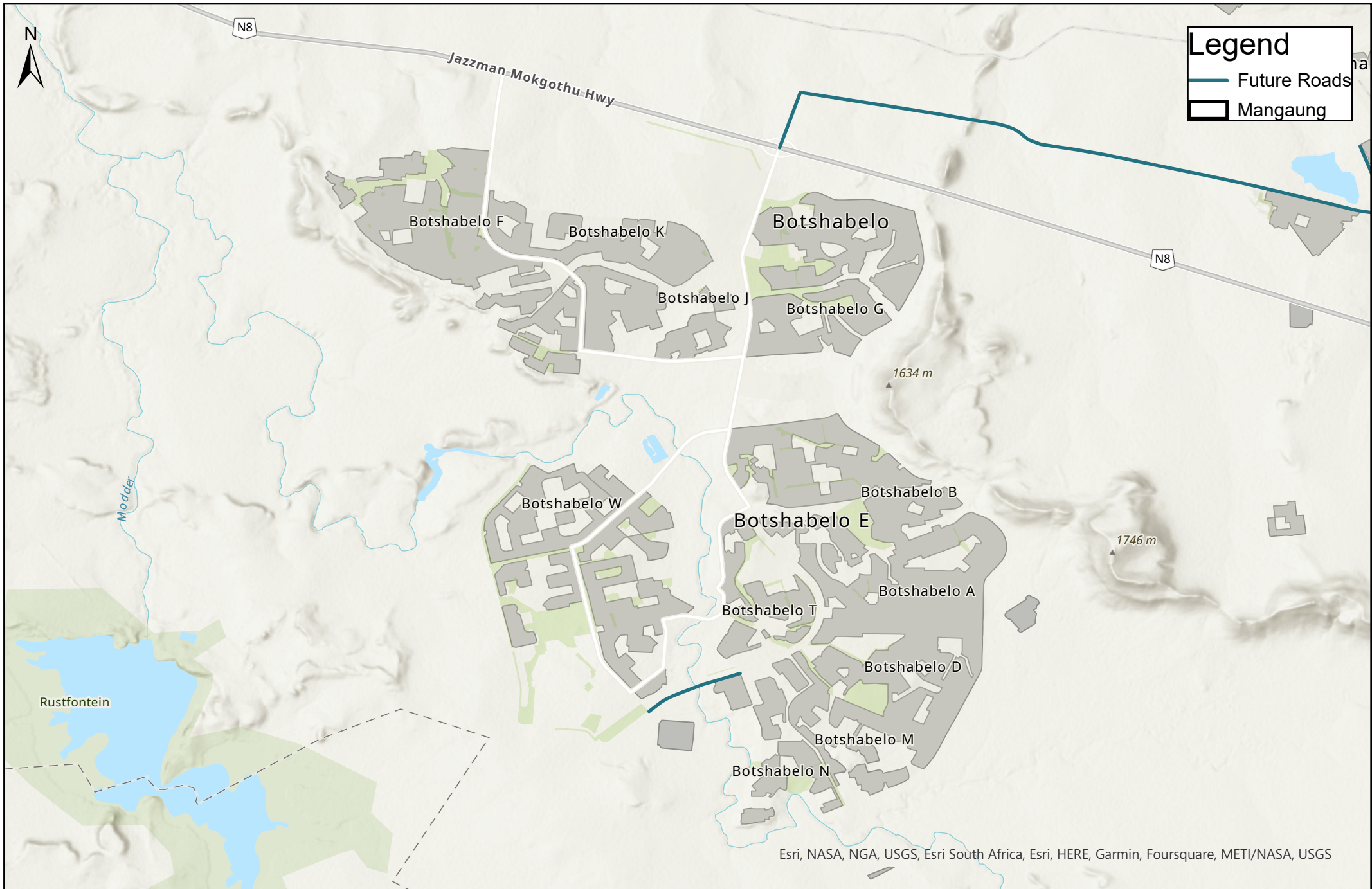


MANGAUNG ROAD CLASSES

WEPENER

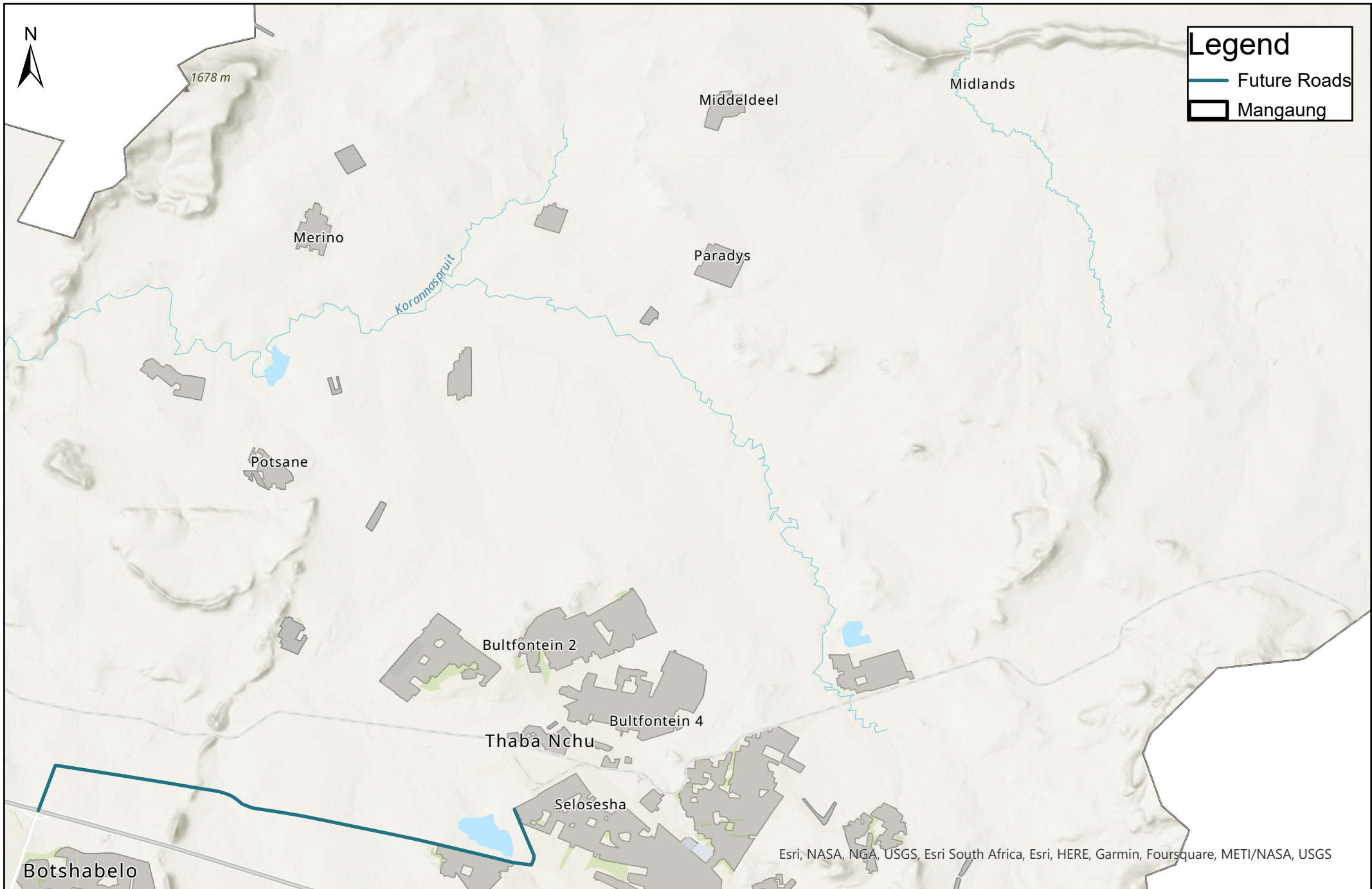


MANGAUNG FUTURE ROADS
BLOEMFONTEIN



0 1.13 2.25 4.5 Kilometers

MANGAUNG FUTURE ROADS
BOTSHABELO

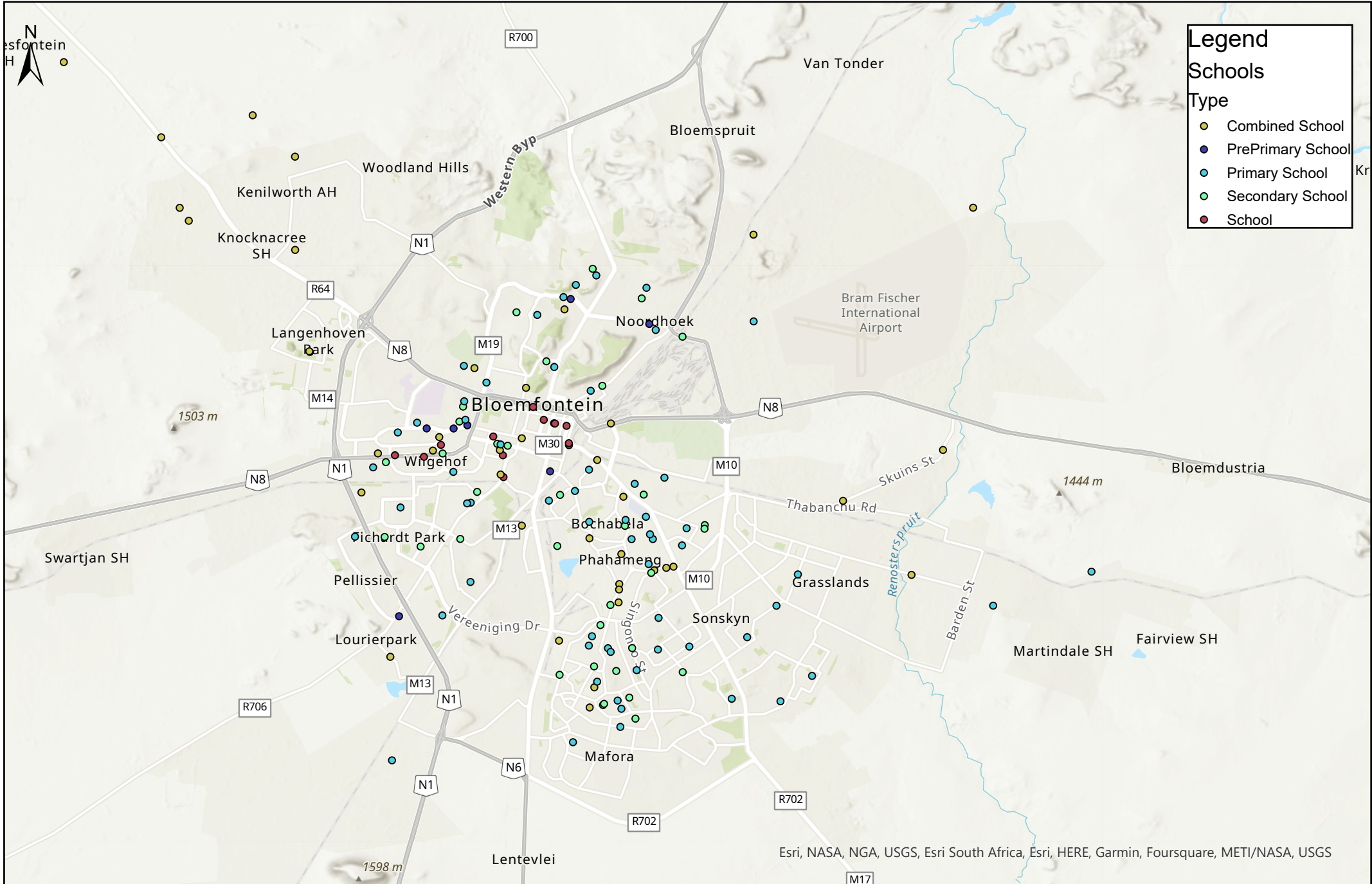


Legend

- Future Roads
- Mangaung

0 1.35 2.7 5.4 Kilometers

**MANGAUNG FUTURE ROADS
THABA NCHU**

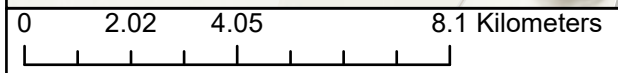


Legend

Schools

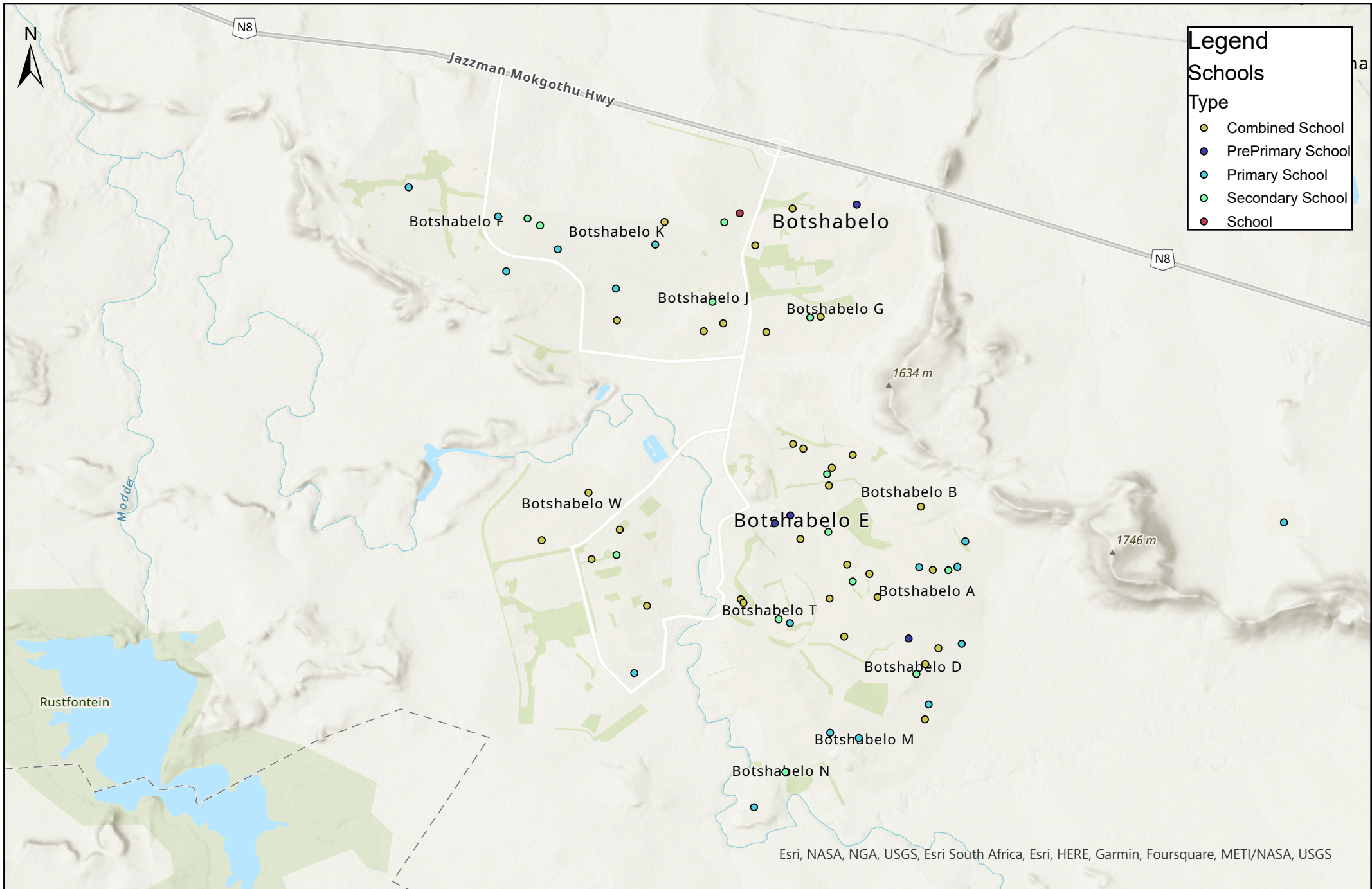
Type

- Combined School
- PrePrimary School
- Primary School
- Secondary School
- School



**SCHOOLS
BLOEMFONTEIN**

Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



Legend

Schools

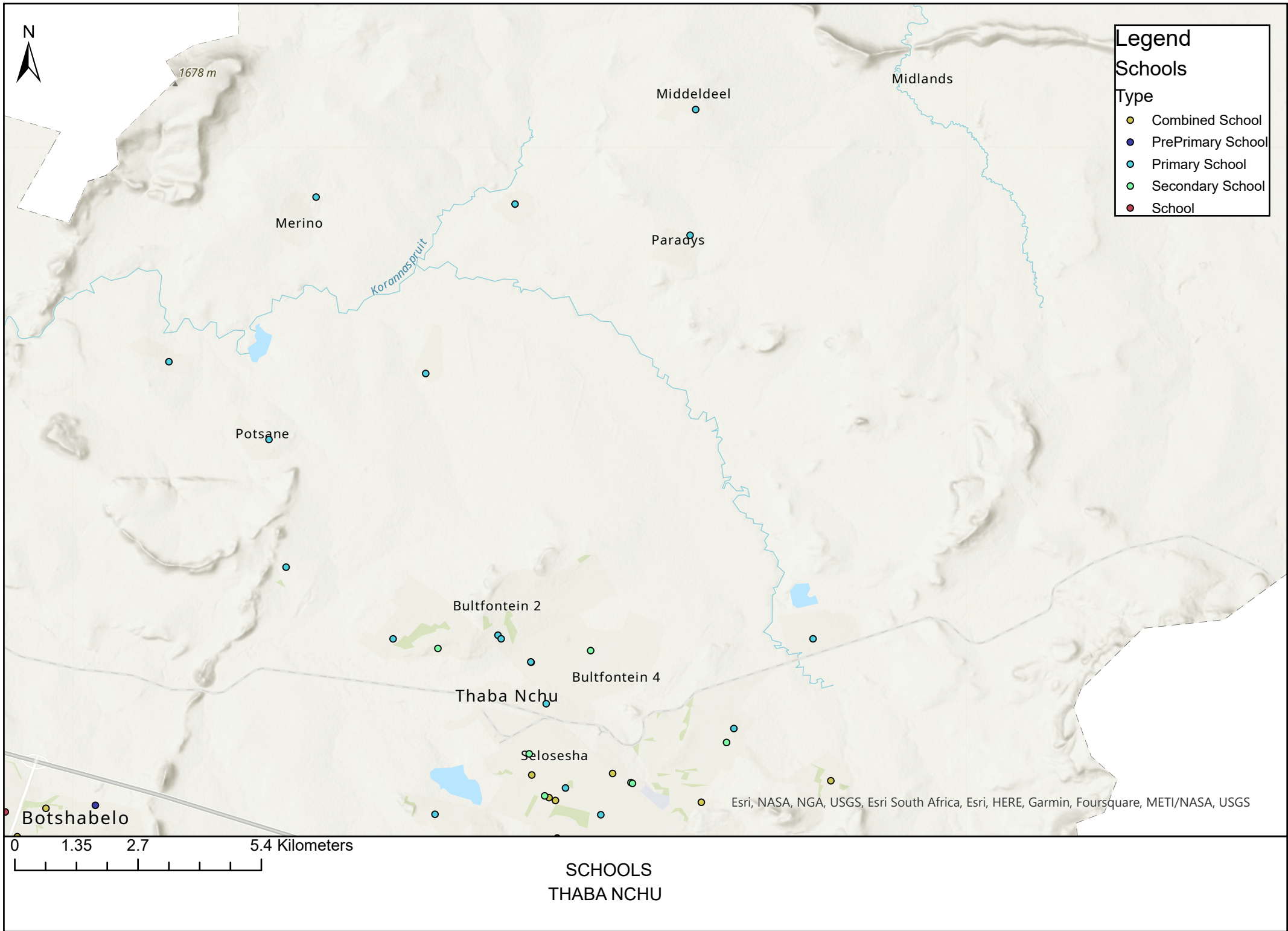
Type

- Combined School
- PrePrimary School
- Primary School
- Secondary School
- School

0 1.13 2.25 4.5 Kilometers

**SCHOOLS
BOTSHABELO**

Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



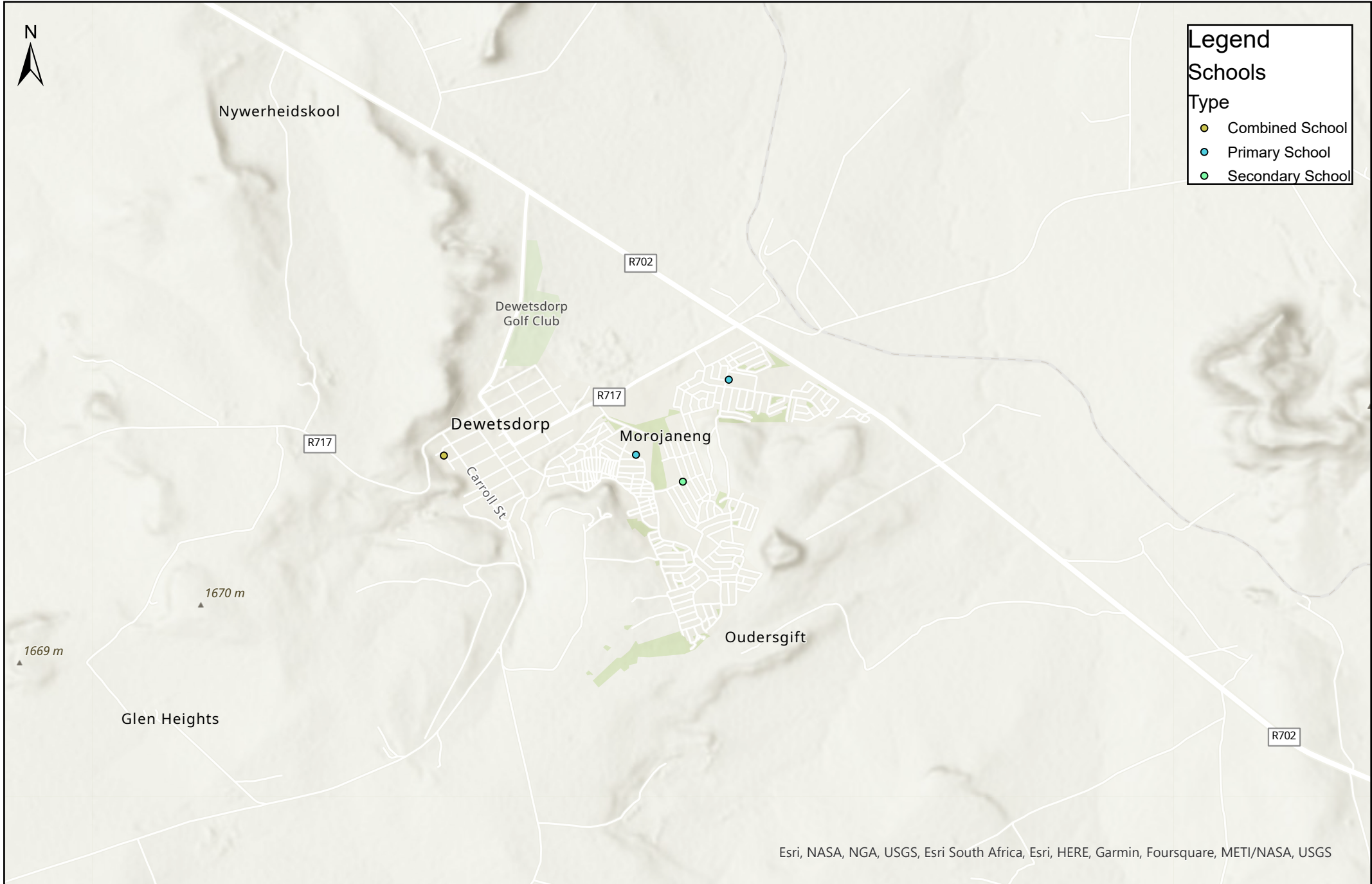


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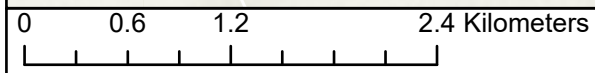
Schools

Type

- Combined School
- Primary School
- Secondary School



Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



**SCHOOLS
DEWETSDORP**



Legend

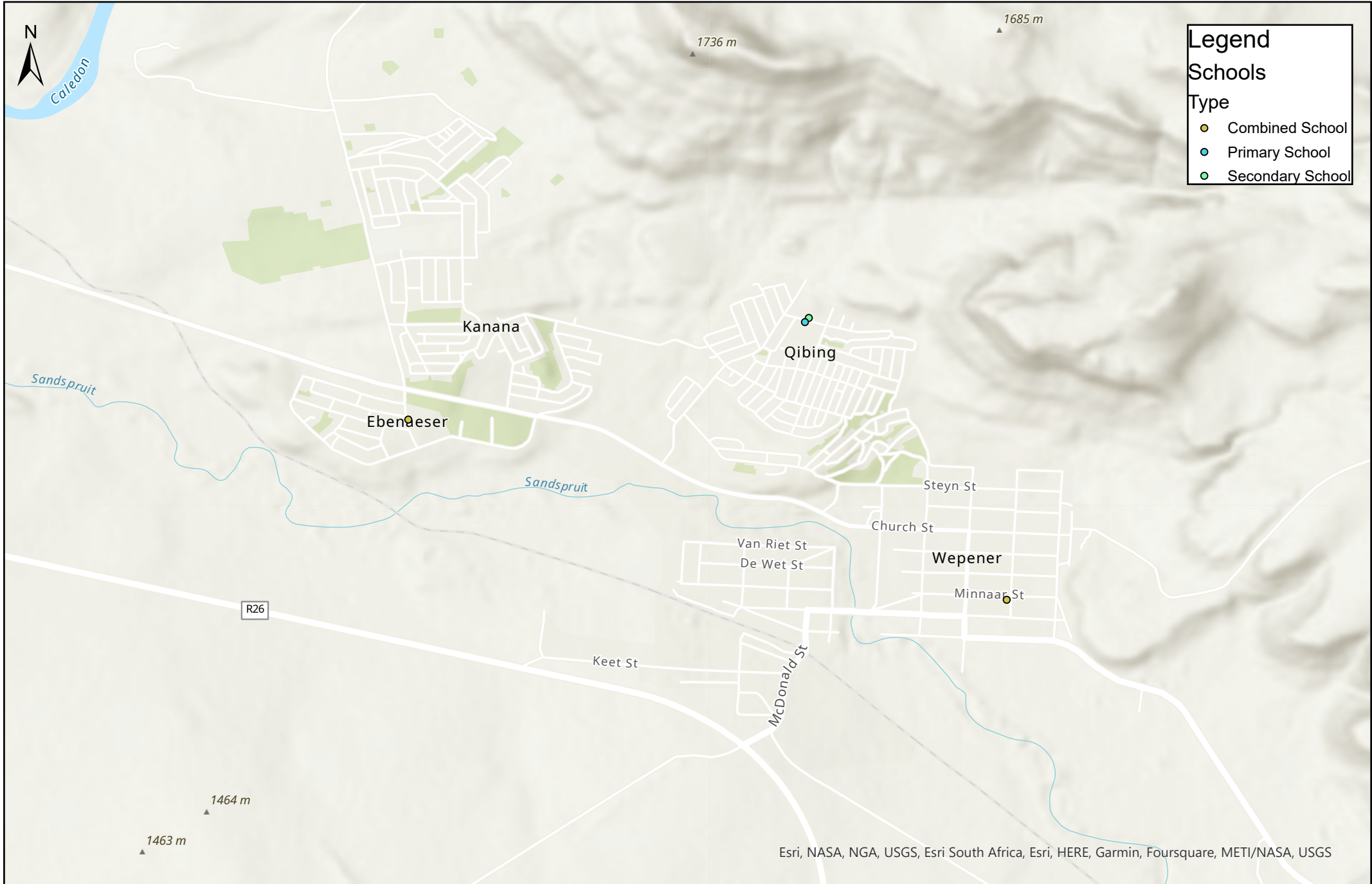
Schools

Type

- Primary School
- Secondary School



**SCHOOLS
VAN STADENSURUS**

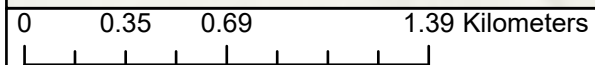


Legend

Schools

Type

- Combined School
- Primary School
- Secondary School



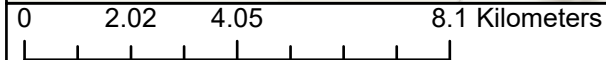
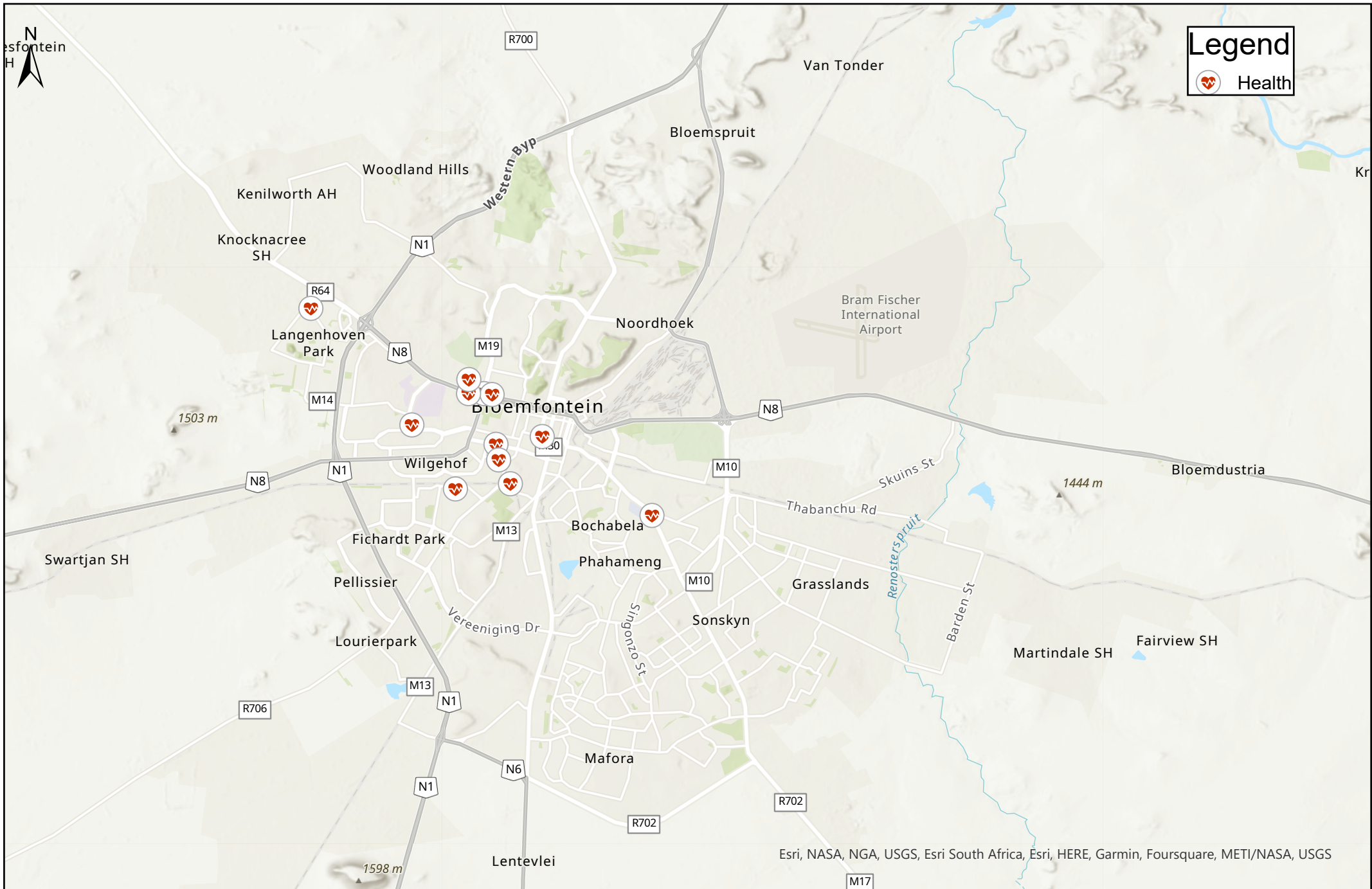
Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

**SCHOOLS
WEPENER**



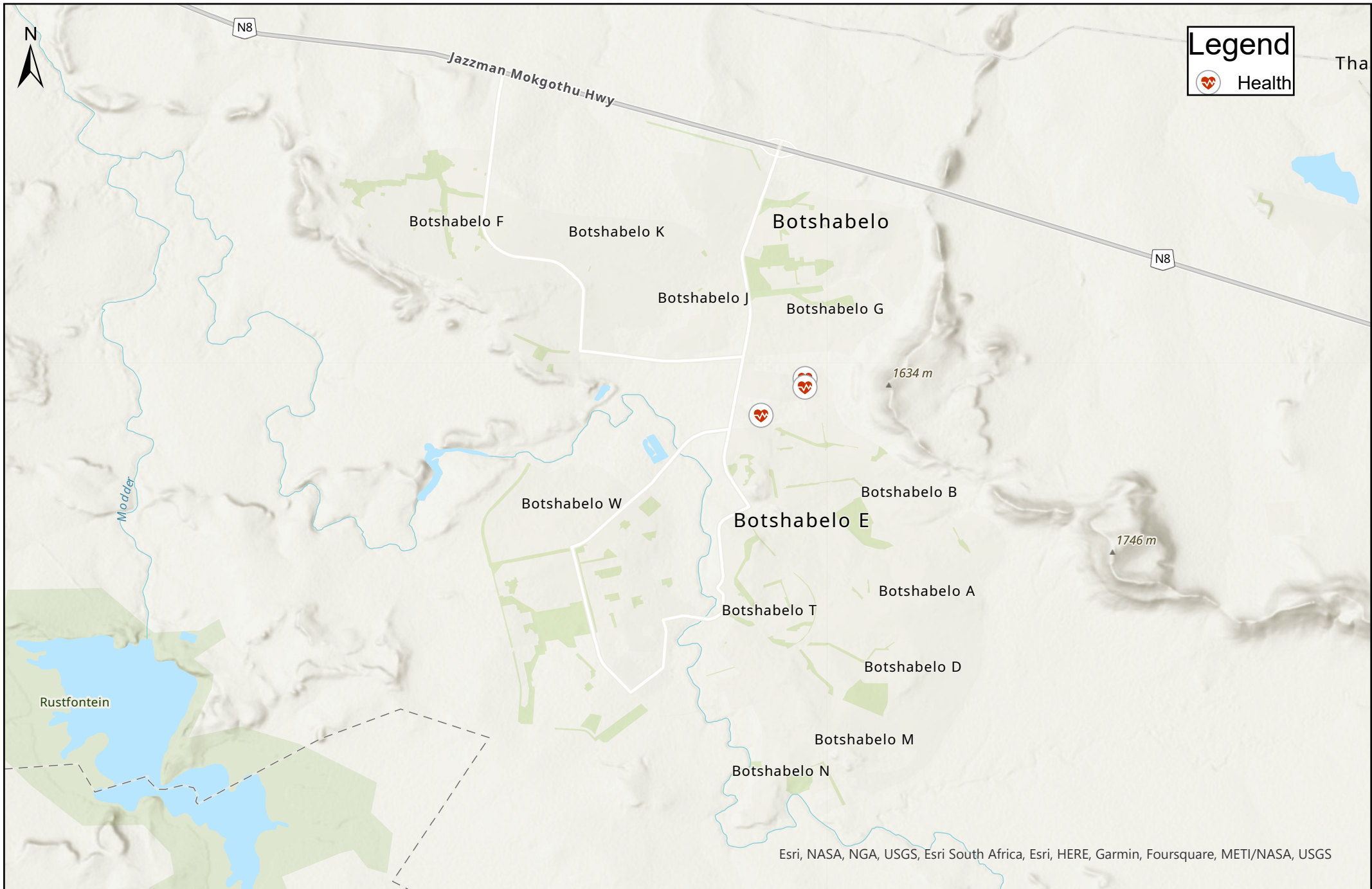
Legend

 Health



Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

**HEALTH FACILITIES
BLOEMFONTEIN**



Legend
Health

0 1.13 2.25 4.5 Kilometers

**HEALTH FACILITIES
BOTSHABELO**



Legend

 Health

1678 m

Middeldeel

Midlands

Merino

Paradys

Korannaspruit

Potsane

Bultfontein 2

Bultfontein 4

Thaba Nchu

Selosesha

Botshabelo

Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

0 1.35 2.7 5.4 Kilometers

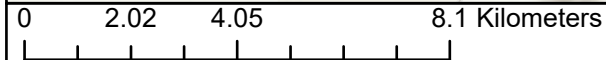
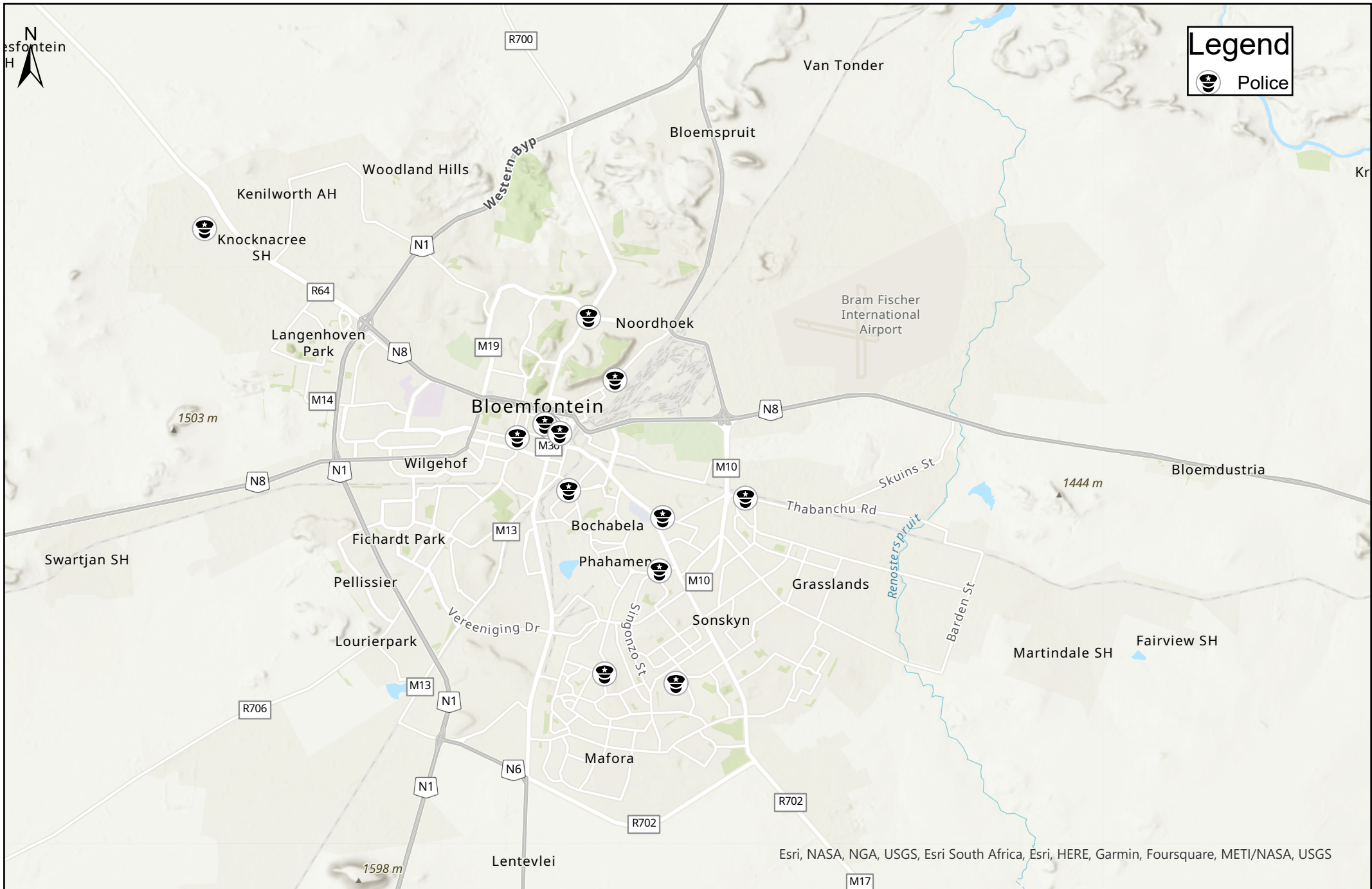
**HEALTH FACILITIES
THABA NCHU**





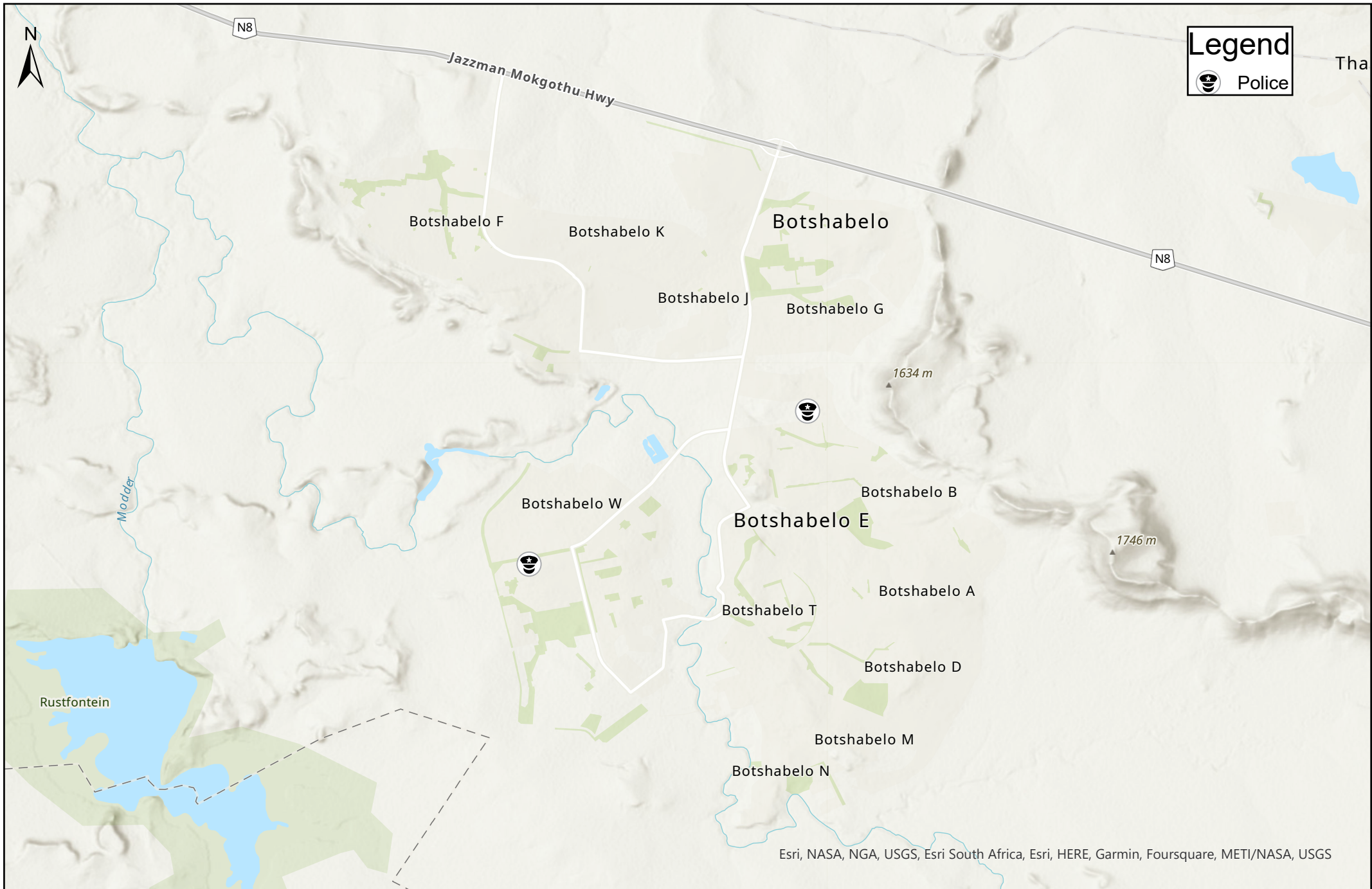
Legend

 Police




Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

**POLICE
BLOEMFONTEIN**



Legend

 Police

0 1.13 2.25 4.5 Kilometers

Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

POLICE BOTSHABELO



Legend

- Police

1678 m

Middeldeel

Midlands

Merino

Paradys

Korannaspruit

Potsane

Bultfontein 2

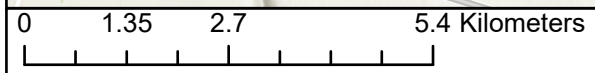
Bultfontein 4

Thaba Nchu

Selos  

Botshabelo

Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



**POLICE
THABA NCHU**



Legend

-  Police

Nywerheidskool

R702

Dewetsdorp
Golf Club

R717

Dewetsdorp

Morojaneng



Carroll St

Oudersgift

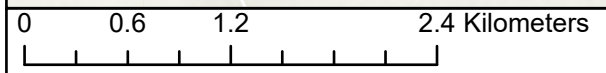
1670 m

1669 m

Glen Heights

R702

Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



**POLICE
DEWETSDORP**



Legend

 Police

1298 m

Soutpan

R703


S235

S447



Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS, Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community

0 0.26 0.51 1.02 Kilometers



**POLICE
SOUTPAN**



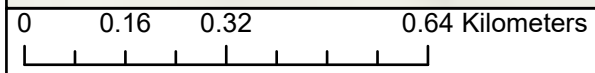
Legend

 Police

Van
Standensrus
Dorps



Sources: Esri, Airbus DS, USGS, NGA, NASA, CGIAR, N Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap and the GIS user community, Esri Community Maps Contributors, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS



**POLICE
VAN STANDENSUS**



Caledon

Legend



Police

1736 m

1685 m

Kanana

Qibing

Ebenaeser

Sandspruit

Steyn St

Church St

Wepener

Minnaar St

Van Riet St

De Wet St

Keet St

McDonald St

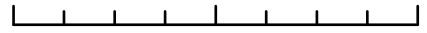
R26

1464 m

1463 m

Esri, NASA, NGA, USGS, Esri South Africa, Esri, HERE, Garmin, Foursquare, METI/NASA, USGS

0 0.35 0.69 1.39 Kilometers



POLICE
WEPENER