GEORGE
THE CITY FOR ALL REASONS

GEORGE MUNICIPALITY

COMPREHENSIVE INTEGRATED TRANSPORT PLAN

2023-2028

FINAL

AUGUST 2024

GEORGE MUNICIPALITY

COMPREHENSIVE INTEGRATED TRANSPORT PLAN (CITP)

2023 - 2028

Prepared in terms of the

National Land Transport Act (No 5 of 2009)

(National Land Transport Strategic Framework (2023 - 2028) - Updated in March 2023)

National Land Transport Amendment Act (Updated June 2024)

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ABBREVIATIONS

AAMF	-	Accessibility and Mobility Framework
ACSA	-	Airports Company of South Africa
AFC	-	Automated Fare Collection
AMP	-	Arterial Management Plans
ANPR	-	Automatic Number Plate Recognition
ATMS	-	Advanced Traffic Management System
BFI	-	Budget Facility for Infrastructure
CAPEX	-	Capital Expenditure
CBD	-	Central Business District
CBPWG	-	Community Based Public Works Grant
CBRTA	-	Cross Border Road Transport Agency
CCT	-	City of Cape Town
CCTV	-	Close Circuit Television
CEF	-	Capital Expenditure Framework
CES	-	Civil Engineering Services
CITP	-	Comprehensive Integrated Transport Plan
CODETA	-	Cape Organisation for the Democratic Taxi Association
COVID	-	Coronavirus Disease 2019
CP	-	Cumulative Percentage
CPTR	-	Comprehensive Public Transport Record
CSIR	-	Council for Scientific and Industrial Research
CTIA	-	Cape Town International Airport
CTO	-	Comprehensive Traffic Observation
DB	-	Database
DBE	-	Department of Basic Education
DDM	-	District Development Model
DEA	-	Department of Environmental Affairs
DHL	-	Dalsey, Hillblom and Lynn
DITP	-	District Integrated Transport Plan
DM	-	District Municipality
DOH	-	Department of Health
DORA	-	Division of Revenue Act
DRM	-	Disaster Risk Management
DRMC	-	Disaster Risk Management Centre
DRR	-	Disaster Risk Reduction
DSD	-	Department of Social Development
DTPW	-	Department of Transport and Public Works
DoT	-	Department of Transport
EMV	-	Europay, MasterCard and Visa
GCITP	-	George Comprehensive Integrated Transport Plan

GDP	-	Gross Domestic Product
GFB	-	General Freight Business
GHG	-	Greenhouse Gas
GIPTN	-	George Integrated Public Transport Network
GIS	-	Geographic Information System
GIZSB	-	Zoning Scheme By Law 2023
GLM	-	George Local Municipality
GM	-	George Municipality
GMSDF	-	Spatial Development Framework 2023 - 2027
GMTE	-	George Municipal Transport Entity
GPS	-	Global Positioning System
GRDM	-	Garden Route District Municipality
GTH	-	George Transport Hub
HEB	-	Home to Education based
HGV	-	Heavy Goods Vehicle
HI	-	High Income
HR	-	Human Resources
HWB	-	Home to Work based
IDP	-	Integrated Development Plan
IGRFA	-	Intergovernmental Relations Framework Act
IPTN	-	Integrated Public Transport Network
IT	-	Information Technology

ITP	-	Integrated Transport Plan
ITS	-	Intelligent Transportation Systems
IUDF	-	Integrated Urban Development Framework
IVT	-	In Vehicle Technology
IZS	-	Integrated Zoning Scheme
IoT	-	Internet of Things
KLM	-	Kannaland Local Municipality
KPA	-	Key Performance Areas
KPI	-	Key Performance Indicator
LI	-	Low Income
LM	-	Local Municipality
LOS	-	Level of Service
LSDF	-	Local Spatial Development Framework
LT	-	Learner Transport
LTFP	-	Long Term Financial Plan
LTS	-	Learner Transport Schemes
MBT	-	Minibus Taxi
MEC	-	Member of Executive Council
MFMA	-	Municipal Finance Management Act
MIG	-	Municipal Infrastructure Grant
MRE	-	Municipal Regulating Entity
MSA	-	Municipal Systems Act 2000

MSDF	-	Municipal Spatial Development Framework
MTE	-	Municipal Transport Entity
MTEF	-	Medium Term Expenditure Framework
MTREF	-	Medium Term Revenue and Expenditure Framework
MTSES	-	Macro-, Transport- and Socio-Economic Study
NATMAP	-	National Transport Master Plan
NDP	-	National Development Plan
NDoT	-	National Department of Transport
NEMA	-	National Environmental Management Act
NHTS	-	National Household Travel Survey
NLTA	-	National Land Transport Act
NLTS	-	National Land Transport Strategy
NLTSF	-	National Land Transport Strategic Framework
NLTTA	-	National Land Transport Transition Act
NMT	-	Non-Motorised Transport
NMU	-	Nelson Mandela University
NRSS	-	National Road Safety Strategy
NSDF	-	National Spatial Development Framework
NTSS	-	National Tourism Sector Strategy
OD	-	Origin and Destination
OL	-	Operating licence
OLAS	-	Operating License Administration System

OLP	-	Operating Licence Plan
OLS	-	Operating Licence Strategies
PC4IR	-	Presidential Commission on the Fourth Industrial Revolution
PH	-	Peak Hour
PLTF	-	Provincial Land Transport Framework
PMS	-	Pavement Management System
POS	-	Point of Sale
PP	-	Peak Period
PPTIF	-	Provincial Public Transport Institutional Framework
PRASA	-	Passenger Rail Agency of South Africa
PRE	-	Provincial Regulatory Entity
PT	-	Public Transport
PTIC	-	Public Transport Integration Committee
PTNG	-	Public Transport Network Grant
PTP	-	Public Transport Plan
PTZ	-	Pan-tilt-zoom
PrDP	-	Professional Driving Permit
PrT	-	Private Transport
PuT	-	Public Transport
RFP	-	Request for Proposals
RIMS	-	Road Incident Management System

RMP	-	Roads Master Plan
RP	-	Rationalisation Plan
RSA	-	Republic of South Africa
RTMC	-	Road Traffic Management Corporation
SANRAL	-	South African National Roads Agency SOC Ltd
SANSBOC	-	South African Small Bus Operators Council
SAPS	-	South African Police Service
SARCC	-	Lobby
SCCITP	-	Smart City Comprehensive Integrated Transport Plan
SDF	-	Spatial Development Framework
SNP	-	Special Needs Passengers
SOP	-	Standard Operating Procedure
SPLUMA	-	Planning and Land Use Management Act
SWOT	-	Strengths, Weaknesses, Opportunities and Threats
SiTG	-	Skin in the Game
TA	-	Transport Authority
TDM	-	Transport Demand Model
TDM	-	Travel Demand Management
TE	-	Transport Entity
TFR	-	Transnet Freight Rail
TIA	-	Transport Impact Assessment

TIED	-	Towards Inclusive Economic Development
TM	-	Transport Model
TMC	-	Transport Management Centre
TMP	-	Traffic Management Plan
TMS	-	Transport Model Strategy
TOD	-	Transit-Oriented Development
TPA	-	Transport Planning Authority
TR	-	Transport Register
TRH	-	Technical Recommendations for Highways
UA	-	Universal Accessibility
UK	-	United Kingdom
UN	-	United Nations
UNDA	-	United Nations Decade of Action for Road Safety 2011-2020
UTC	-	Urban Traffic Control
UTG	-	Urban Transport Guideline
V2X	-	Vehicle to Everything
VOC	-	Vehicle Operating Costs
VRN	-	Vehicle Registration Number
VRU	-	Vulnerable Road Users
WC	-	Western Cape
WCDTPW	-	Western Cape Department of Transport and Public Works

WCED	-	Western Cape Education Department
WCG	-	Western Cape Government

WHO	-	World Health Organisation

LIST OF FIGURES

Note: During the development of the George Municipality Comprehensive Integrated Transport Plan (CITP), the transport model was updated using the latest version of PTV Visum software (2025). As a result, the output figures generated by the model reflect this more recent update.

LIST OF TABLES

EXECUTIVE SUMMARY

The Comprehensive Integrated Transport Plan (CITP) 2023-2028 for George Municipality is a forward-thinking document designed to transform the municipality's transportation system into one that is integrated, accessible, safe, and sustainable. This plan is crucial for guiding the municipality towards its long-term goal of establishing an efficient, well-managed transport network that meets the diverse needs of not only its residents but also visitors, tourists, and transient traffic.

The CITP is crafted with careful consideration to appeal to a broad audience, including political leaders, technical experts, citizens, business stakeholders, and laypersons. Recognising the introduction of new concepts, technologies, and ideas, the CITP provides the necessary context and clarification to ensure that all readers, regardless of their background, can understand and engage with the material. This approach reflects a transformational effort to embrace advancements in technology and more sustainable planning and implementation practices.

Beyond merely offering information and strategic direction, the CITP also serves as a tool for upskilling and knowledge transfer, helping to build capacity and understanding across various sectors. By doing so, the CITP not only paves the way for a more sustainable transportation future but also empowers all stakeholders to contribute effectively to the realisation of George Municipality's transportation vision.

Vision and Objectives

The CITP's overarching vision is to deliver a transport system that is:

- **Integrated**: Combining various transport modes into a cohesive, seamless system.
- **Accessible**: Ensuring all communities, particularly the underserved, have easy access to transport services.
- **Safe and Sustainable**: Promoting environmentally friendly practices while ensuring the safety of all users.
- **Affordable and Efficient**: Ensuring the transport system is economically viable and provides value for money.

These objectives align with national and provincial policies, ensuring that George Municipality contributes to broader transport and development goals while addressing local needs.

Key Components of the CITP

- **Transport Register**: A comprehensive record and analysis of the current state of the transport infrastructure and services, which forms the basis for future planning.
- **Operating Licence Plan**: A separate stand-alone document was created that addresses the issues surrounding Operating Licences as well as providing guidance around these.
- **Public Transport Plan**: This section focuses on improving the existing public transport system, particularly the George Integrated Public Transport Network (GIPTN), by rationalising and restructuring services to better meet demand.
- **Transport Infrastructure Strategy**: Detailed proposals for the development and maintenance of transport infrastructure, ensuring that it can support the municipality's growth and evolving transport needs.


- **Travel Demand Management (TDM) Strategy**: Initiatives aimed at managing congestion, reducing reliance on private cars, and promoting public transport and non-motorised transport options.
- **Freight Transport Strategy**: A plan to streamline the movement of goods within the municipality, integrating various transport modes to support economic activity.
- **Non-Motorised Transport (NMT) Plan**: Emphasis on expanding and improving infrastructure for cyclists and pedestrians, enhancing safety, and encouraging the use of these modes.
- **Funding Strategy**: A robust financial strategy to ensure the successful implementation of the transport plan, including budgeting and identifying funding sources.

Stakeholder Engagement: Continuous consultation with key stakeholders, ensuring that the plan remains relevant and reflective of the community's needs.

Strategic Initiatives

The CITP outlines several strategic initiatives to achieve its goals, including the development of a dynamic Transport Model to guide long-term planning, the enhancement of public transport services, and the implementation of smart technologies to improve transport management.

The CITP 2023-2028 is a critical tool for George Municipality, enabling it to plan and implement a transport system that not only meets the current needs of its residents, visitors and tourist, but also supports future growth. By focusing on integration, accessibility, safety, and sustainability, the CITP ensures that George's transport network will continue to serve its community effectively, contributing to the overall well-being and economic prosperity of the region.

1. Introduction - Transport Vision & Objectives

The introduction outlines the overarching context of the CITP, setting the stage for a comprehensive approach to transport planning in George Municipality. The plan aligns with the National Land Transport Act (No 5 of 2009) and is designed to ensure that George's transport network is not only efficient but also supports the broader goals of economic development and environmental sustainability. The CITP draws on national, provincial, and local policies to guide the development of an integrated transport system that is both future-proof and responsive to current needs.

The geographical focus of the CITP is the entire jurisdiction of George Municipality, which includes urban centres like George as well as more rural areas. The municipality's strategic location along the N2 highway is a key consideration in the transport plan, as it facilitates the mobility of people and goods across significant distances, enhancing regional connectivity. The plan also acknowledges the rapid population growth in George, which underscores the need for a robust and scalable transport infrastructure.

The transport vision articulated in the CITP aims to provide an integrated, accessible, safe, affordable, and sustainable transport system. This vision is supported by specific objectives, such as improving public transport services, enhancing infrastructure, and promoting non-motorised transport options. The CITP is also designed to be a dynamic document, with regular updates to ensure



it remains relevant in the face of changing conditions and emerging challenges.

2. Transport Register

The Transport Register is a critical component of the Comprehensive Integrated Transport Plan (CITP), offering a comprehensive inventory and analysis of the existing transport infrastructure and services within George Municipality. This register serves as a vital baseline, enabling the identification of current challenges and opportunities, and guiding the strategic planning process. It encompasses data on road conditions, public transport usage, traffic volumes, and other essential metrics that are crucial for informed and effective transport planning.

The analysis within the Transport Register highlights several critical issues facing George's transport network. For instance, it identifies congestion hotspots, areas with poor road conditions, and gaps in public transport coverage. These findings are crucial for prioritising interventions and ensuring that resources are allocated efficiently to address the most pressing needs.

Furthermore, the Transport Register plays a pivotal role in integrating land use and transport planning. By aligning transport data with the Spatial Development Framework (SDF), the CITP ensures that transport infrastructure development supports broader urban planning goals, such as reducing travel times, enhancing connectivity, and promoting sustainable land use patterns.

3. Spatial Development Framework

The Spatial Development Framework (SDF) is integral to the CITP, as it provides the spatial context within which transport planning occurs. The SDF outlines the future growth and development patterns of George Municipality, guiding decisions on where and how transport infrastructure should be developed. It ensures that transport planning is not done in isolation but is closely linked to broader land use planning objectives.

The CITP leverages the SDF to identify key areas where transport infrastructure needs to be enhanced or expanded to support anticipated growth. For example, as the population of George continues to increase, there is a need for new transport links in emerging residential areas, as well as upgrades to existing infrastructure in established urban centres. The SDF helps prioritise these investments, ensuring that they align with the municipality's long-term development goals.

Additionally, the SDF provides a framework for integrating various modes of transport, including public transport, non-motorised transport, and freight. By coordinating these modes within a cohesive spatial strategy, the CITP aims to create a transport network that supports economic development, enhances quality of life, and promotes environmental sustainability.

4. Transport Needs Assessment

The Transport Needs Assessment is a critical component of the CITP, as it identifies the specific transport challenges and opportunities within George Municipality. This assessment is based on a comprehensive analysis of current transport conditions, including



traffic patterns, public transport usage, and infrastructure quality. It also considers future transport demands, driven by population growth, economic development, and changes in land use.

Key findings from the Transport Needs Assessment include the need for improved public transport services, particularly in underserved areas, and the necessity of addressing congestion in key corridors. The assessment also highlights the importance of enhancing non-motorised transport infrastructure, such as pedestrian pathways and cycling lanes, to promote sustainable transport options and reduce reliance on private vehicles.

The Transport Needs Assessment forms the cornerstone of the strategic planning process, driving the development of targeted initiatives and projects within the CITP. By clearly identifying the municipality's transport needs, the CITP ensures that proposed interventions are both effective and aligned with broader policy objectives. Moreover, it translates feedback from an extensive stakeholder engagement process into practical, feasible components that integrate seamlessly with the vision, objectives, and purpose of the CITP. This ensures strategic alignment with the Integrated Development Plan (IDP), Municipal Spatial Development Framework (MSDF), and other key policies.

5. Principles for Using the Transport Model as a Tool in the CITP

The CITP includes the development and application of a dynamic Transport Model, which serves as a powerful tool for simulating and analysing the impacts of various transport scenarios. This model allows planners to evaluate the effects of proposed transport interventions, such as road upgrades, public transport improvements, and traffic management strategies, under different future conditions. The use of the Transport Model ensures that decisions are data-driven and based on robust analysis.

The Transport Model is particularly valuable in integrating land use with transport planning. By simulating the effects of population growth, economic development, and changes in land use, the model helps identify where transport infrastructure investments are most needed. It also allows for the testing of different strategies, such as the introduction of new public transport routes or the implementation of traffic demand management measures, to determine their potential effectiveness.

Moreover, the Transport Model supports long-term planning by providing insights into how the transport network will need to evolve over the next 20 years. This forward-looking approach is essential for ensuring that George Municipality’s transport system remains resilient and capable of supporting future growth and development.

6. Public Transport Plan

The Public Transport Plan (PTP) within the CITP is focused on improving the accessibility, efficiency, and coverage of public transport services in George Municipality. A key aspect of the PTP is the rationalisation and enhancement of the George Integrated Public Transport Network (GIPTN), which serves as the backbone of the municipality’s public transport system. The plan aims to expand the GIPTN’s reach, improve service reliability, and ensure that public transport is a viable alternative to private car use.


The PTP also addresses the integration of various public transport modes, including buses, minibuses, and other shared transport services. By creating a seamless, interconnected network, the CITP aims to improve the overall user experience, making public transport more attractive and convenient for residents. This integration is also critical for ensuring that public transport services are efficient and can meet the needs of a growing population.

In addition to infrastructure improvements, the PTP includes strategies for enhancing the operational efficiency of public transport services. This includes the introduction of smart technologies for fare collection, real-time passenger information systems, and other innovations that improve service delivery and management. The overall goal is to create a public transport system that is not only functional but also responsive to the needs of all users.

7. Transport Infrastructure Strategy

The Transport Infrastructure Strategy is a core component of the CITP, detailing the plans for the development, maintenance, and enhancement of the municipality's transport infrastructure. This strategy is informed by the findings of the Transport Register and Needs Assessment, ensuring that investments are targeted where they are most needed. The strategy covers all forms of transport infrastructure, including roads, bridges, public transport facilities, and non-motorised transport infrastructure.

Key priorities within the Transport Infrastructure Strategy include addressing congestion in key corridors, improving road conditions, and enhancing the capacity of existing transport infrastructure to support future growth. The strategy also emphasises the importance of maintaining existing infrastructure to ensure that it remains safe and functional. This includes regular inspections, repairs, and upgrades as necessary.

In addition to physical infrastructure, the strategy also addresses the need for intelligent transport systems (ITS) that enhance the efficiency and safety of the transport network. This includes the deployment of technologies such as traffic management systems, automated fare collection systems, and real-time traffic information services. By incorporating these innovations, the CITP aims to create a more modern, responsive, and resilient transport network.

8. Transport Demand Management (TDM) Strategy

The Transport Demand Management (TDM) Strategy within the CITP is designed to manage congestion, reduce reliance on private vehicles, and promote the use of more sustainable transport modes. TDM strategies are essential for ensuring that the transport network can accommodate future growth without becoming overburdened. The CITP includes a range of TDM measures, including traffic management initiatives, parking policies, and incentives for using public transport and non-motorised transport.

One of the key components of the TDM Strategy is the promotion of public transport as a viable alternative to private car use. This includes measures such as priority lanes for buses, enhanced public transport services during peak hours, and incentives for residents to switch from private cars to public transport. These measures are designed to reduce traffic congestion, improve air quality, and make the transport system more efficient.


The TDM Strategy also includes initiatives to promote walking and cycling as sustainable modes of transport. This includes the development of dedicated cycling lanes, pedestrian pathways, and other infrastructure that supports non-motorised transport. By encouraging residents to walk or cycle for short trips, the CITP aims to reduce the overall demand on the transport network, while also promoting healthier lifestyles.

9. Non-Motorised Transport Plan (NMT)

The Non-Motorised Transport (NMT) Plan is a critical aspect of the CITP, focusing on improving infrastructure and conditions for pedestrians and cyclists. The NMT Plan recognises the importance of providing safe, accessible, and convenient options for non-motorised transport, which is an essential component of a sustainable and inclusive transport system. The CITP includes specific initiatives to expand and enhance the network of pedestrian pathways and cycling lanes throughout George Municipality.

The plan emphasises the need for dedicated infrastructure to separate non-motorised transport users from motor vehicles, reducing the risk of accidents and making walking and cycling more attractive options. This includes the construction of new pedestrian pathways and cycling lanes, as well as upgrades to existing infrastructure to improve safety and accessibility. The CITP also considers the needs of vulnerable road users, including children, the elderly, and people with disabilities, ensuring that the transport network is inclusive and accessible to all.

In addition to physical infrastructure, the NMT Plan includes initiatives to promote the use of non-motorised transport through public awareness campaigns, community engagement, and incentives. By encouraging more residents to walk or cycle, the CITP aims to reduce traffic congestion, improve public health, and contribute to the overall sustainability of the transport network.

10. Freight Transport Strategy

The Freight Transport Strategy within the CITP addresses the movement of goods within, to, and from George Municipality. Freight transport is a critical component of the local economy, and the strategy aims to ensure that the transport network can efficiently support the needs of businesses and industries. The CITP includes plans to improve freight transport infrastructure, such as roads, bridges, and logistics hubs, to accommodate the increasing demand for freight services.

The strategy also focuses on integrating different modes of freight transport, including road, rail, and air transport, to create a more efficient and resilient freight transport network. This includes initiatives to improve connections between key freight corridors and logistics centres, as well as measures to reduce the environmental impact of freight transport. By promoting the use of more sustainable modes of freight transport, the CITP aims to support economic development while minimising negative environmental impacts.

In addition to infrastructure improvements, the Freight Transport Strategy includes initiatives to enhance the safety and efficiency of freight operations. This includes the implementation of intelligent transport systems (ITS) for monitoring and managing freight traffic, as well as measures to improve compliance with safety regulations.


The overall goal is to create a freight transport system that is safe, efficient, and capable of supporting the municipality's economic growth.

11. Other Transport Related Strategies

The CITP also includes several other transport-related strategies that address specific aspects of the transport system, such as road safety, law enforcement, tourism, institutional capacity, intelligent transport systems (ITS), and transport for special needs passengers. These strategies are designed to complement the broader transport plan by addressing key challenges and opportunities within the transport network. For example, the road safety strategy focuses on reducing accidents and improving the safety of all road users, while the ITS strategy aims to leverage technology to enhance the efficiency and effectiveness of the transport system.

The strategy for special needs passengers addresses the need for accessible and inclusive transport services for people with disabilities, the elderly, and other vulnerable groups. This includes initiatives to improve the accessibility of public transport services, as well as the provision of specialised transport options for those who cannot use conventional services. By ensuring that the transport system is inclusive, the CITP contributes to the broader goal of creating a more equitable and just society.

These additional strategies are essential for ensuring that the CITP is comprehensive and addresses all aspects of the transport system. By taking a holistic approach to transport planning, the CITP ensures that the transport network is not only efficient and sustainable but also safe, inclusive, and responsive to the needs of all residents.

12. Summary of Eden District ITP

The CITP for George Municipality is closely aligned with the Integrated Transport Plan (ITP) for the Eden District, ensuring that transport planning at the local level is coordinated with broader regional strategies. The Eden District ITP provides a framework for addressing transport challenges that extend beyond the boundaries of George Municipality, such as regional connectivity, inter-municipal transport services, and the integration of different transport modes across the district.

The CITP incorporates key elements of the Eden District ITP, including strategies for improving regional public transport services, enhancing road connectivity between municipalities, and promoting sustainable transport options throughout the district. By aligning the CITP with the Eden District ITP, George Municipality ensures that its transport planning efforts contribute to the overall development goals of the region.

The alignment between the CITP and the Eden District ITP also facilitates collaboration between different levels of government and other stakeholders, ensuring that transport planning is coordinated and integrated across the district. This collaborative approach is essential for addressing complex transport challenges that require regional solutions, such as improving access to employment, education, and healthcare services.

13. Funding Strategy and Summary of Proposals and Programmes

The Funding Strategy outlined in the CITP is critical for ensuring the successful implementation of the transport plan. The strategy


includes detailed financial planning and budgeting for the various initiatives and projects proposed in the CITP, ensuring that they are feasible and sustainable. The Funding Strategy identifies potential sources of funding, including government grants, public-private partnerships, and other financial mechanisms, to support the implementation of the transport plan.

The CITP also includes a summary of the key proposals and programmes that will be implemented over the five-year period. These proposals are prioritised based on their potential impact, feasibility, and alignment with the municipality's broader development goals. The summary provides a clear roadmap for the implementation of the CITP, ensuring that all stakeholders are aware of the key initiatives and the timeline for their delivery.

The Funding Strategy and summary of proposals and programmes also include mechanisms for monitoring and evaluating the progress of the CITP. This ensures that the transport plan remains on track and can be adjusted as necessary to respond to changing conditions or emerging challenges. By providing a clear framework for implementation, the CITP ensures that the municipality can achieve its transport vision and objectives within the allocated resources.

14. Stakeholder Consultation

Stakeholder consultation is a fundamental aspect of the CITP, ensuring that the transport plan reflects the needs and priorities of the community it serves. The CITP includes a comprehensive stakeholder engagement process, involving consultations with residents, businesses, community organisations, and other key stakeholders. This process is designed to gather input on the transport challenges facing the municipality, as well as feedback on the proposed initiatives and strategies.

The stakeholder consultation process is also essential for building consensus and securing support for the CITP. By involving stakeholders in the planning process, the CITP ensures that the transport plan is responsive to the needs of the community and has broad-based support. This is particularly important for ensuring the successful implementation of the transport plan, as stakeholder buy-in is critical for overcoming potential challenges and obstacles.

The CITP also includes mechanisms for ongoing stakeholder engagement throughout the implementation of the transport plan. This ensures that stakeholders remain informed and involved in the process, and that their feedback continues to be incorporated into the transport plan. By maintaining an open and transparent dialogue with stakeholders, the CITP ensures that the transport plan remains relevant and responsive to the needs of the community.

Conclusions and Recommendations

The George Comprehensive Integrated Transport Plan (CITP) 2023-2028 is a strategic framework designed to guide the sustainable development of transportation infrastructure and services within George Municipality. Developed through extensive research and stakeholder engagement, the CITP aligns closely with national and provincial transport policies to address the transportation needs of a rapidly growing region. The plan emphasises the importance of creating a transport system that is integrated, accessible, safe, and sustainable, ensuring that future developments are both inclusive and environmentally responsible.



Chapter 1: Transport Vision & Objectives

This chapter lays the groundwork by defining the municipality's transport vision, which aims to establish an integrated and sustainable transport system. The chapter stresses the importance of aligning local objectives with broader national and provincial strategies to ensure coherent and effective planning.

Recommendation: Regularly update the transport vision to incorporate emerging trends and technologies, ensuring that it remains aligned with evolving national and provincial policies.

Chapter 2: Summary of the Transport Register

The transport register provides a detailed overview of the current state of George's transport infrastructure, services, and conditions. It includes critical data and trends that inform the CITP's strategic decisions.

Recommendation: Keep the transport register updated with real-time data to support dynamic and informed decision-making.

Chapter 3: Spatial Development Framework

This chapter highlights the crucial link between land use and transport planning, ensuring that transport developments support the municipality's spatial vision and contribute to balanced urban growth.

Recommendation: Integrate transport planning closely with the Spatial Development Framework (SDF) to support mixed-use developments and enhance connectivity. The Transport Model is regularly utilised to evaluate and plan land-use proposals, ensuring that necessary network and transport system improvements are identified and implemented.

Chapter 4: Transport Needs Assessment

The needs assessment identifies current and future transport challenges based on demographic, economic, and environmental factors, prioritising interventions that will have the most significant impact.

Recommendation: Focus on transport interventions that enhance accessibility, particularly in underserved areas, and develop infrastructure to support non-motorised transport (NMT).

Chapter 5: Transport Model Strategy

This chapter introduces a transport model that forecasts future scenarios and assesses the impact of various transport interventions, aiding in long-term planning.

Recommendation: Continuously refine the transport model to include factors such as environmental and social equity indicators, ensuring resilient and adaptable infrastructure investments.

Chapter 6: Public Transport Plan

The public transport plan aims to enhance and expand services, particularly the GO GEORGE network, to reduce reliance on private vehicles and alleviate congestion.



Recommendation: Expand the GO GEORGE network, improve service integration, and implement an accessible fare system to increase public transport use.

Chapter 7: Transport Infrastructure Strategy

This strategy outlines priorities for developing and maintaining transport infrastructure to support connectivity, economic growth, and safety.

Recommendation: Prioritise the development of key infrastructure projects and the maintenance of existing assets, incorporating smart technologies for improved traffic management.

Chapter 8: Transport Demand Management (TDM) Strategy

The TDM strategy focuses on reducing private car usage and promoting sustainable transport modes, such as public transport, cycling, and walking.

Recommendation: Implement TDM measures like Develop Park-and-Ride facilities that allow commuters to conveniently park their vehicles and seamlessly transfer to public transit services Encourage walking and cycling through safe routes, enhance connectivity to urban centres through scheduled bus or shuttle services. Create central hubs where residents can access various transport modes, including bikes and shared cars coupled with public awareness campaigns to encourage sustainable travel behaviours.

Chapter 9: Non-Motorised Transport Plan (NMT)

This chapter advocates for the development of infrastructure that supports walking and cycling, contributing to broader health, environmental, and accessibility goals.

Recommendation: Develop a comprehensive network of pedestrian and cycling paths, ensuring connectivity between residential areas and key destinations.

Chapter 10: Freight Transport Strategy

The freight strategy addresses the efficient movement of goods within and through George, emphasising the need for infrastructure that supports heavy vehicles while minimising their urban impact.

Recommendation: Develop dedicated freight corridors and explore opportunities to shift freight transport from road to rail.

Chapter 11: Other Transport-Related Strategies

This chapter consolidates various strategies, including intelligent transport systems (ITS) and tourism-related transport, to ensure a holistic approach to transport planning.

Recommendation: Continue integrating ITS into the broader network and align tourism transport strategies with the CITP's sustainability goals.



Chapter 12: Summary of Eden District ITP

This chapter ensures that the CITP's objectives are aligned with the Eden District Integrated Transport Plan, enhancing regional connectivity.

Recommendation: Collaborate with neighbouring municipalities to coordinate transport planning across the region, enhancing connectivity and efficiency. Eden District Municipality to update their ITP with the current comprehensive George CITP.

Chapter 13: Funding Strategy and Summary of Proposals and Programmes

The funding strategy outlines potential sources of revenue to support the CITP, ensuring that the plan is actionable and financially sustainable.

Recommendation: Secure diverse funding sources, including public-private partnerships and innovative financing mechanisms, to support high-impact projects.

Chapter 14: Stakeholder Consultation

Stakeholder engagement is highlighted as crucial for the plan's success, ensuring that the transport system reflects the community's needs and priorities.

Recommendation: Maintain continuous stakeholder engagement throughout the CITP's implementation to ensure responsiveness and broad support.

Final Reflections

The CITP 2023-2028 is a comprehensive, forward-looking plan that outlines a clear strategy for the sustainable development of George Municipality's transport system. By aligning transport planning with broader urban objectives, while also addressing rural connectivity, the CITP aims to create a transport network that is efficient, equitable, resilient, and environmentally sustainable. The plan's emphasis on stakeholder engagement, continuous alignment with policy frameworks, and dynamic planning tools will ensure that George Municipality can address current challenges while preparing for future growth. With its strategic focus on sustainability, inclusivity, and connectivity, the CITP is poised to play a vital role in shaping the future of George as a well-connected, vibrant, and sustainable city.


1 INTRODUCTION - TRANSPORT VISION & OBJECTIVES

1.1 Introduction and Context

Techso-Tolplan-Lyners Consortium was appointed by the George Municipality (GM) to update and develop a Comprehensive Integrated Transport Plan (CITP). This chapter provides the reader with the required background for navigating the remainder of this report by stating the transport vision and objectives.

As part of George Municipality's ongoing mission to be a '*city for a sustainable future'* it requires the preparation of a Comprehensive Integrated Transport Plan (CITP). This Comprehensive Integrated Transport Plan (CITP) for George, covers the period 2022 to 2028, is the first comprehensive ITP that responds to and guides the municipality in terms of its Integrated Development Plan (IDP), (IDP 2017-2021 Review and 2023 IDP final draft) and Spatial Development Framework (SDF) (2023-2027) leveraging previous and future planning towards reaching the transport vision in "*providing an integrated, accessible, safe, affordable and sustainable transport system that is well managed and maintained for all people in George".*

The George CITP is based on the principle of considering National, Provincial and Local Government legislation, policy, guidelines, best practice and addressing challenges to answer and guide the transport system and transport network in obtaining the preferred outcomes supporting the vision.

The Comprehensive Integrated Transport Plan (CITP) must be developed in accordance with the National Land Transport Act, 2009 (Act No. 5 of 2009).

In preparing these integrated transport plans, planning authorities must, at a minimum, adhere to the provisions of the Act and the specific requirements outlined in the relevant Schedule. While the five-year ITP serves as the baseline, authorities are encouraged to engage in additional planning, where feasible, within their budgetary and capacity constraints, to better fulfil the objectives of the Act. Authorities should also consider formulating longer-term strategies, segmented into five-year intervals, with attention given to projects extending beyond the initial five-year period.

The minimum requirements for an Integrated Transport Plan (ITP), based on the document, include the following key aspects:

1. **Compliance with Legislative and Guideline Provisions**: The ITP must be prepared in accordance with the National Land Transport Act, 2009, and must adhere to the Technical Transport Planning Guidelines. Planning authorities must meet these baseline requirements and are encouraged to go beyond them where budgets and capacities allow, especially to advance the objectives of the Act.
2. **Five-Year Planning Horizon**: The ITP is structured around a minimum five-year planning cycle, which is the standard requirement. However, authorities are encouraged to develop longer-term strategies, segmented into five-year intervals, particularly for projects that extend beyond the initial five-year period.
3. **Content Structure**: The ITP must include, at a minimum, the following components:

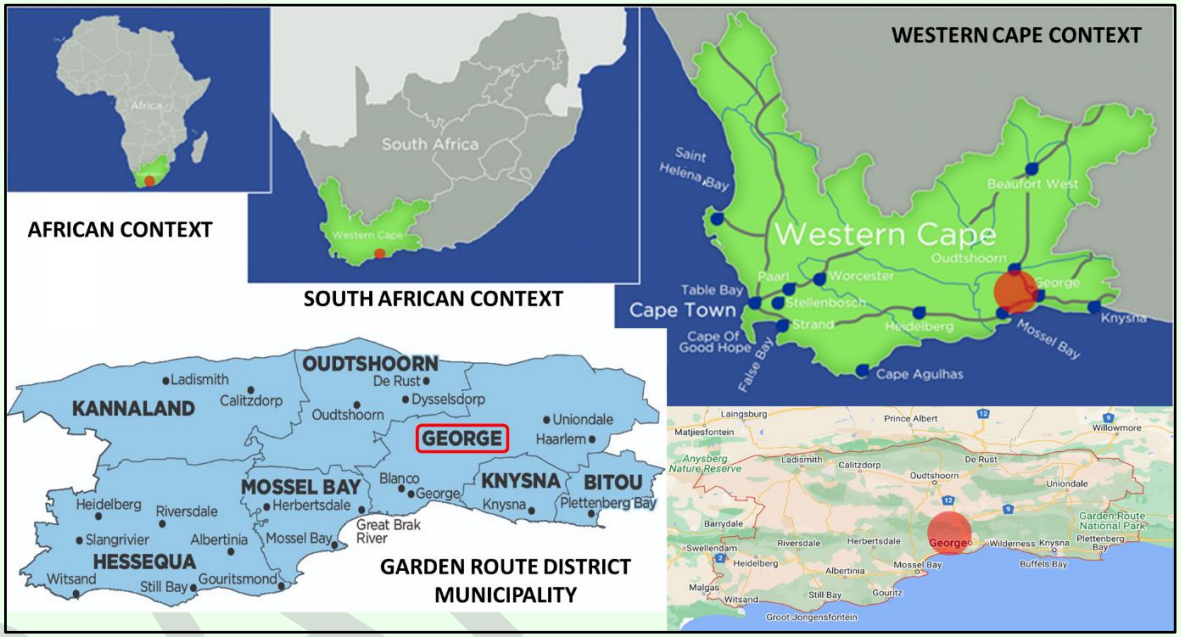


Figure 1-1: Locality of George in International, National, Provincial and Local context.

- **Introduction**: Overview of the planning area, the responsible entity, and the status and period of the plan.
- **Transport Vision & Objectives**: A clear statement guiding transport development aligned with national, provincial, and local policies.
- **Transport Register**: A summary and analysis of the data collected necessary for planning all types of transport infrastructure and operations.
- **Public Transport Plan (PTP)**: An integrated plan covering all relevant modes of public transport, aimed at rationalising and restructuring services to meet demand effectively.
- **Transport Infrastructure Strategy**: Detailed proposals for the development and maintenance of all transport infrastructure within the planning area.
- **Travel Demand Management (TDM) Strategy**: Measures to manage congestion and reduce car usage, integrated with improvements to public transport and non-motorised transport options.
- **Freight Transport Strategy**: A plan for the movement of goods to, from, and within the area, focusing on the seamless integration of different transport modes.


- **Funding Strategy**: Detailed financial strategies and budgeting for the implementation of the transport plan over the five-year period.

These elements ensure that the ITP is comprehensive, strategic, and aligned with broader transport and development goals. The ITP should be updated annually to reflect changes in demand, progress in implementation, and revisions to strategies and budgets.

This CITP should function as a dynamic working document, providing clear guidance on each area of focus. Each relevant chapter begins with Key Aspects and concludes with a Summary of the Plan or Main Issues, ensuring that stakeholders have the necessary background and context to make informed decisions in executing the plan. In this approach, the CITP incorporates the development of a comprehensive dynamic Transport Model (TM), providing an excellent tool for integrating land use with transport planning and associated road network planning for a minimum of a 20yr planning scenario period. The TM is an instrument to complement sustainability planning and assessment ensuring continuity for the future updates, currently every 5yrs as per Minimum Requirements for the Preparation of Integrated Transport Plans as Gazetted (no. 40174) on 29 July 2016.

The first George Comprehensive Integrated Transport Plan (CITP) was developed during the 2009/2010 financial year for the period 2015 to 2019 and was subsequently reviewed and updated in 2014/2015. This CITP update was guided by the earlier 2014/2015 version and encompassed a broad range of objectives, briefly outlined as follows:

- **Transport Register Update**: Ensure that the transport register is current and comprehensive.
- **Alignment with Spatial Development Framework (SDF)**: Harmonise the CITP with the SDF to eliminate any inconsistencies, ambiguities, or conflicting interpretations between these key policy documents.
- **Road Network Considerations**: Address major road issues in both rural and urban contexts.
- **Evaluation of GIPTN Outcomes**: Provide an independent assessment of whether the George Integrated Public Transport Network (GIPTN) is meeting its transportation and urban restructuring objectives.
- **Transport Network Modelling**: Develop a strategic municipal-wide transport model, including a detailed model for the broader built-up area of George.
- **Provincial Connectivity**: Address provincial connectivity by considering both National and Provincial perspectives, particularly the roles and functions of the R62, N2, the proposed Western Bypass, and the Southern Arterial.
- **Re-evaluation of the George Roads Master Plan**: Review road proposals within the context of the GIPTN, including road classification, the role of key roads, road upgrading priorities, and the implementation of bus priority measures to promote public transport.
- **Public Transport Plan – Rationalisation Plan**: Develop a rationalisation plan for public transport.
- **Freight Strategy:** Formulate a strategy for managing freight transport.
- **Operating Licence Plan**: Review and update the Operating Licence Plan to align with current and future transport needs.

Furthermore, the CITP expands on general terminology in transport planning, such as “integrated”, “Interoperability” and “safety”, etc. to incorporate more fundamental core values for any user of a


transport system, being “Access, Accessibility and Mobility”. This approach creates a common “Lens” through which all the components of a transport system and the integration of the thirteen (13) functional areas of a CITP should be viewed.

1.2 The Geographical Area covered by this CITP.

George is in the Garden Route District Municipality. The Eden District Municipality’s name was officially changed to the Garden Route District Municipality in 2018 in terms of the Local Government: Municipal Structures Act, 1998 (Act 117 of 1998), and proclaimed in the Western Cape Government Provincial Gazette.

The area covered by this CITP is the geographical jurisdiction of the George together with its Geographical Area. **Figure 1-1** shows the location of George within an International (African), National and Western Cape Context.

The direct Geographical Area of George is within the Garden Route District but stretch beyond these boundaries into the Western Cape and South Africa in terms of agriculture, freight, education, and tourism. The geographical legal boundaries of George Municipality are shown **Figure 1-2**.

Figure 1-2: Locality of George in International, National, Provincial and Local context.

George Municipality is classified as a category B Municipality and is located along the N2 highway, with Cape Town some 430 km to the west and East London some 630 km to the east. Its strategic location along the N2 highway between Cape Town and the Eastern Cape facilitates mobility of people, goods, and services. The George Municipality’s jurisdictional area is approximately 5191km2.

Geographically, the bulk of the area is rural, where more than 84% of the municipal area’s population is in the George city area, being

the primary urban centre. Wilderness, Uniondale, and Haarlem respectively host the bulk of the remaining urban population.

The municipality serves 224 430 people from 57 793 households (Western Cape Government (Department of Social Development (DSD, 2022) across 28 wards including Uniondale and Wilderness – with service hinterlands geographically separated from the main city area George. According to latest unpublished Census 2022 data, it is estimated that there are a population of 294 929 individuals and 85 931 households. This is a significant increase from the 2011 Census and relates to a calculated increase of at least 4% per annum. Small rural or tourism settlements include Haarlem, Herold's Bay, Victoria Bay, Touwsranten, Hoekwil, Kleinkrantz, – and various hamlets and rural places like Avontuur, De Vlogs, Herold and Noll, coastal areas of Kleinkrantz, Wilderness, Victoria Bay, Harolds Bay and Gwaing as well as the rural areas of Herold, Waboomskraal, Uniondale and Haarlem (George Municipality, 2023).

According to the (WC Government) Department of Social Development the population is expected grow with 1.2% per annum (DSD, 2021 – 2031) with the (WC Government) Socio-Economic Profile, it is expected to grow with 1.4% per annum over next 5yrs (SEP, 2022-2026), and as mentioned above, the Census 2022 data indicates a 4.1% annual expected population growth for George.

1.3 Document Suite Structure and Context

This CITP document is part of a suite of CITP documents, which comprise of the following four (4) documents (as depicted in **Figure 1-3**):

1. ***Comprehensive Integrated Transport Plan (CITP)***
2. *Transport Register (TR)*
3. *Transport Model Strategy (TMS)*
4. *Operating Licence Plan (OLP)*

The CITP Transport Register, CITP Transport Model Strategy and CITP Operating License Plan contain large amounts of data and are summarised in chapters in the CITP document, for ease of reading.

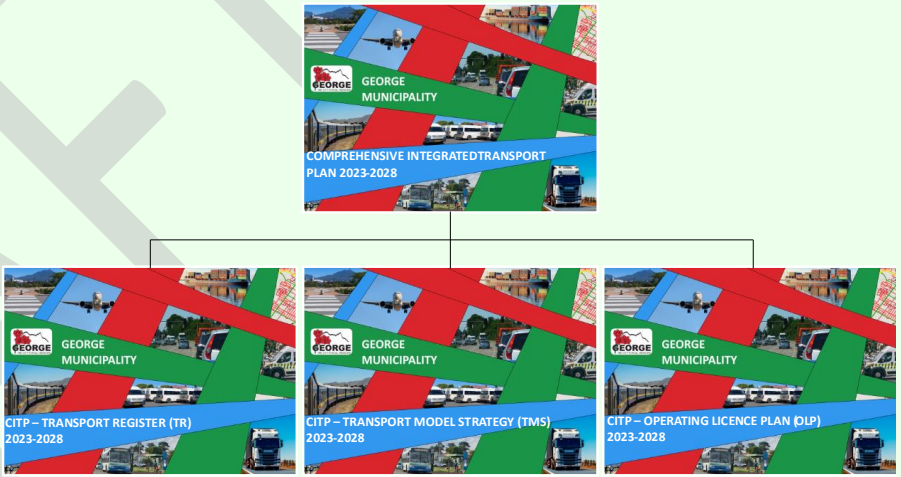


Figure 1-3: CITP document suite structure.

1.4 Background

As part of George Municipality's ongoing mission to be a '*city for a sustainable future*' it requires the preparation of a Comprehensive Integrated Transport Plan (CITP). The CITP will assist the municipality to achieve their goal of providing an integrated, accessible, safe, affordable, and sustainable transport system that is well managed and maintained for all people in George.

The existing CITP of George Municipality expired in 2019 after which a new, revised CITP, valid for a 5-year period from 2020 to 2025, had to take effect. However, due to several uncontrollable factors, the newly revised CITP will be valid from 2023 to 2028.

The update of the existing CITP includes various elements such as developing a Transport Model, update of the Transport Register and incorporating the objectives of the current (2023) George Spatial Development Framework (SDF).

1.5 Purpose of the Comprehensive Integrated Transport Plan (CITP)

The creation of the George Comprehensive Integrated Transport Plan (GCITP) aligns with the directives of the National Land Transport Strategic Framework (NLTSF) for the period 2023 to 2028. This alignment is not only strategic but also a legal mandate as stipulated by the National Land Transport Act, 2009 (NLTA), specifically under section 34. The GCITP functions as a statutory legal instrument, framing the foundations for funding and executing an integrated transport strategy. Its development is meticulously coordinated with the stipulated minimum requirements detailed in relevant regulations. Essential in defining George's long-term transportation vision, the CITP is instrumental in devising the most effective and sustainable transport solutions for the benefit of George and its entire populace.

1.6 Purpose of National Land Transport Strategic Framework (NLTSF)

The purpose of the NLTA, serving as a national land transport strategy is to provide guidance on transport planning and land transport delivery by the national government, provinces in the development of Provincial Land Transport Frameworks (PLTFs) and municipalities in the development of the respective Integrated Transport Plans (ITPs) for the five-year period.

The National Land Transport Strategic Framework (NLTSF) purpose is to influence transport planning to realise national strategic priorities in achieving *social, health, economic and environmental* outcomes. These strategic priorities are coupled / interconnected to other national (NDP, National Transport Master Plan (NATMAP)), provincial and municipal transport and spatial planning (SDF's, CITP, Bulk Infrastructure Master Plans and DDM's at Local Government level) by the NLTSF.

There are Constitutional implications for transport planning, which affect the right to *safety, equality, dignity, and freedom* of movement. It is therefore important to take cognisance of the purpose of the NLTSF when developing or confirming the vision, goals, and objectives of the George CITP. A clear correlation must be established between the NLTSF and George Municipality's IDP, MSDF and CITP.

It ***sets the overarching goals, vision, and objectives*** for each element of the transport system which would be reflected in the Provincial Land Transport Frameworks (PLTFs) and Integrated Transport Plans (ITPs), and which must align with the NLTSF.

1.7 Structure of the NLTSF

The NLTSF provides guidance to the spheres of Government in terms of:

- *a clear vision* of the integrated transport system that is desired, is defined with supporting objectives.
- the three spheres of Government and other stakeholders collaborate to develop an integrated transport system.
- Progress is measured through key performance indicators in the monitoring and evaluation program by the DoT.

A process (structure) for preparing the NLTSF is shown in **Figure 1-4**.

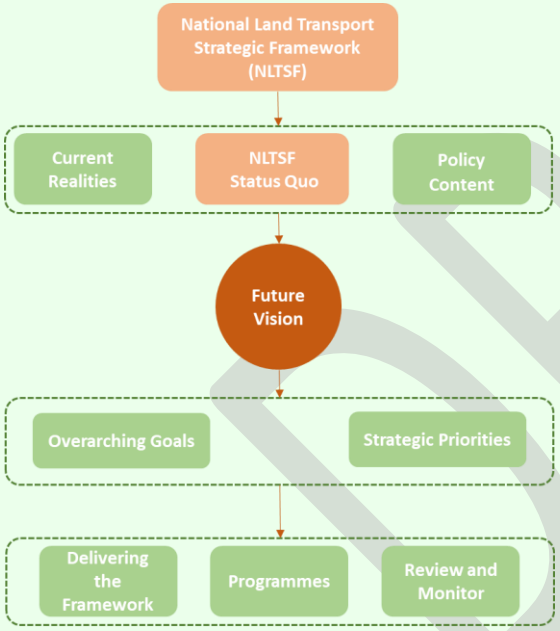


Figure 1-4: Structure for preparing NLTSF.

This Framework and the current realities in transport inform the vision and key priorities for Transport in South Africa for the period 2023-2028. The strategic intent, objectives, and Key Performance Areas (KPA's) are most important to inform the identification, development and implementation of local policies, guidelines and specific transport programmes and projects.

1.8 Purpose of the NLTSF

The purpose of the NLTSF is:

- To serve as a five-year framework for integrated land use transport planning.
- To *serve as an enabler of land use and transport planning* aspects as guided by the National Development Plan (NDP) 2030.
- To *provide the guiding principles* that integrates various modes of land transport within the planning context of the NDP and support wider relevant national legislation and policy.
- To *provide clarity and certainty about the transport planning priorities* to enable effective decision-making about programmes and initiatives at all levels of government.
- To align transport to sustainable development.
- To enable universal accessibility.
- To enhance coordination between the various spheres of government.

The NLTSF is a framework for Transport Planning, which imply that the George CITP should be very clear in communicating and presenting the direction it advocates where the priorities and investment in terms of integrated transport planning, transport systems and infrastructure lies to realise the vision, goals, and objectives.

1.9 Transport Vision and Objectives

The vision, goals, and objectives succinctly articulate the municipality's aspirations and targets. They delineate critical service areas, assess service delivery quality, and highlight particular outcomes, including specific objectives and goals.

1.9.1 Vision of the NLTSF

The overall vision of the NLTSF is to create: "*An integrated and efficient land transport system supporting a thriving economy that promotes sustainable economic growth, provides safe and **accessible mobility options**, socially includes all communities, and preserves the environment.*"

The NLTSF is structured in thirteen (13) functional areas which provides sufficient flexibility as a guideline for stakeholders to apply it to local needs and circumstances a shown in **Figure 1-5**.

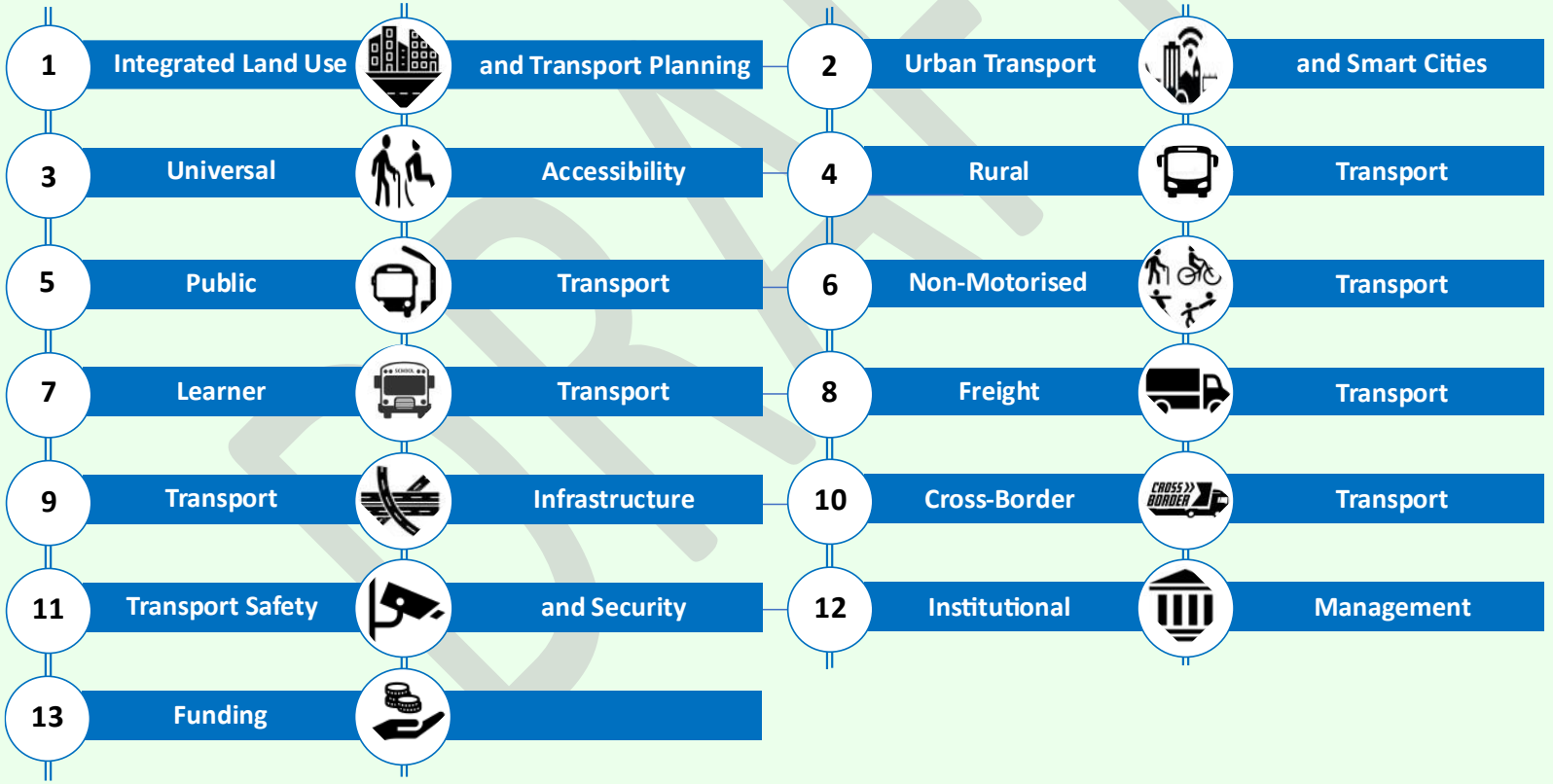
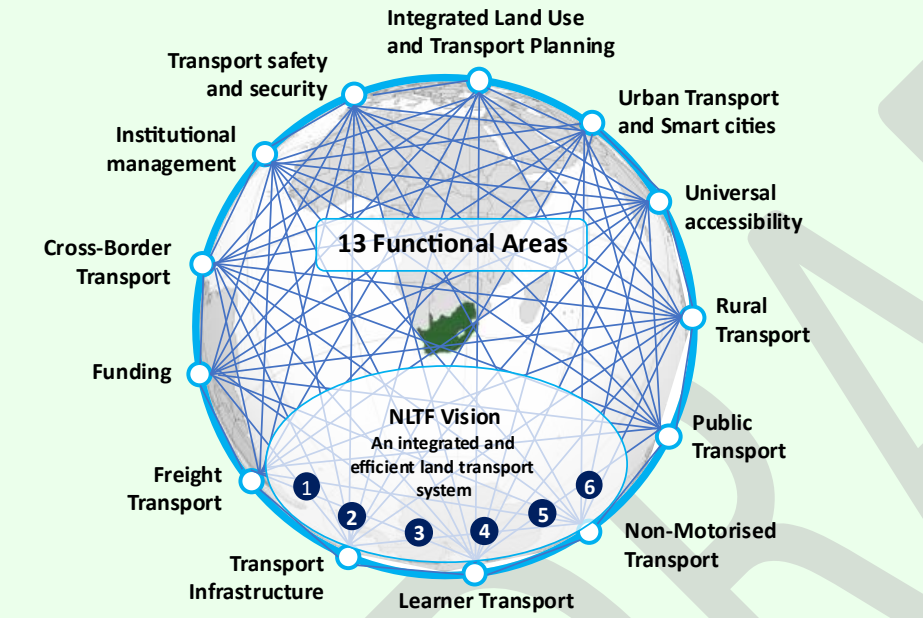


Figure 1-5: The thirteen (13) functional areas as mentioned in the NLTSF.

The NLTSF issued in March 2023 recognised an additional focus on *Universal Accessibility* (UA), not highlighted specifically as a functional area in previous NLTSF's.

A summary of the NLTSF (2023-2028) vision and integration of the thirteen (13) functional areas is shown in **Figure 1-6**.



NLTF Vision: An integrated and efficient land transport system

1	Supporting a thriving economy	2	Promotes sustainable economic growth
3	Provides safe mobility options	4	Provides accessible mobility options
5	Socially includes all communities	6	Preserves the environment

Figure 1-6: National Land Transport Strategic Framework NLTSF Vision and thirteen (13) Functional Areas.

The NLTSF aims to establish a legacy beyond 2028 based on the principle of sustainability, universal accessibility, and prioritising facets of the transport system for the development of an integrated efficient transport system.

The vision of the NLTSF is perfectly positioned to provide a foundation for the development of visions and objectives for provincial and local government authorities in terms of their own Integrated Development Plans (IDP's), Spatial Development Frameworks (SDF's) and Integrated Transport Plans (ITP's). It also highlights key performance areas for each functional area. The key performance indicators (KPIs) are provided to measure the effectiveness of the NLTSF, ensure accountability by the DoT and the planning authorities, and monitor value for money.

of service, qualifies service delivery and points to specific outcomes (objectives and goals).

1.9.2 National Development Plan (NDP)

A critical objective within South Africa's National Development Plan (NDP) is achieving tangible and quantifiable progress towards creating integrated, well-balanced, and dynamic communities. The 2019 Draft of the National Spatial Development Framework (NSDF) aligns with the country's urban policy delineated in the Integrated Urban Development Framework (IUDF), which sets out the guidelines to meet this goal. This framework integrates insights and directives from various NDP chapters, establishing a cohesive strategy. Specifically, the NDP 2030 entrusts the Department of Transport (DoT) with a clear mission to establish and execute effective transport planning initiatives. These initiatives, led by the central government, aim to develop substantiated, long-term transport strategies that are in harmony with spatial planning. Moreover, they ensure alignment of infrastructure investments

across different government tiers and effectively convey the government's transport vision to the private sector.

The NDP 2030 addresses this important area by highlighting that "*Movements into and within municipalities have significant implications for planning, budgeting and the provision of services*".

The NDP 2030 supports the NATMAP 2050 by confirming that, although South Africa has relatively good economic infrastructure, the South African economy is constrained by inadequate investment and the ineffective operation and maintenance of existing infrastructure. The NDP 2030 visualises that transport investments will, "*bridge geographic distances affordably, foster reliability and safety so that all South Africans can access previously inaccessible economic opportunities, social spaces, and services; support economic development by allowing the transport of goods from pit to port where they are consumed. This will also facilitate regional and international trade; and promote a low-carbon economy by offering transport alternatives that minimise environmental harm*".

The NDP guiding Vision is shown in **Figure 1-7** and informs the principles of the IUDF.

Figure 1-7: Vision of the National Development Plan (NDP).

The IUDF provides strategic goals for South Africa's cities and towns ranging from the very large metropolitan regions to the smallest towns in rural South Africa. The focus of these goals is to

- Maximising the potential of urban areas.
- Integrate planning, budgeting, and investment.
- Improves and enhances urban form.
- Improves the performance or urban areas.

The IUDF puts forward four (4) "*strategic goals*" for all urban areas, i.e.

1) Spatial integration.
2) Inclusion and Access.
3) Growth.
4) Governance.

The IUDF proposes nine (9) "*policy levers*" to achieve these goals as shown in **Figure 1-8**.

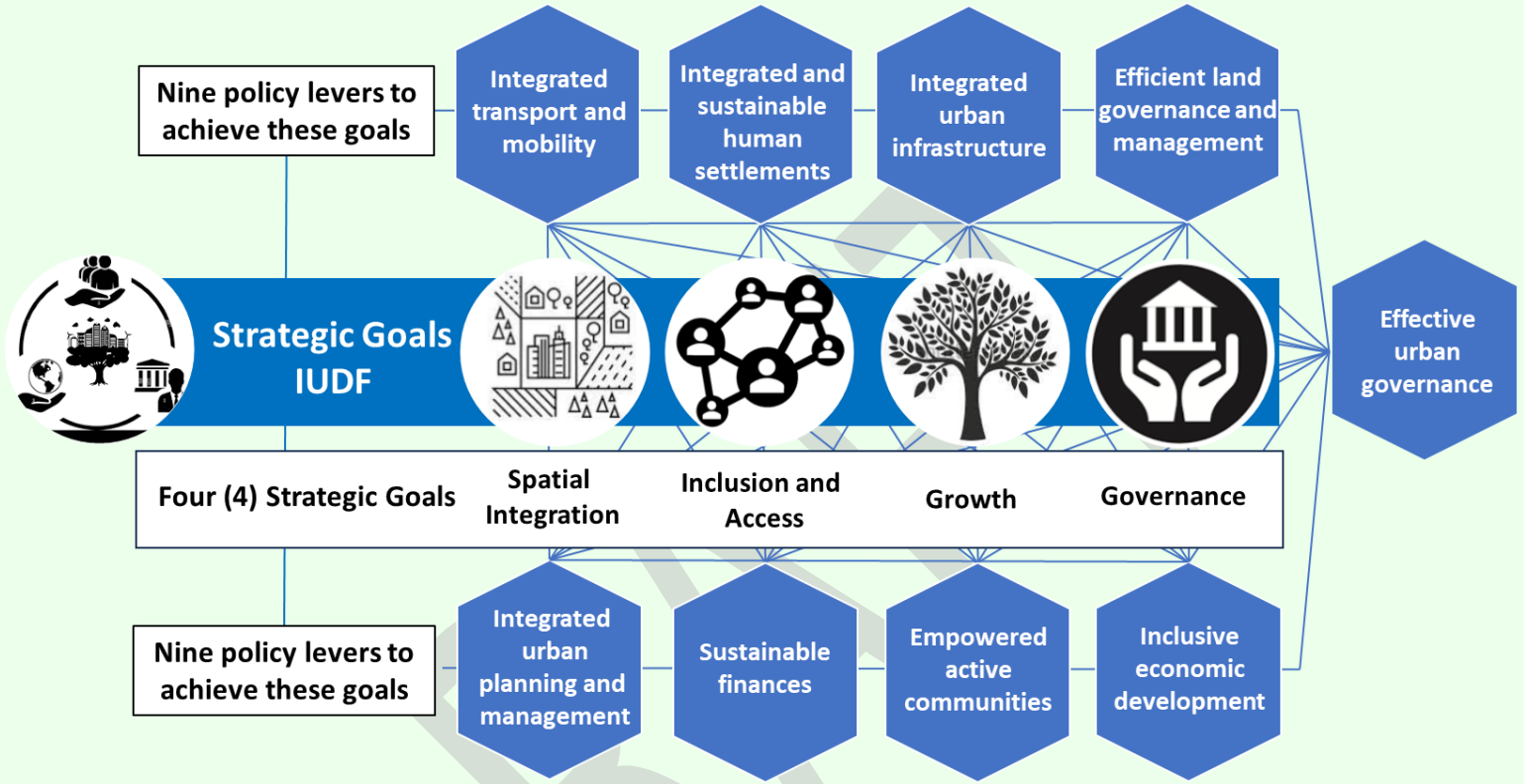


Figure 1-8: The National (IUDF) Four (4) Strategic Goals and Nine (9) Policy Levers.

The IUDF furthermore introduces three "*cross-cutting priorities*" that are to be used in the conceptualisation and implementation of the nine policy levers, as follows:

1) Rural-urban interdependency.
2) Urban resilience.
3) Urban safety.

It is important to note that one should apply these principles and guiding goals within the local context and character of George and build on key directives, specifically on achieving "*integration*", integrating the following:

- Integrated Transport and Mobility.
- Integrated Urban Infrastructure.
- Integrated and Sustainable Human Settlements.
- Integrated Urban Planning and Management.

1.9.3 Western Cape PLTF

A Provincial Land Transport Framework (PLTF) is a statutory requirement enabled by the National Land Transport Act (Act No. 5 of 2009) (Department of Transport, 2009), which should be renewed every five years, and updated every two years by each of the Provinces in South Africa. The most recent PLTF for the Western Cape was published in 2016, spanning the time horizon of 2016/17-2020/21 (Western Cape Government: Department of Transport and Public Works, 2016). The vision of the Western Cape Government (WCG) is "an open-opportunity society for all" (**Figure 1-9**), as reflected in the five Provincial Strategic Goals in **Figure 1-10.** ITPs and CITPs should be aligned with the respective province's PLTF in which its jurisdiction falls. Currently, the PLTF is in the process of being updated.

Figure 1-9: Western Cape Government Vision (Western Cape Government: Department of Transport and Public Works, 2016).

Figure 1-10: Western Cape Government's five (5) Strategic Goals (Western Cape Government: Department of Transport and Public Works, 2016).


The strategic direction that has been developed for the Western Cape PLTF contains seven (7) strategic goals, of which each has various objectives, as seen in Table 1-1.

Table 1-1: PLTF Strategic Goals and Objectives (Western Cape Government: Department of Transport and Public Works, 2016).

No	PLTF Strategic Goal	PLTF Objectives
1	**PLTF-1**: Establish and operationalise a Public Transport Management Forum to manage and coordinate trans-modal and transversal transport across the Western Cape.	• Appoint the core and second-tier groups. • Finalise the entity name, mission and mandate, modus operandi. • Review the PLTF strategic goals and KPIs, and amend as required • Institute PLTF monitoring and reporting from the outset. • Assess organisational options, whether legal/regulatory enablement of the PTMF is necessary and take appropriate action.
2	**PLTF-2**: Develop a transversal plan to promote transport safety and security for road, rail and non-motorised transport.	• Coordinate the development of a road safety plan addressing issues such as compliance with road safety regulations, education, and awareness. • Develop a rail safety plan covering the network, stations and intermodal interchanges. • Develop a plan to ensure regulatory compliance for vehicles, covering registration, licencing, overloading. • Develop a plan for collective management of unrest occurrences, e.g. MBT/Bus conflict, other civil unrest affecting transport. • Develop an NMT masterplan and ensure it is incorporated appropriately at all levels of government. Ensure that it promotes commuter safety and mobility, via provision of dedicated NMT facilities, e.g. cycle paths, pedestrian paths, bridges, signals.
3	**PLTF-3**: Promote and coordinate integrated transport.	• Monitor IPTN progress at MyCiTi and GO GEORGE. • Develop strategies for implementing the actual “integration” across more modes, e.g. integrate route scheduling and fare management across Metrorail, other non-contracted bus services, MBTs. • Develop lower budget IPTN-equivalents for less affluent municipalities/districts.
4	**PLTF-4**: Develop transport plans to respond to rural socio-economic challenges and development objectives.	• Review the draft PSTP proposal and finalise the rural transport development approach and plan. • Ensure that appropriate aspects of the NMT masterplan are incorporated in all rural transport plans and transport development projects. • Review options to integrate “scholar transport” with public transport to improve efficiency.
5	**PLTF-5**: Develop key trans-modal strategies to promote economic efficiencies within transport.	• Develop a strategy to promote a shift from private to public transport. • Develop a strategy to promote a shift of freight from road to freight rail. • Focus infrastructure maintenance on highest priority road and rail networks. • Develop coordination mechanisms within spatial, road and rail planning to


No	PLTF Strategic Goal	PLTF Objectives
6	**PLTF-6**: Optimise transport fund sourcing and allocation.	• Ensure all available State funding sources are fully exploited, via rigorous socio-economic analysis and substantiation. • Explore alternative funding sources, e.g. strategic partnerships, special grants, green technology opportunities. • Identify opportunities to optimise funding by exploring demand management and user pay principles.
7	**PLTF-7**: Roll out the strategic goals and objectives to all transport entities.	• Identify the PLTF goals and objectives that are applicable to each transport entity (e.g. PRASA, Metrorail, TDA, and district & local municipalities. • Incorporate the PLTF goals into current and future transport plans. • Monitor and ensure implementation.

Historically, the Western Cape's Provincial Land Transport Framework (PLTF) has struggled with the effective management and coordination of different transport modes, lacking a unified strategy that includes key stakeholders like Transnet, the Passenger Rail Agency of South Africa, the Airports Company South Africa, and Metrorail at a provincial level. Recognising this, the Department of Transport and Public Works has committed to fulfilling its role for provincial coordination as outlined in the National Land Transport Act and Strategy. The revamped PLTF aims to prioritise a select few critical transport challenges, establish a framework to enhance coordination across all transport modes and entities, and set up a robust system for proactive strategy implementation. This includes the formation of a Provincial Transport Management Forum, clear performance indicators, and continuous monitoring to align with the province's vision of creating an open-opportunity society for all, by achieving five strategic goals and adhering to provincial development priorities.

1.9.4 George Municipality Vision and Strategic Goals

The vision, mission and the five (5) Strategic Objectives for George Municipality (GM) has been reconfirmed in the IDP 2023/27 (as well as in the 2014/2015 CITP and the GIPTN Plan) and summarised in **Figure 1-11**. The essence of the Municipalities vision is focussed on a "*developing a city with a sustainable future*". Sustainability has many components and should culminates into delivering services that improve the quality of life for all its people and visitors, build a strong healthy local economy, reduce safety, economic and health risks for all in George.

The George Municipality's Integrated Development Plan (IDP) incorporates several strategies and initiatives aimed at enhancing climate resilience. The document highlights the need to mainstream climate change adaptation and mitigation measures within the municipality's planning processes, including the IDP and Spatial Development Framework (SDF). These measures are critical for addressing the increased frequency and severity of extreme weather



events, such as floods, droughts, and fires, which are exacerbated by climate change.

The IDP emphasises the importance of Disaster Risk Reduction (DRR) as a central component of sustainable development. It outlines various strategies for reducing vulnerability to natural hazards, improving preparedness, and enhancing the municipality's capacity to respond to and recover from disasters. These strategies include implementing early warning systems, promoting the use of renewable energy, and protecting biodiversity and ecological infrastructure. The document also recognises the significance of local climate trends and the need for continuous monitoring and research to inform climate resilience strategies. Furthermore, the IDP acknowledges the necessity of developing long-term climate change adaptation strategies, which are to be segmented into five-year plans. This approach ensures that the municipality's climate resilience initiatives are both forward-looking and adaptable to evolving climate conditions. The IDP also encourages the integration of climate change considerations into various municipal functions, including land use management, water resource management, and infrastructure development, to promote a holistic approach to building resilience against climate-related risks. It is important that a specific green transport strategy be further developed in line of the with the IDP and MSDF which should incorporate typical components as follows:

1. **Emissions Reduction**
    - Transition to low-emission and zero-emission vehicles, such as hydrogen-powered or electric vehicles (EVs).
    - Encourage the use of renewable energy sources for public transport fleets and infrastructure.
2. **Public Transport Enhancement**
    - Shift focus from private car use to public transportation, aiming for a 20-30%% reduction in private vehicle usage.
    - Expand and improve public transport services to make them more accessible, reliable, and attractive to commuters.
3. **Road to Rail Integration**
    - Develop strategies to shift freight and passenger transport from road to rail, reducing road congestion and emissions.
    - Invest in rail infrastructure and services that support sustainable urban and regional mobility.
4. **Infrastructure Development**
    - Promote the development of infrastructure that supports green transport modes, such as electric vehicle charging stations and bike lanes.
    - Design and implement smart traffic management systems to optimise traffic flow and reduce congestion.
5. **Active Transport Promotion**:
    - Encourage walking and cycling as viable and safe modes of transport through the development of pedestrian-friendly infrastructure and secure cycling lanes.
    - Implement bike-sharing programs and other initiatives to promote non-motorised transport.
6. **Integration with Land Use Planning**


- Ensure that transport planning is aligned with land use management and the Spatial Development Framework (SDF) to create sustainable urban environments.
- Develop transit-oriented developments (TODs) that reduce the need for long-distance travel and promote the use of public transport.

7. Climate Resilience

- Integrate climate resilience measures into transport planning, such as designing infrastructure that can withstand extreme weather events.
- Continuously monitor and adapt transport systems to evolving climate conditions.

8. Renewable Energy Utilisation

- Encourage the use of renewable energy in transport operations, such as solar-powered bus stops, bus depots and truck stops.
- Explore the potential for other sustainable energy sources in public transport fleets.

9. Policy and Incentives

- Implement policies and incentives to encourage the adoption of green transport options, such as subsidies for electric vehicles and tax breaks for businesses that promote sustainable commuting.
- Introduce regulations that set emissions standards and promote eco-friendly practices in transport.

10. Public Awareness and Education

- Launch campaigns to raise public awareness about the benefits of green transport and encourage behavioural changes towards sustainable mobility.
- Provide education and training programs on sustainable transport options and practices for both the public and transport operators.

These components should be developed and implemented in alignment with the Integrated Development Plan (IDP) and Municipal Spatial Development Framework (MSDF) to ensure a coordinated and holistic approach to achieving a greener, more sustainable transport system in George Municipality.

Figure 1-11: The 5 strategic goals mentioned within the current George IDP.

The Spatial Planning Vision in support to the Municipality's integrated development vision of 'A City for a Sustainable Future", is well-defined in the George Municipal Spatial Development Framework (MSDF) and summarised in **Figure 1-12**. The City's key strategic objectives are well captured and expressed by the vision of the MSDF.

Figure 1-12: George Municipal Spatial Development Framework Vision.

With the stage set by the George IDP and MSDF vision and objectives, the purpose and role of the CITP is captured by the transport vision and mission statement.

1.9.5 George Municipality - Transport Vision and Strategic Goals

Although the George transport vision is guided by the IDP and MSDF it should also reflect the key principles, objectives and values captured in National and Provincial government transport visions. This integration of all these visions will assist in the effort to ensure sustainability for the future for the city in context of economic growth, environmental resilience, transformation and integration, socio-economic environment, governance and institutional management, technology innovation and transport data digitalisation.

1.9.5.1 Transport Vision and Mission

The current Transport Vision and Mission Statement for George the is shown in **Figure 1-13**.

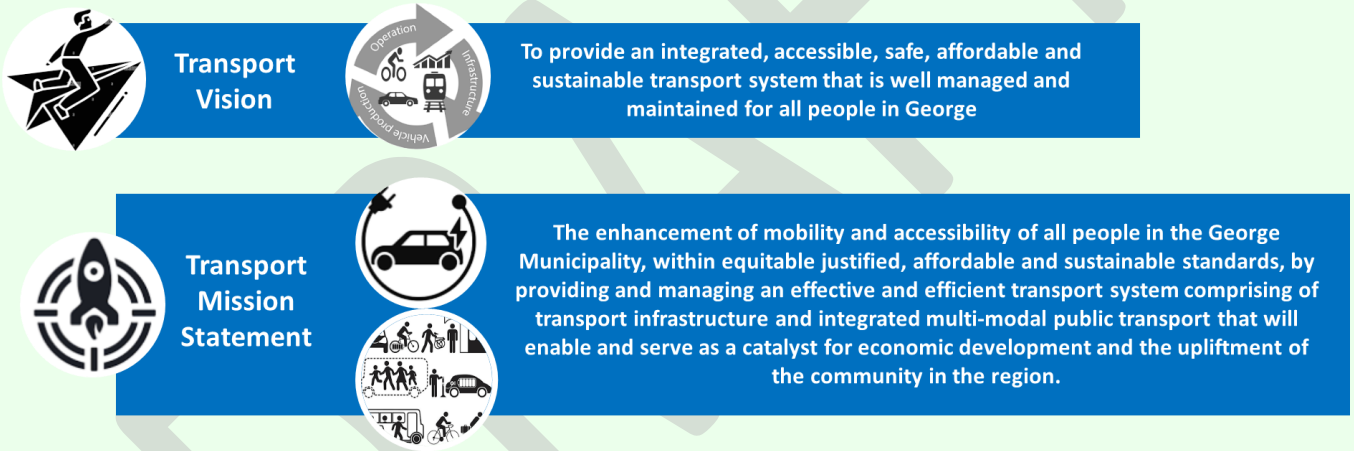


Figure 1-13: George Municipal Spatial Development Framework Vision.

The fundamental aim of the CITP is to operationalise, steer, and act as a transformative influence advancing the George Transport Vision, aligning with the Integrated Development Plan (IDP) and Municipal Spatial Development Framework (MSDF) while acknowledging broader transport frameworks at national, provincial, and local levels. This mission necessitates well-defined goals and objectives, incorporating a range of sustainable mobility strategies, system elements, innovative technological solutions, and the leverage of collective and open resources to realise anticipated outcomes.

A paramount shift envisioned is prioritising "*public transport first*," ensuring accessibility and connectivity through a meticulously organised, reliable, secure, and sustainable public transportation

network. Establishing and executing diverse public transport modalities, inclusive of non-motorised options, is central to this transformative agenda. The CITP is dedicated to explicitly defining the purpose and contribution of each transport mode within the comprehensive system.

Reinforcing and revitalising the existing objectives and aspirations is imperative, necessitating the formulation of a new **City Transportation Strategy**. This strategy should articulate a specific "**Transport Vision**" aligned with the mission to enhance mobility and accessibility for all George Municipality residents. This entails delivering and administrating an effective, efficient transport infrastructure and an integrated, multimodal public transit network. Such an infrastructure is envisioned to spur economic growth and community upliftment within the region.

Formulating a robust City Transportation Strategy that resonates with the five IDP goals for George, as depicted in **Figure 1-14**, is critical.

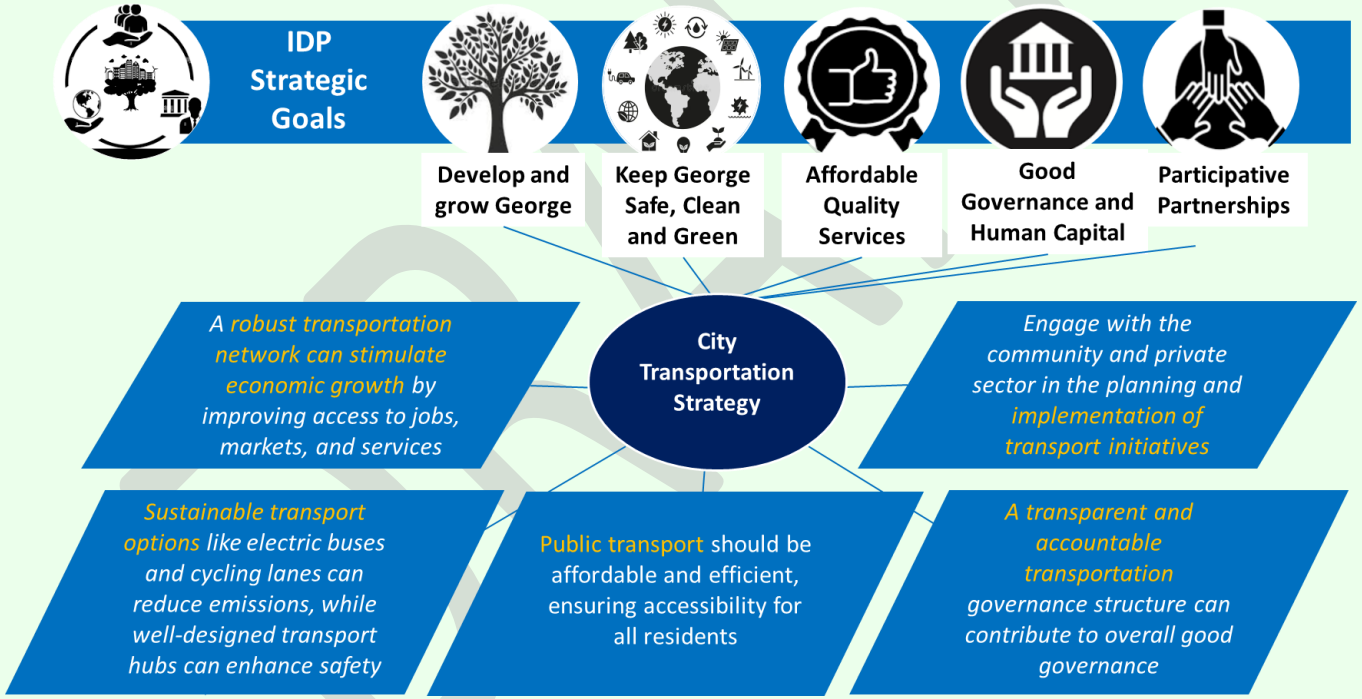


Figure 1-14: The City Transportation Strategy in context of the five IDP Strategic Goals.

To drive a new *City Transport Strategy* in terms of the IDP goals would require a new Transport Vision for George Municipality.

The proposed new Transport Vision and Mission Statement for George the is shown in **Figure 1-15**.

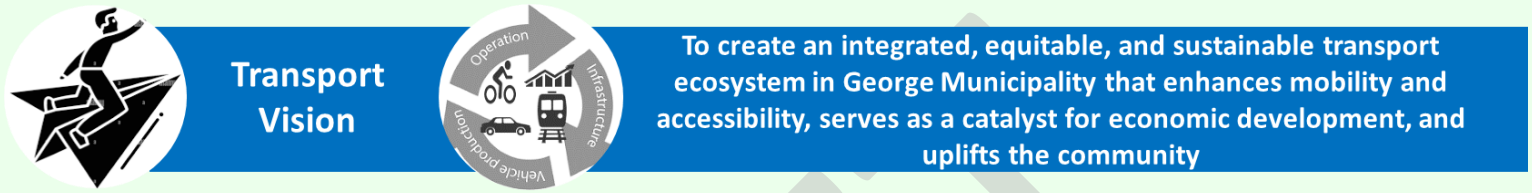


Figure 1-15: New proposed Vision and Mission statement for George Local Municipality.

This new Transport Vision is more specific and focussed to guide the establishment of transformational goals and objectives for a transport strategy to enable access, accessibility, and mobility in a sustainable transport ecosystem.

The following section elaborates on the reviewed CITP goals and objectives and sets new CITP goals and objectives in terms of George becoming a "*Smart City*", going forward.

1.9.5.2 Overarching Strategies, Goals and Objectives

The George Comprehensive Integrated Transport Plan Review 2014/2015 highlighted goals and objectives to be pursued in the new CITP achieving the vision applicable to operation, management, and implementation of transport systems, expressed as broad targets.

CITP Goals 2014/2015

The goals as identified in the CITP 2014/2015 review and the corresponding response are listed in Table 1-2:

Table 1-2: CITP Goals expressed as Broad Targets.

CITP Goals expressed as Broad Targets		
No.	**Goals as per CITP Review 2014/2015**	**Response definition in this CITP**
1	*A robust Operational Plan*	An Integrated Transport Plan incorporating the operations input for modes of transport where applicable.
2	*A transport authority to manage contracts*	An applicable municipal institutional structure with the right capacity and working agreements with other authorities to provide planning, implementation, and operational oversight for Transport in George until the transportation systems have matured to a level of a Transport Authority (TA). The development of a Transport Planning Authority (TPA) at the Garden Route District Municipal Level should also be considered to play a catalyst role to connect the other municipalities in particular Mossel Bay in terms of the location of national key point facilities as the Port and Airport in George.
3	*A process of business planning and negotiation to include existing operators in the IPTN*	Provide strategic direction in terms of the preferred public transport model for George Municipality including a transition framework to steer and monitor the process. This includes amongst others the Operating License Strategy

CITP Goals expressed as Broad Targets		
No.	**Goals as per CITP Review 2014/2015**	**Response definition in this CITP**
		(OLS) to guide WC Provincial Regulating Authority in the award of operating licenses in context of the Transport Vision for George.

In terms of the above broad targets the CITP is to serve as catalyst to work towards attaining these goals and objectives. The objectives are designed to guide the City Transport Transformation in achieving the stated vision and mission, focusing on integration, sustainability, safety, and community benefit. The next steps involve developing a strategic plan (part of the CITP) that outlines the initiatives and projects required to meet these objectives.

This would typically include the following listed in **Table 1-3**:

Table 1-3: Strategic Planning to meet Objectives.

Strategic Planning to meet Objectives		
No.	**Component**	**Strategy Activity**
1	**Transport Network Analysis**	Conducting a thorough analysis of the current transport network to identify gaps in accessibility and mobility.
2	**Stakeholder Engagement**	Engaging with the community to understand their needs and to ensure that the transport system is designed with the user at the centre.
3	**Policy Development**	Policy Development: Crafting policies that support the development of 30-Minute Towns and a 60-Minute City, including zoning laws, transport tariffs, and incentives for sustainable travel.
4	**Infrastructure Investment**	Identifying key areas for investment in infrastructure that will improve travel times and safety, such as dedicated bus lanes, cycle paths, and pedestrian zones.
5	**Technology Integration**	Leveraging technology to improve transport services, such as real-time travel information, mobile ticketing, and smart traffic management systems.

ITP Objectives 2014/2015

The following CITP 2014/2015 review objectives are incorporated in the development of this CITP.

- To coordinate and integrate all transport modes and services.
- To provide, maintain and operate efficient public transport infrastructure.
- To promote and integrate land use and public transport corridors.
- To ensure safety for all users of public transport.
- To ensure continuous short-term and long-term planning of all public transport aspects.
- To ensure the acquisition of funds and its effective expenditure on all transport infrastructure.
- To maximise empowerment opportunities for people using public transport.
- To improve the general levels of service of public transport.
- To minimise adverse impacts on the environment.
- To promote and plan for the role of appropriate non-motorised forms of transport such as walking and cycling.
- To promote and plan for universal access in IPTN, including walking and cycling.

- To promote travel demand management measures to encourage less car usage, to improve the environment and to improve road safety.
- To promote walking, cycling and other non-motorised transport measures.
- To provide non-motorised transport facilities and include their requirements in traffic impact studies.
- To incorporate self-enforcing traffic calming measures in the design of new residential areas and to apply the traffic calming policy for existing areas.

To align with the vision of an integrated, accessible, safe, affordable, and sustainable transport system that is well-managed and maintained for all in George, and the mission statement to enhance mobility and accessibility with equitable and sustainable standards, catalysing economic development and community upliftment, the recommended objectives are shown in **Table 1-4**.

CITP Objectives 2040

Table 1-4: CITP 2040 Objectives and Broad Strategy.

No.	Objective	Focus	Broad Strategy
1	Develop a cohesive transport network that seamlessly integrates various modes of transport, ensuring accessibility and ease of transfer for all users.	**Integrated Accessibility**	Forge a transport network that offers comprehensive accessibility, enabling most journeys, whether by public transport (30min), walking (60 min), or cycling (40min), to be completed within 30 minutes in local towns and 60 minutes across the city.
2	Maintain and operate a high-quality public transport infrastructure that meets the needs of the community and supports sustainable growth.	**Inclusive Mobility**	Deliver an inclusive transport system that accommodates the needs of all demographics, ensuring that transport for all is not just a concept but a tangible reality.
3	Foster a symbiotic relationship between land development and transport planning to create efficient public transport corridors.	**Health and Safety**	Promote healthier lives by encouraging active travel options that contribute to well-being and ensure that every journey is underpinned by the highest safety standards to reduce accidents and injuries.
4	Prioritise safety across all transport systems to protect users and instil public confidence.	**Sustainable and Efficient Infrastructure**	Maintain and operate a public transport infrastructure that supports the 30-Minute Town and 60-Minute City concept, ensuring efficient transit times and high-quality service provision.
5	Engage in proactive and strategic planning for the evolution of public transport, addressing both immediate and future community needs.	**Land Use Synergy**	Integrate land use planning with transport infrastructure development to support the creation of communities where daily needs are within a 30-minute reach on foot or by bike.
6	Secure and judiciously allocate funding to transport projects that demonstrate the highest impact on community mobility and sustainability.	**Proactive Safety Measures**	Implement proactive safety and well-being measures across all modes of transport, with a focus on reducing risks and promoting health through design and operation.

No.	Objective	Focus	Broad Strategy
7	Maximise empowerment and employment opportunities within the transport sector, particularly for historically disadvantaged groups.	**Strategic Planning for Accessibility**	Engage in strategic planning that prioritises accessibility, ensuring that transport systems are designed to shorten travel times and make daily commutes more efficient.
8	Continuously enhance the quality and reach of public transport services to meet and exceed community expectations.	**Community-Centric Empowerment**	Leverage transport projects to provide empowerment opportunities, with a focus on improving access to jobs and services, particularly for underserved communities.
9	Implement environmentally responsible practices and technologies to reduce the transport system's ecological footprint.	**Environmental Stewardship**	Commit to environmental stewardship by adopting transport solutions that minimise pollution and contribute to the creation of green, liveable urban spaces.
10	Promote and improve infrastructure for non-motorised transport, ensuring it is safe, efficient, and well-integrated into the urban fabric.	**Non-Motorised Transport Integration**	Enhance the infrastructure for non-motorised transport, ensuring that walking and cycling are not only safe and accessible but also integrated into the broader transport strategy to support the 20-Minute Town concept.
11	Advocate for and implement travel demand management strategies to encourage a shift towards sustainable transport modes.	**Sustainable Travel Culture**	Cultivate a culture of sustainable travel by implementing demand management strategies that incentivise the use of public and non-motorised transport modes.
12	Ensure that non-motorised transport considerations are integral to transport planning and impact assessments.	**Impactful Transport Planning**	Incorporate comprehensive transport planning and impact assessments that prioritise access, mobility, and the health of the community.
13	Incorporate community-centric traffic calming and safety measures in the design and retrofitting of residential areas.	**Residential Area Design for Safety**	Design and retrofit residential areas with traffic calming measures that support safe, accessible, and quick travel within the community.

1.9.5.3 George a "Smart City" - Objectives 2024 and beyond

The goals and objectives are crucial components in developing a thorough and enduring transport strategy, pivotal for the evolution of George Municipality into a Smart City.

The IDP refers to the concept of a "Smart City with the key points related to Smart City initiatives highlighted below:

- Smart City Principles

The George Municipality is focused on adopting Smart City principles to enhance urban management and governance. The Smart City approach emphasises the use of technology, data, and innovation to improve infrastructure, services, and the quality of life for residents. The strategic vision includes integrating modern communication infrastructure with sustainable economic development and prudent natural resource management. The municipality aims to create a city that is resilient, inclusive, and environmentally green.

- Strategic Objectives and Outcomes

The document outlines strategic objectives for the Smart City initiative, including the development of infrastructure that is sustainable and eco-friendly, improved governance through e-Government, and the enhancement of human and social services. The municipality is working towards establishing a Smart City framework that guides decision-making processes and ensures that smart technologies are effectively implemented to address urban challenges.

- Implementation and Governance

The George Municipality plans to prioritise Smart Governance, focusing on the development and implementation of a Smart City framework. This framework will support internal stakeholders in making informed decisions regarding smart city projects, with the ultimate goal of improving the city's resilience, innovation, and liveability. The strategy also includes developing specific smart city tools such as mobile apps, electronic supply chain management systems, and smart water meter installations to further advance these objectives.

Additionally, these objectives are vital within the broader context of regional transport planning, recognising George's influential role within the Garden Route District Municipality. It is imperative to consider and acknowledge the influences of neighbouring local municipalities, particularly Mossel Bay and Knysna, on George's Smart City development.

Consequently, in alignment with these considerations, certain key focus areas and objectives need to be integrated into the CITP, steering George's transformation into a Smart City. These additional focus areas and objectives are detailed in **Table 1-5**.

Table 1-5: CITP 2040 additional Focus Areas and Objectives.

No.	Focus Area	Objective
1	**Digital Integration and Smart Technologies**	Implementing smart traffic management systems, real-time data analytics for public transport, and digital platforms for user engagement and feedback. This will enhance efficiency and user experience.
2	**Energy Efficiency and Renewable Energy Sources**	Focusing on energy-efficient transport systems and exploring renewable energy sources for public transport, like solar-powered buses or charging stations.
3	**Public-Private Partnerships (PPPs)**	Encouraging PPPs to leverage private sector expertise and investment in developing innovative transport solutions.
4	**Data-Driven Decision Making**	Utilising data analytics for transport planning and policymaking, ensuring decisions are based on accurate, real-time information.
5	**Resilience and Adaptability**	Building a transport system that is resilient to environmental changes and adaptable to future technological advancements. To protect the integrity of the current and future transportation (including NMT) network
6	**Accessibility and Connectivity**	Ensuring the transport system is accessible to all, including people with disabilities, and is well-connected to key areas like residential neighbourhoods, business districts, and recreational areas. To identify current and future transportation blockages to enable pro-active funding and planning processes To support integration of communities

No.	Focus Area	Objective
7	**Education and Awareness Campaigns**	Promoting sustainable transport options through public education and awareness campaigns, encouraging a shift in public attitudes and behaviours.
8	**Innovation in Non-Motorised Transport**	Investing in innovative solutions for non-motorised transport, such as advanced cycling lanes, pedestrian-friendly streets, and e-scooter sharing programs.
9	**Urban Planning Integration**	Integrating transport planning with urban development to create compact, walkable communities that reduce the need for long-distance travel. To support areas of economic development and enhance future economic opportunity To support the densification of priority areas and nodes reflected in the MSDF

In the journey of transforming a city into a Smart City, data stands out as the pivotal element driving this transition. Recognising and defining appropriate data standards, formats, and types are critical, alongside understanding the methodologies of data acquisition, storage, and application across various processes. Without meticulous planning in this domain, the transport system's data infrastructure risks becoming a disjointed array of information segments that fail to intercommunicate effectively. This disconnection not only impedes integration but also escalates the costs associated with attempting to consolidate disparate data standards and ensuring data availability. Furthermore, establishing uniform data standards and formats is essential for facilitating the eventual integration with other Local Municipalities (LMs) within the District Municipality (DM), aiming to enable uninterrupted travel across municipal jurisdictions.

Some of the popular concepts in this field includes data digitisation (changing analogue data into digital formats), digitalisation (improve business operations by leveraging digitised data), and the eventual end state of digital transformation (comprehensive transformation of businesses and operations utilising fully integrated digital technologies). The relationship of these is depicted in **Figure 1-16**.

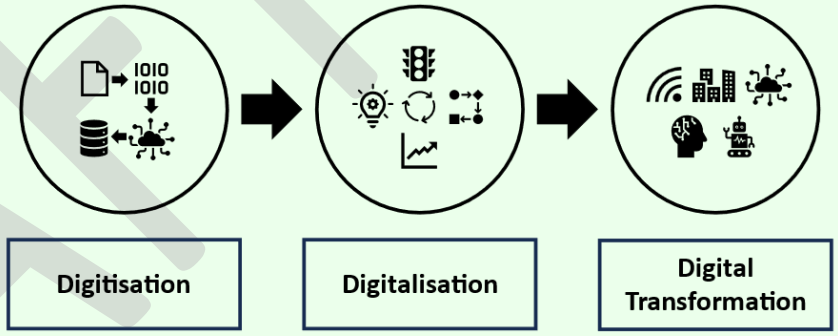


Figure 1-16: Depiction of the process of Digital Transformation, with Digitalisation and Digitisation being prerequisites.

With a data rich environment, where OD data, mode choices of people, travel information, all the different modes of transport, the transportation infrastructure are all readily available and digitised, this opens up a whole new world of opportunities, like seamless travel, automated fare collection, increased efficiencies of the transportation system, improved travel times, and innovation where applications can be developed by programmers. The possibilities are endless, but the foundation to create this enabling environment is

the data rich environment that needs to be laid and put in place now already while looking towards the future of George.

The Presidential Commission on the Fourth Industrial Revolution (PC4IR) (National Department of Communications and Digital Technologies, 2020) was tasked with a wide range of responsibilities, which encompasses formulating the nation's chief strategy for the Fourth Industrial Revolution (4IR) and proposing guidelines for different societal sectors to function within this overarching strategy. Taking note of this document in planning for the digital foundation is vital to confirm that George aligns with the country's comprehensive 4IR vision.

A Comprehensive Guide to Digital Transformation (Digital Adoption, 2022) offers valuable principles for transitioning into a digitised environment, utilising technology to boost efficiency and effectiveness.

The report, "Integrating Emerging Data Sources into Operational Practice – Opportunities for Integration of Emerging Data for Traffic Management and TMCs," funded by the United States Department of Transport, centres on incorporating new data sources into the operational processes of Traffic Management Centres (TMCs) and traffic management organisations.

Recent trends in the transportation industry that should be noted are the increase of data availability, Big Data, and the analytics thereof, Cloud Computing, Artificial Intelligence, Cybersecurity, and improved efficiencies through data.

Some of the transformative tools are highlighted below but elaborated on in the respective CITP chapters where applicable.

The international publication '*Data for Better Lives - June 2021'*, emphasises the transformative potential of data in various sectors and the insights from this report can guide strategies, assessments, and stakeholder consultations. The emphasis on data-driven decision-making can lead to more efficient and effective transport solutions for the region. The role of data is emphasised in various aspects of development, from understanding spatial dynamics to optimising logistics, which supports this in context if the George CITP, it becomes clear that data-driven decision-making can significantly enhance transport planning and execution.

It emphasises the role of data in addressing socio-economic challenges, enhancing public and private sector operations, and promoting sustainable development. I also confirm the potential of social media analytics in understanding traffic safety culture and the benefits of leveraging both public and private datasets for effective monitoring of natural resource extraction.

Data can be harnessed for better decision-making, planning, and implementation in various sectors. By leveraging data-driven approaches will confirm the important role of transportation in socio-economic development by which George Municipality can ensure that its transport strategies are aligned with current needs, future growth patterns, and sustainability goals. Data driven decision making confirms the importance of data governance, strategic planning, rulemaking, compliance, and learning for effective policymaking. The significance of laws, regulations, standards, and norms in ensuring data integrity, quality, and usability.

As emphasised earlier in the document the role of transport should in essence enhance the accessibility and mobility of all people in


George. The significance of this is unpacked in Chapter 2: Access, Accessibility and Mobility Framework.

The strategic direction adopted in George is to provide a well-designed public transport system that is implemented by the George Integrated Public Transport Network (GIPTN).

1.9.6 Smart City - Access, Accessibility and Mobility Framework

George Municipality's ongoing mission to be a "*city for a sustainable future"* requires the preparation of a Comprehensive Integrated Transport Plan (CITP). The CITP assists the municipality to achieve their goal of providing an integrated, accessible, safe, affordable, and sustainable transport system that is well managed and maintained for all people in George.

The demographics and culture of George within its urban and rural areas has changed dramatically over past decade and is in sync with what is happing internationally, nationally, and locally in other Cities in South Africa. People migration towards the Garden District Municipal Area, more specifically George has been on a rapid growth rate over the past five years (5), which looks very similar to a diaspora of nations as visible in Africa and internationally. This migration potentially has two main reasons namely, people generally looking for a better life opportunities and George Municipality is moving towards doing the right things to attract development and grow the economy.

George is now the biggest municipality in the Western Cape outside of the City of Cape Town. The Census 2022 figures indicate that the population has grown at 4,1% per annum since 2011, which appears to be the highest growth rate among the 19 intermediate cities in South Africa.

It is a thriving manufacturing hub, with growing activity in the textiles, dairy and juice, furniture, and timber products industries. Businesses are attracted by the range of state-of-the-art bulk services and business services the city has to offer. Sprawling informal settlements are evidence of the above.

Because of its location, George is a popular distribution centre for both governmental and non-governmental goods and services. Forestry, farming (vegetables, hops, dairy), light industries and tourism form the basis of the local economy.

Six prominent reasons for people to move to George (as per Stats SA Community Survey 2016), in descending order:

- A new dwelling for household (27,5%)
- Moving as a household with a household member (for health reasons) (12,8%)
- Moving to live with or be closer to spouse (marriage) (11,9%)
- Job transfer / taking up a new job opportunity (8,1%)
- Looking for paid work (7,4%)
- Education (studying, schooling, training) (6,6%)

Unfortunately, the above has a positive and negative impact on George since it will continue to put pressure on the provision of infrastructure and service to meet the growing demand.

To meet the various demands of a growing city with the main vision to be a "*city for a sustainable future*"", George will have to think, plan, develop, manage, operate, and maintain the city in smart and innovative ways and work towards transforming George into a "*Smart City*". The development of a **Smart City Comprehensive**


Integrated Transport Plan (SCCITP) is fundamentally a step into the right direction. The National Land Transport Transition Act (NLTTA) provides the thirteen (13) functional areas to structure a typical CITP for the preparation of an "integrated" plan, but it leaves the term "integration" open for various interpretations, ending up with a plan that has these separate chapters addressing these functional areas without a core thread that knit this all together. The inclusion of this section called "*Smart City – Access, Accessibility and Mobility*" is to provide this core thread in this CITP.

The function of a transport network, transport system and transportation services should in essence enhance and facilitate the *accessibility* and *mobility* of all people in George. This collective to provide people "access" to opportunities, amenities, and services. All the different components of an integrated transport plan must be viewed, assessed, and measured in terms of its level of providing access, accessibility, and mobility to all people in George. The significance of this is being unpacked further in this section.

1.9.6.1 Concepts of Access, Accessibility and Mobility

The concepts of "*Accessibility*" and "*Mobility*" are central and key to the development of effective transportation policies, plans when considering the design and improvement of a transportation network.

Accessibility refers to the ease with which individuals can reach desired services, destinations, or opportunities. It encompasses not only the physical infrastructure but also the availability and affordability of transportation options. In an urban context, accessibility is often measured by the proximity of essential services such as healthcare, education, employment, and recreation.

Mobility, on the other hand, pertains to the ability to move freely and easily within a transportation network. It involves the efficiency, speed, and convenience of travel between different locations. Mobility is concerned with how people and goods move from one place to another, considering factors such as traffic flow, transportation modes, and connectivity.

In the light of clarity and context, it is important that the definition and point of reference of certain concepts is firmly established and made in terms of the framework and use in the CITP. Its interpretation must be clear and understandable for effective application and implementation. The sections that follow build on this insight and go into much more detail so that it can be effectively used by various role players within and outside the transport planning environment with the purpose that real integration of the CITP can be realised.

The framework is a first step in the right direction in the context of the CITP document, but the goal would be to develop it further as a building block and foundation to provide context and guidance for future CITPs in George.

1.9.6.2 Purpose of the Access, Accessibility and Mobility Framework

Considering the above context and that the "*Access to, Accessibility, and Mobility Framework"* should be the backbone / core thread in this George CITP, it endeavours to facilitate the following <u>purpose statement</u>:

"*In developing a Comprehensive Integrated Transport Plan (CITP) for George, the primary objective is to establish a transport system that embodies the principles of Access, Accessibility, and Mobility. This*


system must be the backbone of the community's infrastructure, designed to provide equitable, efficient, and sustainable transport solutions. It will be responsive to the diverse needs of all residents, enhancing their quality of life by facilitating seamless and environmentally responsible movement within the municipality. The commitment is to create a transport network that not only meets current demands but is also adaptable to future growth and changes, ensuring long-term resilience and prosperity for George Municipality."

This framework will serve as practical guide to integrate land use planning (urban and rural) with transport planning ensuring that a common vision for the George can be achieved. The framework will also assist in the interface role the various applicable departments should fulfil, fostering teamwork, "singing from the same hymn sheet" and developing appropriate guidelines and standards from the various perspectives. It also provides direction to the other relevant chapters in the CITP to tie it together, serving as the "core thread".

1.9.6.3 CITP Transformational Goals

The added identified CITP objectives as highlighted in **Table 1-5** for context and reference. It serves as a guiding framework to transform George towards becoming a Smart City in terms of integrated transport planning, implementation, and operations. The following goals listed below and shown in **Figure 1-17** will provide guidance for the various CITP objectives.

CITP Transformational Goals:

1. Promote modal change and encourage model shift.
2. Reduce congestion and emissions.
3. Leverage digitalisation and the benefits of the 4th and 5th industrial revolutions.
4. Enhance safety, security, and health.
5. Develop appropriate road master plans.
6. Nurture economic growth.
7. Improve accessibility and mobility for people, goods, and services.

These goals should be applied, taking cognisance of the current prioritisation and forward planning to realise the intent of the MSDF. Overall strategy for Implementing these goals can be performed by implementing the following three (3) building blocks listed in **Table 1-6**.

Table 1-6: Three Building Blocks for implementing the overall strategy.

No.	Building Block	Objective Action
1	**Strategic Planning**	Develop a comprehensive plan that integrates these components into the transport system.
2	**Stakeholder Collaboration**	Work closely with government bodies, private sector, and community groups.
3	**Phased Implementation**	Roll out the plan in phases, starting with quick wins and gradually implementing more complex components.

The building blocks will be a key foundation for giving effect to this transformational change in transport planning, implementation and operations and requires the identification of those core components within the development of the CITP to be addressed in the various chapters according to the current NLTTA guidelines. These principles


/ core components are the common thread throughout the CITP to ensure that each component of the transport system works together towards achieving the George Transport Vision, goals and objectives and are for context and reference listed in **Table 1-7**. These core components furthermore are foundational for developing an "*Access, Accessibility and Mobility*" Framework helping to understand the important role this fulfil in the Smart City Transformation Process.

Figure 1-17: CITP Transformational Goals and Implementation Building Blocks.

Table 1-7: Core Components for a Smart City Comprehensive Integrated Transport Plan (SCCITP).

No.		Focus Area	Objective
1		**Integrated Transport Network**	• Seamless integration of different modes of transport (buses, trains, non-motorised transport) for smooth transit and connectivity. • Development of multimodal transport hubs.
2		**Smart Traffic Management**	• Implementation of intelligent traffic systems for real-time traffic monitoring and management. • Use of AI and IoT for adaptive traffic signal control, congestion management, and incident detection.
3		**Digital Platforms and Data Analytics**	• Development of digital platforms for journey planning, ticketing, and real-time passenger information. • Utilisation of big data analytics for transport planning and operational improvements.
4		**Sustainable and Green Transport Solutions**	• Promotion of electric vehicles (EVs) and the necessary charging infrastructure. • Development of cycling lanes and pedestrian-friendly pathways.
5		**Public Engagement and Participation**	• Platforms for community feedback and participation in transport planning. • Regular public consultations and information dissemination.
6		**Safety and Security**	• Enhanced safety measures in public transport and infrastructure. • Implementation of security systems like surveillance cameras and emergency response protocols
7		**Policy and Governance**	• Establishment of clear policies and governance structures for transport management. • Integration of transport planning with broader urban development policies.
8		**Economic and Financial Models**	• Adoption of emerging technologies (e.g., 5G, AI, IoT) in transport systems. • Encouragement of innovation in transport services and infrastructure.
9		**Technology and Innovation**	• Building a transport system resilient to environmental changes and adaptable to future needs. • Incorporation of climate change mitigation and adaptation strategies.

No.		Focus Area	Objective
10		**Resilience and Adaptability**	• Building a transport system resilient to environmental changes and adaptable to future needs. • Incorporation of climate change mitigation and adaptation strategies.
11		**Accessibility and Inclusivity**	• Ensuring transport services are accessible to all, including those with disabilities. • Designing transport systems that cater to the needs of diverse community groups.
12		**Education and Awareness**	• Campaigns to promote sustainable transport habits. • Educational programs on the benefits and usage of smart transport options.
13		**Spatial structuring**	• Enabling growth (population and/or social/ economic) in specific areas • Improve Accessibility to Key Services and Employment Centres • Support Sustainable Urban Development • Enhance Connectivity Between Targeted Growth Areas and Broader Region • Promote Inclusivity and Equity in Transport Systems • Facilitate Technological Advancements and Innovation in Transport

The mobility emphasis cannot be to the disadvantage of accessibility. In fact, access and accessibility should be considered the prime measure of transportation efficiency. Mobility usually comes at a higher premium than accessibility, but the goal would be to have an equilibrium serving the commuting community in a most cost-effective manner.

For a sustainable and holistic transportation policy, it's crucial to balance these perspectives. Prioritising accessibility can lead to more sustainable and community-centred solutions, reducing the environmental impact and enhancing the quality of life for residents.

1.9.7 Traffic Focus

A Traffic Focus concerns the movement and speed (Level of Service (LOS)) of vehicles, people, and goods. It is focused on dealing with the primary problems of congestion and inadequate roads. This perspective can also have implications, since it tends to prioritise road expansions, bypasses, and other infrastructure projects aimed at increasing the flow and speed of vehicles. It may not necessarily consider the broader impacts on communities, the environment, or alternative modes of transportation.

1.9.8 Accessibility Focus

An Accessibility Focus concerns the ability to reach opportunities, goods, and services. Movement itself is not the end goal; instead, the emphasis is on ensuring people can access what they need.

This perspective recognises that in different contexts, the solutions will vary. In urban areas, enhancing accessibility might mean promoting walking or cycling for short trips. In semiurban areas, it might mean developing local hubs of services to reduce the need for long commutes. In rural areas, it might still involve longer trips but using efficient and sustainable modes. It has long been recognised as a critical component of economic activity, quality of life and the potential to be more effective to capture individual experiences as compared to traditional measures that emphasise the transportation system.

Sustainable Urban or rural development with an *Accessibility Focus* emphasis will ensure that all amenities, services, and opportunities are easily accessible to all residents, regardless of their physical abilities, age, or socio-economic status.

1.9.9 Mobility Focus

Mobility Focus concerns the efficient movement of people and goods with the goal is to find the most efficient ways to move people and goods, regardless of the mode of transportation.

This perspective shifts the focus from just vehicles to also include other modes of transportation like buses, trains, bicycles, and even walking. It promotes a more holistic view of transportation, emphasising the importance of public and collective modes of transport.

In essence, while the Traffic Focus is more about facilitating the movement of vehicles, the Mobility Focus is about facilitating the movement of people and goods in the most efficient way possible. The Accessibility Focus, on the other hand, is about ensuring people can access opportunities, whether that means moving a lot or a little. **Figure 1-18** shows the three different perspectives in terms of improvement strategies and typical performance indicators. These typical improvement strategies and indicators and associated attributes are being addressed and elaborated within the various chapters of the CITP dealing with the transport network, infrastructure, and systems components.

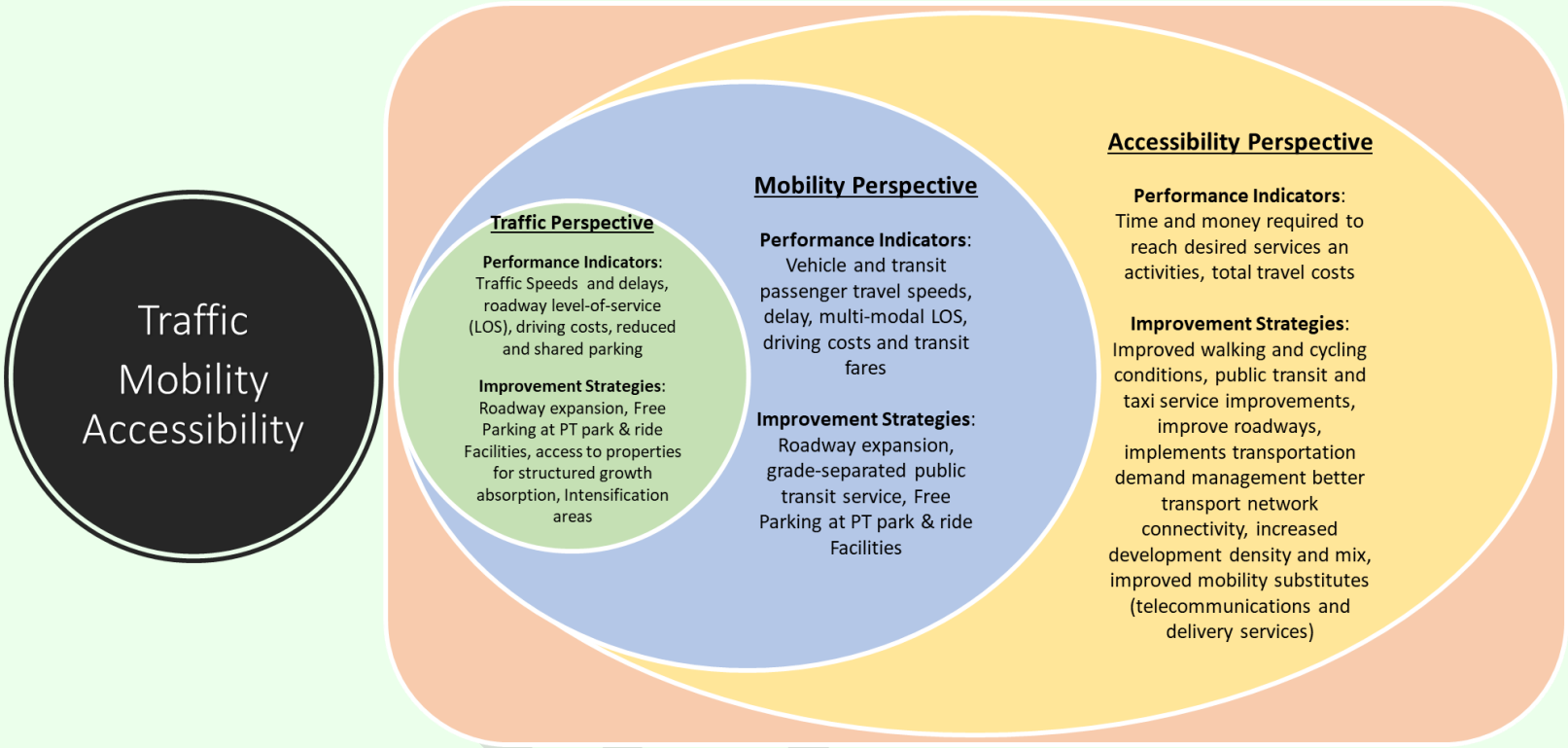


Figure 1-18: Traffic, Accessibility and Mobility Perspectives.

Based on the introduction and context of the "*Access, Accessibility and Mobility"* Framework concept and perspectives the vision, principles, objectives, and particular measures that would be applicable for the George CITP will be discussed further in this chapter. The provide additional context the principles and concepts of "*Networks and Connectivity"* will be highlighted to complete the foundational input in terms of Access, Accessibility and Mobility Framework for the CITP.

1.9.9.1 Access, Accessibility and Mobility Framework (AAMF) Vision and Objectives

The vision, goals and objectives encapsulate in essence what the municipality would like to achieve and aspire towards. It identifies key areas of service, qualifies service delivery and points to specific outcomes (objectives and goals).

1.9.9.1.1 A paradigm shift in urban planning: towards sustainable mobility concepts

Addressing urban mobility challenges calls for a pivotal transformation in urban planning. Such a transformation embraces the notion of compact, multi-use urban spaces to enhance accessibility and minimise transportation demand. Urban planning must centre around the residents, ensuring that destinations—whether for work, leisure, services, or shopping—are within close proximity, thereby limiting travel distances and the need for extensive transportation.

The focus of urban planning should be the efficiency of connections between people and places, prioritising accessibility and negating the necessity for transport infrastructure expansion that only serves to increase travel. The ultimate goal is for city dwellers to fulfil their daily needs with little to no travel. To support this, a move away from private vehicles to sustainable mobility solutions is imperative. This includes developing public transport that is not only broad-reaching and high-capacity but also energy-efficient and low in emissions.

Urban planning must advocate for an attractive, accessible, and affordable public transport network, catering to all citizens, especially those in less affluent communities. As urban trips frequently involve various transport modes, the integration of a multimodal transport system becomes essential. Such systems, combining high-capacity public transports like metros and BRTs with feeder services, should be flawlessly interconnected to maximise usage and streamline 'last mile' connectivity.

Beyond these strategic shifts, urban space must be reconceptualised to optimise traffic flow and encourage non-motorised forms of transport. The redesign of streets to include pedestrian walkways and bike lanes is essential, as is the creation of transport hubs that act as connecting points between different transport modes. These hubs enhance the public transport system's reach at both the macro (city and regional) and micro (neighbourhood) levels.

Additionally, urban design must consider area intensification and structured growth absorption, factoring in the socio-economic implications. Shared and secondary access points should be methodically planned for each node or intensified area. Parking solutions need to evolve as well, with a move towards reduced and shared parking facilities to complement the broader objectives of a sustainable urban transport strategy.

Smart Mobility and Smart Tourism

George, already a popular tourist destination with its effective GO GEORGE bus system, stands on the brink of embracing Smart Mobility and Smart Tourism. The city's transition into a smart urban space is especially pertinent given the mounting challenges of traffic congestion, pollution, and resource inefficiency. Smart mobility goes beyond conventional road network expansion; it signals a transformative shift towards the integration of urban infrastructure via intelligent systems. Serving as a cornerstone of smart cities, smart mobility strives to alleviate congestion, slash commute times, and curtail road accidents, all while allowing travellers the flexibility to customise their routes. The goal is to re-envision urban transport through strategic initiatives and cutting-edge technology, integrating intelligent transport systems, open data platforms, big data analytics, and active citizen participation. These components work together, forming the backbone of an agile, proactive urban transport network.

Simultaneously, the emergence of smart tourism aligns with the global vision of smart cities. An example is India's drive to establish 100 smart cities, with Phase-I spotlighting a dual-framework design. This design provides a base layer of security and infrastructure uniformity, while the second layer caters to the distinct characteristics and requirements of each city, including bespoke strategies for business, social growth, and disaster preparedness.

The unification of smart city frameworks is central to this evolution, underpinning data security and fostering a cohesive architecture that promotes application and process interoperability, expedites deployment, and curbs expenditure. It also permits the consolidation of data at a national scale, boosting the efficacy of smart city initiatives.

A thriving smart city ecosystem is rooted in community-led innovation, managed by dedicated data stewards working in tandem with urban leaders and central agencies. This collaborative innovation can harness and monetise data, aiding the sustainable growth of smart cities.

Complementing these initiatives, the reinstatement and enhancement of the commuter rail service between George and Mossel Bay, including tourism rail links through the Garden Route District Municipality to Wilderness and Knysna, represent strategic moves towards robust smart tourism and investment. Revitalising and upgrading rail infrastructure such as tracks, sidings, and stations serve dual purposes for freight and commuter transit and hold considerable economic promise.

Traffic, Accessibility and Mobility Focus Areas

In the realm of urban planning, the consideration of transportation and land use extends far beyond the mere layout of roads and buildings. It encompasses a vision of a holistic system, one that seamlessly integrates living, working, and recreational spaces. This approach aims to foster an environment where efficiency and sustainability are not just ideals, but everyday realities. The key elements of Traffic, Mobility, and Accessibility are not isolated factors; they form a cohesive framework that underpins the creation of vibrant, inclusive, and progressive urban landscapes. By focusing on these aspects, city planners strive to craft communities that not only meet the needs of their residents today but are also adaptable and resilient for the challenges of tomorrow. **Table 1-8** indicates the key factors and associated activities in context of giving a particular focus in terms Traffic, Accessibility and Mobility for further reference in the CITP.

Table 1-8: Key Factors and Activities related to the Focus Areas: Traffic, Accessibility and Mobility.

No.	Focus Area	No	Factors	Activity
1	**Traffic**	1	Road Infrastructure	City / Town / Transport planners need to design roads that cater to current and future traffic demands. This includes planning for main arteries, secondary roads, and local streets, ensuring they are interconnected and efficient
		2	Traffic Volume	Estimations of future traffic volume can influence the width of roads, the need for overpasses, underpasses, and other infrastructure.
		3	Vehicle Types	Different zones in a city might have restrictions or preferences for certain vehicle types, like pedestrian-only zones or areas where heavy trucks are restricted.
		4	Traffic Regulations	City-wide standardization of traffic rules, signage, and signals ensures consistency and safety.
		5	Traffic Management Systems	Smart traffic management systems can be implemented to optimise traffic flow, reduce congestion, and improve air quality.
		6	Public Events	City / Town planners need to account for spaces where public events can be held without severely disrupting regular traffic
2	**Accessibility Focus**	1	Proximity to Services	Land use planning should ensure that residential areas are close to essential services. Transport planning to facilitate access to areas of intensification and densification --- This reduces the need for long commutes and promotes local accessibility.
		2	Transportation Options	Diverse transportation options should be available across all city zones, ensuring everyone has access regardless of their location.
		3	Physical Barriers	City planning should prioritise inclusivity, ensuring that infrastructure is accessible to the elderly, children, and people with disabilities.
		4	Digital Connectivity	As cities become smarter, ensuring digital connectivity becomes as crucial as physical connectivity.
		5	Land Use Policies	Zoning regulations can influence the city's layout, determining where businesses, industries, residences, and green spaces are located.
		6	Socio-economic Factors	Affordable housing and transportation options should be available to ensure that all city residents, regardless of income, have access to opportunities.
3	**Mobility Focus**	1	Modes of Transportation	A city should offer diverse transportation options. This includes a robust public transit system, pedestrian-friendly zones, and cycling paths.
		2	Connectivity	Transit hubs, like bus and train stations, should be strategically placed to ensure easy transfers and connectivity.
		3	Infrastructure	Infrastructure investments should prioritise both motorised and non-motorised transport. This includes everything from bus stops to bike-sharing stations.
		4	Public Transportation Frequency	High-density areas or business districts might require more frequent public transportation services.
		5	Environmental Impact	Cities might prioritise green transportation options, like electric buses or trams, to reduce emissions.
		6	Technological Integration	Integrating technology, like mobile apps for ticketing or route planning, can enhance the user experience.

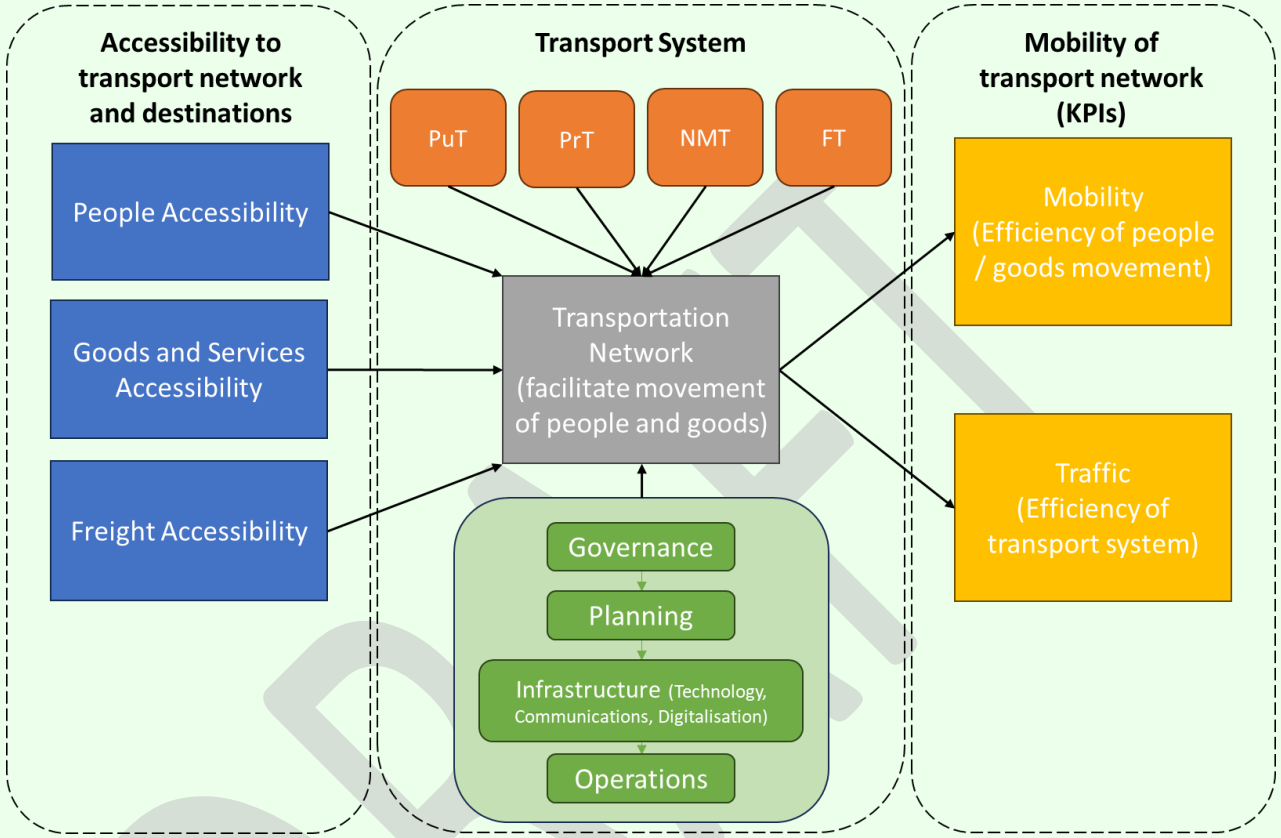


Figure 1-19: Components of the Integrated Transport for George.

In summary, when city planners consider transportation and land use, they're not just thinking about roads and buildings. They're envisioning a holistic system where people can live, work, and play efficiently and sustainably. The factors of Traffic, Mobility, and Accessibility Focus provide a framework to ensure that cities are vibrant, inclusive, and forward-thinking.

Figure 1-19 shows diagrammatical the integration of the three (3) core components of Accessibility *to the transport network and destination*, the *Transport System* and *Mobility of the transport network* with its sub elements working together towards the development of a comprehensive Integrated Transport Plan for George. It forms the foundational basis and context for the development of required policy, strategy, frameworks, and various


plans (e.g., Roads Master Plan, NMT Plan, Freight Plan, etc.) for the different functional areas of the transport system.

Chapter 1 outlines the overarching transport vision and objectives for the George Municipality, setting the stage for a detailed exploration of the current transport framework. Furthermore, the Key Concepts Of Access, Accessibility and Mobility are presented in **Annexure A** . This chapter has provided the necessary context and introduced the principles guiding the Comprehensive Integrated Transport Plan (CITP) 2023-2028. With an emphasis on integration, accessibility, safety, affordability, and sustainability, the aim is to cater to the comprehensive mobility needs of all George residents, aligning with national transport guidelines and local development goals.

Chapter 2, "Summary of the Transport Register," shifts focus from the strategic to the empirical, focusing on the present state of George's transport system. This section is designed to present a detailed analysis of existing transport infrastructure, modal usage, service patterns, and the demographic distribution of transport demand within the municipality. By examining current transport dynamics, sets a baseline for future improvements and strategic interventions.

The structure of the CITP document is methodically arranged to facilitate a logical flow from conceptual frameworks to actionable strategies. Following the summary of the transport register, the document progresses through spatial development considerations (**Chapter 3**), needs assessments including operational aspects (**Chapter 4**), and a summary of the transport modelling strategy (**Chapter 5**), culminating in targeted strategies, ranging from **Chapter 6** to **10**, for public transport, infrastructure development, demand management, non-motorised transport, and freight logistics. **Chapter 11** focuses on other transport related strategies including Intelligent Transport Systems (ITS), Road User Safety, Parking Law Enforcement, Tourism and Institutional Arrangements. **Chapter 12** contains a summary of the Eden District Integrated Transport Plan (although the Eden District has recently been renamed to the Garden Route District). **Chapter 13** contains a Funding Strategy and a Summary of Proposals and Programmes, and **Chapter 14** contains a short chapter on Stakeholder Consultation. Lastly, the CITP ends off with Conclusions and Recommendations.

Chapter 2 provides a comprehensive understanding of George Municipality's transport status quo. This serves as the foundation for the subsequent chapters, which will detail the approach taken to overcome the identified challenges, leveraging opportunities for improvement, and systematically working towards the realisation of George Municipality's transport vision. Each section is crafted to contribute to a holistic strategy, ensuring that the transport system evolves to meet both current and future needs of the George community.


2 SUMMARY OF THE TRANSPORT REGISTER

The Transport Register (TR) is part of a suite of Comprehensive Integrated Transport Plan (CITP) documents, as mentioned in **Section 1**. The TR aims to provide a comprehensive snapshot of all transport systems within the George Local Municipality (GLM).

The Garden Route District Municipality is a Category C municipality situated in the Western Cape Province. The CITP covers the jurisdictional area of the George Municipality and considers demand trip "generators" and "attractions" that are located outside the George Municipal Area.

The data gathering strategy is based on five key process elements:

- Assessment of existing data sources
- Identifying data gaps
- Consultation with stakeholders
- Collection of data/information
- Fieldwork

Various databases were used in the analysis and collation of data for the transport register, including Western Cape Learner Enrolment, George GIS Data, GO GEORGE Routes and Timetables, and others.

2.1 Demographic information

As of 2021, George municipality had a population of 221,637, with notable economic inequality indicated by a Gini Coefficient of 0.62 and a Human Development Index of 0.76. The TR covers a broad spectrum of transport-related topics, from the regular daily public transport system to freight logistics. It also delves into financial aspects and aims for rationalisation to improve efficiency. Socio-economically, the area has an unemployment rate of 14.2% as of 2020, with the major contributing sectors being Finance, Wholesale & Retail, and Manufacturing. Technological ownership is high, particularly mobile phones, which are instrumental in information dissemination.

2.2 General Overview of Transportation System

This section provides and overview of the transportation system, including modal split, mode choice, dissatisfaction levels, traffic composition estimates, and roads and traffic conditions.

2.2.1 Modal Split

The section utilises data from the National Household Travel Survey 2020 (NHTS) (STATS SA, 2020) to provide a summary of the modal splits for various trip purposes in **Table 2-1**. The sample size is 230 households and 869 individuals in George.

Table 2-1: Mode Split calculated from NHTS 2020 (STATS SA, 2020).

Modal Split (%)	NMT (Non-Motorised Transport)	PrT (Private Transport)	PuT (Public Transport)
All Trips	44.50%	41.30%	12%
Work Trips	14%	62.60%	22.60%
Educational Trips	61.80%	27%	10.30%

The remainder of the section provides a bit more details into these calculations.

2.2.1.1 Modal split for all work trips surveyed

Table 2-2 indicates the modal split between Non-Motorised Transport (NMT), Private Transport (PrT), and Public Transport (PuT) from the NHTS 2020 for GM (STATS SA, 2020). PuT comprises about 21.7% of transport with PrT comprising 42.1%, and NMT transport comprising some 34.7%. The other category includes special transport for people with disabilities, bicycles, scooters/motorcycles and other transport types, which is a very small percentage for George.

Table 2-2: Modal split for all trips in George Municipality.

Mode	Transport Type	Trips Surveyed	Percentage Split
NMT	Walking all the way	189	34.7%
NMT Total		**189**	**34.7%**
Private Transport (PrT)	Car / Bakkie / Truck/ Lorry driver	93	17.1%
	Car/ Bakkie/ Truck/ Lorry passenger	136	25.0%
PrT Total		**229**	**42.1%**
Public Transport (PuT)	Bus	48	8.8%
	Minibus Taxi	70	12.9%
PuT Total		**118**	**21.7%**
Other	Other	8	1.5%
Other Total		**8**	**1.5%**
Grand Total		**544**	**100.0%**

2.2.1.2 Modal split for all work trips surveyed

Table 2-3 indicates the modal split for all work trips surveyed, indicating 14% use NMT for work, 62,6% use PrT, and 22.6% use PuT.

Table 2-3: Modal split for work trips in George Municipality.

Mode	Transport Type	Trips Surveyed	Percentage Split
NMT	Walking all the way	34	14.0%
NMT Total		**34**	**14.0%**

Mode	Transport Type	Trips Surveyed	Percentage Split
PrT	Car/ Bakkie/ Truck/ Lorry driver	120	49.4%
	Car/ Bakkie/ Truck/ Lorry passenger	32	13.2%
PrT Total		**152**	**62.6%**
PuT	Bus	24	9.9%
	Minibus Taxi	31	12.8%
PuT Total		**55**	**22.6%**
Other	Other	2	0.8%
Other Total		**2**	**0.8%**
Grand Total		**243**	**100.0%**

2.2.1.3 Modal split for all educational trips surveyed

Table 2-4 shows the modal split for all work trips surveyed, indicating 50.3% use NMT for educational destinations, 27.2% use PrT, and 21.9% use PuT.

Table 2-4: Modal split for educational trips in George Municipality.

Mode	Transport Type	Trips Surveyed	Percentage Split
NMT	Walking all the way	76	50.3%
NMT Total		**76**	**50.3%**

Mode	Transport Type	Trips Surveyed	Percentage Split
PrT	Car/ Bakkie/ Truck/ Lorry driver	6	4.0%
	Car/ Bakkie/ Truck/ Lorry passenger	35	23.2%
PrT Total		**41**	**27.2%**
PuT	Bus	23	15.2%
	Minibus Taxi	10	6.6%
PuT Total		**33**	**21.9%**
Other	Other	1	0.7%
Other Total		**1**	**0.7%**
Grand Total		**151**	**100.0%**

2.2.2 Mode Choice

Figure 2-1 shows the main factors that households consider when deciding on which mode of travel to choose. Some other insights gained from the Transport Register includes:

- The average travel time to work is 32.7 minutes, and to educational destinations is 29 minutes.
- People walk longer distances to taxi ranks compared to bus stations.
- 23% of households spend more than 10% of their income on transport.

2.2.3 Dissatisfaction Levels

Figure 2-2 shows the largest transport related problems experienced by households in the George area, where each household was asked to indicate the two largest transport problems they experience as a household, where both are accounted for in the figure. It is interesting to note that 22.3% of the survey respondents indicated that they experience no transport problems.

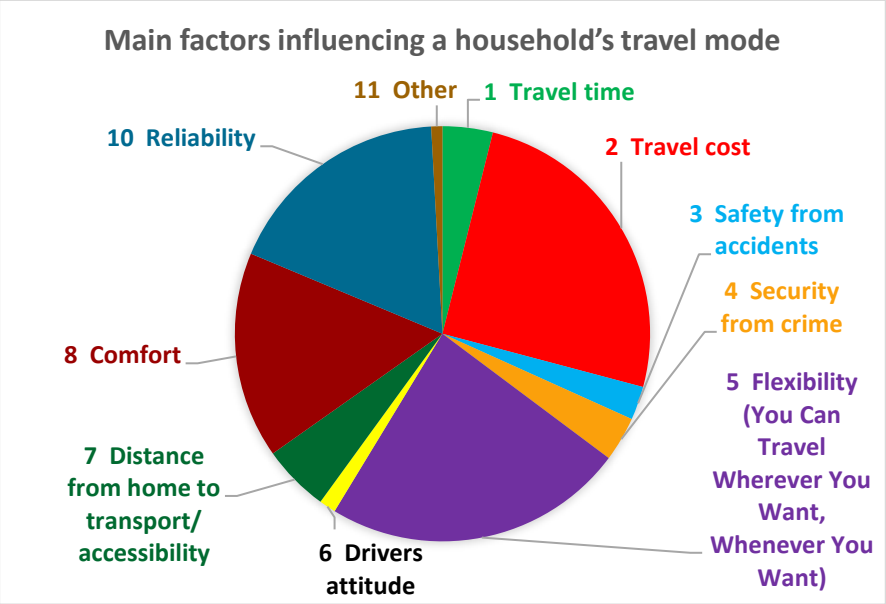


Figure 2-1: Main factors influencing a household's travel mode in George Municipality (STATS SA, 2020).

The second and third largest transport related problems are that no buses or taxis are available, with 18.9% and 12.3% of respondents indicating this, respectively. The other contributing factors are reckless driving (8.2%), other (6.1%), overload (5.1%), rude drivers (4.4%), no trains available (4.1%), no buses at specific times (3.6%), crime (2.7%), taxis too expensive (2.2%). The other factors are all less than 2% of respondents' feedback each.

2.2.4 Traffic Composition Estimate

A calculation was done for the motorised modal split from a small sample size of traffic surveys conducted for this CITP, which provides an estimate.

- AM Peak Period (3 hours)
  - Light Vehicles: 89.4%
  - Taxis (MBTs): 4.7%
  - Buses: 0.8%
  - Heavy Vehicles: 5.1%
- PM Peak Period (3 hours)
  - Light Vehicles: 91.8%
  - Taxis (MBTs): 3.0%
  - Buses: 0.9%
  - Heavy Vehicles: 4.4%

Public Transport Utilisation (AM Peak Period) Estimate

- Minibus Taxis (MBTs)
  - Capacity Utilisation (Assumed based on surveys): 99.7%
  - Maximum Capacity: 15 passengers per vehicle
  - Contribution to PuT Passenger Share: 67%
- GO GEORGE Buses
  - Capacity Utilisation (Assumed based on surveys): 50.9%
  - Maximum Capacity: 84 passengers per bus
  - Contribution to PuT Passenger Share: 33%

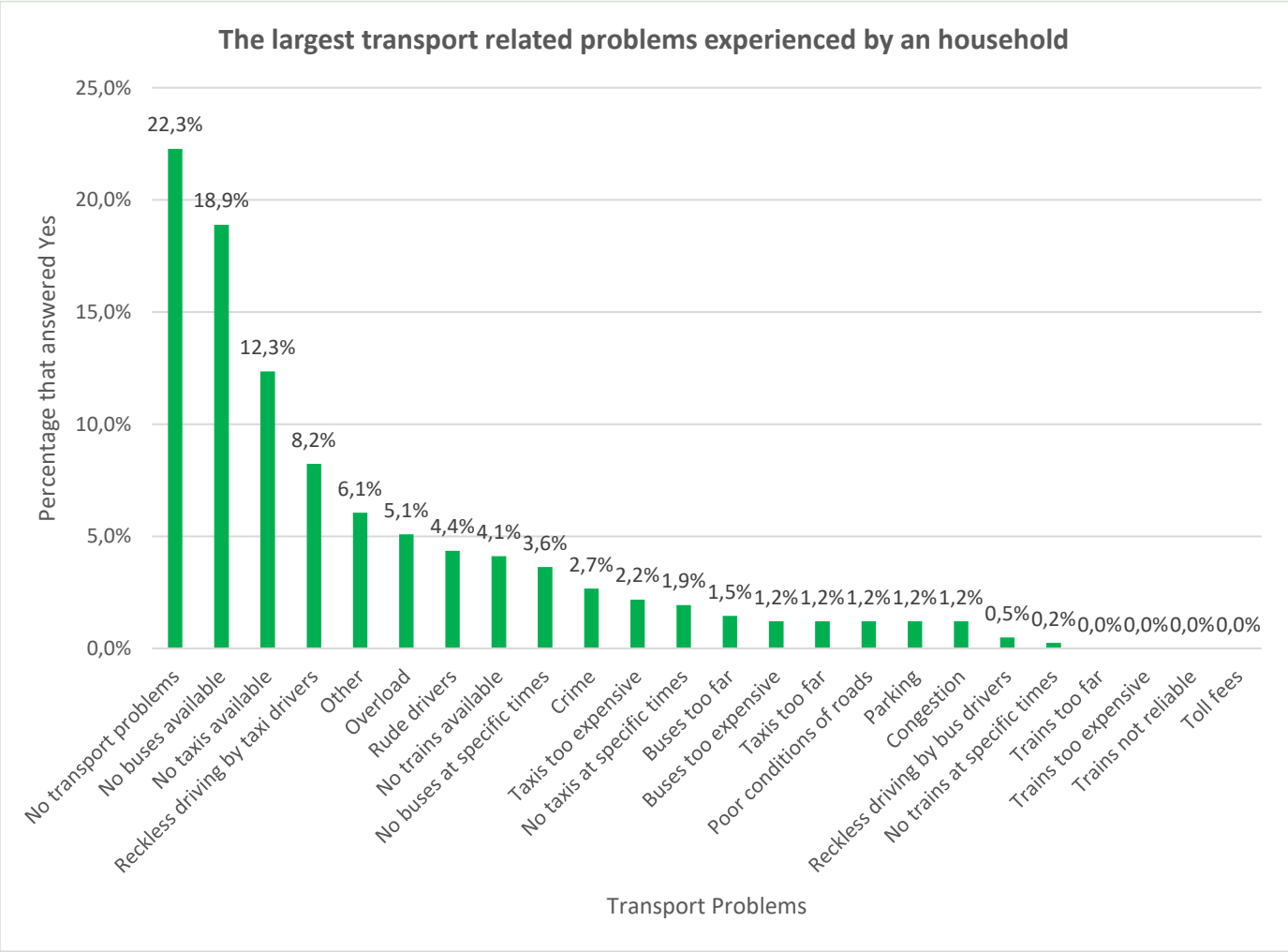


Figure 2-2: Transport related problems experienced by households in George (STATS SA, 2020).

2.2.5 Roads and Traffic

This section discusses the road conditions and traffic volumes in George, based on data from the Pavement Management System (PMS) and PTV VISUM transport model.

Figure 2-3 provides the Road Hierarchy for the roads in George Urban Area. **Table 2-5** indicates the road class and length, and **Figure 2-4** indicates the road condition for George Urban Area, whereas the conditions of the outlying areas are presented in the **Annexure B** attachment.

Table 2-5: George Local Municipality Road Length Summary as of 1 December 2022 (Western Cape Government, 2023).

Road Type	Total proclaimed road length [km]	Effective (Physical road length) [km]	Surfaced [km]	Surfaced %
National Roads	54.4	54.4	46.9	86.2%
Trunk Roads	445.1	396.5	272.7	61.3%
Main Roads	245.1	205.3	96.5	39.4%
Divisional Roads	625.4	606.0	37.1	5.9%
Minor Roads	404.7	403.7	7.5	1.9%
Total	1774.7	1665.9	460.7	100%

Two measures were selected to for analysing traffic on the network, namely the Volume to Capacity Ratio and the Operating to Posted Speed Ratio. The Volume to Capacity Ratio measures the ratio of vehicle volumes on a link to the vehicle capacity for that specific link, and this is illustrated for the George Urban area in

Figure 2-5: The modelled Volume to Capacity Ratio of vehicle on the road for the AM Peak Hour, with the top congestion problems highlighted

. The Operating to Posted Speed Ratio measures the ratio of the operating speed of vehicles on a link level during the model simulation to the posted speed for the corresponding link, and this is illustrated in **Figure 2-6** for the George Urban area. The top five congestion problems identified based on the two traffic measures are tabulated in **Table 2-6**, and also indicated in **Figure 2-6**.

As there are higher PrT volumes in George, PrT is therefore the largest contributor to congestion. As expected, the bulk of the traffic volumes are carried on the four major corridors within the George area, namely:

1. York Street (Pacaltsdorp – George Central)
2. Knysna Road/ Courtney Street (N12) (N2 – George Central)
3. Nelson Mandela Boulevard (Thembalethu – George Central).
4. N2 Freeway passing through George.

It is evident from the PuT traffic volumes, that the Nelson Mandela Corridor serves a significant mobility role in George.

*Table 2-6: Top five congestion problems identified from the George CITP model, along with the two traffic measures adopted, as also indicated in **Figure 2-6**.*

Rank	Description	Volume to Capacity Ratio	Operating to Posted Speed Ratio
1	Nelson Mandela Boulevard, South of the N2, both directions.	0.73	0.64
2	Davidson Road where C.J. Langenhoven Road meets at the circle, as well as a bit of Plover Road just North of the circle, and the surrounding area.	0.4	0.61
3	Glenwood Avenue, South of Kraaibosch Estate Street.	0.37	0.6
4	Plattner Blvd, North of York Street.	0.4	0.57
5	Knysna Road section, between entrance to Garden Route Mall and West of the N2.	0.4	0.55

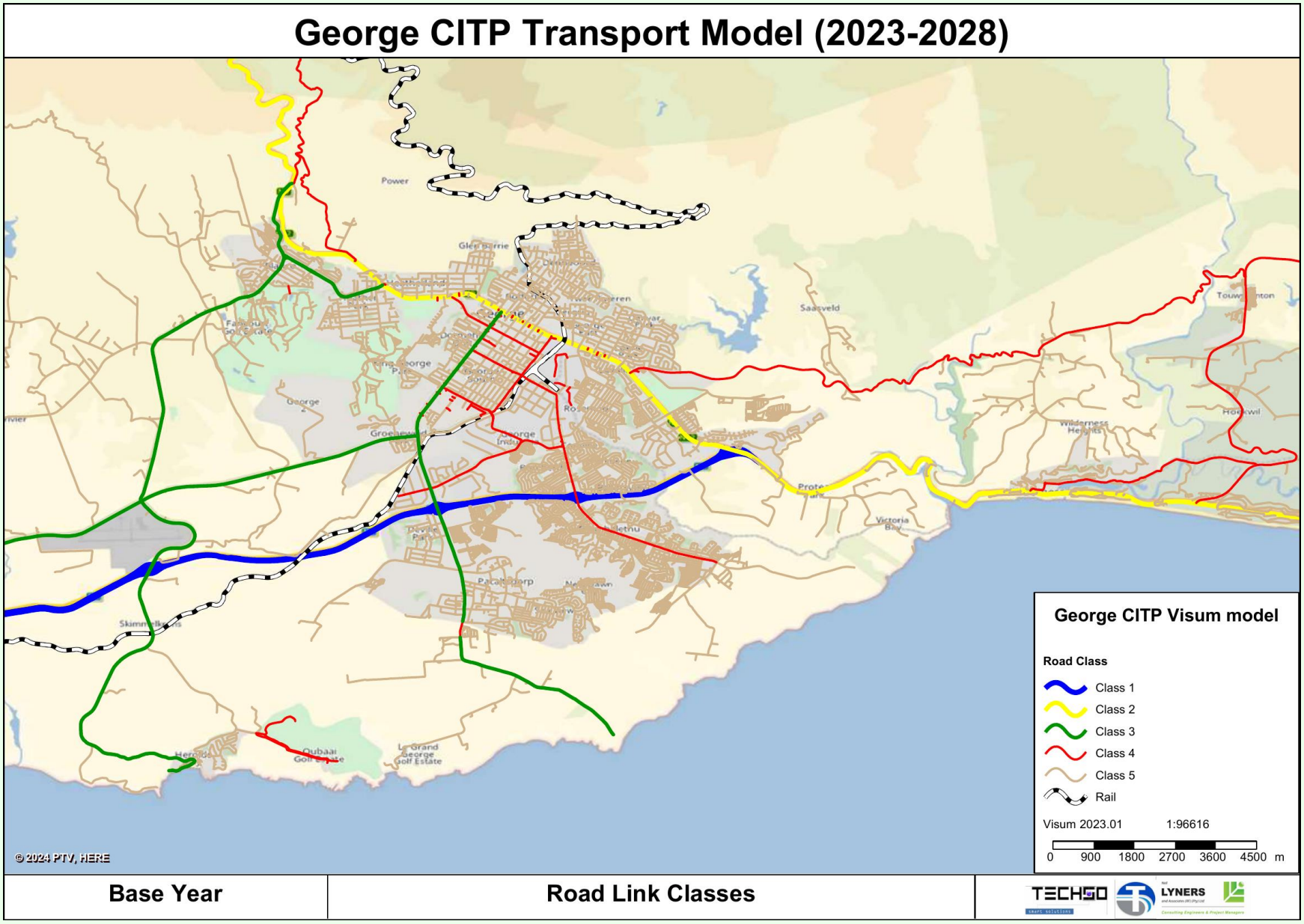


Figure 2-3: Road Hierarchy for George, as used in the Base Year of the Transportation Model.

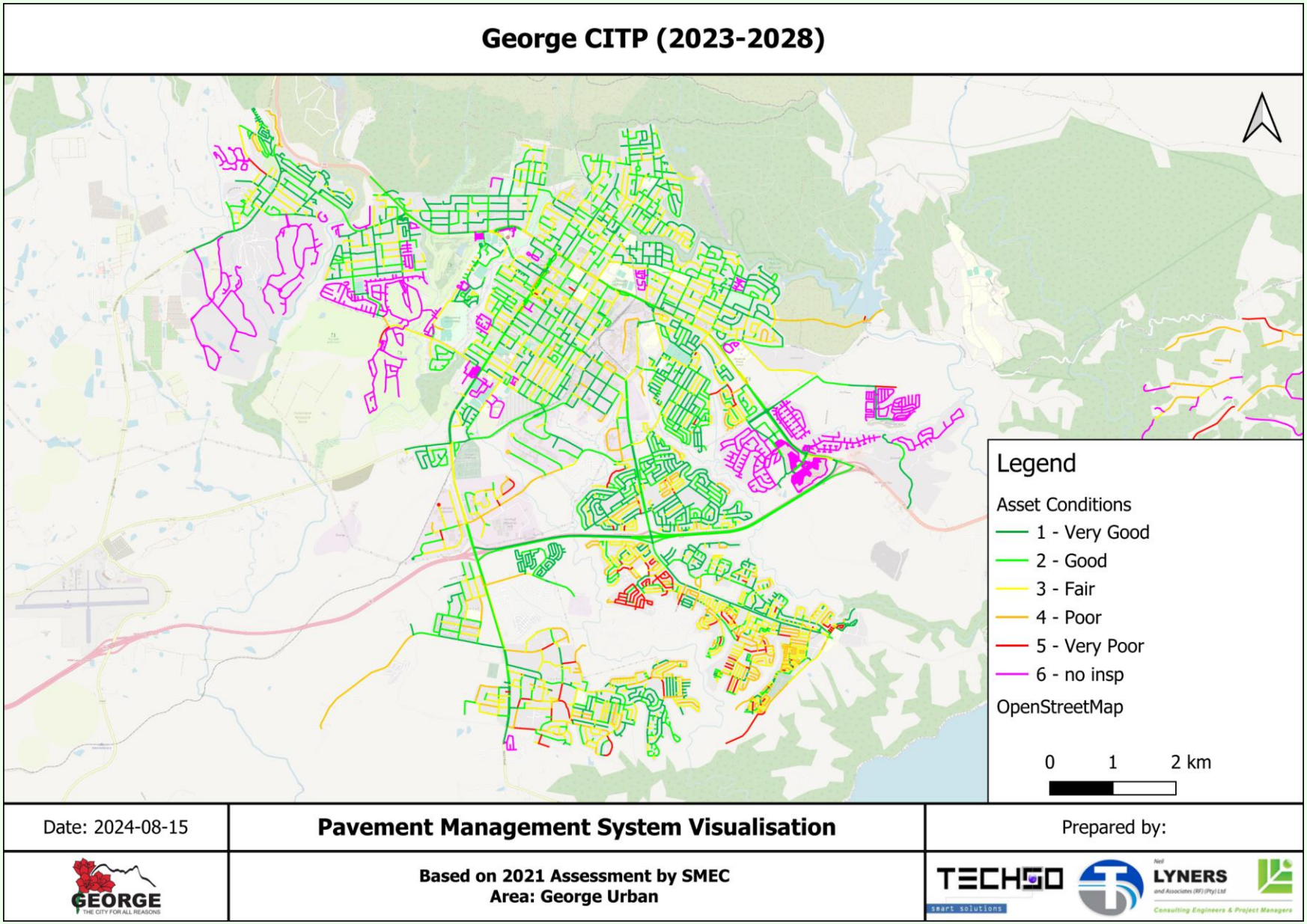


Figure 2-4: Road conditions for the George Urban area from the Pavement Management System, 2021.

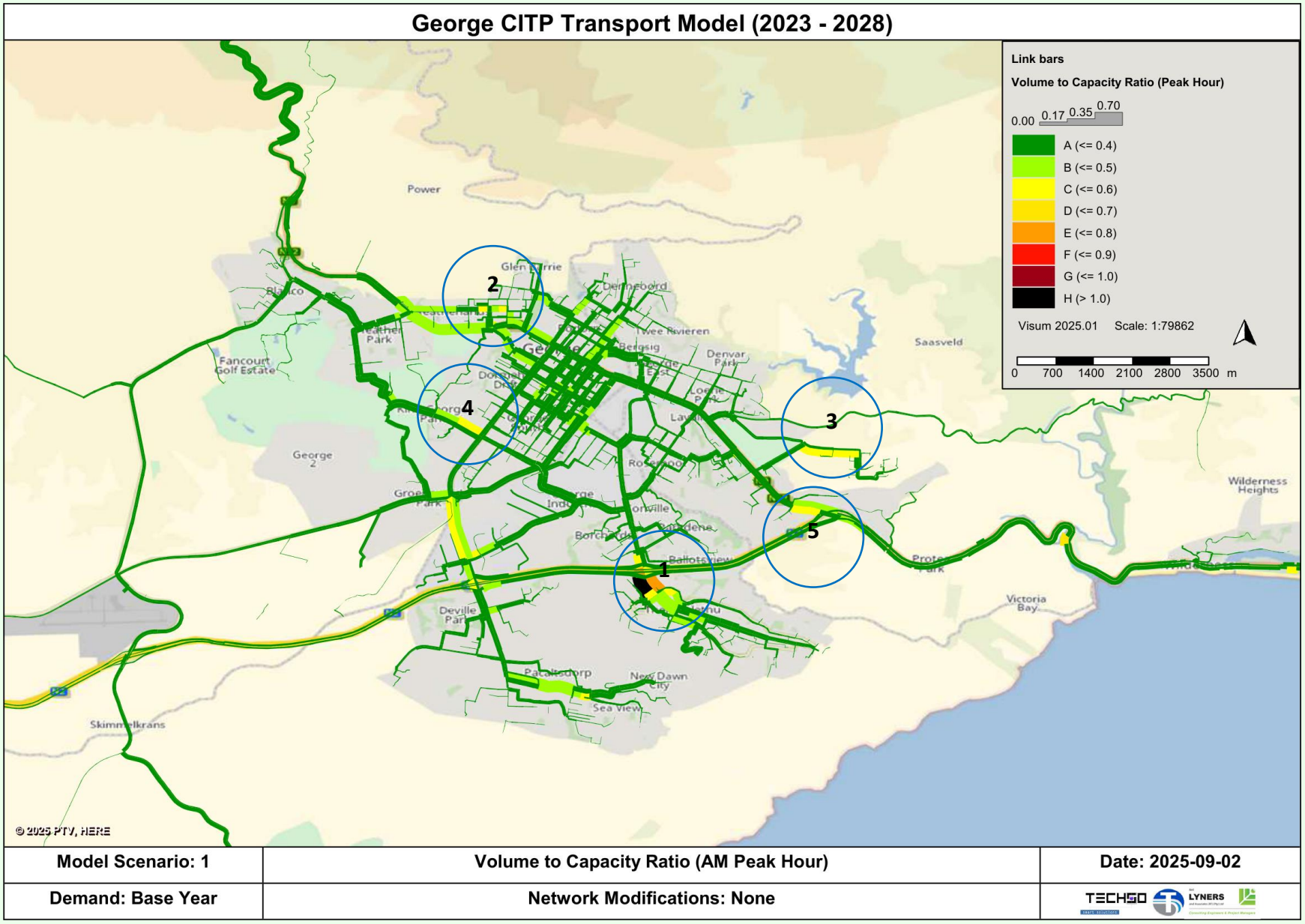


Figure 2-5: The modelled Volume to Capacity Ratio of vehicle on the road for the AM Peak Hour, with the top congestion problems highlighted

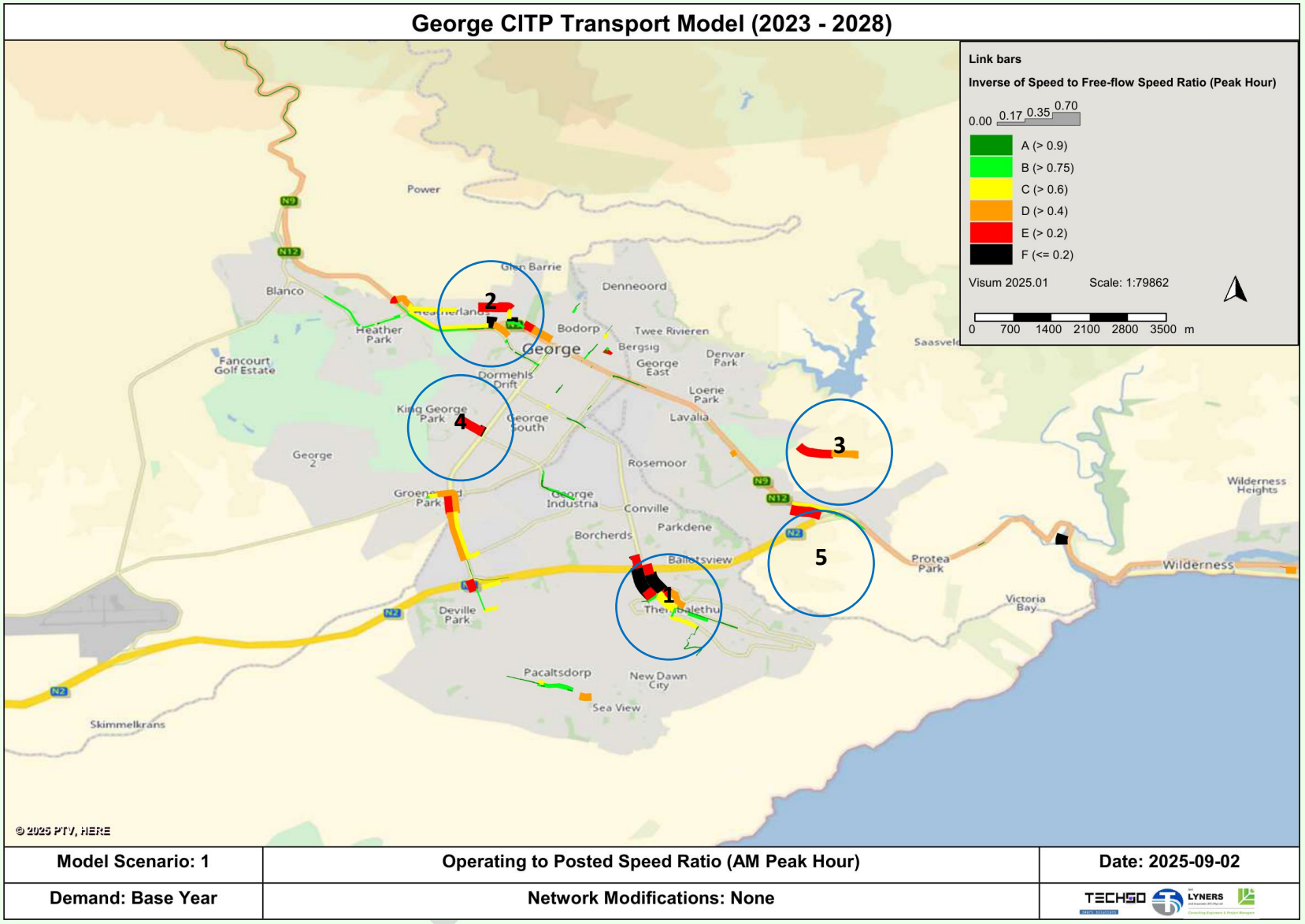


Figure 2-6: The modelled Operating to Posted Speed Ratio for the AM Peak Hour, with the top congestion problems highlighted.

2.3 Description of the regular, daily public transport system

The section emphasises the importance of a comprehensive understanding of public transport within the George CITP area for effective management. It covers OLAS Database insights, the two primary public transport systems in George, namely The GO GEORGE bus system and the Minibus Taxi system. The section also discusses services competing in parallel, service capacity, and peak period utilisation.

2.3.1 OLAS Database Insights

Some of the high-level insights gained from the OLAS Database are included in this section. The GO GEORGE bus service fleet is less than 10 years old, while the mini-bus fleet has a wider age range. Over 50% of operating licences were issued for mini-bus/midi-bus vehicles older than 10 years.

Table 2-7 lists the composition of Public Transport vehicles that are registered on the OLAS Database. Due to various vehicles being registered for multiple authority types, all vehicles that are registered with at least Charter, Scholar or Staff was grouped together in the Charter, Scholar, Staff category in determining **Table 2-7**.

Table 2-7: The Total Number of Vehicles and the Total Number of Seats for Public Transport vehicles registered on the OLAS Database, with associated percentage splits.

Description	GO GEORGE	Minibus Taxi	Charter, Scholar, Staff	Metered Taxi
Total Number of Vehicles	126	268	414	16
% of Total Vehicles	15.3%	32.5%	50.2%	1.9%
Total Number of Seats	7931	3878	9098	71
% of Total Seats	37.8%	18.5%	43.4%	0.3%

The relationship between vehicle age and years since first issuance of OL for vehicles with active OLs for George LM (PRE OLAS Database as of January 2023) is shown in **Figure 2-7** and in **Table 2-8** below

As indicated in the **Figure 2-7** and **Table 2-8** in the last 5 years over 50% of operating licences were issued on mini bus /midi bus vehicles older than 10 years (depicted by shaded area in **Figure 2-7**. Ideally newer vehicles should be brought into the public transport environment, from a vehicle maintenance and overall road safety perspective. It should be noted that the OLAS Database describes buses as “Bus (Single Deck)” where we know it is a single decker bus, and also “Bus”, where it could a single or double decker bus, but the Database does not provide sufficient information on this.

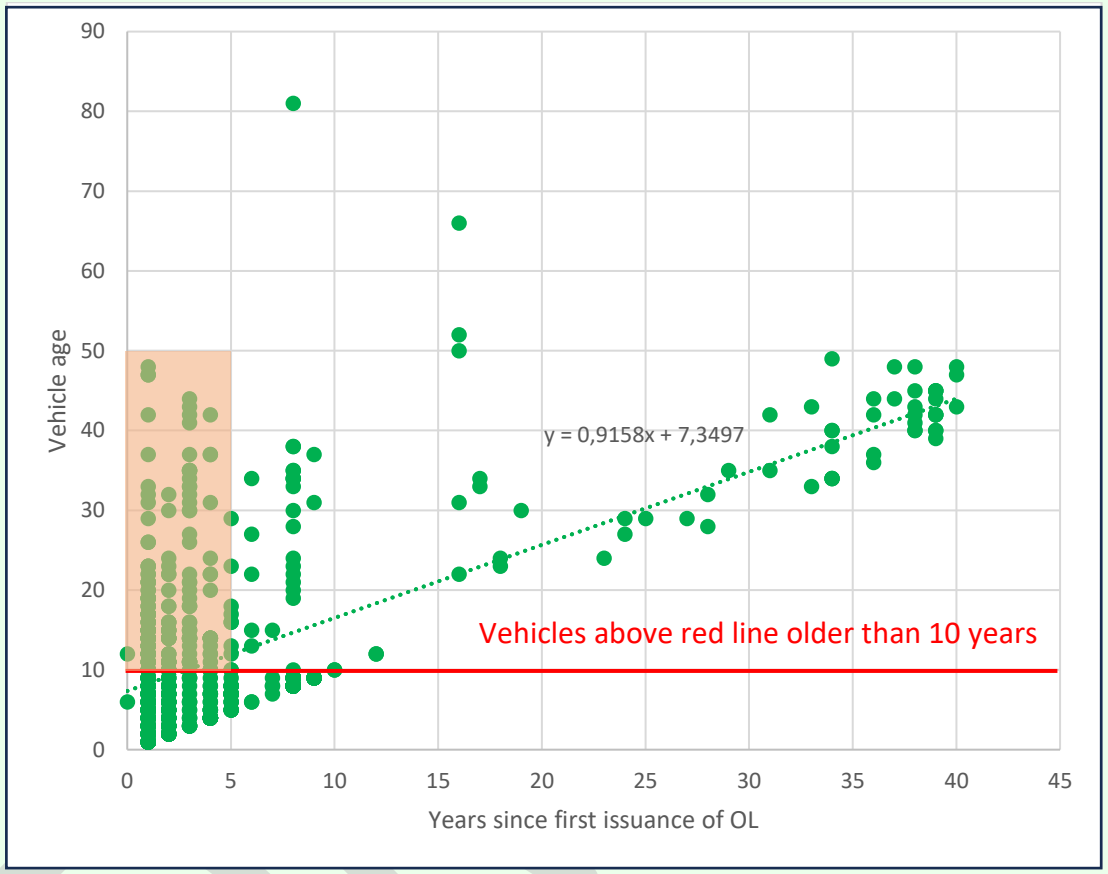


Figure 2-7: Relationship between vehicle age and years since first issuance of OL for vehicles with active OLs for George LM (PRE OLAS Database as of January 2023).

Table 2-8: The number of vehicles per vehicle age for which operating licences were approved in the past 5 years, per vehicle type. These data points are highlighted in Figure 2-7.

Vehicle Age Range [years]	Bus	Combi / Microbus / Minibus	Midibus	Motor Car	Row Total
0 - 5	20	170	4	8	**202**
6 - 10	27	166	8	26	**227**
11 - 15	12	56	8	23	**99**
16 - 20	12	30	4	6	**52**
21 - 25	16	3			**19**
26 - 30	4	1		1	**6**
31 - 35	10	1			**11**
36 - 40	8				**8**
41 - 45	6				**6**
46 - 50	3				**3**
Grand Total	**118**	**427**	**24**	**64**	**633**

2.3.2 Public Transport Companies and Associations

This section categorises Public Transport (PuT) services into three business types: Individuals, Businesses, and Formalised Associations based on their OLAS Registrations, and provides some details for each.

PuT registered as Individuals

There are 340 vehicles registered under 196 unique individuals for charter, staff and/or scholar transport with a total carrying capacity of 5,434 people.

PuT registered as Businesses

233 vehicles are registered under 23 unique businesses with a total carrying capacity of 11,906 people. GO GEORGE buses are a significant part of this category and are planning to expand into Thembalethu.

PuT registered as Formalised Associations

Three main associations operate in George, namely George Huurmotor Vereniging, George Taxi Owners Front, and Uncedo George Taxi Association. They have a total of 251 vehicles with a carrying capacity of 3,638 people. This is the current analysis as done with the OLAS Database, although many of these have been absorbed into George Link (Pty) Ltd, which is the operating company of GO GEORGE.

2.3.3 GO GEORGE Bus System

GO GEORGE is a scheduled bus service in George, part of the George Integrated Public Transport Network (GIPTN). It's a collaboration between various governmental bodies and local operators.

The GO GEORGE bus fleet as of August 2022 comprises of the following:

- 54 x 12 m standard buses
- 33 x 10.5 m midi-buses
- 35 x 7 m Sprinter minibuses.

Legislatively speaking, the 10.5m buses are standard buses, not midi-buses although the team colloquially refer to them as such to distinguish the slightly different sizes, (the shorter bus is required for certain road geometry).

The GO GEORGE Bus Depot is located in York Street, George South. A new permanent depot is in the planning stage. George Transport Hub (GTH) is located in Cradock Street, and includes Cradock St, the 'horseshoe' terminus, the bus stops in Market & Hibernia St, and the MBT Rank There is also approximately 700 bus stops located along the GO GEORGE bus corridors.

GO GEORGE operates scheduled services with multiple routes, including express and circular routes. The GO GEORGE Route network is displayed in **Figure 2-8**.

GO GEORGE uses a Smart Card system with a stage-distance fare structure although current operations are limited to journeys only within the first stage distance.

The document called George Integrated Public Transport Network (GIPTN): Macro-, Transport- and Socio-Economic Study (MTSES) 2022: Passenger Surveys, Economic Assessment and Key Performance Indicators (KPIs) - Submission date: 2023/05/04 (George LM, 2023) was reviewed.

The MTSES entailed passenger surveys (at bus stops) and GO GEORGE bus punctuality, surveys, and the key findings are shown below.

Passengers are mostly satisfied with GO GEORGE in terms of the system transport flexibility, accessibility, and mobility. Most passengers consider GO GEORGE to be more safe, secure, and affordable than minibus-taxis. While most passenger satisfaction scores have improved from 2020, some concerns were raised around punctuality, safety, and accessibility of bus stops.

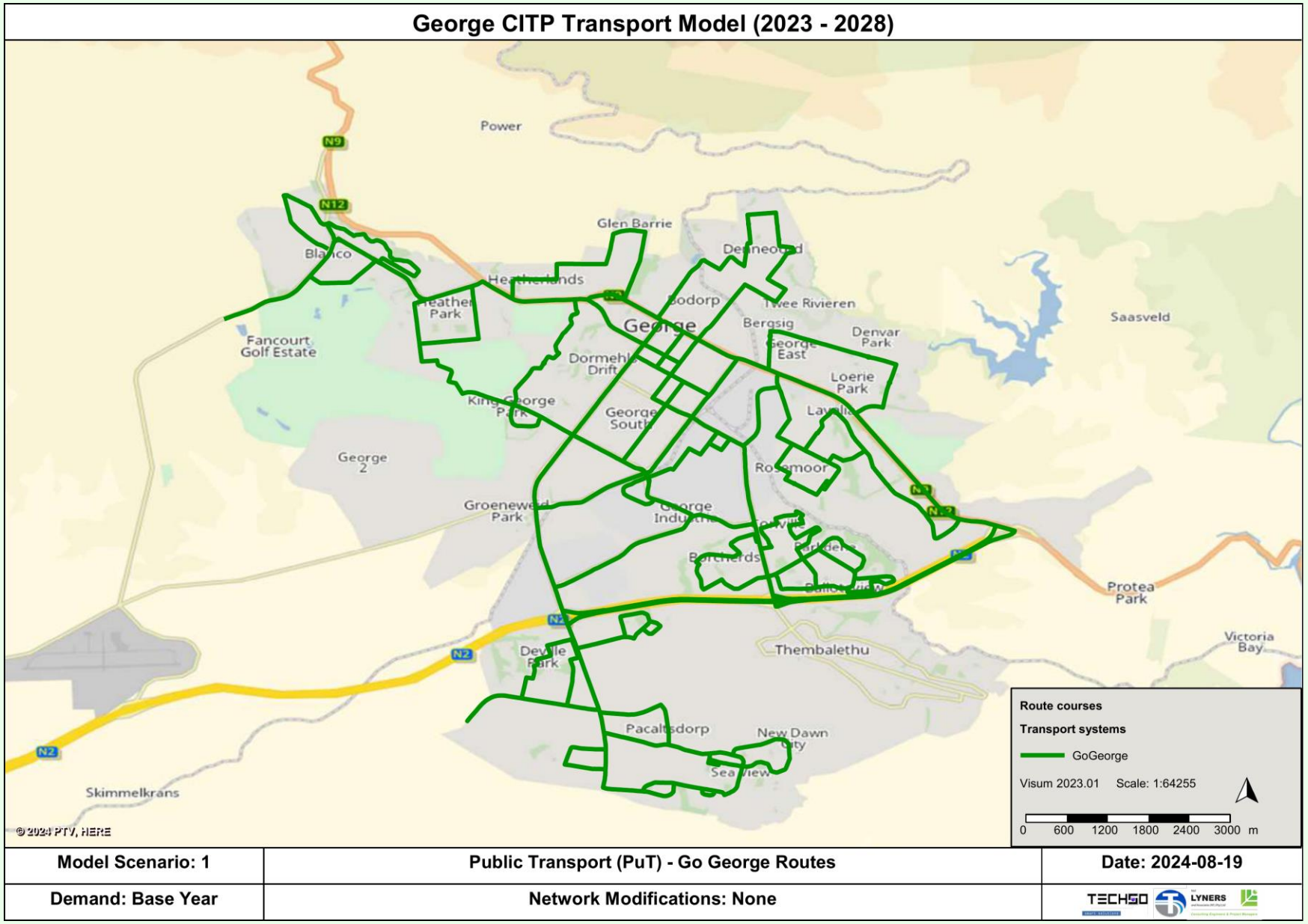


Figure 2-8: Public Transport Routes for the GO GEORGE Transport System (Zoomed In).

2.3.4 Minibus Taxis

Minibus taxis provide unscheduled services and are organised into 3 different taxi associations as obtained from the PRE OLAS database. It was observed that a fourth taxi association, Cape Organisation for the Democratic Taxi Association (CODETA), were also operating in George LM.

Three formal mini-bus taxi ranks are located in George LM (Thembalethu Taxi Rank, Cradock Taxi Rank, St Mark's Square), as well as one informal mini-bus taxi rank (Garden Route Mall).

There are about 268 Minibus taxis registered on the OLAS Database, with a total seating capacity of 3878 seats.

Routes as obtained from the PRE-Operating Licenses database were verified with Taxi Associations. The Minibus Taxi Route network is displayed in **Figure 2-11** (zoomed out) and **Figure 2-12** (zoomed in). Note that for aesthetic purposes, each route could not be shown individually as there are too many, but rather overlayed to form one network.

The average taxi trip fare is R12.85 per trip.

The analysis of the Area-based Cordon Surveys revealed interesting insights. The proportions of vehicle types identified where multiple identifications of the same vehicle are accounted for, are depicted in the pie chart in **Figure 2-9**, and where only the unique vehicles are accounted for are depicted in the pie chart of **Figure 2-10**.

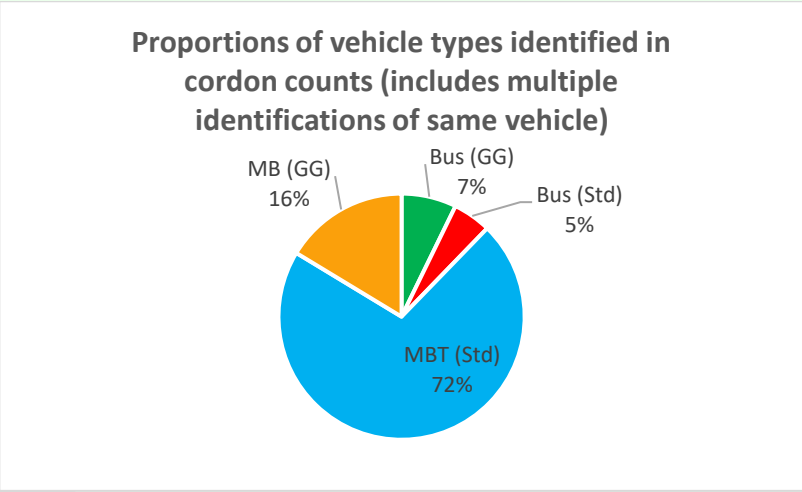


Figure 2-9: Proportions of vehicle types identified in cordon counts (includes multiple identifications of same vehicle).

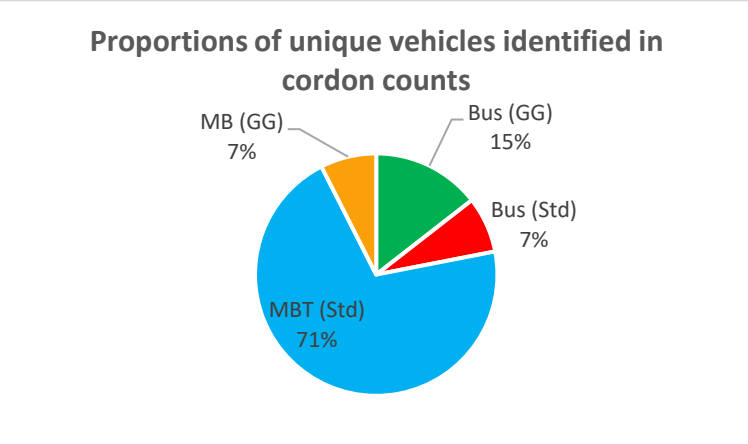


Figure 2-10: Proportions of unique vehicles identified in cordon counts.

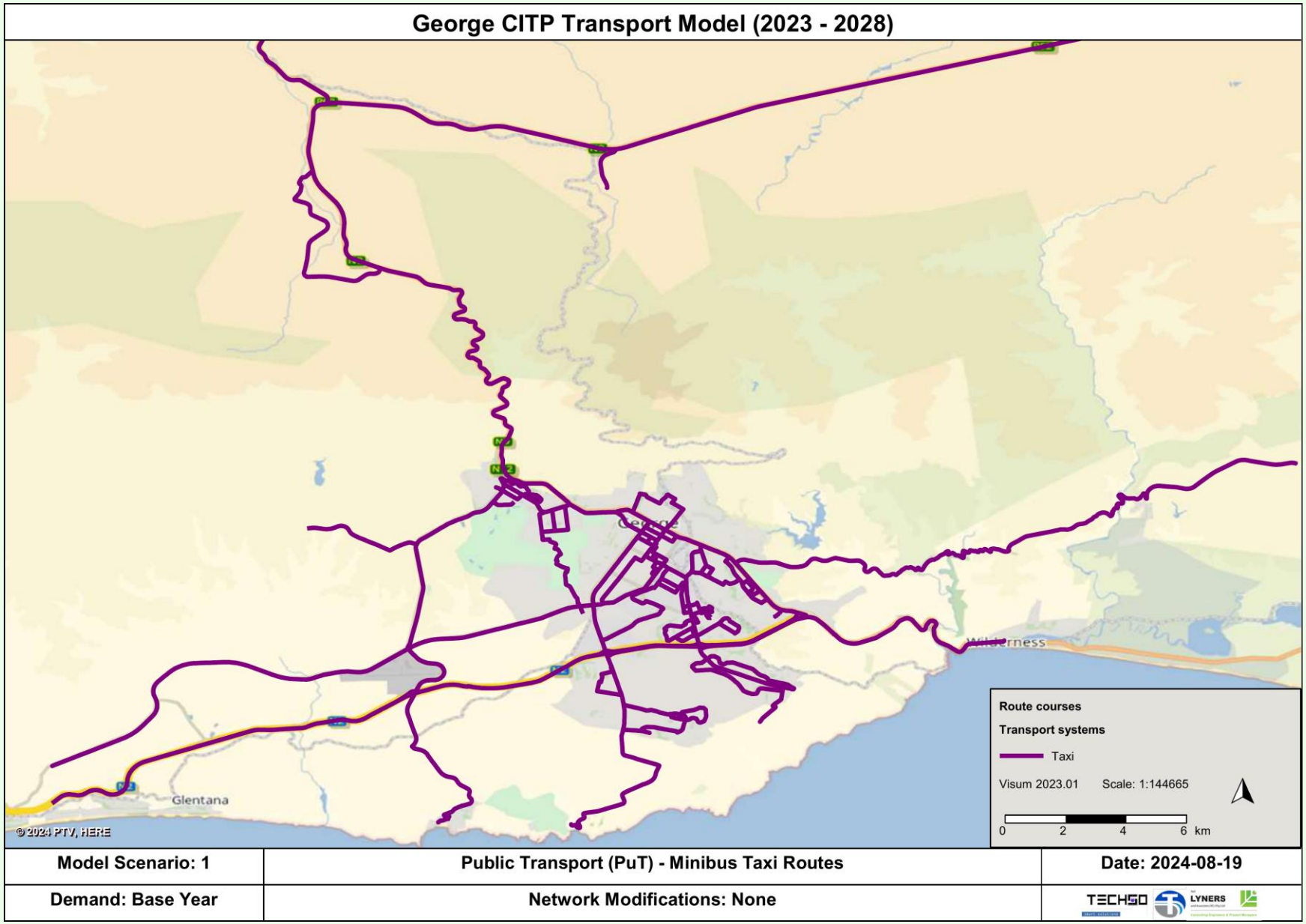


Figure 2-11: Public Transport Routes for the Minibus Taxi Transport System (Zoomed Out).

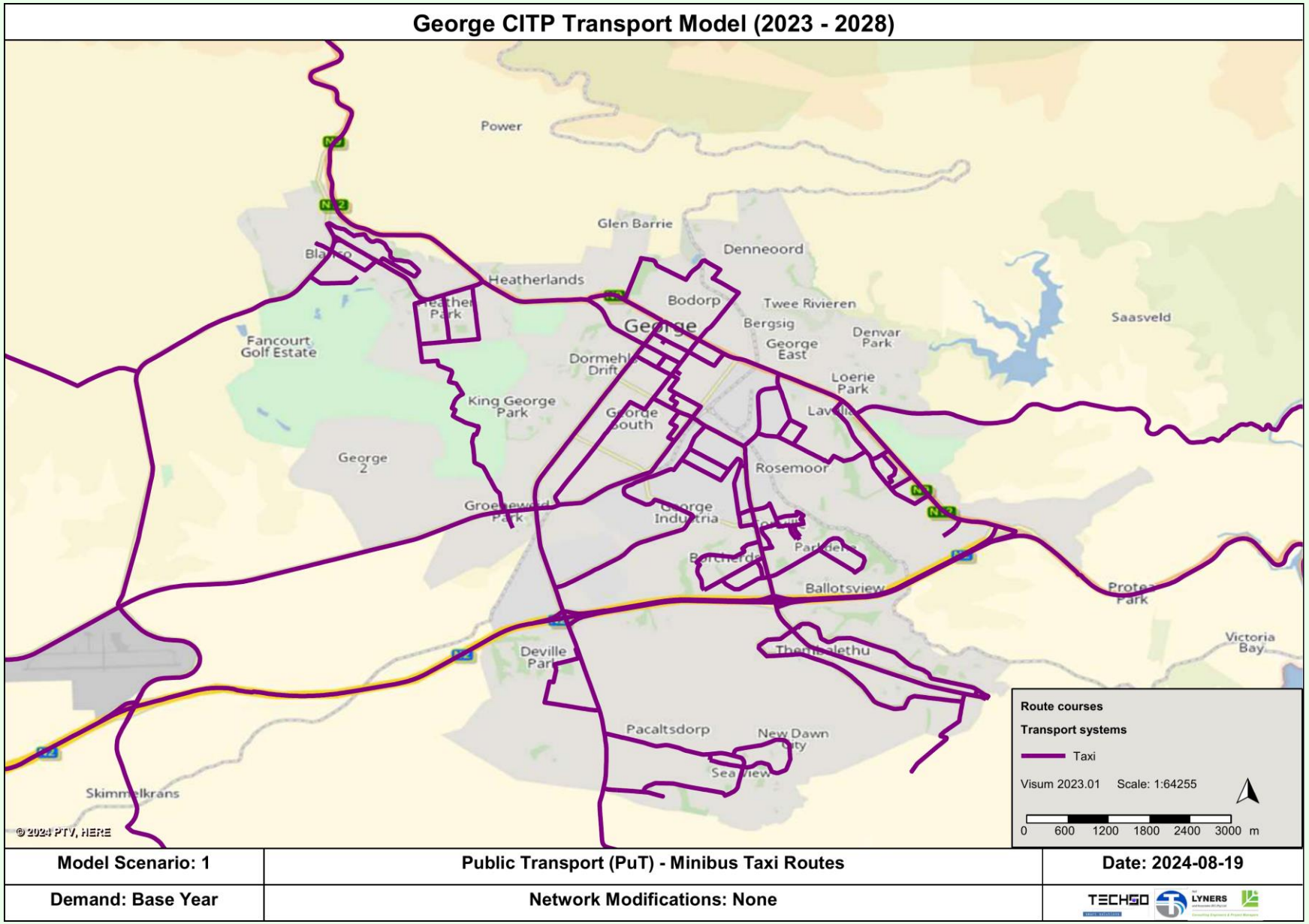


Figure 2-12: Public Transport Routes for the Minibus Taxi Transport System (Zoomed In).

During the cordon counts, the Vehicle Registration Numbers (VRNs) of various PuT vehicles were noted, and an analysis conducted by comparing the observed VRNs with those registered in the OLAS Database (DB). For the purpose of this analysis, "unique identifications" are defined as the unique number of vehicles that were identified in the survey sample that were observed one or more times. On the other hand, "multiple identifications" are defined as all the observations of the unique identifications that occurred more than once. The total observations from this analysis, split between GO GEORGE buses, standard buses, minibus taxis and GO GEORGE minibuses, may be seen in **Figure 2-13**, and corresponding data in **Table 2-9**. Furthermore, **Figure 2-13** also splits the groups on the level of total observations of that type (including multiple VRN identifications) indicated with both green and red bars, and unique VRN counts, indicated by only the green bars.

Table 2-9: Total observations per vehicle type, per unique and total (including multiple) observations.

Vehicle Type	Total Unique Obser-vations	Total Unique Obser-vations [%]	Total Obser-vations	Total Obser-vations [%]
Bus (GG)	157	14.5%	269	7.2%
Bus (Std)	81	7.5%	187	5%
MBT (Std)	766	70.6%	2658	71.4%
MB (GG)	81	7.5%	608	16.3%
Totals	**1085**	**100%**	**3722**	**100%**

From this analysis, when observing the VRNs of the minibus taxis, a comparison could be done on how many of these are registered with valid OLs on the OLAS DB, and those who are not registered. Due to human error that can creep in when doing VRN recognition, a sliding scale was created as a cut-off value of how many times a VRN was counted, reasoning that those that were picked up more are more likely to be operating a public transport service, than those who were only observed once etc. **Figure 2-14** gives a graphical representation of this, and **Table 2-10** provides the raw data. Therefore, if the likely trade-off is taken that a minibus is operating as a taxi if it was picked up more 3 or more times, then there are about 288 taxis in the system, about 226 legal and 62 illegal taxis as on the date the survey was conducted. **Table 2-10** shows all the unique standard MBT vehicle registration number (VRN) observations from the cordon counts, per VRNs found in the OLAS database, and which are not. The observation cut-off value is included as a measure for quality control and indicates that the VRN is considered only when it is observed at least the cut-off number of times in the cordon counts. If you consider that a taxi operating as a public transport service should be identified at least 5 times, then there are about 12% illegal taxis operating in the PuT system for taxis.

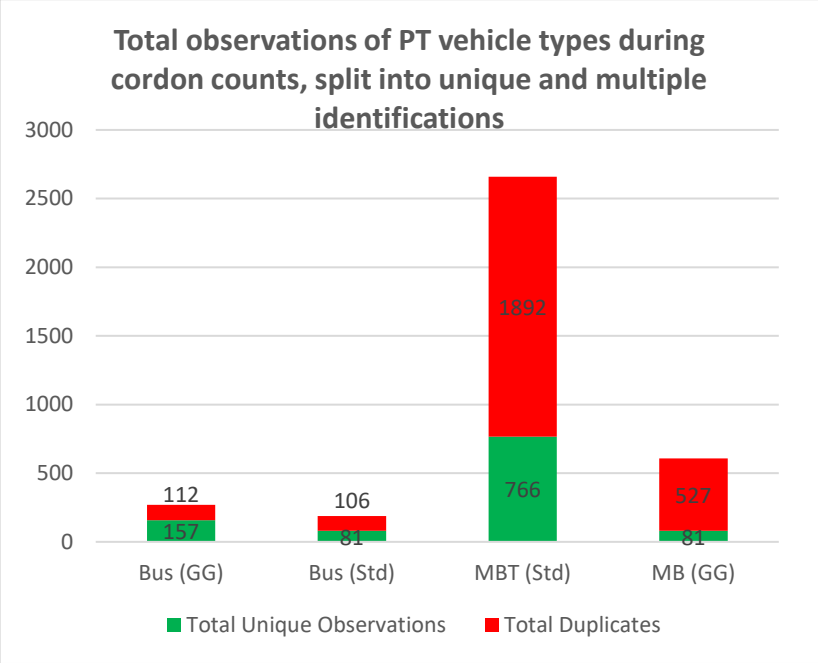


Figure 2-13: Total observations of PuT vehicle types during cordon counts, per unique and multiple identifications.

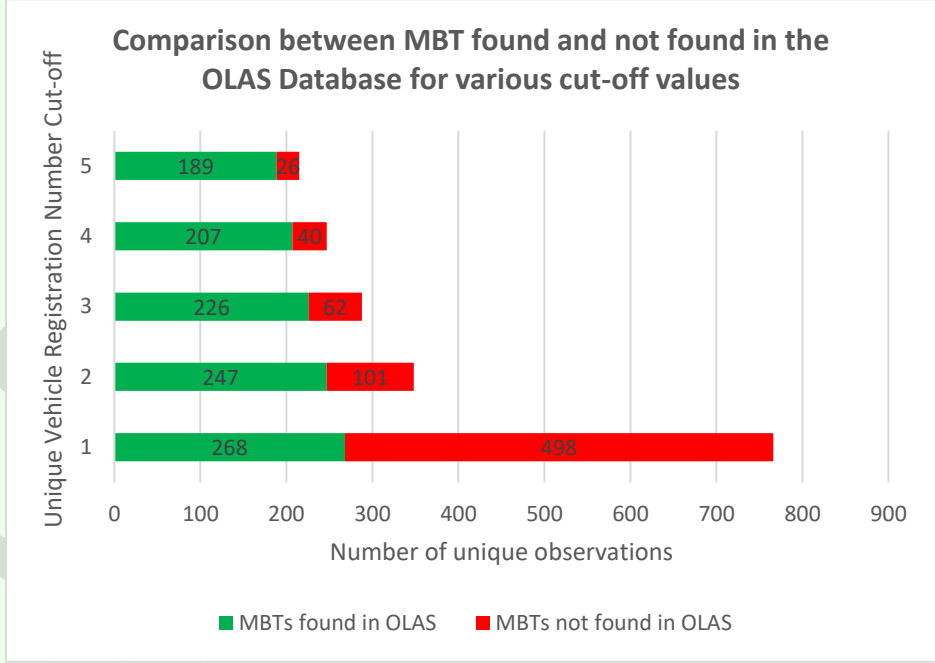


Figure 2-14: Comparison between MBT found and not found in the OLAS Database for various cut-off values, based on Table 3-19.

Table 2-10: All the unique standard MBT vehicle registration number (VRN) observations from the cordon counts, per VRNs found in the OLAS database, and which are not.

Cut-off	1		2		3		4		5	
	No.	[%]	No.	[%]	No.	[%]	No.	[%]	No.	[%]
MBT found in OLAS	268	35%	247	71%	226	78.5%	207	83.8%	189	87.9%
MBT not found in OLAS	498	65%	101	29%	62	21.5%	40	16.2%	26	12.1%
MBT Total	**766**	**100%**	**348**	**100%**	**288**	**100%**	**247**	**100%**	**215**	**100%**

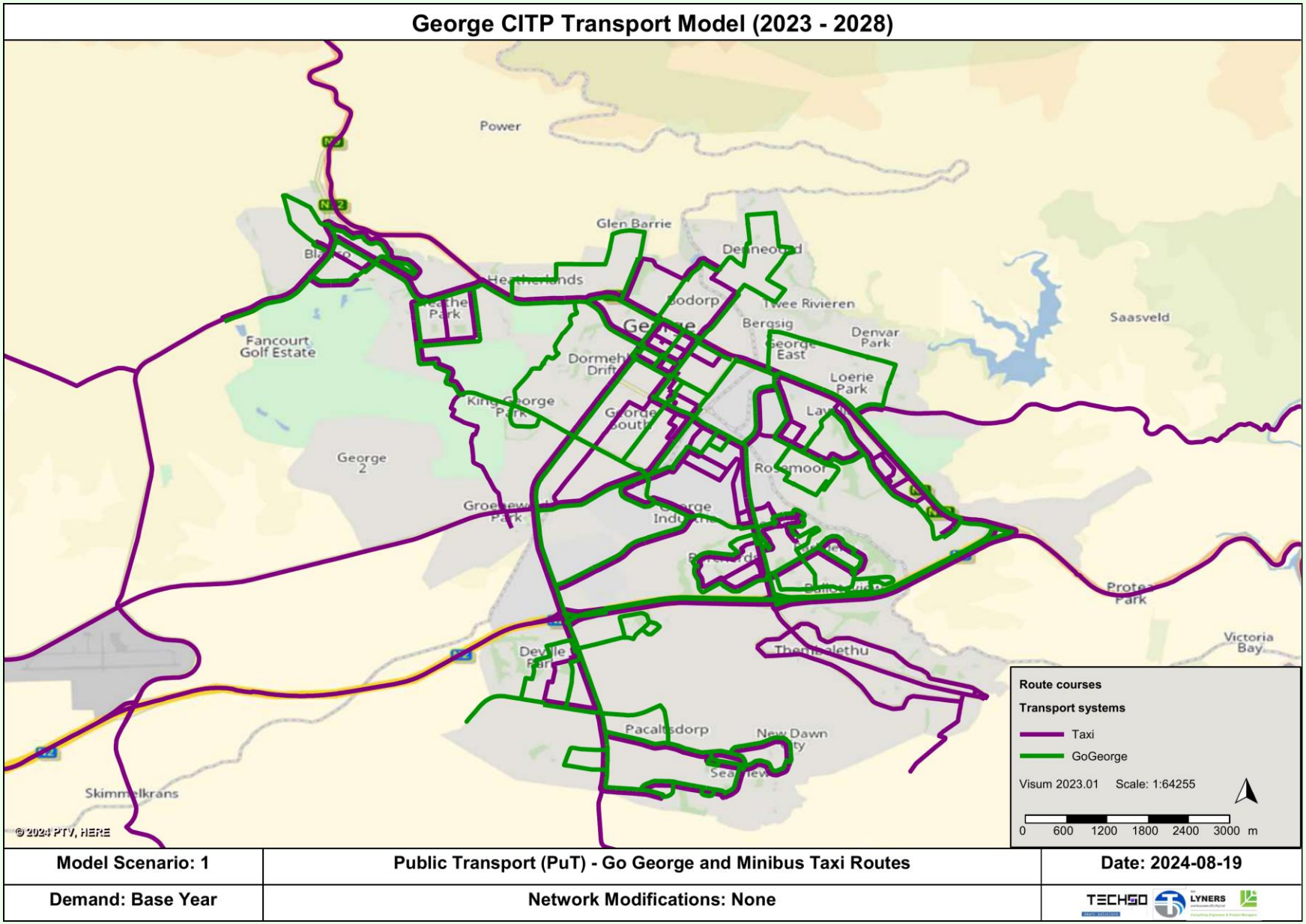


Figure 2-15: Public Transport Routes for the GO GEORGE and Minibus Taxi Transport Systems (Zoomed In).

2.3.5 Competing Services

GO GEORGE buses and minibus taxis operate on separate routes, with little route overlap (although sharing some of the same roads). The Public Transport routes for both the GO GEORGE and Minibus Taxi Transport Systems are displayed in **Figure 2-15**.

2.3.6 Service Capacity and Utilisation

GO GEORGE operates at an average utilisation of 50.9% overall during peak hours while servicing a wide area (determined from GO GEORGE data received in December 2022).

The surveyed minibus taxis (determined from the facility surveys conducted in 2022) that operated within the peak hour were on average operating close to capacity at 99.7% while leaving the taxi rank (taxis mainly leave the taxi rank once the taxi occupancy is full). Although their fleet might consist of more taxis, some taxis have multiple operating licences and might have operated on other routes during the survey. It is not evident from this particular survey, but historically the route was overtraded by about 30%.

The utilisation of PuT was also determined using the Cordon Count surveys that were conducted in 2022, for both peak and opposite peak direction of flow, and presented in **Table 2-11**.

Table 2-11: Utilisation Calculations based on the Peak hour (07:00-08:00) Cordon Count Surveys conducted in 2022.

PuT Type Observed in Cordon Count	Peak Direction Utilisation	Opposite Peak Direction Utilisation
GO GEORGE Standard Bus	77.9%	26.3%
GO GEORGE Minibus	50%	No Data
Minibus Taxi	61%	6.4%
Standard Bus	80.6%	57.1%

2.4 Other public transport services

This section outlines various smaller public transport services in George, including metered taxis, long-distance services, and more.

2.4.1 Metered Taxi Services

There are about 14 operators that operate as ‘metered taxis’, although they do not actually use the required electronic meters. Instead, fares are determined based on distance to be travelled and agreed upon with passengers beforehand. They operate from formal ranks and are mainly concentrated around George Airport and other significant streets and has a total instantaneous carrying capacity of 62 passengers.

2.4.2 Long-distance services

Long-distance services experience consistent demand throughout the year, with notable increases during holiday seasons such as December and long weekends. Services offered include scheduled buses, unscheduled buses, minibus taxis, and regular taxis, available in both formal and informal arrangements.

Scheduled long-distance bus services operate year-round and include major providers such as Intercape and Translux. Minibus taxis also serve long-distance purposes, operating from both formal and informal facilities.

The long-distance bus stops and collection/drop-off points in George are located at George Railway Station parking area, Sasol George Highway filling station, and other designated sites. The Themba Lethu taxi rank also facilitates long-distance taxi services.

Operator and Vehicle Data:

- Total Operators: 221
- Total Vehicle Capacity: 3,225
    - Bus operators: 1, with a total of 22 vehicles.
    - Combi/Microbus/Minibus operators: 209, with a total of 3,097 vehicles.
    - Midibus operators: 2, with a total of 38 vehicles.
    - Motor car operators: 9, with a total of 68 vehicles.

Operators Breakdown in George Area:

- George-Huurmotor-Vereniging: 9 operators with a total vehicle capacity of 131.
- George Taxi Owners Front: 1 operator with a total vehicle capacity of 15.
- Uncedo George Taxi Association: 203 operators with a total vehicle capacity of 2,961.
- Non-business Individuals: 8 operators with a total vehicle capacity of 118.

2.4.3 Cross Border Transport Services

George has PuT services that crosses borders of other provinces, municipalities and through other provinces en-route crossing international borders i.e. flights (George Airport), marine (Mossel Bay Harbour), trains and long-distance buses (primarily Intercape), even though George does not have any international borders.

2.4.4 Learner transport

This section focuses on the specialised transport services for scholars, teachers, and lecturers. **Table 2-12** indicates the number of vehicles and the total capacities of scholar and WCED transportation registered on the OLAS DB, split between vehicle type and whether the operator is a business or an individual. From the OLAS DB obtained as of early 2024, it is clear that there are approximately 55 different learner transport operators, operating with a total of 130 operating licence contracts. A mix of 5-seater cars, 15-seaters and buses are used for these services.

Due to the difficulty of obtaining high-quality learner transport utilisation data, a proxy was created instead and visualised and described in the Transport Register. From these, summary tables were created that gives an indication of the learner transport split across various educational institution types, and found in **Table 2-13** and **Table 2-14**.

Table 2-12: Summary of all the active scholar and WCED transport registered on the OLAS DB, for GLM, indicating the number of vehicles, with total capacity indicated in parentheses.

Vehicle Types	Business	Individual	Grand Total
Bus	40 (2282)	22 (1000)	**62 (3282)**
Bus (Single deck)	6 (426)	0 (0)	**6 (426)**
Combi/Microbus/ Minibus	9 (180)	56 (834)	**65 (1014)**
Midibus	3 (98)	5 (137)	**8 (235)**
Motor Car	0 (0)	9 (55)	**9 (55)**
Grand Total	**58 (2986)**	**92 (2026)**	**150 (5012)**

Table 2-13: Learner Transport Summary by School Type, OD-pair passenger capacity and the split.

No	Destination Type	Sum of Origin-Destination Pair Passenger Capacity (One-way)	3-hour Passenger Carrying Capacity	% Learners of Total
1	Pre-Primary School	94	187	2%
2	Primary School	912	1779	17%
3	Intermediate School	97	194	2%
4	Secondary School	860	1529	15%
5	Tertiary School	1814	3629	35%
6	Other Tertiary Trips	1597	3194	30%
	Total	**5374**	**10512**	**100%**


Table 2-14: George Local Municipality Enrolment Summary and learner transport provision for 2021 available enrolment data.

No	Destination Type	Sum of Origin-Destination Pair Passenger Capacity (One-way)	3-hour Passenger Carrying Capacity	School Capacity 2021	School Enrolment 2021	Percentage of Learners receiving Learner Transport
1	Intermediate School	30	60	801	724	8.22%
2	Primary School	886	1727	19064	17478	9.88%
3	Secondary School	850	1509	12304	12304	12.27%

The results for the analysis of determining Learner Transport OD pair instantaneous capacity (details contained in Transport Register) are showcased in **Figure 2-16** (zoomed out) and **Figure 2-17** (zoomed in), unveiling intriguing spatial patterns concerning the pickup and drop-off locations throughout George, and the capacity supplied between areas.

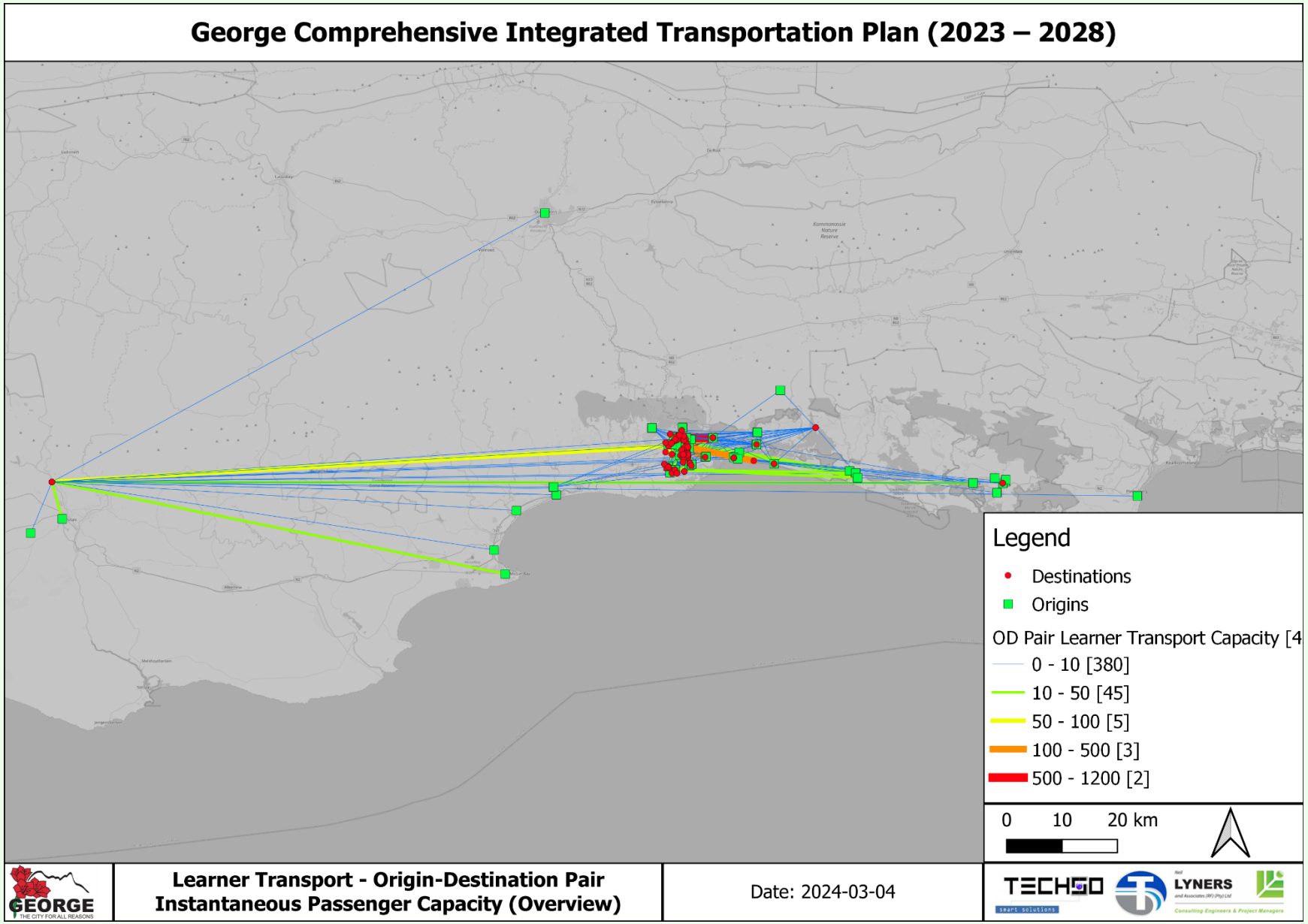



Figure 2-16: Learner Transport – Origin Destination Pair Instantaneous Passenger Capacity for all Learner related destinations (Zoomed out).

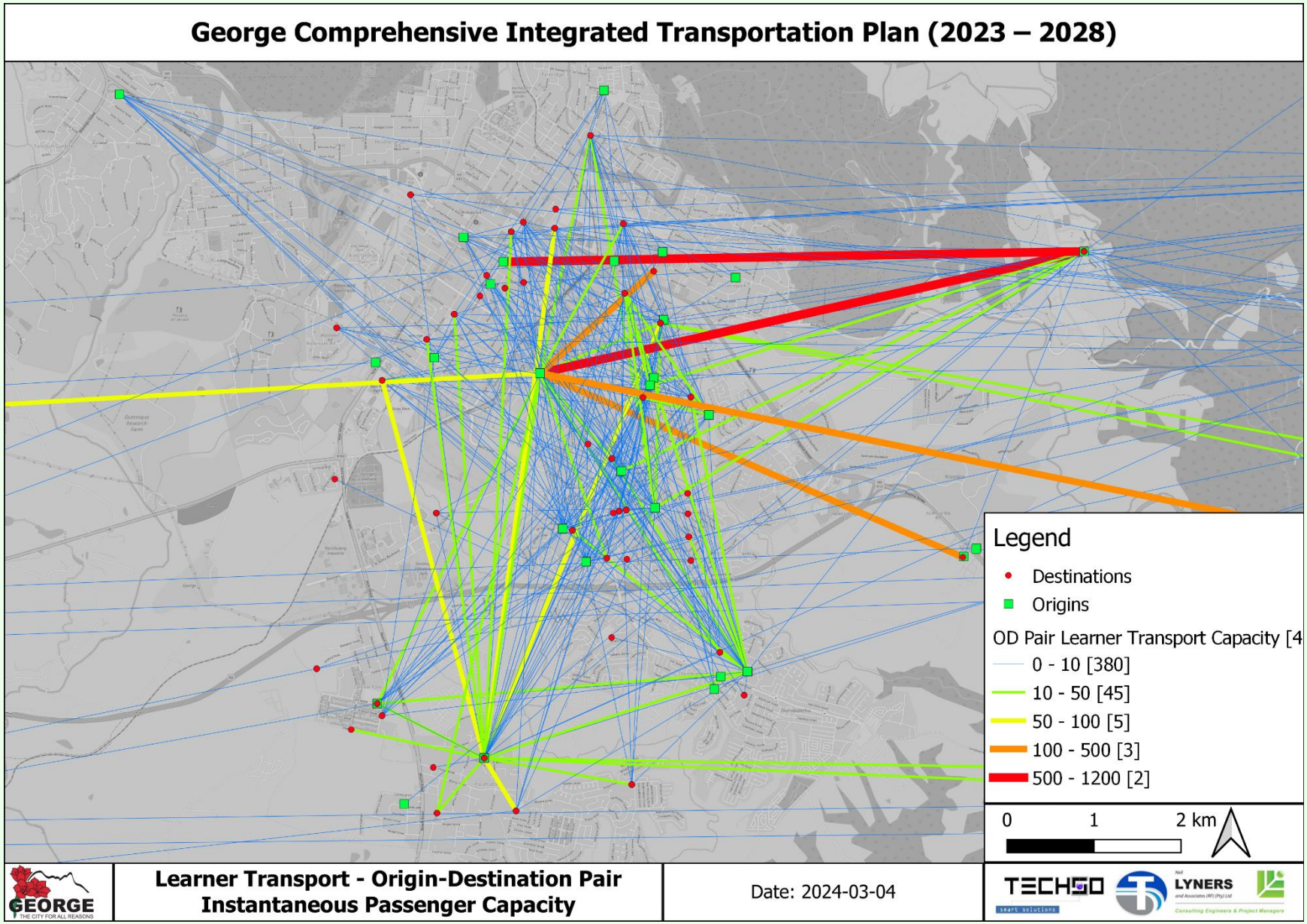


Figure 2-17: Learner Transport – Origin Destination Pair Instantaneous Passenger Capacity for all Learner related destinations (Zoomed in).

2.4.5 Non-motorised transport

This part discusses the Non-Motorised Transport (NMT) network in George. Key statistics on non-motorised transport in George highlight:

- A striking 88% of all NMT journeys in George cover distances ranging from 0 to 2 km.
- Remarkably, around 97% of high-income, home-based work commutes via NMT are within the 0 to 2 km range.
- For low-income commuters, about 25% of NMT trips to work span between 2 km and 5 km, and another 24% exceed 5 km in distance.
- Overall, approximately 50% of low-income individuals using NMT travel over 2 km to reach their workplaces, with half of these journeys extending beyond 5 km.

2.4.6 Two- and three-wheeler public transport vehicles

There are no formal two- and three-wheeler public transport services in George.

2.4.7 Commuter rail information

Rail services in George have collapsed due to various factors, including COVID-19 restrictions and vandalism.

2.5 Freight transport

Freight transport is a significant component of the transport network and its impact on other transport modes and infrastructure must be considered in terms of congestion and road safety.

2.5.1 Road Freight

Roads are the primary means of freight transport in George. The N2 highway carries the heaviest vehicle traffic. The CBD has a significant presence of heavy vehicles, which causes conflicts with other road users and infrastructure damage.

There is not a freight route signage guidance plan for George, particularly for George urban area.

2.5.2 Rail Freight

In 2021, the Western Cape handled 142.2 million tonnes of freight, a 5.9% increase from 2020, driven by economic recovery post-COVID-19. Of this total, 57% was transported by road and 43% by rail. However, within the General Freight Business (GFB) sector, which excludes iron ore, manganese, pipeline transport, and short-distance construction materials, road transport overwhelmingly dominated with 98% of the freight, while only 2% was carried by rail. This stark imbalance highlights the limited role of rail in moving general freight, despite existing rail infrastructure. Rail is mainly used for bulk agricultural and mining commodities, with opportunities for expansion in transporting other goods like fruit, though these have not yet been fully realised due to infrastructure and service constraints (Western Cape Government: Transport and Public Works, 2022).

No local data is available for George Rail Freight, but it is likely that similar modal splits are experienced. Rail lines exist but are underutilised for freight in George. The George-Knysna line is inactive but could be revived. Currently, the rail network is used mainly for transporting petroleum, grain, and perishable items.

2.5.3 Air Freight

George Airport is primarily for passenger transport, but plans are in place to upgrade it to handle cargo planes, which would increase freight movement to and from George.

2.5.4 Port Freight

The nearest major seaport is the Port of Mossel Bay. It has limited cargo capacity, but plans are in place for upgrades that could benefit freight transport between Mossel Bay and George.

2.5.5 Problems caused by or inhibiting freight movements

Heavy vehicles cause road damage and safety risks, especially in the CBD and residential areas. There are also environmental concerns due to fuel consumption. Where possible, rail freight transport is preferred over road-based freight transport, as described above. Freight is an essential service and there will always be a component of road freight in the CBD and residential areas.

2.5.6 Waste Management

Waste contributes to freight volumes. Currently, George transports waste to the PetroSA landfill in Mossel Bay via road. A regional landfill site is in development, which will serve multiple local municipalities. The site is located off the R102, after the Show Grounds, on the way to the airport.

2.5.7 Abnormal loads and dangerous goods

There is insufficient regulation for the transport of hazardous goods and abnormal loads, posing safety risks. There are no abnormal load routes specified for George, but abnormal loads are transported under permit conditions.

2.5.8 Measures in place to deal with overloading

Overloading is a significant issue causing road damage. There are limited weighbridge locations for enforcement, and a proposal is under investigation to construct a new weighbridge facility. The Western Cape Government has approached George Municipality with a proposal for establishing a provincial weighbridge facility. A decision has not been made and the proposed locations should be evaluated with the George CITP transport model once an agreement has been reached between the two authorities.

2.6 Financial Information

This section provides a summary of the financial aspects of George Municipality's transport system. It outlines the sources of income and expenditure for transport services and infrastructure. For the full financial information, refer to Annexure E of the Transport Register document.

Regarding Regulation 23(3), the National Treasury has approved supplementary transfers as stated on page 15 of Gazette no. 48327 released on 29 March 2023, shown in **Table 2-15**. This indicates the budget adjustments pertaining to civil engineering services for GM.

Table 2-15: George Municipality additional allocations adjustments for Civil Engineering Services in Rands (George Municipality, 2023).

Grant	Original Budget	Adjustment	Adjusted Budget
Regional Bulk Infrastructure Grant	R240 648 000	R134 248 000	R374 896 000
Public Transport Network Grant	R190 410 000	R45 690 000	R237 100 000

Table 2-16 and **Table 2-17** contains the GM capital budget funding for 2022/2023, and the streets and stormwater budget for 2022/23, respectively. The Streets and Stormwater portion of the GM 2022/23 annual budget is shown below, where Streets and Stormwater take up 26% of the budget.

Table 2-16: George Municipality Capital Budget Funding for 2022/2023 in Rands (George Municipality, 2023).

Description	March adjustment budget 2022/2023	Proposed adjustments	April adjustment budget 2022/2023
Capital replacement reserve (CRR)	R166 337 482	R2 160 000	R168 497 482
External financing fund (EFF)	R266 204 443		R266 204 443
Grants	R585 398 126	R126 927 391	R712 325 517
Other			
Total	**R1 017 940 049**	**R129 087 391**	**R1 147 027 440**

Table 2-17: Streets and Stormwater budget 2022/23 for George Municipality.

Budget Items > R10 million	Funding Source	Budget
GIPTN Roads Rehabilitation	CCR	R10 160 000
Reseal of Streets	EFF	R10 000 000
Upgrade existing Infrastructure (George South)	GRANTS	R43 043 478
Tabata St Section 3-6	GRANTS	R14 297 500
NgacaniSt Section 2-4	GRANTS	R19 807 500
Rooidraai Roads Slip Failure	GRANTS	R11 521 826
Streets and Stormwater (General Projects)	GRANTS	R11 333 374
Streets and Stormwater (Specific Projects)	GRANTS	R81 572 640
Peters Road Repair Slip Failure and Associated Stormwater	GRANTS	R16 521 739
Sum of Above (73% of Streets and Stormwater Budget)		**R218 258 057**
Overall Total Streets and Stormwater Budget (26% of Total Budget)		**R298 392 744**
TOTAL BUDGET		**R1 147 027 440**

2.7 Public Transport Rationalisation

This section outlines the need for a comprehensive rationalisation and restructuring of the public transport system in George Municipality. It discusses the Transport Register (TR) and Transport Model (TM), which serve as foundational data for the George Municipality Public Transport Plan (PTP). The section also introduces the Operating Licence Plan (OLP) as a necessary addition for managing and regulating public transport. The Rationalisation Plan (RP) aims to:

- Eliminate or reduce competition between subsidised services.
- Advise on restructuring the public transport system.
- Design contracts aligned with the goals of the CITP and PTP.
- Provide guidance on awarding operating licenses.
- Assist in making informed decisions on subsidies.

The section emphasises the importance of provincial involvement, as subsidies are managed by the province and funded by the Department of Transport (DoT).

2.8 Status Quo Summary

The transport landscape in George is undergoing a dynamic transition, catalysed by innovative initiatives such as the GO GEORGE bus transport system, and is poised for further transformation with the introduction of Smart Mobility solutions. This chapter presents a comprehensive Status Quo of George's transport facilities, detailed in **Table 2-18** through **Table 2-21**, which serve as the foundational data for the Transport Needs Assessment in **Chapter 4**.

In **Table 2-18,** the Macro Mobility Facilities are highlighted, encompassing everything from public transport services such as the GO GEORGE system to minibus taxis and rail services, detailing their infrastructure and operational intricacies. **Table 2-19** and **Table 2-20**, offer a breakdown of vehicle capacities and operational licenses, vital for understanding the current mobility ecosystem. Meanwhile, **Table 2-21** delves into Micro Mobility Transport Services, shedding light on the range of transport options, including motorised and non-motorised means, which are increasingly integral to urban mobility networks.

These tables collectively paint a detailed picture of the current mobility facilities and services, revealing insights into the capacity, coverage, and operational details of the transport modalities in George. They underscore the importance of strategic planning and the need for integrated mobility solutions to address the contemporary demands of urban transport.

This section aims to condense this data, providing a snapshot of the existing transport fabric and setting the stage for identifying the gaps and needs that will guide George's journey towards becoming a Smart City with a robust, sustainable, and user-centric mobility network.

2.8.1 Macro Mobility Transport Services

Table 2-18, the *Status Quo of Macro Mobility Facilities* highlights the successful implementation of the GO GEORGE bus system, which has become a cornerstone of public transport within the urban areas. The operational details of facilities such as the GO GEORGE bus depots and transport hubs reflect a well-established infrastructure poised for expansion into rural areas and inter-town services. This creates an opportunity to extend the reach of efficient public transport, reducing reliance on private vehicles and supporting environmental sustainability.

Table 2-19 shows the vehicle capacities and active operating licenses, giving a clear view of the breadth and scope of licensed operators within the transport system. The high proportion of minibuses indicates a strong reliance on smaller-capacity vehicles, which could suggest a need for higher-capacity transport solutions to meet peak demand and improve service efficiency.

Table 2-20 presents a summarised view of carrying capacities by service type, where the overlap of operating licenses across different service types could be indicative of a need for better integration and optimisation of services. This might involve coordinated scheduling, route planning, and perhaps the introduction of a centralised transport management system.

Table 2-18: Status Quo of Macro Mobility Facilities from the Transport Register.

Mode Type	Facility *The name of the bus depot, train station, etc.*	Locations *The geographical location or address of the facility*	Infrastructure Details *Information about the physical structure, capacity, and amenities of the facility*	Operational Details *Data on how the facility operates, such as number of routes serviced, frequency of service, hours of operation where applicable, etc.*
1. Public Transport (PuT)				
Open Street Bus System (A commuter open street bus service) The GO GEORGE system comprises a network of main and community routes operating within the built urban areas of George. Thus, offering a conventional scheduled public transport network operating between 14-18 hours per day at varying frequency levels, that makes use of a mixed bus fleet that allows for service optimisation (using mostly the smaller vehicles during off-peak times, for example) and operations cost (thus subsidy) minimisation. The services is to be extended to the rural areas, and offer inter-town services between George and neighbouring towns.	**GO GEORGE Current Bus Depot**	The GO GEORGE temporary bus depot is situated on Erf 3472 in York Street, George. Currently owned by the Province Western Cape Government and sharing site with Provincial Traffic (-33.975503, 22.443177).	Medium-sized facility will provide: • Parking for buses and staff private vehicles. • Fuelling stations. • Maintenance facilities. • Storage spaces.	Parking layouts to accommodate a mixed fleet of mini-buses, midi-buses, and standard buses.
	Future Permanent Depot	The site for the new permanent depot is planned on a portion of Erf 464 in the Borcherds area, approximately 4.6 hectares in size. Access will be via a future access road between PW Botha Boulevard and the future Rand Street extension. The depot will be owned by the George Municipality and operated by a single vehicle operating company (VOC)	The planned medium-sized facility will provide: • Parking for buses and staff private vehicles. • Fuelling stations. • Maintenance facilities. • Storage spaces.	

Mode Type	Facility *The name of the bus depot, train station, etc.*	Locations *The geographical location or address of the facility*	Infrastructure Details *Information about the physical structure, capacity, and amenities of the facility*	Operational Details *Data on how the facility operates, such as number of routes serviced, frequency of service, hours of operation where applicable, etc.*
	GO GEORGE Transport Hub	The George Transport Hub, part of the GO GEORGE network, is located at Cradock Street. This hub is one of the main transfer points in the transport network (-33.962085, 22.461077)	The under-cover centre comprises of six bus stops and loading areas, two entrances, four high-security ticket booths, toilets, an information centre, comfortable seating (231 seats), hand railings to separate queueing passengers from buses, bicycle racks and shade trees. An important design principle is the universal accessibility for people with special needs, like tap rails for people with limited vision.	A GIPTN Info Kiosk in the George Transport Hub, open daily from 08:00 – 17:00 GO GEORGE Smart Cards are available at the Smart Card Kiosk, 7 days a week.
	GO GEORGE Bus Stops	There are currently about 700 Bus Stops		
	Bus Terminal Points	There are currently Bus Terminal points at the following five (5) locations: 1. Thembalethu 2. Pacaltsdorp 3.Garden Route Mall 4. Blanco 5. Transport Hub		• Smart Card kiosk in the George Transport Hub in Cradock Street: 05:30 – 20:00 • Smart Card kiosk in York Street next to Civic Centre: 05:30 – 20:00 • Smart Card kiosk at Garden Route Mall: 05:30 – 20:00 • Smart Card kiosk at Blanco Triangle: 05:30 – 20:00 • GO GEORGE Smart Card mobile kiosks stopping at fixed locations all over town according to a weekly schedule.
	Transfer Locations	There are currently forty-two (42) Transfer Locations within the System	These transfer locations include the GO GEORGE Transport Hub and various stops where different routes intersect.	Commuters transfer to buses on intersecting routes.

Mode Type	Facility *The name of the bus depot, train station, etc.*	Locations *The geographical location or address of the facility*	Infrastructure Details *Information about the physical structure, capacity, and amenities of the facility*	Operational Details *Data on how the facility operates, such as number of routes serviced, frequency of service, hours of operation where applicable, etc.*
Minibus Taxis	**Thembalethu Taxi Rank**	Thembalethu, George (-34.000187, 22.478967)	Formal taxi rank, includes shelter, ablution, offices, holding area, loading area, waiting area, trading area, rank roof structure, rubbish bins, electricity, lights, water taps, information signage and a surfaced area.	• Thembalethu taxi rank is used by long-distance taxis and taxis acting as a feeder service to Thembalethu. • The rank does not have sufficient taxi rank capacity for taxis to and from George. • Taxis collect passengers on Nelson Mandela Boulevard opposite the Thembalethu taxi rank, which potentially includes illegal taxis as identified in the broad cordon count number plate survey study and analysis, most probably CODETA taxis that ranks at Craddock Taxi Rank. • Thembalethu taxi rank requires further investigation in terms of its potential future function. • The existing office space has a meeting room, kitchen, and toilet. Sections of the gutters of the office building (rank roof structure) are broken. • The existing office space is too small considering the rank volume and the approximately up to 300 people that uses the office space as a community meeting room.
	Garden Route Mall Taxi Rank	Garden Route Mall, George (-33.986237, 22.501350)	Informal taxi rank, includes holding area, pavement, rubbish bins, camera security and surfaced area.	• Located on private property owned by Garden Route Mall • Is well located to serve passengers to and from the shopping mall. • The holding area is an open area that is hardened but unsurfaced. • The taxi rank utilises the camera security of the neighbouring McDonald's.
	Cradock Street Taxi Rank	George CBD (-33.962911, 22.462126)	Formal taxi rank, includes shelter, ablution, offices, holding area, loading area, waiting area, rank roof structure, information signage, camera security, surfaced area.	• Cradock taxi rank area is fully occupied. • Some of its capacity is taken up by CODETA. • In the PM it operates as a taxi rank with boarding and departures. Apart from the PM Cradock Taxi Rank serves primarily as a holding area.

Mode Type	Facility *The name of the bus depot, train station, etc.*	Locations *The geographical location or address of the facility*	Infrastructure Details *Information about the physical structure, capacity, and amenities of the facility*	Operational Details *Data on how the facility operates, such as number of routes serviced, frequency of service, hours of operation where applicable, etc.*
	St Mark's Square Taxi Rank	George CBD (-33.958697, 22.459152)	Formal taxi rank, includes shelter, ablution, holding area, loading area, waiting area, rubbish bins, lights, water taps, benches, surfaced area.	• Occupies a small area adjacent to the public parking lot and has ample room for extensions if required. There are proposals to upgrade St Marks taxi rank for long distance taxis • There is a NMU student bus service with 7 bus trips per day, leaving at different intervals.
Metered Taxi Services	Various registered business premises to private properties (homes)	Various Locations	Operate from various locations, and these vary from registered business premises to private properties (homes)	The term metered taxis are used to describe sedan taxis that operate for private hire, but do not have actual meters, but a price is agreed upon. There are not many of these, so locations mainly operate as holding area for vehicles, and times depend on demand.
Long-distance Services	**George Railway Station parking area**	Station Street (-33.96559334133506, 22.46846323318682)	Formal, off-street loading area with Intercape and Translux Offices, with large open parking lot in the front of the offices.	Operates throughout the day as per each long-distance service's schedule, and services various routes.
	N2 Sasol Garage, George	N2 (-33.99192394388526, 22.520908296134444)	Informal, off-street open parking lot at the back of the N2 Sasol Garage for loading.	Operates throughout the day as per each long-distance service's schedule, and services various routes.
Learner Transport	Various pickup locations all across George, and drop-off locations are various schools	Various Locations	No formal facilities, pickup and drop-off as required, usually on-street for pickup and drop-off	Mainly operates between 05:00 and 08:00 in the mornings, and 14:00 and 17:30 in the afternoons during weekdays. Some of the Nelson Mandela University contracted transport operates outside of these hours on Saturdays (10:00 and 15:00). Some learner transport is also utilised over weekends for recreational and sporting events.
Tourist Services	Various registered business premises to private properties (homes)	Various Locations	Operate from various locations, and these vary from registered business premises to private properties (homes)	Mainly operates as holding area for vehicles, and times depend on demand.

Mode Type	Facility *The name of the bus depot, train station, etc.*	Locations *The geographical location or address of the facility*	Infrastructure Details *Information about the physical structure, capacity, and amenities of the facility*	Operational Details *Data on how the facility operates, such as number of routes serviced, frequency of service, hours of operation where applicable, etc.*
Staff Services	**Rural area near the Blueberry Farm Geelhoutboom Street, R404**	R404 (-33.96414246187616, 22.38384044427821)	Informal bus holding area, open ground, off-street	Holding area for various buses that transports farm workers
	Various pickup locations, typically areas that are geographically separated from George CBD	Various Locations	Various informal pick-up locations, drop-off locations would be formal places of employment	Mainly operates between 05:00 and 08:00 in the mornings, and 17:00-18:00 in the afternoons during weekdays. Could be outside these hours based on the shifts etc.
Charter Services	Various registered business premises to private properties (homes)	Various Locations	Operate from various locations, and these vary from registered business premises to private properties (homes)	Mainly operates as holding area for vehicles, and times depend on demand.
Courtesy Services	Various registered business premises that offers the service	Various Locations	Various registered business premises that offers the service	Mainly operates as holding area for vehicles, and times depend on demand.
Cross Border Transport Services	Same applies as for Long-distance services	Same applies as for Long-distance services	Same applies as for Long-distance services	Same applies as for Long-distance services
E-hailing Services	Various registered business premises to private properties (homes)	Various Locations	Various informal, on-street waiting areas from where drivers wait for ride requests	On-demand travel, so no formal routes, frequency of service or hours of operation.
Commuter Rail	**George Railway Station**	Station Street (-33.96559334133506, 22.46846323318682)	Standard railway station building and platforms, but not operational.	Commuter rail service it not operating in George Municipality at the time of writing this report
Two- and Three-Wheeler Public Transport	None	None	None	According to the team's knowledge, there are no formal two- and three-wheeler public transport services in GLM.

Mode Type	Facility *The name of the bus depot, train station, etc.*	Locations *The geographical location or address of the facility*	Infrastructure Details *Information about the physical structure, capacity, and amenities of the facility*	Operational Details *Data on how the facility operates, such as number of routes serviced, frequency of service, hours of operation where applicable, etc.*
Aviation	**George Airport**	George Airport (-34.004183102547344, 22.38097342304924)	Formal airport, including shops, toilets, waiting areas, as well as runways, holding areas and loading areas for vehicles	Operating Hours: Monday-Thursday: 06:00 - 19:00 Friday: 06:00 - 20:00 Saturday: 08:00 - 15:00 Sunday: 08:00 - 19:30 Mainly services routes to other South African Airports. Capacity: About 807 000 persons per year, and about 389 tonnes of cargo per year (forecasted for 2023)
2. Private Transport				
Private Vehicles	Various parking locations around George	Various Locations	Various parking bays, formal and informal, under-cover and non-under-cover parking	No schedule, as the demand requires.
3. Freight				
Road Freight	None	None	None	According to the team's knowledge, there are no formal road freight facilities, other than various places for holding of goods and redistribution.
Rail Freight	**George Railway Station**	Station Street (-33.96559334133506, 22.46846323318682)	Standard railway station building and platforms, but not operational.	Three main lines run to/from the George CBD, namely George – Mossel Bay, George – Knysna and George – Oudtshoorn. Transnet's 2022 Freight Rail Report states that the George – Knysna line is no longer active. Currently, the rail network in the George Municipality is only utilised for freight transport and there are no passenger transporting services. Some of the main commodities transport via rail through George is petroleum, grain and perishable items, specifically fruits such as berries.

Mode Type	Facility *The name of the bus depot, train station, etc.*	Locations *The geographical location or address of the facility*	Infrastructure Details *Information about the physical structure, capacity, and amenities of the facility*	Operational Details *Data on how the facility operates, such as number of routes serviced, frequency of service, hours of operation where applicable, etc.*
Air Freight	**George Airport**	George Airport (-34.004183102547344, 22.38097342304924)	Formal airport, including shops, toilets, waiting areas, as well as runways, holding areas and loading areas for vehicles	Operating Hours: Monday-Thursday: 06:00 - 19:00 Friday: 06:00 - 20:00 Saturday: 08:00 - 15:00 Sunday: 08:00 - 19:30 Mainly services routes to other South African Airports. Capacity: About 807 000 persons per year, and about 389 tonnes of cargo per year (forecasted for 2023)
Port Freight	**Nearest to George is Port of Mossel Bay**	Bland Street (-34.17732033611993, 22.146728786824056)	The current break-bulk capacity of the port is 110 thousand tons per year and the current liquid bulk capacity is 8 million kilolitres per year.	The Port of Mossel Bay is the third largest in the Western Cape, after the port of Cape Town and the Port of Saldanha. Even so, the cargo capacity of this port is quite limited, with the majority of traffic at this port being fish trawlers and recreational boaters. The main freight product imported through the Port of Mossel Bay is petroleum, which is not destined for George but rather the PetroSA refinery outside Mossel Bay.

Table 2-19: The total number of vehicles with active operating licences and their total vehicle capacity (indicated in parentheses) for each authority type grouped by vehicle type registered on the PRE database as of January 2023, as found in the Transport Register.

Authority Service Type(s)	Bus	Combi / Microbus / Minibus	Midi-bus	Motor Car	Truck	Unsure	Grand Total
Charter	11 (371)	74 (1051)	5 (104)	18 (114)			109 (1706)
Charter, Contracted - WCED		1 (15)					1 (15)
Charter, Contracted - WCED, Scholar, Staff	3 (132)	1 (60)					4 (192)
Charter, Contracted - WCED, Staff	16 (1003)						16 (1003)
Charter, Local Minibus Taxi		3 (43)					3 (43)
Charter, Long Distance (Unscheduled), Staff		1 (15)					1 (15)
Charter, Metered Taxi (Rank)				5 (22)			5 (22)
Charter, Scholar	14 (558)	19 (288)	2 (70)	1 (6)			36 (922)
Charter, Scholar, Staff	8 (510)	17 (255)	1 (16)	1 (6)			29 (932)
Charter, Staff	14 (589)	25 (366)	4 (123)	2 (14)			46 (1127)
Contracted - GO GEORGE	90 (7391)	36 (540)					126 (7931)
Contracted - WCED	9 (491)	1 (15)	3 (87)				13 (593)
Local Minibus Taxi		46 (658)		2 (10)			48 (668)
Local Minibus Taxi, Long Distance (Unscheduled)		148 (2195)		6 (41)			154 (2236)
Long Distance (Unscheduled)	1 (22)	60 (887)	2 (38)	3 (27)			66 (974)
Metered Taxi (Base)				8 (38)			8 (38)
Metered Taxi (e-Hailing)				2 (9)			2 (9)
Metered Taxi (Rank)				6 (24)			6 (24)
Scholar	4 (79)	17 (251)	1 (21)	6 (37)			29 (430)
Scholar, Staff	8 (509)	9 (130)	1 (41)	1 (6)			22 (925)
Staff	14 (194)	55 (805)	5 (114)	20 (60)	5 (NA)	1 (NA)	100 (1173)
Grand Total	**192 (11849)**	**513 (7574)**	**24 (614)**	**81 (414)**	**5 (NA)**	**1 (NA)**	**824 (20978)**

Authority Service Type(s)	Bus	Combi / Microbus / Minibus	Midi-bus	Motor Car	Truck	Unsure	Grand Total
Percentage Split	**23.3% (56.5%)**	**62.3% (36.1%)**	**2.9% (2.9%)**	**9.8% (2%)**	**0.6% (0%)**	**0.1% (0%)**	**100% (100%)**

Table 2-20: Summarised carrying capacity for each of the Authority Service Types when Operating Licenses that are registered for more than one transport authority type are grouped together, compiled from the Transport Register information.

Authority Service Type(s)	Bus	Combi / Microbus / Minibus	Midi-bus	Motor Car	Truck	Unsure	Grand Total
GO GEORGE	90 (7391)	36 (540)					126 (7931)
Minibus Taxis (Local + Long Distance)		198 (2911)		8 (51)			206 (2962)
Metered Taxi Services				19 (84)			19 (84)
Long-distance Services							Various
Learner Transport	68 (3708)	65 (1014)	8 (235)	9 (55)			150 (5012)
Tourist Services							Not Available
Staff Services	66 (3224)	106 (1556)	11 (294)	24 (86)	5 (0)	1 (0)	213 (5160)
Charter Services	70 (3409)	141 (2093)	12 (313)	27 (162)			250 (5977)
Courtesy Services							Not Available
Cross Border Transport Services							Not Available
E-hailing Services				2 (9)			2 (9)
Commuter Rail							Not Operational
Two- and Three-Wheeler Public Transport							Not Applicable
Aviation							Not Available

2.8.2 Micro Mobility Transport Services

Table 2-21 listing Micro Mobility Facilities suggests a burgeoning potential for non-motorised transport options which can support a shift towards a more active, healthy, and environmentally friendly urban environment. Enhancing infrastructure for walking, cycling, and other forms of micro-mobility can improve local accessibility and reduce the carbon footprint associated with short-distance travel.

Considering these insights, the next steps should focus on integrating high-capacity, sustainable transport options within George's mobility strategy. The inclusion of non-motorised transport options and the improvement of micro-mobility facilities can complement the existing macro mobility framework. This would not only cater to a broad range of mobility needs but also align with the Smart City goals of efficiency, sustainability, and improved quality of urban life.

Furthermore, the potential reinstatement of the commuter rail service, as previously mentioned, would not only cater to daily commuters but also bolster smart tourism initiatives, providing an attractive transport alternative that links key nodes within and beyond George.

Table 2-21: Status Quo of Micro Mobility Facilities from the Transport Register.

Mode Type	Facility *The name of the bus depot, train station, etc.*	Locations *The geographical location or address of the facility*	Infrastructure Details *Information about the physical structure, capacity, and amenities of the facility*	Operational Details *Data on how the facility operates, such as number of routes serviced, frequency of service, hours of operation where applicable, etc.*
Micromobility Transport Services				
Motorised Transport	All of the micromobility services mainly operate on sidewalks all across George, where specific paths have been designated.	All across George	Formal and informal roads and paths across George.	People make use of these services as they need.
Electric Bicycles (E-bikes)				
Electric Scooters				
Electric Skateboards				
Segways				
Hoverboards				
Electric Unicycles				
Electric Handcycles				
Wheelchair				
Non-Motorised Transport (NMT)				
Walking				
Bicycles				

Mode Type	Facility *The name of the bus depot, train station, etc.*	Locations *The geographical location or address of the facility*	Infrastructure Details *Information about the physical structure, capacity, and amenities of the facility*	Operational Details *Data on how the facility operates, such as number of routes serviced, frequency of service, hours of operation where applicable, etc.*
Scooters				
Skateboards				
Unicycles				
Inline Skates/Rollerblades				
Wheelchair				
Animal Drawn				

3 SPATIAL DEVELOPMENT FRAMEWORK

3.1 Key Aspects

- **Integration of Land Use and Transport Planning**: Ensuring that land use decisions complement and enhance transport infrastructure and services.
- **Sustainable Development**: Promoting sustainable land use patterns that reduce the need for travel and support non-motorised and public transport.
- **Accessibility and Mobility**: Enhancing accessibility and mobility through strategic spatial planning that considers the needs of all transport users, including pedestrians and cyclists.
- **Economic Growth**: Facilitating economic development by improving access to key commercial and industrial areas.
- **Environmental Considerations**: Incorporating environmental sustainability into spatial planning to protect natural resources and reduce the environmental impact of transport.
- **Community Involvement**: Engaging with communities to ensure that spatial development meets the needs and aspirations of local residents.
- **Policy Alignment**: Aligning local spatial development policies with national and provincial frameworks to ensure consistency and coherence.

3.2 Introduction

The George Municipality adopted the George Municipal Spatial Development Framework, 2023-2027 (GMSDF) in May 2023 (George Municipality, 2023). The GMSDF is now deemed as the adopted policy which guides spatial growth and development in George. The GMSDF provides clarity in respect of the way land-use, development, and investment will be supported to build a spatial form which facilitates the vision and strategic objectives of the Municipality.

3.2.1 Purpose of the George Municipal Spatial Development Framework, 2023 (GMSDF)

The purpose of the GMSDF can be summarised as follows:

a) Interpret and represent the spatial development vision of the municipality – informed by a long-term spatial development vision statement and plan.


b) Guide planning and development decisions across all sectors of government and specifically the municipality and provincial government in its spatial planning and land use management decisions.
c) Contribute to a coherent, planned approach to spatial development across the spheres of government.
d) Provide clear and accessible information to the public and private sector and provide direction for investment purposes.
e) Include previously disadvantaged areas, rural areas, informal settlements, slums and landholdings of state-owned enterprises and government agencies and address their inclusion and integration into the spatial, economic, social, and environmental objectives of the relevant sphere.
f) Address historical spatial imbalances in development.
g) Identify the long-term risks of spatial patterns of growth and development and the policies and strategies necessary to mitigate those risks.
h) Provide direction for strategic developments, infrastructure investment, promote efficient, sustainable, and planned investments by all sectors and indicate priority areas for investment in land development.
i) Promote a rational and predictable land development environment to create trust and stimulate investment.
j) Assist in integrating, coordinating, aligning, and expressing development policies and plans emanating from the various sectors of the spheres of government as they apply within the municipal area, specifically as it relates to environmental management; and
k) Outline specific arrangements for prioritising, mobilising, sequencing, and implementing public and private infrastructural and land development investment in the priority spatial structuring areas identified in the Spatial Planning and Land Use Management Act (SPLUMA , 2013).

3.2.2 Role of the Municipal Spatial Development Framework

The Municipal Systems Act (2000) (MSA) requires an MSDF as a core component of a Municipality's Integrated Development Plan (IDP). The IDP drives budget prioritisation and allocation decisions in terms of a rolling five-year development plan. An MSDF is the spatial expression of the IDP while at the same time an MSDF couches the IDP within a long-term spatial vision for the municipal area that seeks to implement the vision, principles and policy directives set out in national and provincial legislation, strategies, policies, and plans. Therefore, decisions made by sectors, spheres, and entities of the public sector, should be consistent with, and work towards, realising the vision, spatial strategies and plan set out in an MSDF. Indeed, public sector actors are bound by the MSDF in their actions within a municipal area. Decisions and authorisations made by public entities in respect of private development are also bound by the principles expressed in an MSDF.

The George Municipal Spatial Development Framework, 2023 (GMSDF) leads the Municipality's policy-driven Land Use Management System. The GMSDF provides the long-term spatial framework for decisions made in terms of the Land Use Planning By-Law for George (2023) and the George Integrated Zoning Scheme By-Law, 2023 (GIZSB). These by-laws standardise land use regulations


across the municipal jurisdiction aligned to the long-term spatial development outcomes sought by the GMSDF and its policies.

Importantly, the GMSDF not only gives direction to the public sector but also aims to guide private investment decisions in the George municipal area by providing coherent information on the opportunities and constraints for development in the municipal area and offering a vision for sustainable development that will realise long term benefit for the whole of society. Clarity on where public investment will be made and the objectives that will drive decisions on planning permissions also provides clear signals to investors on the municipality's intent.

3.2.3 Summary

The George Municipal Spatial Development Framework (GMSDF) should be viewed as a strategic guide for forthcoming development rather than a collection of fixed development propositions. It is not designed to dictate the precise characteristics or design of future developments but to steer prospective development proposals. The GMSDF aims to direct where investment should be focused and acknowledges the significance of involving the private sector in these decisions. This involvement is deemed crucial for forging partnerships that will shape future development.

The GMSDF serves as a blueprint for harmonious urban growth, shaping the trajectory of development by highlighting potential investment zones. To foster a collaborative environment with the private sector, the framework can be utilised as a tool for dialogue and engagement, creating a shared vision for the city's development.

By setting clear priorities for investment, the GMSDF provides the private sector with valuable insights into municipal development plans, allowing them to align their own initiatives with the broader objectives of the municipality. This clarity can encourage private entities to commit to projects that complement public sector goals, leading to a synergy between municipal planning and private investment.

Additionally, the GMSDF can act as a catalyst for Public-Private Partnerships (PPPs), by identifying and proposing projects that are ripe for joint ventures. Through such partnerships, the risks and benefits of urban development projects can be shared, which may attract private investment towards infrastructure, services, and amenities that are beneficial to both the community and businesses.

Moreover, the framework's guidance on development can inform zoning regulations, land use management, and incentive structures that the municipality might offer to encourage private investment in priority areas. Such incentives might include tax breaks, expedited permitting processes, or assistance in infrastructure development.

Engaging the private sector early in the planning process, perhaps through forums or consultative committees, ensures their perspectives and expertise contribute to the refinement of the GMSDF. This collaborative approach not only accelerates development but also fosters a sense of ownership and responsibility towards sustainable and inclusive urban growth.

3.3 Spatial Analysis and Profile of the George Municipal Area

3.3.1 Location and Extent

The GMSDF applies to the whole of the George Municipality's jurisdictional area, extending over 5 191km^2. The municipal area lies halfway between Cape Town and Gqeberha, and within the Garden Route District Municipality. George is designated as a regional anchor, within the Southern Cape, in terms of the categorisation of the recently (2023) promulgated National Spatial Development Frameworks. Map 1 gives an indication of the boundaries of the Greater George Municipal Area.

George Municipality administers a vast and diverse geographic area that extends from the dry and climatically extreme Little Karoo in the north, to the wetter more temperate Garden Route in the south. It is an area of considerable natural assets and beauty, including expansive mountains and forests, wilderness areas, a varied coastline, and extensive lakes, rivers, and estuaries. Its natural assets include parts of the Garden Route National Park (a World Heritage site), the Baviaanskloof Wilderness Area and part of the Cape Floristic Region and the Garden Route Biosphere Reserve. The municipal area also includes fertile farmlands and timber plantations along the coastal plain, fruit orchards in the Langkloof and arid grasing areas in the Little Karoo.

Three important national roads/routes, the N2, N9 (R62) and N12, traverse the area, and connects George regionally and nationally. The George regional airport extends this regional and national connectivity.

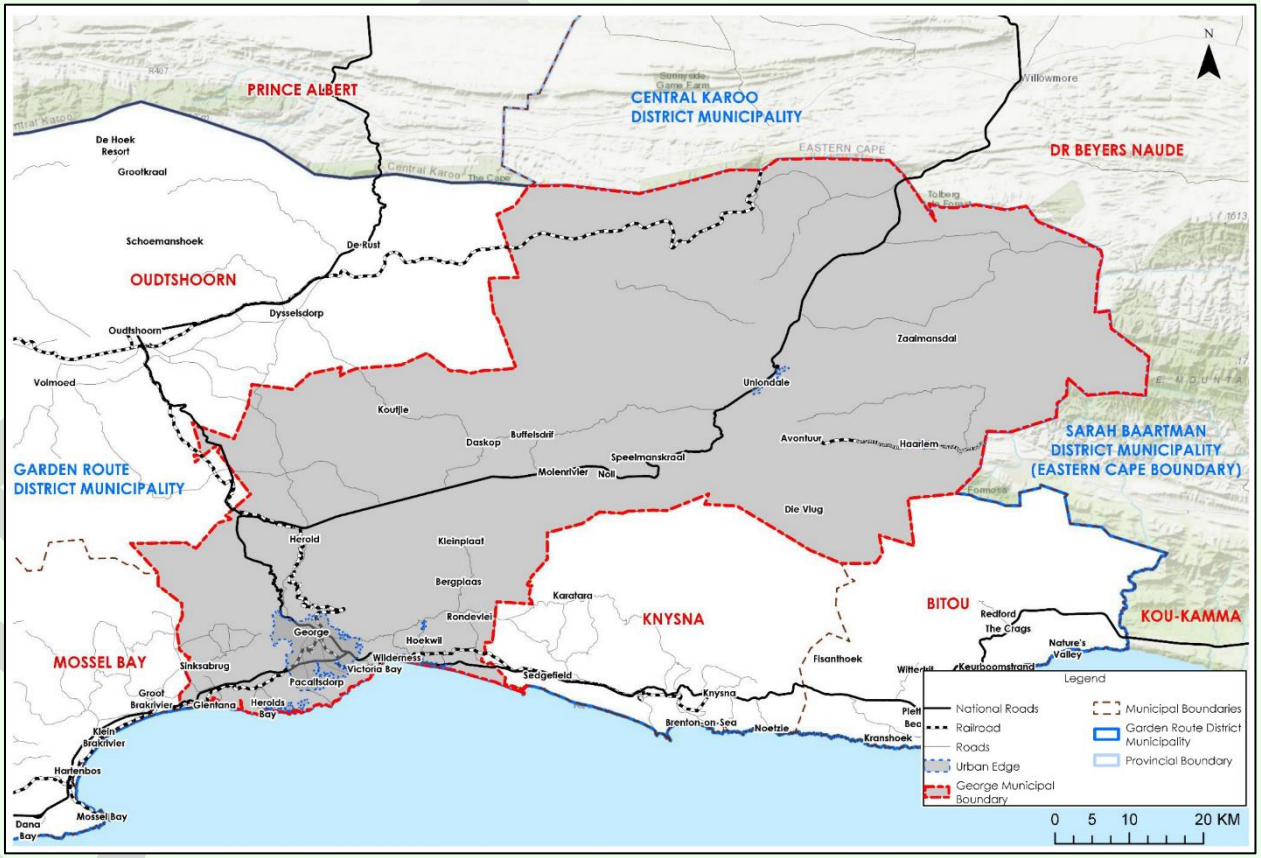


Figure 3-1: The Greater George Area (George Municipality, 2023).

The George city area is the primary urban centre of the George Municipality. More than 84% of the municipal area's population is located here. Wilderness, Wilderness Heights, Herolds Bay, Victoria Bay, Hoekwil, Touwsranten, Kleinkrantz, Uniondale and Haarlem respectively host the bulk of the remaining urban population.

According to the GMSDF, George has a population of 224 430 peoples, 61 179 households and 53 729 registered properties located in the George Municipal area. According to the GMSDF an estimated 10 684 informal structures are located within the George Municipal area. The population growth of the area is estimated at 1.2% per annum for the period 2021 to 2031.

According to the GMSDF (George Municipality, 2023) the population composition consists of a male population of 48.3% and a female population of 51.7% with 26.8% of the population between 0 and 14 years, 66,2% between 15 and 64 years and 7% above 65 years. The unemployment rate is according to the GMSDF estimated at 19,5% with 33% of the employed population active in the finance, real estate and business sector. The employment rate in the manufacturing sector is estimated at 14% with 16% active in the wholesale, retail trade catering and accommodation sector.

Around 82% of George's population lives in the George Urban area (George Municipality, 2023). The city's population density is shown in **Figure 3-2**, based on census projections and municipal survey data from 2021. Since 2016, all areas have seen some residential growth, but the city's urban areas remain fragmented, with the following key features being that it is an older town that is relatively well off in terms of access to opportunities, businesses, and public facilities.

The economy is concentrated in a triangular area that includes the central business district, the Kraaibosch/Blue Mountain commercial area, and the Pacaltsdorp industrial zone (George Municipality, 2023).

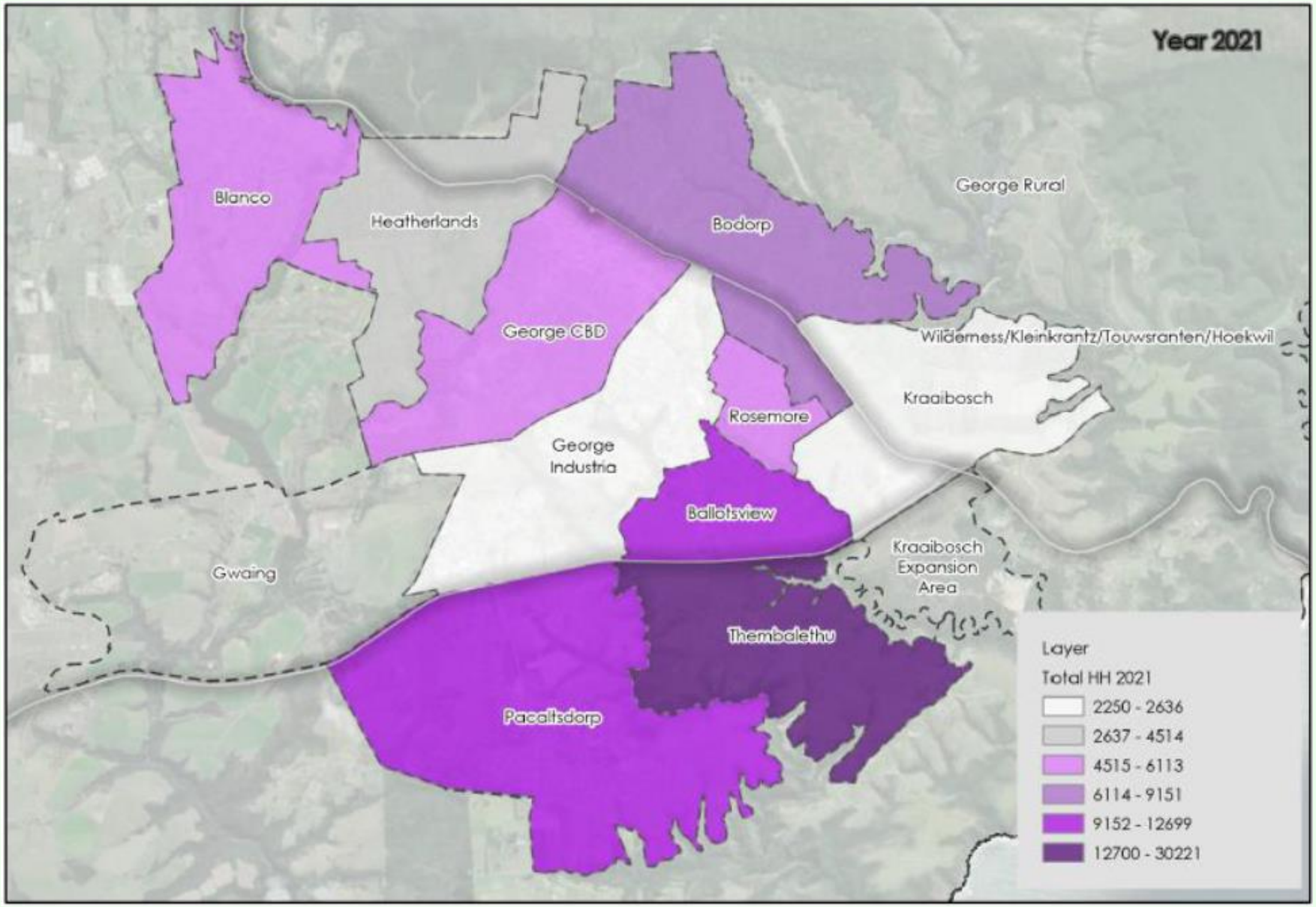


Figure 3-2: George City Area: Population Density 2021 (George Municipality, 2023).

3.3.2 Regional and District Context

The regional importance of George is echoed in the Southern Cape Regional Spatial Implementation Framework, 2019. George is identified, as the primary service centre of the entire Garden Route region, offering most of the higher order services and facilities one would expect to receive in a metropolitan city, including modern airport infrastructure. It houses the primary administrative and regional offices of companies (and government departments) offering services in the region but is also the heart of the vast tourism offering, and a thriving agricultural sector specialising in export quality berries and other agricultural produce used in beer making and other agri-processing activities.

The economy of George Municipality is interdependent with the regional economy. George still dominates the regional economy and has the basis to perform better and create more jobs for those living in the region. In its role as a service centre, it is also reliant on the region to generate demand for services and beneficiation that will stimulate its growth. The performance of the region in relation to its natural resources, agricultural economy, and accessibility, impacts directly on how well George performs in terms of servicing its population and attracting tourism and investors. The Garden Route District Spatial Development Framework proposes that the more robust infrastructure systems within George and Mossel Bay are better positioned to sustainably absorb economic- and settlement growth in the district than the neighbouring municipalities within the region.

3.3.3 George Municipality: Vision, Mission, Motto, and Values

George Municipality ascribes to the “Smart City” concept, to create a future George that is safe, secure, sustainable, and efficient. The “smart city” has three main pillars, which relate to the strategic objective of the Municipality:

- **Governance and management services:** Good governance, financial management, institutional transformation to the support the City. Community leadership, policy and regulation are the drivers for investment and growth.
- **Infrastructure:** Physical infrastructure and Services and development management, including reliable infrastructure (engineering infrastructure, transport, energy, communications, development infrastructure, technological innovation, green infrastructure), is the platform for smart development.
- **Human and Social Services:** Economic development, safety and security, and sustainable communities. Community- and social infrastructure are an indispensable part of the smart city.

The Vision, Mission and Values of the George Municipality is illustrated in **Figure 3-3**.

Figure 3-3: Vision, Mission, and Values of the George Municipality (George Municipality, 2023).

3.3.4 Masterplan with Spatial Implications

In terms of the GMSDF various functional Sector/Master Plans have been completed or is in process of completion, with the George Municipality: Comprehensive Integrated Transport Plan 2023 – 2028 (CITP) being one of the identified Sector/Master Plans.

The following Master Plans are applicable to the George Municipality:

- Comprehensive Integrated Transport Plan 2022 - 2027
- Comprehensive Integrated Transport Plan, 2014
- George Roads Master Plan, 2005

The alignment of the CITP to the vision, strategies, policies, and proposals set out in GMSDF will be critical for the successful implementation of the GMSDF.

3.4 Status Quo Synthesis

The Greater George Area is made up of two distinctive landscapes – the Garden Route and the Klein Karoo - divided by the Outeniqua Mountain Range, which itself provides a dramatic backdrop to the area. The mountain range is connected to a coastline through river corridors. These corridors and estuaries, the diverse scenic landscapes including indigenous forests and plantations on either side of the mountain range and the mild climate, are assets that have, continue to, and can do more to support livelihoods and create well-being and prosperity in George. The GMSDF seeks to respect these two unique but connected regions and their distinctive landscape elements that offer a critical natural and economic resource base for the regional and local economies.

At the scale of the George city area, its surrounding natural and rural environment provides a distinctive frame for the city which gives the city an identity by providing clear green edges and gateways supporting its attraction as a place to live and work. At the same time, there are "green fingers" or corridors linking the sea and the mountain, which pass through the urban area providing ecosystem services, amenity, and opportunities for positive connections between different communities of George. The GMSDF seeks to balance urban growth needs with the importance of protecting and rehabilitating the integrity of natural and rural systems that are the basis for sustainable, resilient, and high-quality settlement and economy in George and the marketing of George as a "A City for a sustainable future".

An integrated Open Space System is promoted to positively build a respectful relationship between people and the natural systems on which they depend, specifically in the urban areas. The CITP will have to take cognisance of access to this open space system as an important element in the integrated transport plan.

In terms of the GMSDF development (existing and new) within the urban area should furthermore actively implement urban greening, not only to contribute to the quality of the environment and a 'green sense of place' congruent to the main town in the Garden Route but also as it contributes to regulating the heat island effect and related air quality management. i.e., urban greening should be a condition imposed on all development (private and public realm; existing and new) as it will enhance the sense of place in areas presently dominated by cars and poor-quality streetscapes and will prevent the degradation of the quality of other areas.

3.5 Spatial Budget

In terms of the GMSDF the spatial budget seeks to quantify opportunities available for potential residential, business, and industrial development and expansion within the current urban edge. The spatial budget is divided into four main categories namely:

- Remaining opportunities (in fill and in progress projects).
- Approved projects, but with no top structures.
- Proposed projects in technical process; and
- Identified vacant properties, still to be investigated.

Figure 3-4 provides data with regards to the spatial budget as per the abovementioned four categories.

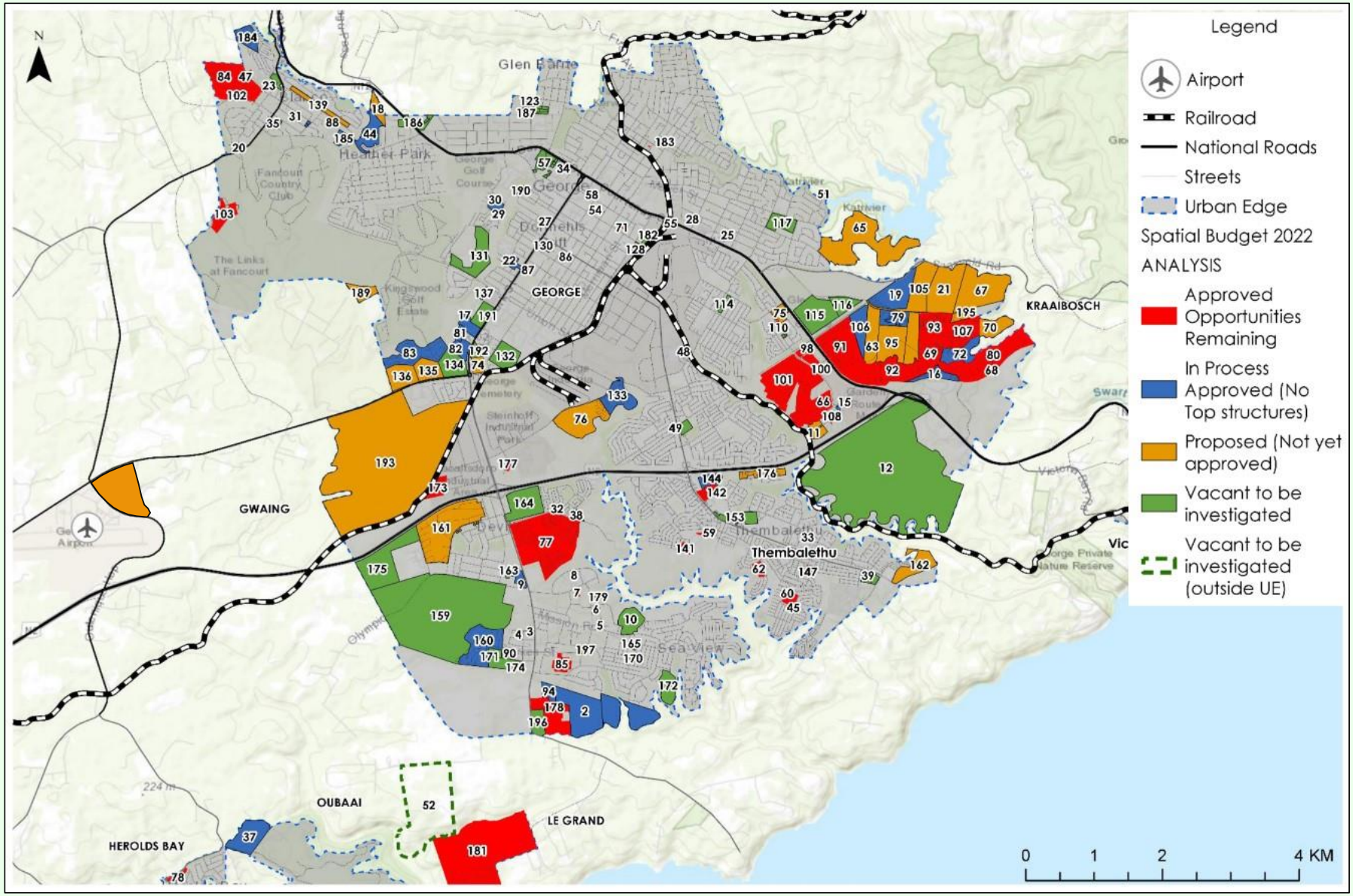


Figure 3-4: George Spatial Budget 2022 from George MSDF 2023 (George Municipality, 2023), and amendment added for the George Airport Northeastern Precinct proposed development.

The Spatial Budget 2022 as per "Annexure 3: Spatial Budget Data Base" as per the GMSDF can be summarised as follows:

i. A total of or 29.5ha (294 938.17m²) of business area is still available in the George city area. This area includes current vacant erven, approved, and proposed.
   a. Proposed business development in the vicinity of the western node includes approximately 33.4ha (333 579,27m²) of future opportunity.

ii. An approximate total of 13.2ha (132 339.97m²) of industrial property is currently vacant within the urban edge.
   a. Proposed development will yield approximately 16.4ha (163 852.05m²) in the existing George Industrial area together with a further 96.7ha (967 248.12m²) in the vicinity of the Gwayang utility area.

iii. Residential opportunities for the remaining, approved, and proposed areas include a total of 13 473 opportunities in the private and public sector (538ha at an average density of 25u/ha).
   a. Scattered vacant sites measure approximately 485,2ha and at the above-mentioned densities could potentially yield a total of 25 931 residential opportunities.

To realise the residential potential of infill housing sites, in balance with the demand for open-space and socio-economic support facilities, it is recommended that an integrated human settlements approach must be followed (graded densities/income, mixed use).

3.6 Spatial Concept

According to the GMSDF there are three spatial drivers that give form to the George MSDF.

The first is the natural and rural environment which must be protected and managed to ensure it is able to function optimally as a basis for supporting and nourishing prosperous and resilient settlement and economic activity in George.

The second is the settlements and, within the city of George, the system of corridors and nodes/precincts which must be reinforced and developed in a managed way to function as a productive and efficient system. The spatial structuring of George (the greater George and the city area) to support enabling and inclusive socio-economic growth, integrated human settlement and smart growth absorption is the aim of this theme/driver.

The third is the regional accessibility network that links the settlements to one another within the Greater George Area, as well as to opportunities further afield. This includes the local accessibility network (motorised and non-motorised) connecting people and activities along corridors to nodes within the city of George, enabling choice and participation in society and the economy within the urban areas. Within the George city area, four principal public transport corridors and a system of priority nodes are identified as strategically important in the GMSDF.

3.7 Accessibility and Mobility Network

How easily citizens of and visitors to George can access the opportunities, services, and amenities it offers is a critical


precondition for growth of the economy and development of its communities. The GMSDF must as such promote an effective and efficient accessibility network that supports urban-rural linkages through a productive interaction between the urban and rural environments, and within the settlements.

Please note that the content of this section is extracted from the George Municipality Spatial Development Framework (GMSDF) 2023, which was completed prior to the finalisation of the CITP. Proposals from the GMSDF will need to be confirmed and validated through the CITP, utilising the Transport Model for a more accurate and current assessment.

Ease of access relates to the efficiency of the movement network and in particular the public transport services operating along them. This network follows development and in turn the network can unlock development opportunity. If well managed, this network will support a productive and growing economy, if not, it will be a drain on the economy. A well performing network with a high level of connectivity will allow for choice in destination through affordability, convenience, and safety - no matter who you are in George or where you live. As such, it is a significant lever for spatial justice.

For the Greater George Area, the regional movement network must support the efficient movement of freight and people. This requires ensuring a clear primary and secondary regional route hierarchy that defines the role of the route and its investment priority and therefore guides how potentially conflicting uses of the route and the land use alongside it are managed to secure efficient mobility. A resilient system requires that there are clear alternative routes that can perform the same functions when another route is disrupted. This same network must support the ability of rural dwellers and workers, and those living in smaller rural settlements to be able to access services and amenities within a reasonable time and distance.

The implementation of the Western Bypass is an important improvement to this network and will remove conflicts within the George city area in favour of protecting space for local accessibility.

At a broader municipal scale, to relieve congestion along the N2 (particularly during peak season), it is proposed in the GMSDF that the R62 is upgraded to accommodate regional tour buses and freight traffic. This would firstly enhance regional mobility and freight traffic and secondly aid disaster risk management (additional route in the event of the closure of the N2 in a disaster situation (i.e., natural fires)). Thirdly, it would provide an economic driver to the towns along the R62.

The R62 is a significant tourism route. In the GMSDF it is proposed that in addition to upgrading the R62, land use and mobility tensions should be managed through street design and land use planning as opposed to the implementation of bypasses. This will ensure that the attractive quality of the route is maintained.

Longstanding plans to re-align the N2 still stand. The existing N2 is no longer fulfilling the function of providing mobility to the extent that it is expected of a national route. Planning to improve the N2 to provide improved mobility dates back almost five decades. Renewed attention must be focused on this objective. The basic planning and route determination was completed in the 1970s culminating in the proclamation of the road reserve in 1978. As such it provides the basic departure point for the future development. It is however not a foregone conclusion that the road will be developed in full within the 1978 proclaimed road reserve. The required environmental authorisation process may impact the final design (alignment) and


possibly affect the viability of the implementation of this road. In the meantime, an improvement to the existing N2 between George and Wilderness is planned and is to be implemented as an interim mitigation. The roll out is planned in 2-phases to occur continuous with an anticipated commencement date in 2023. This process will span beyond the timeframe of the GMSDF, it is a project to be implemented in the next 15 – 20 years. However, the vulnerability of communities with only one entrance and exit on the current N2 presents risks as can be seen from the experience of some of the coastal towns in recent wildfires. From a risk management perspective, the opportunity for alternative evacuation routes and for redundancy in the mobility system given the N2's national role cannot be ignored.

These secondary access positions as proposed by SANRAL will impact land use planning along the N2. Intersection points may impact on existing access provision and will have to be confirmed in all land use development investigations in the areas of the amended intersection positions (from the George N2/N9 intersection to Sedgefield). All accesses along the N2 must comply with new access designs and where secondary access systems must be incorporated such access systems/lanes/alternative roads must be indicated in the roads master plan or subsequent area/development roads plans, to tie into the main network (current and long term).

In the George city area, there has been a significant increase in traffic, related to formal and informal development in the past five years. In terms of the GMSDF there are missing linkages in the movement network that need to be introduced to enhance connectivity in the network and provide alternative routes in emergencies. The improved connectivity routes need to be addressed in the updated Roads Master Plan. The proposed roads will bridge missing links to create a legible hierarchy and a 'super grid' for the urban area. This is identified conceptually in this GMSDF and will need to be refined in the CITP and Road Network Plan.

The linkages identified in die GMSDF are as follows:

- The Thembalethu Local Spatial Development Framework (LSDF) proposes an extension of Ntaka Street (parallel to the N2) to tie in with a future road that would connect the Eastern Commercial Node to the land identified for long term urban growth to the south of this node and to the east of Thembalethu, as an alternative, direct access to employment in the Eastern Commercial Node and on the land to be developed in the long term.
- The Rand Street extension from Pacaltsdorp/Rosedale across the N2 linking with the industrial areas to the west and the north will improve access to employment areas from the broader Pacaltsdorp area.
- The Thembalethu Local Spatial Development Framework also proposes that a link road from Thembalethu along Nqwenesha Street, past the wastewater treatment works, be considered to tie in with the Rand Street extension to improve access to the industrial area from Thembalethu.
- A further link between new developments on the south-western edge of Thembalethu to Pacaltsdorp.
- A link between Knysna Road and Nelson Mandela Boulevard, being the link between Mount Vista Drive, Meander link Road, linking with Fiskaal Street.
- Additional road linkages to the proposed Gwayang Industrial and mixed-use area and the airport precinct.

- Additional western road linkages to the west and across the N2 to serve the densification of the Pacaltsdorp area and the larger City area.
- The Kaaimans Road extension to Glenwood Road and Glenwood Road re-instatement form part of the existing road network planning.
- Various emergency services access lanes/alternatives to serve disaster risk management.
- Secondary road linkages, within economic precincts (specifically Thembalethu Node 1, the York/R102, Pacaltsdorp Node and Blanco node) to facilitate coordinated access to such nodes to enable uptake of rights and economic development.

The linkages referred to above are indicated on **Figure 3-5** below.

The construction of these linkages will serve to formalise informal desire lines, enhance their convenience and safety, improve efficiency of public transport services, and create alternative entry and exit points for these communities, thereby improving the disaster risk response and resilience of these communities, currently served by a single entry and exit point. Although some of these connections are minor, their importance should not be underestimated and needs to be considered as priority and preferable to the proposed Southern Arterial as they are more feasible from a cost perspective and as a result could be implemented sooner with greater benefit to a large proportion of the George community that do not own cars.

It is recommended in the GMSDF that the proposed linkages be evaluated in the CITP.

The following priority nodes as identified in the GMSDF and indicated on the map in **Figure 3-6** are located within a network of principal public transport corridors:

- George CBD
- Eastern Commercial Node
- George Airport Precinct (outside the George City urban edge)
- Blanco CBD
- Thembalethu CBD and southern node
- Pacaltsdorp CBD
- York Street-R102 Node
- The N2/Beach Road Node
- Conville/George Industrial Area intersection on Nelson Mandela Boulevard
- Heather/Witfontein Node

26th Avenue/Sandkraal/Nelson Mandela Boulevard Road intersection, Thembalethu

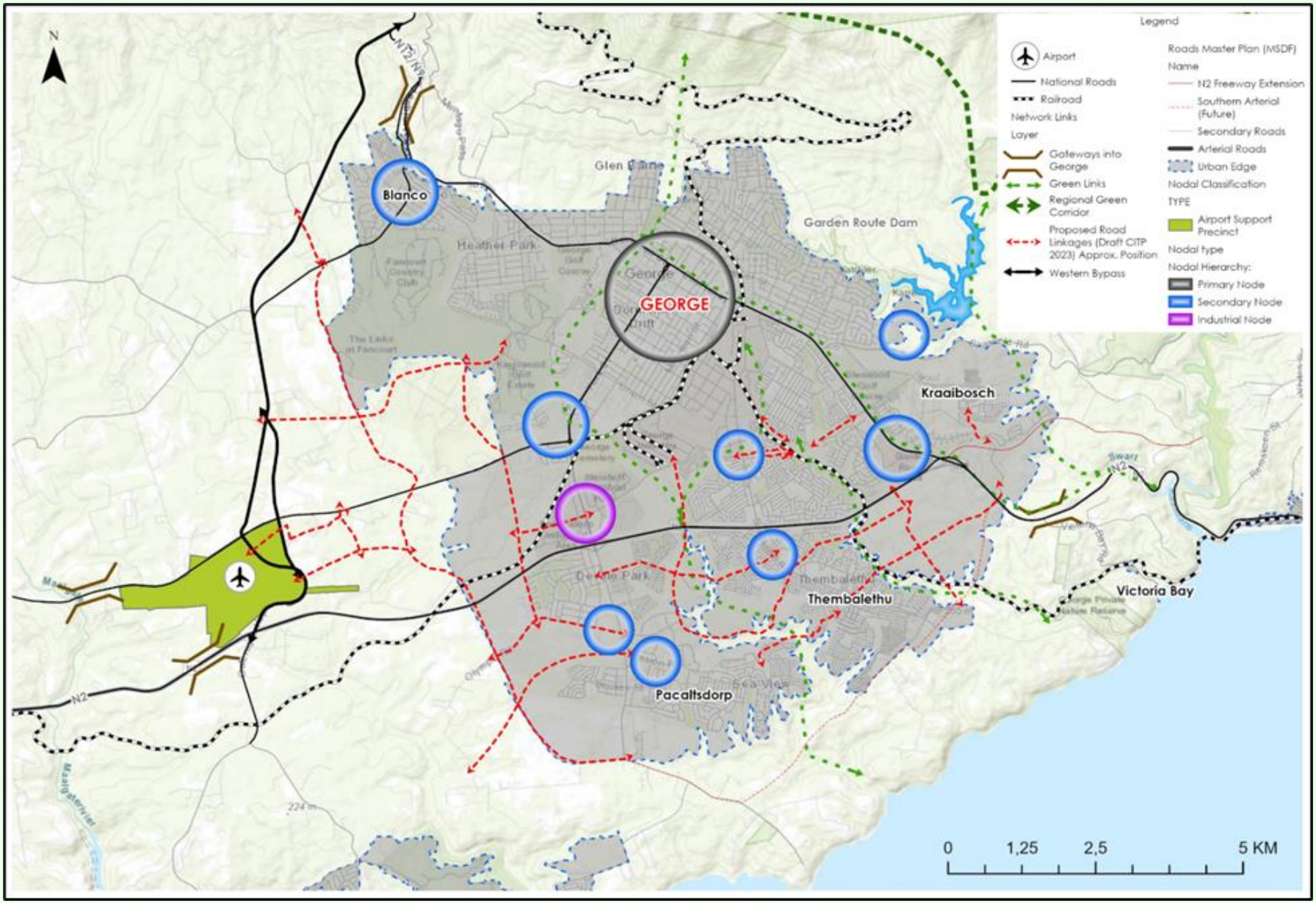


Figure 3-5: Proposed Road Network Linkages from George MSDF 2023 based on Draft CITP 2023 (George Municipality, 2023).

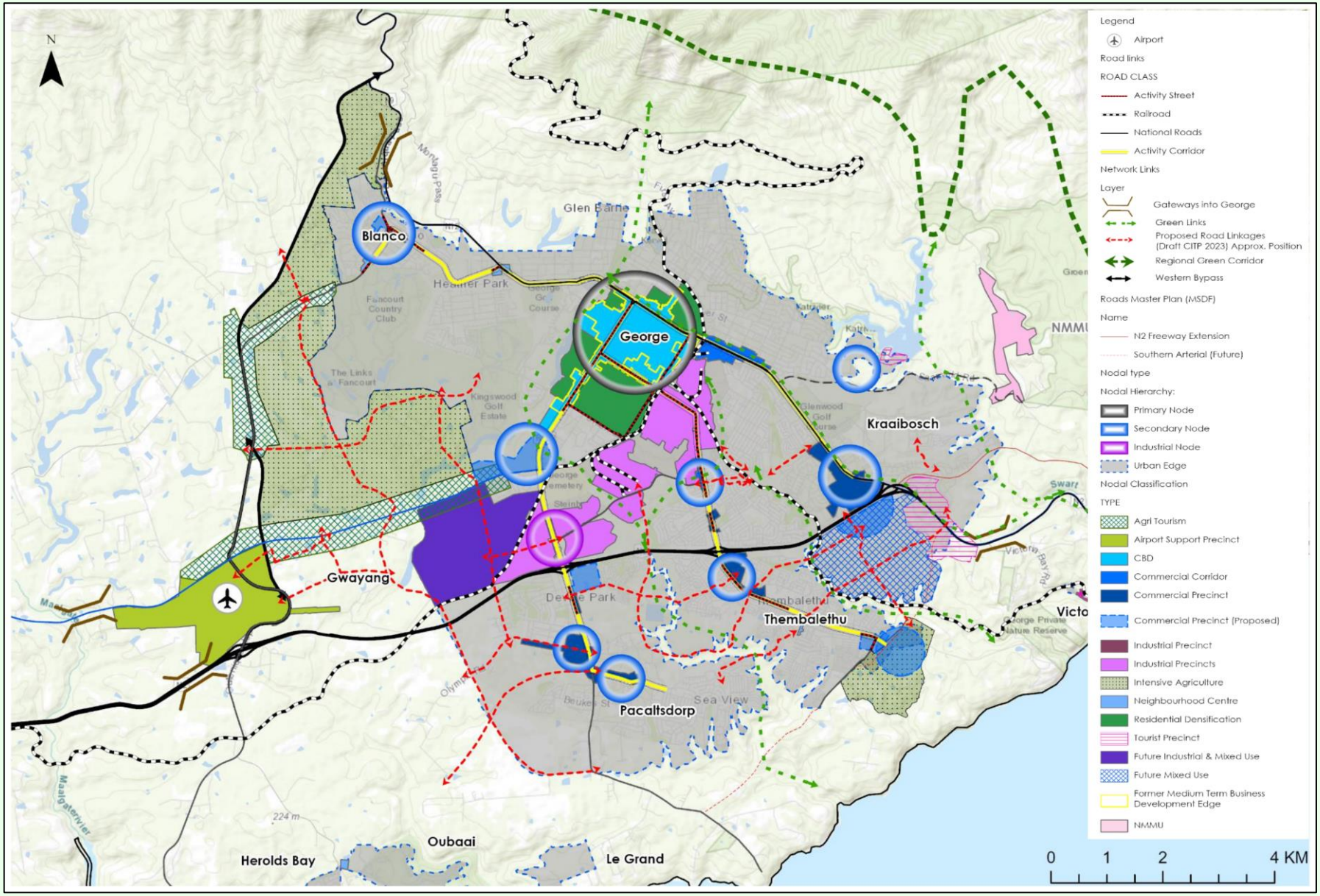


Figure 3-6: George City Area: Nodal Areas and Precincts from George MSDF 2023 (George Municipality, 2023).

These nodes should receive focussed attention in terms of investment priority and land use management to support the functionality and sustainability of the Integrated Public Transport Network. A 500m walkable residential densification zone has been identified along the principal public transport corridors.

Importantly, international best practice, SPLUMA and the Western Cape Provincial Spatial Development Framework underscore that the movement network cannot only be a matter of mobility for cars and modes of public transport but the mobility network, must also facilitate walkability and the use of non-motorised transport (NMT). It is estimated that walking is the main mode of transport for 45% of the George city area's residents. The settlements in George and parts of George city currently have a high level of walkability. This GMSDF seeks to encourage this further. Principal public transport routes, together with the city-wide open space system, should form the basis of the NMT network, to be detailed in the CITP.

Pedestrian and NMT linkages need to be safe to users and as such visibility and formal design is key. The design of the main transportation corridors and current and proposed linkages must focus on facilitating pedestrian movement and NMT. The prioritisation of public transport and walkability in the GMSDF is an important contributor to economic development, increasing footfall to enhance the viability of street level commercial activity and reducing movement costs to increase disposable income. This also aids in reducing George's carbon footprint and the resulting contribution to climate change. The GMSDF recommends that the current movement of people, (public/private/cargo- vehicles, pedestrian), in the Greater George area must be captured in the modelling of the George Integrated Public Transport Network (GIPTN) and additional pedestrian linkages must be identified via the GIPTN.

This modal hierarchy must define investment decisions. Infrastructure investment decisions must prioritise non-motorised transport, public transport, freight transport and then the private motor car – aligned to a route hierarchy. This is an equitable approach directly correlated with need in the George Municipal Area. Accessibility and mobility should enable movement 24 hours a day, seven days a week and should not be focussed on dealing with peak hour car-based traffic congestion.

The George Roads Master Plan must align with the spatial vision and concept of the GMSDF, and will coordinate road classification, incorporating roads side development environment, public transport network and priorities and possible linkage to rail infrastructure.

The coordinated roads and public transport system is an important informant to the spatial concept and integration of the GMSDF and the roads master plan must be finalised as a matter of priority.

3.8 Spatial Strategies, Policies and Guiding Principles

Various spatial strategies are contained in "Table 14: Spatial Strategies, Policies and Guiding Principles" of the GMSDF. The following proposals with regards to "Roads and Transportation (people and freight) and Non-Motorised Transport (NMT) to promote connectivity (socio-economic integration)" is highlighted in the GMSDF. Table 14 in the GMSDF also contains very specific policy guidelines and alignment principles with regards to each of the proposals. Implementation steps and actions have also been attached to each of the proposals.

The various strategies applicable to the CITP emanating from Table 14 in the GMSDF is summarised in **Table 3-1**.

Table 3-1: Spatial Strategies, Policies and Guiding Principles — text extracted from various paragraphs in the GMSDF that relates to traffic. (George Municipality, 2023).

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
Promote timeous implementation of roads infrastructure to support future growth (Residential and socio-economic)	Future bulk and link road planning to address immediate and medium-long term growth requirements. Planning for link services (local area master planning) enables limited short-medium term implementation. Planning for networks for George as a whole must identify investment (funding and timeframes) to enable catalytic projects and absorb predicted growth absorption (spatially located). Insufficient roads capacity (implemented capacity, not network planning) in the short and medium term, restricts development implementation and growth absorption required in the next 10 years as land use applications will not be technically supported if the main network is not aligned with growth absorption tempo.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. The CITP, including the Roads Master Plan and GIPTN forward planning to be aligned with growth absorption estimates and incremental precinct uptake. ii. Activity Streets have been identified and relate to road sections where the roadside environment and strategic intent is supported via road- and access planning.	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Alignment of Transport- and Roads Master Plans (GIPTN, CITP) with the GMSDF Spatial Concept. • AMP's to be reviewed to acknowledge the urban form and the GMSDF intent, specifically urban areas within the urban edge, nodes and precincts, activity corridors/spines. • Prioritisation of Implementation Projects to be assessed via the Capital Expenditure Framework (CEF). • Road network capacity creation to be planned to align with project programming of catalytic- and funded housing projects. • The following Specific Sectoral Actions have been identified in the GMSDF: o Completion and integration (GIS) of Roads Master Plan, (road linkages, combined historic master plans and proclamations). o Integration of disaster risk management in road identification and prioritisation, specifically Thembalethu area: Identification of short-, medium- and long-term options of alternative access to the Thembalethu area, Pacaltsdorp Functional area, Kraaibosch-north area, and sections of Blanco to aid disaster risk management. o NMT identified in the CITP to be spatially rendered to be included in the Municipal GIS and CEF process. o Review of Category B, C and D Nodes areas/precincts to ensure local access network planning which will support

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
			the functioning and the intensified use of such nodes/precincts. ○ Parking Study. ○ PT1 and PT2 Zones as referred to in GIZSB to be confirmed and PT Zone parking ratios to be applied without requirement for technical studies relating to the lowering of ratios. ○ Walkability and pedestrian routes, specifically in the city area, Wilderness and related to Coastal Access points to be evaluated in the CITP/Roads Master Planning. Priority projects to be identified. Integration and safety to be addressed.
Enhance public transport and walkability (NMT)	Public Transport is a method of extending access to services to the poorer communities where socio-economic infrastructure is often lacking. Linking poorer communities to areas of job-opportunities is a practical method of inducing transformation and social upliftment. Public transport also facilitates lower carbon emissions (climate change mitigation) by encouraging less frequent use of private vehicles. Facilitation of walkability requires that specific attention is provided in project planning to walkable connectivity (NMT) and the infrastructure requirements required to enable this.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. Retain a compact urban form (Urban Edge, nodes and precincts, densification zones, Commercial Corridor/Activity Spine, Mobility Route) to support public transport functionality and walkability. ii. Intensification to support public transport corridors. iii. NMT/walkability/cycle ways to be illustrated in all developments. Access to socio-economic opportunities and public transport routes to be facilitated.	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Alignment of Transport- and Roads Master Plans (GIPTN, CITP) with the GMSDF Spatial Concept. • AMP's to be reviewed to acknowledge the urban form and the GMSDF intent, specifically urban areas within the urban edge, nodes and precincts, activity corridors/spines. • Prioritisation of Implementation Projects to be assessed via the CEF. • Road network capacity creation to be planned to align with project programming of catalytic- and funded housing projects. • The following Specific Sectoral Actions have been identified in the GMSDF: ○ Completion and integration (GIS) of Roads Master Plan, (road linkages, combined historic master plans and proclamations). ○ Integration of disaster risk management in road identification and prioritisation, specifically Thembalethu area: Identification of short-, medium- and long-term options of alternative access to the Thembalethu area,

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
			Pacaltsdorp Functional area, Kraaibosch-north area, and sections of Blanco to aid disaster risk management. ○ NMT identified in the CITP to be spatially rendered to be included in the Municipal GIS and CEF process. ○ Review of Category B, C and D Nodes areas/precincts to ensure local access network planning which will support the functioning and the intensified use of such nodes/precincts. ○ Parking Study. ○ PT1 and PT2 as referred to in GIZSB to be confirmed and lower parking ratios to be applied without requirement for technical studies relating to the lowering of ratios. ○ Walkability and pedestrian routes, specifically in the city area, Wilderness and related to Coastal Access points to be evaluated in the CITP/Roads Master Planning. Priority projects to be identified. Integration and safety to be addressed.
Access planning to be done to promote social integration and aid disaster risk management	Road linkages not only support public transportation planning and development of economic precincts and nodes, but also enables socio-economic integration, and thus fosters transformation. Disaster risk must be mitigated. Access planning forms an integral part of disaster risk management and future/proposed roads do not contribute to addressing existing risks. Planned links in accordance with the Roads Master Planning, must be prioritised with due regard to the risk alleviation and socio-economic benefit associated	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards this strategy: i. All development proposals to be evaluated in terms of overall roads master planning and intended road linkages in order to facilitate spatial integration. ii. Additional access options that also address disaster risk management to be prioritised. Disaster risk management measures (such as access roads) to be included in infrastructure requirements to be completed prior to project finalisation and clearance to hand over erven for transfer, or as noted in Service Level Agreements. iii. Identification and Implementation of alternative access to the Thembalethu area,	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Alignment of Transport- and Roads Master Plans (GIPTN, CITP) with the GMSDF Spatial Concept. • AMP's to be reviewed to acknowledge the urban form and the GMSDF intent, specifically urban areas within the urban edge, nodes and precincts, activity corridors/spines. • Prioritisation of Implementation Projects to be assessed via the CEF. • Road network capacity creation to be planned to align with project programming of catalytic- and funded housing projects. • The following Specific Sectoral Actions have been identified in the GMSDF: ○ Completion and integration (GIS) of Roads Master Plan, (road linkages, combined historic master plans and proclamations).

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
	with the construction of the service.	Pacaltsdorp Functional area, Kraaibosch-north area, and sections of Blanco. iv. Prioritisation of access for disaster risk management to be done. v. Access linkages proposed: a. Rand Road link to Rosedale Road. b. Rosedale Road link to Nelson Mandela Boulevard. c. Mission/North Street link to Nelson Mandela Boulevard. d. Glenwood Road Extension and Kraaibosch Master Plan Link. e. Fiskaal Street link to Blue Mountain Boulevard. f. Ntaka Street link to park Road/N2. g. Any additional linkages identified in the CITP.	○ Integration of disaster risk management in road identification and prioritisation, specifically Thembalethu area: Identification of short-, medium- and long-term options of alternative access to the Thembalethu area, Pacaltsdorp Functional area, Kraaibosch-north area, and sections of Blanco to aid disaster risk management. ○ NMT identified in the CITP to be spatially rendered to be included in the Municipal GIS and CEF process. ○ Review of Category B, C and D Nodes areas/precincts to ensure local access network planning which will support the functioning and the intensified use of such nodes/precincts. ○ Parking Study. ○ PT1 and PT2 as referred to in GIZSB to be confirmed and lower parking ratios to be applied without requirement for technical studies relating to the lowering of ratios. ○ Walkability and pedestrian routes, specifically in the city area, Wilderness and related to Coastal Access points to be evaluated in the CITP/Roads Master Planning. Priority projects to be identified. Integration and safety to be addressed.
Promote appropriate classification of roads, access management and parking requirements that relate to a roadside development environment that supports the urban concept	In some instances, the historically adopted road classification access requirements prohibit the implementation of spatial concepts aimed at promoting densification, nodal development, economic precincts, and informality.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. All access spacing (AMP) requirements within the urban edge to be regarded as urban areas, subject to due process. ii. Access design and spacing within precincts and nodes to be evaluated on merit (workability/activity support) at Site Development Plan stage. iii. Should properties within intensification zones (densification/nodes and precincts) not be developable due to access requirements,	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Alignment of Transport- and Roads Master Plans (GIPTN, CITP) with the GMSDF Spatial Concept. • AMP's to be reviewed to acknowledge the urban form and the GMSDF intent, specifically urban areas within the urban edge, nodes and precincts, activity corridors/spines. • Prioritisation of Implementation Projects to be assessed via the CEF. • Road network capacity creation to be planned to align with project programming of catalytic- and funded housing projects.

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
		alternative network planning must be investigated. i.e., access relating to applications within precincts and nodes to be evaluated in the context of the whole precinct/node. iv. Where available secondary access networks do not support nodes/precincts, conceptual linkages should be proposed, including: ○ Pacaltsdorp Precinct ○ York Street South Node ○ Thembalethu Northern Node (Road Links) v. Implementation of the PT1 and PT2 parking ratios, as standard to be modelled and aligned with the 2020 Access Management Guidelines. vi. Shared parking solutions (locality/possibilities), as component to the public transport system to be investigated.	• The following Specific Sectoral Actions have been identified in the GMSDF: ○ Completion and integration (GIS) of Roads Master Plan, (road linkages, combined historic master plans and proclamations). ○ Integration of disaster risk management in road identification and prioritization, specifically Thembalethu area: Identification of short-, medium- and long-term options of alternative access to the Thembalethu area, Pacaltsdorp Functional area, Kraaibosch-north area, and sections of Blanco to aid disaster risk management. ○ NMT identified in the CITP to be spatially rendered to be included in the Municipal GIS and CEF process. ○ Review of Category B, C and D Nodes areas/precincts to ensure local access network planning which will support the functioning and the intensified use of such nodes/precincts. ○ Parking Study. ○ PT1 and PT2 as referred to in GIZSB to be confirmed and lower parking ratios to be applied without requirement for technical studies relating to the lowering of ratios. ○ Walkability and pedestrian routes, specifically in the city area, Wilderness and related to Coastal Access points to be evaluated in the CITP/Roads Master Planning. Priority projects to be identified. Integration and safety to be addressed.
Public Transport Hubs to be located, designed, and implemented	The Go-George service is a network of routes, transfer locations and bus stops. The local transportation hub is in the CBD. It is recommended in the GMSDF that additional hubs, long distance, and specialised transport interchanges (road	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. Public Transport facilities, including transfer locations (with public amenities) to be included in, and to be done in line with, design of all economic nodes and precincts.	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Alignment of Transport- and Roads Master Plans (GIPTN, CITP) with the GMSDF Spatial Concept. • Prioritisation of Implementation Projects to be assessed via the CEF. • Public Transport extension to be planned to align with project programming of catalytic- and funded housing projects.

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
	and potential rail) be added to the network.	ii. Priority hubs and main transfer facilities (all stops with additional infrastructure such as ticketing offices, ablutions, hawker areas, etc.) to be in nodal areas or activity streets. iii. Rail network (existing lines and proposed station positions) to be considered as future opportunity elements in all development designs.	• Specific Sectoral Actions Identified: ○ Tourism: rail connecting CBD and Wilderness and to Knysna to be investigated (Rail line & Stations). ○ Main termini (taxi, Go-George, long distance bus) in the CBD to be upgraded to facilitate accessibility and economic opportunities (Public Transport facilities) and to link to CBD Regeneration project. ○ Long distance bus facilities required in Wilderness, placed to be sensitive to the sense of place. ○ Regional functionality to be considered in placement of long-distance services.
Protection of areas for provision of high order social functions, adjacent to public transport routes and/or regionally accessible nodes	Social facilities, especially high order facilities serve more than one neighbourhood or ward and therefore should be located on public transport routes to ensure adequate accessibility and to support viability of these uses. In turn these facilities along the main transport routes contributes to the viability of the public transport service.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. Locality of transport hubs, -stations and routes to be coordinated with locations of high order social facility precincts to support regional accessibility (Nodes, Precincts, Transport Routes) ii. Reinforce this investment with a high standard of area based urban management as an incentive for private investment and positive social interaction and activity. iii. Fewer but better facilities are preferred if this enables the provision and maintenance of a high standard of social infrastructure and there is convenient and affordable access to these facilities.	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: Prioritisation (CEF) of populous areas where private investment is limited, required. The southern Thembalethu Node to be prioritised. • Library space at shared facilities to be investigated (re-purposing of buildings)- pressure for provision in Thembalethu south node. • Joint land use planning of regional and local sport activities Rooirivier Rif site required. • NDPP Project: Clustering of facilities and public realm planning to be fostered in the Thembalethu Node • Under provision of school facilities to be investigated, specifically in Thembalethu. • CITP to align with the spatial concept of the GMSDF to ensure location of transport facilities/stops in or near nodal positions.
Protection of shared areas of economic activity and opportunity	Having economic opportunity (tertiary) precincts promotes legibility of urban form, agglomeration benefit and facilitates services- and transportation planning.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. Precinct areas and various category nodes are identified. The position of the precincts and	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Adequate access provision (main-public transport- and secondary (site access) to all category nodes to be facilitated in the Roads Master Plan to contribute to the viability of the


Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
	Densification and infill residential development places more emphasis on retention of areas for urban supportive uses and economic development.	nodes facilitate socio-economic integration and transformation of disparate areas. ii. Each category node relates to a defined function to avoid disruption to urban fabric and services networks and to support an overall spatial concept (space economy) and the integration and transformation opportunities presented by mixed use areas.	nodes and to ensure network protection of service roads and local access roads. • Parking Study and PT1 and PT2 adoptions to support tertiary and wholesale & retail trade in nodal and precinct areas.
Urban Rural connectivity to be improved	The rural economy is reliant on the population (market) and infrastructure (processing/transportation/offices/services) offered in urban nodes. Accommodation of workers in urban centra reduces the vulnerability of farmworkers and their families.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. Support catalytic projects, space for traders, markets, hives, small industrial erven, more effective use of areas previously allocated for social and economic use which has not been taken up. ii. Areas of managed informality to be identified and guidelines for use to be drawn up. iii. Existing facilities and transport termini/transfer location to be prioritised as areas for upgrade/development. iv. All new shopping centres to incorporate an area for informal use in the design and management. v. Establish economic zones where traders operate.	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Market areas and trader areas/zones to be identified and adopted (LED). • The Thembalethu Node 1 and Nelson Mandela Boulevard traders' zone and transportation hubs/stations to be investigated as part of the NDP Project.
Development and Re-development of land/buildings within the urban edge, in context appropriate localities, to	Densification reduces land consumption, facilitates delivery of services (engineering and socio-economic) to households in a more cost-effective manner and supports affordability and tenure. It establishes the	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. Densification is supported in all nodal precincts and in density zones along main transportation corridors. The position, nature, composition, scale, design of higher density residential development will relate to the	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Alignment of Engineering and Transport Master Planning with anticipated densities in city area. • Parking Study (Individual site/areas). • PT1 and PT2 as referred to in GIZSB to be confirmed and the lower parking ratios to be applied without requirement for

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
accommodate higher density residential use is supported - graded development densities will apply	thresholds for viable public transport systems and business.	context of the development site. A graded density approach will be followed in residential areas. Higher density to be considered in all areas of the CBD and nodes and precincts. Densification facilitated in the mixed-use infill sites and catalytic project sites by requiring a density mix to be illustrated in development proposals/applications. ii. The repair and renewal of existing infrastructure in well located areas to support the enhanced capacity to accommodate densification. iii. Backyard dwellings provide accommodation in areas within the urban fabric. Although back yarding is a form of rental accommodation, the use should be formalised/regulated to create safe, liveable neighbourhoods, and provided for the possibility of assisted upgrading of tenure should be investigated. iv. Second dwellings should be planned for in the layouts and infrastructure specifications for all new housing developments, where possible and context appropriate. By-laws and any other regulatory constraints should be reviewed to reduce the barriers and costs to developing suitable second dwellings. v. Units supported above ground floor on all business sites/precincts. vi. Second dwelling- and additional dwelling allowance in the Zoning Scheme Bylaw (read with the WC Rural Development Guidelines) aids densification that supports the provision of rental accommodation. vii. All properties within the restructuring zone falls within the densification area.	technical studies relating to the lowering of ratios, in densification zones and nodes. • Walkability, pedestrian route and NMT, and Green Infrastructure, specifically in the CBD, to be addressed in the CITP, Open Space Study and Review of the various Local Spatial Development Frameworks. • GIZSB review to facilitate structured densification.

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
		viii. Graded densification supported in all A, B and C nodes/precincts and densification corridors (General Principle 0-150m at 80u/ha (or motivated higher), 150-400m = 60u/ha, 400-500m = 45u/ha). ix. National and provincial government have set municipalities the target of increasing the density of urban areas to an average gross based density of 25 dwelling units/hectare. x. Densification (existing and proposed) should consider the availability of urban supportive uses and the provision of active open spaces. Available data suggests that the number of households residing in informal backyard shelters is almost equal to the number of those living in informal settlements. Informal densification is acknowledged and should be considered in the provision of urban supportive facilities. xi. Amend the GIZSB so that the intensification/restructuring zone has a lower parking requirement. This is an essential ingredient in improving affordability and inclusivity of both residential and commercial development. It is also consistent and supportive of the significant investments in Go-George and its long-term viability.	
Permeability of all urban areas to ensure integration, connectivity to socio-economic infrastructure (current and	The need to provide security in residential areas should not as such obstruct the permeability of urban fabric. Fine grain (building/street scape level) security planning must incorporate design of safe pedestrian (and NMT) and	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. Resist gated developments/estates in locations and at a scale that will compromise the walkability of the area and specifically safe, comfortable pedestrian and non-	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Open Space Study. • Planned NMT and Pedestrian (CITP).

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
future) and to public transport and must be an informant to all development design in the city area	vehicular movement. Security planning for gated estates sometimes render the areas around such estates unsafe for the community at large.	motorised transport access to public transport routes and the non-motorised transport network. Linkages that provide integration must be prioritised. ii. Gated development to be sensitive to public road frontage and adjacent public places, including public open spaces, enabling access to open space networks. iii. Promote alternative forms of enhanced safety that provide broader public benefit (e.g., security patrols and CCTV cameras).	
Promote walkability within the intensification zone (densification area and priority nodes)	Walkable places are inherently more inclusive if the scale and format of development is carefully managed. A large percentage of the population in the George city area does not have a car (GIPTN). Walkable places need to start with the bones of an urban (rather than suburban) structure or retrofit existing places to accommodate more walkable street systems, land use mixes and transport services. Walkable places are inherently more inclusive if the scale and format of development is carefully managed.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. Get the land use and density right – create a reason to walk and enable walks to be reasonably short and achieve a range of needs. ii. Make walking safe and comfortable. This is influenced by block size, sidewalk quality, a connected street network and visual interest. iii. Ensure good edges to streets. iv. Make sure that streets include signs of humanity (active ground floors, cluster social facilities, activity streets). v. Develop an integrated and connected street network, improving pedestrian connections allowing direct connections between places wherever possible. vi. Promote walkable block sizes of no more than 80-100m. vii. Incentivise and encourage active ground floor use within mixed use zones.	The following implementation steps and actions with regards to this strategy is recommended in terms of the GMSDF: • Open Space Study. • Planned NMT and Pedestrian movement (CITP) and alignment with pavement upgrade planning (past and future projects). • Parking Study.

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
		viii. Promote fine grained development, enabling and incentivising many small developers over large scale, single use developments. ix. Rationalise streets over time to promote "skinny streets", narrow streets through infill, wider sidewalks and landscaping or increase height of buildings so that streets have a width to height ratio of less than 6:1. x. Amend the GIZSB so that the intensification/restructuring zone has a lower parking requirement. This is an essential ingredient in improving affordability and inclusivity of both residential and commercial development. It is also consistent and supportive of the significant investments in Go-George and its long-term viability. xi. Landscape priority corridors with wide road reserves where infill is not proposed to enhance these spaces as public spaces, NMT corridors and green lungs that absorb air pollution from traffic and mitigate the heat island effect.	
Support Hierarchy of Nodes/Precincts and activity streets	The clustering of non-residential uses contributes to a legible urban form, protects the ambiance of neighbourhoods and the rural area, aids engineering services and transport planning and supports economic agglomerations.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. The space economy to be directed to not only main nodes and precincts and industrial areas, but also to defined linear activity streets. ii. Economic and higher social order facilities to be accommodated in the hierarchy of Nodes, Precincts, and Mixed-Use investment properties. Clustering of Urban functions encouraged.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: • Infrastructure and Transportation (Road Network) Integration. • Parking Study.

Spatial Strategies, Policies and Guiding Principles			
Strategy	**Background**	**Specific Policy Guidelines and Alignment Principles**	**Implementation Steps and Actions**
Ensure protection of a functional public realm	Creating quality, functional and active (used) public spaces foster social integration and contributes to the 'sense of place' of certain areas. Public squares, markets, activity streets, active sidewalks and mixed used nodes must be designed to build a good quality public realm. Spaces should not be undefined open spaces but linked to investment, active use, and management structures.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: i. Creating quality, functional and active (used) public spaces foster social integration and contributes to the 'sense of place' of certain areas. Public squares, markets, activity streets, active sidewalks and mixed used nodes must be designed to build a good quality public realm. Spaces should not be undefined open spaces but linked to investment, active use, and management structures.	In terms of the GMSDF the following specific policy guidelines and alignment principles are proposed with regards to this strategy: • Open Space Study. • Roads Master Plan: NMT & Pedestrian route integration with public areas. • Informal Trade Zone identification (including markets).

3.9 Implementation Framework

Despite the various implementation steps and actions outlined, as well as the GMSDF's role in underpinning the spatial concept, structure, and guiding principles of George — as detailed in the Spatial Strategies from sections 7.2 to 7.14 in the GMSDF — the GMSDF has pinpointed certain specific actions to steer the groundwork for the Comprehensive Integrated Transport Plan (CITP):

- Completion of the Comprehensive Integrated Transport Plan (CITP) and the Roads Master Plan.
- Undertaking of a parking strategy.
- Exploration of district-level railroad usage.
- Confirmation from PRASA/Transnet regarding rail infrastructure improvements.
- Establishment of a long-distance bus stop in Wilderness.
- Identification of additional access points for disaster risk management.
- Affirmation of PT1 and PT2 as defined in GIZSB, applying lower parking ratios without necessitating technical studies for parking ratio reduction.
- Incorporation of Non-Motorised Transport (NMT) routes from the CITP into the Municipal GIS and CEF process.
- Ensuring the CITP's alignment with the Municipal Spatial Development Framework (MSDF) to locate transport facilities/stops at or near nodal points.
- Provision of adequate main and secondary access to all nodal categories in the Roads Master Plan to enhance node viability and protect the service road network.
- Upgrades to rural roads by the Department of Transport and Public Works (DTPW).
- Confirmation of the Go-George service expansion to peripheral areas.
- Coordination between Engineering and Transport Master Planning with projected urban densities.
- Extension of public transport services to the airport.

The integration of spatial, land use and transport planning are a key lever identified in the IUDF to achieve spatial transformation. It is recommended in the GMSDF (George Municipality, 2023) that the Comprehensive Integrated Transport Plan (CITP) must in terms of the principles and objectives of the Provincial Land Transport Framework, support the spatial priorities adopted in the GMSDF. The CITP must prioritise the infrastructure and operational requirements for public transport, non-motorised transport, freight, and private cars, to achieve the objectives of the (George Municipality, 2023).

It is furthermore recommended, in addition to the minimum requirements for the preparation of a CITP, that the elements below should receive special attention.

- Prioritisation of the missing links identified and review of implementation prioritisation.
- Integration between road and rail networks.
- Road classification and Roadside Management plans to support fine grain economic development in precincts, nodes, and activity streets.
- Linkage between nodes to support economic activity and secondary systems in precincts where lacking.
- A high-level strategy for rural transport, based on the provisions, and experiences to date, of the rollout of the Provincial Public Transport Institutional Framework (PPTIF) and international innovations in rural public transport associated with on demand services and technology.

- Review road classification to promote land use integration and alignment with the policies and policy guidelines set out in the GMSDF.
- A travel demand management (TDM) strategy for the George CBD that has the objective of promoting greater intensity and mix of land uses, which is accessible by a greater mix of modes. The proportional allocation of space within the areas dedicated to movement should be reflective of the actual modal share in George. Specific attention should be given to the infrastructure and operational requirements to promote walking and cycling within the greater CBD.
- A Non-Motorised Transport Master Plan, integrating the NMT network with the open space system, where functional, and GIPTN as proposed in the GMSDF - to facilitate affordable, convenient mobility for utility/commuting purposes recreational NMT.
- In line with the above, but in support of the CITP inclusive of the Roads Master Plan and GIPTN in general, a parking audit should be done, and a parking strategy and plan developed for the town centre and other key nodes. This plan should address the needs of commuters, business visitors and tourists, and deal specifically with peak holiday season demand. It should propose a strategy for rationalisation of parking to promote:
  i. the use of public transport,
  ii. walking, which in turn creates footfall which stimulates pavement businesses and enhances the safety of streets and public spaces,
  iii. the efficient use of land,
  iv. a better-quality urban form,
  v. support investment in nodes and precincts,
  vi. improve functionality/movability of the road, and
  vii. take the roadside development environment into consideration.
- Reviewed parking ratios for public transport zones in terms of the GIZSB which will promote densification and inclusive development of affordable housing and economic opportunities. In doing so, the relative benefits of minimum or maximum parking requirements, as well as lower parking requirements in appropriate locations should be investigated and a template for accompanying parking management plan(s) should be developed.
- The regulation and enablement of technology-driven changes in the transport environment. These include on-demand services like Uber, electric vehicles, self-drive cars, etc.
- Establish the drivers of current travel behaviour, and perceptions about and proposed changes through a user travel survey.
- Prioritise access which contributes to disaster risk management.

3.10 Key Principles of the MSDF for the CITP

- **Strategic Nodes and Corridors**: Identifying and developing key nodes and corridors to focus development efforts and enhance connectivity.
- **Land Use Zoning**: Implementing zoning policies that support mixed-use developments and transit-oriented development (TOD) to reduce travel distances and promote public transport use.


- **Infrastructure Development**: Prioritising infrastructure investments that enhance connectivity and accessibility, including roads, public transport facilities, and non-motorised transport infrastructure.
- **Environmental Protection**: Ensuring that development is environmentally sustainable, with measures to protect natural habitats and reduce carbon emissions.
- **Economic Development**: Supporting economic growth by improving access to commercial and industrial areas and facilitating the efficient movement of goods and people.
- **Community Engagement**: Continuously engaging with the community to ensure that the SDF reflects the needs and aspirations of George's residents.
- **Monitoring and Evaluation**: Establishing mechanisms to monitor and evaluate the implementation of the SDF to ensure it meets its objectives and can be adjusted as necessary.


4 TRANSPORT NEEDS ASSESSMENT

4.1 Key Aspects

This chapter centres on understanding the main transport requirements for the George Municipality by referencing several key sources and applying a focused lens to identify and evaluate needs.

Key Sources that the needs emanated from:

- **Transport Register**: Provides comprehensive data on the current state of transport infrastructure and services.
- **George Municipal Spatial Development Framework (MSDF)**: Helps align transport planning with land-use and spatial development goals.
- **Stakeholder Consultations**: Engages local communities, businesses, and transport operators to gather on-the-ground insights and concerns.
- **Population and Demographic Data**: Utilises census and socio-economic profiles to project future transport needs based on growth trends.
- **Environmental and Safety Reports**: Highlights sustainability and safety challenges as major factors in transport planning.

Lens Applied to Identify Needs:

The assessment applies a holistic lens focused on Access, Accessibility, and Mobility. This includes a Public Transport first focus and resilience in terms of natural disasters (i.e. flooding, fires, etc.). This lens examines:

- **Access**: Ensuring equitable access to transport services for all, particularly in underserved areas.
- **Accessibility**: Designing transport systems that accommodate various user groups, including vulnerable populations.
- **Mobility**: Enhancing the efficiency, connectivity, and ease of movement across different transport modes and areas.

4.2 Introduction

This section serves as the Transport Needs Assessment for George Municipality. This chapter is pivotal, as it represents the crux of the planning efforts, transitioning from a broad understanding of the current transport system to a focused analysis of the specific needs that must be addressed. It also introduces the framework and methodology behind the assessment, laying the groundwork for a comprehensive examination of George's transport landscape.

The purpose of this assessment is not only to identify gaps within the current system but also to anticipate future demands, as well as proposed policies, plans and new infrastructure development and improvements of existing infrastructure. It is through this lens that we seek to understand the intricate details of mobility, accessibility, and infrastructure requirements. This understanding forms the backbone of the strategic approach in subsequent chapters, where solutions are tailored to meet these identified needs effectively. By providing a clear, evidence-based overview of current challenges and potential future scenarios, this chapter ensures that the strategies developed are both responsive and resilient, ready to adapt to the evolving needs of the George community.

4.3 Transport Register Needs

The Issues, Concerns and Needs emanating from the Transport Register are listed in **Table 4-1**, organised according to the NLTSF Focus Areas mentioned with the additional Focus Area called Sustainability included, as well as a Topic column included for a summarised view. This approach has also been applied to the needs from the Stakeholders and Spatial Development Framework (Land use) needs.

4.4 Land Use Needs

The Issues, Concerns and Needs emanating from the MSDF are listed in **Table 4-2**.

4.5 Stakeholder Engagement Needs

The Issues, Concerns and Needs from the various Stakeholder Engagements are listed in **Table 4-3**. The Impact Relevancy is also categorised in terms of importance, denoted by 1 (red – most important) and 2 (orange – medium importance).

4.6 Access and Mobility Needs

The seven (7) transformational goals mentioned in **Chapter 1** are listed below again and is the lens through which the needs assessment is viewed.

CITP Transformational Goals:

1. Promote modal change and encourage model shift.
2. Reduce congestion and emissions.
3. Leverage digitalisation and the benefits of the 4th and 5th industrial revolutions.
4. Enhance safety, security, and health.
5. Develop appropriate road master plans.
6. Nurture economic growth.
7. Improve accessibility and mobility for people, goods, and services.

Moving forward from the overarching analysis of transport needs within George Municipality, this section transitions the focus to an examination of access and mobility requirements. This segment serves as a pivotal point, where the insights garnered from the transport needs assessment are intricately linked to the formulation of specific strategies in later chapters. By understanding the nuances of access and mobility challenges identified in the assessment, one is better positioned to design targeted strategies that directly address

these issues. The findings act as a cornerstone for strategic planning, enabling the development of interventions that are not only responsive to current needs but also adaptive to future demands. This ensures that the strategies outlined in subsequent chapters are grounded in a deep understanding of community needs, laying a robust foundation for enhancing George Municipality's transport system in a manner that is both holistic and sustainable.

The impact of integrating these smart city building blocks on "*Access, Accessibility, and Mobility*" within George Municipality's Integrated Transport Plan (CITP) is crucial. These aspects are fundamental in ensuring that the transport network serves all users effectively, fostering an inclusive and efficient urban environment that supports the MSDF objectives. The Transport system aligned with the Roads Master Plan must facilitate densification, integration of communities, intensification of targeted municipal development areas. An analysis of the impact on different modes of transport and users are shown in **Table 4-4**.

Table 4-1:Issues, Concerns and Needs emanating from the Transport Register.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
1	Freight Transport	Heavy Goods Vehicles	The industrial zones of George are located between residential areas and in the city's CBD. This means that heavy vehicles need to traverse the tight geometry of the CBD roadways which were not designed for the turning movements or loads of large heavy vehicles.	Need for identified preferred freight routes that avoid residential areas and the CBD to reduce road damage and safety risks.
2	Freight Transport	Heavy Goods Vehicles	Other problems caused by freight transportation include increased road accidents, congestion of the road network, land use costs for rights-of-way, noise pollution and traffic enforcement.	Need for improved management of freight transport to reduce accidents, congestion, and noise pollution.
3	Freight Transport	Overload Control	There are currently no weighbridges located in the George Municipality, but there are some dynamic count locations where weigh-in-motion technology is utilised. This information is only collected for informational purposes and not for enforcement.	Need for weighbridges and enforcement of overloading regulations.
4	Public Transport	Transport Problems	From the National Household Travel Survey 2020, it became clear through all respondents in George that 5.1% experience overload, 4.4% experience rude drivers, 4.1% experience no trains available, and 3.6% experience no buses at specific times as the largest transport related problems.	Need for an accessible and reliable public transport system with scheduled services for all users.
5	Public Transport	PuT Vehicle Age	About 200 PuT vehicles registered on the OLAS Database are older than 10 years, which is about a third (1/3) of all registered vehicles, and about 50 registered vehicles are older than 20 years.	Need for replacement or upgrading of older public transport vehicles to ensure safety and efficiency.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
6	Public Transport	Limited PuT Access	With the new developments happening in Kraaibosch, PuT needs to be made available to that area	Need for scheduled public transport services in the Kraaibosch area.
7	Public Transport	Operating Licenses	Potentially 62 taxis were identified as operating illegally as PuT without a valid operating license	Need for enforcement of operating licenses and regular taxi surveys to identify unlicensed operators.
8	Public Transport	Commuter Rail Service	No commuter rail is operating in George	Need for the re-establishment of commuter rail service connecting George to the larger rail network.
9	Public Transport	Tourism Rail service	There is no tourism rail service operational	Need for a tourism rail service connecting Mossel Bay, George, and Knysna.
10	Sustainability	Waste Management	George waste transported via trucks to Mossel Bay	Need for alternative waste transport methods, such as rail, to reduce truck usage.
11	Transport Infrastructure	Taxi Ranks	Thembalethu Taxi rank does not have sufficient taxi rank capacity for taxis to and from George, and taxis collect passengers from Nelson Mandela Boulevard.	Need for revision of purpose and function of Thembalethu Taxi Rank in light of GO GEORGE phased roll out in Thembalethu.
12	Transport Infrastructure	Taxi Ranks	Cradock taxi rank area is fully occupied. Some of its capacity is taken up by CODETA. In the PM it operates as a taxi rank with boarding and departures. Apart from the PM Cradock Taxi Rank serves primarily as a holding area. Other mini-bus operators, such as shuttle service operators, may pick up commuters at some of the formal taxi ranks.	Need for revision of function and current operations of Cradock Taxi Rank to accommodate peak demand and ongoing urban renewal processes.
13	Transport Infrastructure	Taxi Ranks	St Mark's Square occupies a small area adjacent to the public parking lot and has ample room for extensions if required.	Need for revision of purpose, function and current operations of St Mark's Taxi Rank taking into account the ongoing urban renewal processes and accommodation of long distance PuT operations.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
14	Transport Infrastructure	Taxi Ranks	Garden Route Mall taxi rank Is well located to serve passengers to and from the shopping mall, but is still informal and is basically just an open field	Need for the provision of permanent facilities to support the PuT (Bus and minibus taxi) services i.e. on the municipal land portion at the Garden Route Mall PuT land portion. Need for a formal agreement between the George Municipality and Garden Route Mall for the provision of facilities to support the informal taxi operations on the Mall's property.
15	Transport Infrastructure	Mobility Corridor	Nelson Mandela Boulevard carries a large number of people from Thembalethu, many making use of PuT.	Need for further design and upgrades to improve the mobility corridor along Nelson Mandela Boulevard.
16	Transport Infrastructure	PuT Facilities	Lack of formal PT Facilities that caters for wider scope of and integration of various Transport Modes, i.e. Bicycles, e-mobility, electrical charging facilities, etc.	Need for development of formal, integrated public transport facilities that accommodate various transport modes.
17	Transport Infrastructure	Pavement Quality	Some portions of the pavement is not in a good condition	Need for assessment and repair of roads with poor pavement quality.
18	Transport Safety and Security	Fatal Crashes	There were 43 fatal crashes and 46 road user fatalities in 2021 that related to driving under the influence. That relates to about 1 in 5000 people died in driving under the influence crashes in 2021 (Western Cape Government, 2021)	Need for the current law enforcement plan to include specific interventions focussing on changing driver behaviour and reducing fatal crashes related to driving under the influence.
19	Transport Safety and Security	Transport Problems	From the National Household Travel Survey 2020, it became clear that about 8.2% of respondents in George indicated that they experience reckless driving by taxi drivers as one of the largest transport problems in George.	Need for improved enforcement of safe driving behaviour among taxi drivers.
20	Transport Safety and Security	Access Roads	Only one access road out of Thembalethu	Need for additional access roads to Thembalethu to improve safety and connectivity.
21	Transport Safety and Security	Hazardous Goods	There is not sufficient control and regulation in the George Municipality when it comes to the transportation of hazardous goods. Vehicles carrying hazardous goods share the roadway with regular commuter traffic, which poses a safety risk.	Need for strict guidelines and controls on the transportation of hazardous goods within the municipality.


No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
22	Universal Accessibility	Transport Problems	From the National Household Travel Survey 2020, it became clear that about 22.3% of respondents in George indicated that they experience no problems, where 18.9% indicated that no buses were available, 12.3% indicated that no taxis are available.	Need for improved availability and accessibility of public transport services.
23	Urban Transport and Smart Cities	Congestion Problems	Main congestion problem identified with model: Nelson Mandela Boulevard, South of the N2, both directions.	Need for network congestion management studies to alleviate bottlenecks on Nelson Mandela Boulevard (use model to evaluate effectiveness of identified interventions and impact on network).
24	Urban Transport and Smart Cities	Congestion Problems	2nd worst congestion problem identified with model: Davidson Road where C.J. Langenhoven Road meets at the circle, as well as a bit of Plover Road just North of the circle, and the surrounding area.	Need for network congestion management studies for Davidson Road where C.J. Langenhoven Road meets at the circle (use model to evaluate effectiveness of identified interventions and impact on network).
25	Urban Transport and Smart Cities	Congestion Problems	3rd worst congestion problem identified with model: Glenwood Avenue, South of Kraaibosch Estate Street.	Need for network congestion management studies for Glenwood Avenue (use model to evaluate effectiveness of identified interventions and impact on network).
26	Urban Transport and Smart Cities	Congestion Problems	4th worst congestion problem identified with model: Plattner Blvd, North of York Street.	Need for network congestion management studies for Plattner Blvd (use model to evaluate effectiveness of identified interventions and impact on network).
27	Urban Transport and Smart Cities	Congestion Problems	5th worst congestion problem identified with model: Knysna Road section, between entrance to Garden Route Mall and West of the N2.	Need for network congestion management studies for Knysna Road (use model to evaluate effectiveness of identified interventions and impact on network).

Table 4-2: Issues, Concerns and Needs emanating from the MSDF (George Municipality, 2023).

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
1	Integrated Land use and Transport Planning	Housing and Land Use	Housing affordability crisis; mismatch in land use and transportation planning	Need for affordable housing development and integration of land use and transport planning.
2	Integrated Land use and Transport Planning	Parking Management	Inefficient parking management contributing to congestion and inefficient land use.	Need for comprehensive parking management strategies that reduce congestion and optimise land use.
3	Integrated Land use and Transport Planning	Social Infrastructure	Inadequate provision of high-order social facilities and insufficient integration with transport infrastructure.	Need for better placement of high-order social facilities along public transport routes to ensure accessibility.
4	Integrated Land use and Transport Planning	Urban Form and Land Use	Insufficient integration of land use and transport planning, leading to inefficient spatial development and utilization.	Need for the integrated land use and transport planning, functions, tools and capacity to promote efficient urban development.
5	Non-motorised Transport	Non-Motorised Transport (NMT)	Lack of comprehensive NMT infrastructure and integration with the overall transport system.	Need for the development of a Non-Motorised Transport (NMT) master plan that integrates NMT with other transport modes, including dedicated resource to drive this process due to PuT first principles.
6	Public Transport	Public Transport System	Limited public transport options and integration, impacting accessibility and mobility.	Need for expansion and integration of public transport services, integrated transport hubs including the consideration of commuter rail and improved GO GEORGE service coverage including new development areas.
7	Rural Transport	Rural-Urban Linkages	Poor accessibility from rural areas to urban services and amenities.	Need for improved rural-urban transport linkages to enhance access to services and opportunities, especially to improve learner / scholar transport accessibility.
8	Sustainability	Economic Development	Concentration of economic activities and insufficient support for informal sectors.	Need for appropriate transport service models to support economic diversification for informal sectors and to stimulate local economies and promote equitable development.
9	Sustainability	Environmental Protection and Green Spaces	Degradation of natural and rural systems; urban sprawl	Need for urban development controls and protection measures for natural areas to preserve environmental sustainability.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
10	Sustainability	Environmental Sustainability	Urban development pressures on natural assets and inadequate urban greening initiatives.	Need for enhanced urban greening initiatives and controlled development that protects natural assets.
11	Transport Infrastructure	Infrastructure	Missing transport linkages; inadequate roads infrastructure for future growth	Need for new transport linkages and upgrades to road infrastructure to accommodate future growth.
12	Transport Infrastructure	Transport Infrastructure Investment	Prioritisation of infrastructure projects; alignment with spatial development goals	Need for strategic investment in critical transport infrastructure that aligns with spatial and economic objectives.
13	Transport Safety and Security	Disaster Risk Management	Limited emergency access routes and inadequate consideration of disaster risk in planning processes.	Need for development of alternative emergency access routes and integration of disaster risk management into all planning processes.
14	Universal Accessibility	Accessibility for All	Challenges in ensuring accessibility and mobility for all community segments, including people with disabilities.	Need for development of inclusive transport systems that cater to the mobility needs of all community members, ensuring equal access to opportunities.
15	Urban Transport and Smart Cities	Connectivity and Accessibility	Missing links in the movement network, inadequate road infrastructure for future growth, and underdeveloped pedestrian and cycling infrastructure.	Need for enhanced connectivity through new linkages, road upgrades, and the development of pedestrian and cycling infrastructure.
16	Urban Transport and Smart Cities	Mobility and Accessibility	Traffic congestion; inadequate public transport; underdeveloped NMT infrastructure	Need for an efficient public transport network, congestion management strategies, and improved NMT infrastructure.
17	Urban Transport and Smart Cities	Technology and Innovation	Need to adapt to and integrate technology-driven changes in the transport environment.	Need for the integration of technology-driven solutions, such as on-demand services and electric vehicles, into the transport system.

Table 4-3: Issues, Concerns and Needs from Stakeholders.

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
1	Cross-border Transport	International Airport Possibility	George Airport could become an international airport	Need for planning and preparation to meet international standards and accommodate increased air traffic.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
2	Freight Transport	Cargo Facilities	Improvement of cargo pick-up facilities and conceptual planning	Need for enhancement and development of cargo facilities to support efficient cargo handling and transport.		
3	Freight Transport	Fresh produce market	Investigate potential entrepreneurial opportunity to transition from road to rail freight transport of the fresh produce market.	Need for exploration of rail freight options for the fresh produce market to improve efficiency and reduce road congestion.		
4	Freight Transport	Cargo Handling	Road cargo is brought via trucks, no air cargo through George Airport	Need for exploring the feasibility and implementation of air cargo services to complement road transport.		
5	Freight Transport	Cargo Processing Station	Plans to introduce a cargo processing station at the airport	Need for support and facilitation of the development of the cargo processing station at the airport to enhance freight operations.		
6	Freight Transport	Cargo Information	Current and future estimated cargo volumes needed	Need for accurate data collection and provision of cargo volume information to support transport planning.		
7	Funding	Funding and Financial Strategy	Identification of projects and allocation of funds	Need for the development of a financial strategy that prioritises funding for key transport projects.		
8	Funding	Spatial Budget	Perception of lack of land for development	Need for more efficient use of available land and review of zoning applications to support development.		
9	Funding	Financial Strategy	Need for an integrated approach to funding, tapping into green funding for sustainable transport solutions.	Need for the development of an integrated financial strategy that includes green funding sources for sustainable transport projects.		
10	Institutional Management	Department structure gaps	Insufficient internal capacity to utilise and maintain the model	Need for training and capacity building for staff to effectively use and maintain transport models.		
11	Institutional Management	Disaster Risk Management Centre	Building a centre in Mossel Bay for R10 million to serve Mossel Bay and George	Need for integrated technology, functions and communications at the new disaster risk management centre to improve coordinated incident management and emergency response capabilities, in particular a well-established link to a future transport management centre (TMC).		
12	Institutional Management	Government Capacity	Risk of the model being shelved due to lack of operational capacity	Need for building government capacity to effectively manage and utilise transport models for ongoing operations.		


No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
13	Institutional Management	Industry Engagement	Engagement via the PRE	Need for active engagement with the transport industry via the PRE to enhance regulation and planning efforts.		
14	Institutional Management	Institutional Capacity	Lack of capacity and inefficiencies in local government functions overwhelming for local management.	Need for strengthening institutional frameworks and enhancing capacity to manage and implement transport projects effectively.		
15	Institutional Management	Institutional Capacity Building	Lack of municipal staff trained to use the transport model	Need for training municipal staff to use and maintain the transport model for better operational efficiency.		
16	Institutional Management	Collaboration with Businesses Chamber	Engagement and Collaboration with Mayor and Business Chamber in support of transport planning initiatives.	Need for facilitation of stakeholder meetings to enhance collaboration on transport planning initiatives.		
17	Institutional Management	Model and Institutional Impact	Concerns about model management and building institutional capacity.	Need for building institutional capacity within the municipality to manage and sustain transport models effectively.		
18	Institutional Management	Project Management	Difficulty coordinating stakeholder engagements	Need for improved project management and stakeholder engagement strategies to ensure the success of transport initiatives.		
19	Institutional Management	Project Management	Further engagement required with various stakeholders	Need for consistent stakeholder engagement to improve understanding and participation in transport planning processes.		
20	Institutional Management	Project Management	Requirement for integrated planning on an Eden District Municipal level.	Need for facilitating integrated planning across the Eden District, incorporating all relevant stakeholders for comprehensive transport solutions.		
21	Institutional Management	Alternative Dispute Resolution	Lack of an alternative dispute resolution model for public transport issues (e.g., minibus taxi, metered taxis, e-hailing).	Need for the development of an alternative dispute resolution model for addressing public transport disputes effectively.		
22	Institutional Management	Capacity to Manage Model	Concerns over George Municipality's capacity to manage and maintain a transport model.	Need for strategies to enhance George Municipality’s capacity to effectively manage the transport model.		
23	Integrated Land use and Transport Planning	Airport growth	Plans to grow the airport's capacity and facilities	Need for a comprehensive plan for the expansion of George Airport's capacity to accommodate future growth.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
24	Integrated Land use and Transport Planning	CITP Requirements	Parking requirements not specifically covered in tender scope of work	Need for inclusion of detailed parking requirements in the future CITP scope to ensure adequate parking management.		
25	Integrated Land use and Transport Planning	CITP Requirements	Integration of municipal goals with legislative and policy data gaps.	Need for development of a comprehensive data strategy that integrates transport data with municipal and legislative policies.		
26	Integrated Land use and Transport Planning	CITP Requirements	Lack of PT registration database	Need for the development and maintenance of a complete public transport registration database.		
27	Integrated Land use and Transport Planning	CITP Requirements	Need for a comprehensive Data Strategy to ensure efficient data collection.	Need for the development of a data collection strategy that is aligned with legislative policies and project risks.		
28	Integrated Land use and Transport Planning	CITP Requirements	Concerns about integrating and refreshing data with provincial requirements in mind.	Need for developing a data strategy that ensures integration with provincial transport data and requirements.		
29	Integrated Land use and Transport Planning	Economic Development	Incomplete economic layer for planning, leading to uncertainty in business and industrial development locations.	Need for a comprehensive economic development plan to inform transport infrastructure and zoning decisions.		
30	Integrated Land use and Transport Planning	Engineering and planning perspectives	Lack of integrated planning tools for infrastructure development	Need for a dynamic, integrated transport model for future scenario planning, particularly in growing areas like Thembalethu.		
31	Integrated Land use and Transport Planning	Housing	Difficulty in accounting for informal settlements and backyards in population and housing unit counts.	Need for integration of informal settlements and backyard dwellings into the transport and land-use planning processes.		
32	Integrated Land use and Transport Planning	Land use and infrastructure	Current model is static, limiting the dynamic analysis of infrastructure impacts	Need for development of a dynamic model that incorporates real-time data for infrastructure analysis and decision-making.		
33	Integrated Land use and Transport Planning	Metropolitan Planning	Connection between Mossel Bay and George models	Need for integration of transport models between George and Mossel Bay to improve metropolitan planning and cooperation.		
34	Integrated Land use and Transport Planning	Operational Needs	Operational needs for ongoing use of the model.	Need for creation of a dedicated position at the district or provincial level to manage ongoing transport model operations.		
35	Integrated Land use and Transport Planning	Parking	Contentious issue within the Municipality, lack of standards and management plans	Need for the development of parking standards and comprehensive parking management plans.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
36	Integrated Land use and Transport Planning	Parking Policy	Town planning scheme does include parking in zoning, but restraint on parking needs consideration.	Need for focus on transforming parking policies to align with modern urban mobility needs.		
37	Integrated Land use and Transport Planning	Parking Policy	Parking in the CBD and Wilderness is contentious. Existing policies may not be fully implemented.	Need for a request of parking policies and access management plans to guide parking operations in the CBD and Wilderness areas.		
38	Integrated Land use and Transport Planning	Parking Policy	Any parking policies and studies available? Parking plan and policy to be developed.	Need for development and inclusion of comprehensive parking policies and studies in CITP.		
39	Integrated Land use and Transport Planning	Spatial Planning	Conflicting policies and classifications that impact road access and the functionality of roads in relation to the spatial development framework.	Need for policy revision to eliminate conflicts and ensure alignment between spatial planning and road access policies.		
40	Integrated Land use and Transport Planning	Thembalethu Development	Densification impact on modelling	Need for accurate data collection and updates on informal dwellings to improve future scenario planning.		
41	Integrated Land use and Transport Planning	Traffic Calming Measures	Requests for traffic calming measures conflicting with emergency services	Need for guidelines on implementing traffic calming measures that consider the needs of all road users, including emergency services.		
42	Integrated Land use and Transport Planning	Weather Information Provision	ACSA could potentially provide weather information	Need for establishing a system to regularly provide weather updates to support transport planning.		
43	Integrated Land use and Transport Planning	Integration and Planning	Need for integrated planning across the Eden District Municipal level	Need for development of integrated transport strategies that incorporate key sectors like ports, airports, and tourism.		
44	Integrated Land use and Transport Planning	Operational Procedures	Operational inefficiencies and lack of a systematic approach to manage day-to-day transport operations.	Need for implementation of standardised operational procedures to improve daily transport management.		
45	Integrated Land use and Transport Planning	IP Requirements	Intellectual property requirements related to route mapping on the Public Transport Regulations System (PTRS).	Need for clarification and management of intellectual property requirements in the development of transport maps and routes.		
46	Integrated Land use and Transport Planning	Employment Locations	Thembalethu residents' employment predominantly in George Central, Blanco, George Mall, and Wilderness Hotel.	Need for transport solutions that cater to these employment locations, ensuring easier commutes for residents.		
47	Integrated Land use and Transport Planning	Data Strategy and Surveys	Gaps in data received from PRE and lack of digitised routes	Need for comprehensive, digitised transport data for informed decision-making and planning.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
48	Integrated Land use and Transport Planning	Utilisation of existing camera infrastructure for surveys	Evaluating which existing camera footage can be used for surveys	Need for evaluation and utilisation of existing cameras for transport data collection.		
49	Integrated Land use and Transport Planning	International statistics	Need for international statistics for comparison	Need for the collection and analysis of international transport statistics for benchmarking and planning.		
50	Public Transport	Engagement with Taxi Managers	Need for established relationships	Need for building and strengthening relationships with taxi managers to enhance public transport services.		
51	Public Transport	Garden Route Mall Taxi Rank	59% of shoppers come from George and 41% from outside.	Need for transportation plans that accommodate both local and non-local shoppers, ensuring adequate access to the mall.		
52	Public Transport	Garden Route Mall Taxi Rank	GO GEORGE has an impact on Taxi Ranks.	Need for coordination between GO GEORGE and taxi operators to improve integration and reduce conflicts.		
53	Public Transport	Garden Route Mall Taxi Rank	High percentage of workers (60%) and shoppers (83%) use public transport.	Need for improved public transport options to meet the high demand from workers and shoppers.		
54	Public Transport	Garden Route Mall Taxi Rank	The mall has 28,000 parking bays but still faces transportation issues.	Need for better traffic and parking management strategies to accommodate both private and public transport users.		
55	Public Transport	Illegal Taxi Operations	Capturing illegal taxi activities	Need for the use of CCTV cameras to monitor and address illegal taxi operations.		
56	Public Transport	Operating Licences	Current route-based licensing may not be effective	Need for consideration of area-based licensing to improve public transport efficiency and coverage.		
57	Public Transport	Operational Centre Need	Necessity for an operational centre for managing intelligent systems.	Need for the establishment of a transport management centre (TMC), to incorporate current transport operation services such as GO GEORGE, CCTV surveillance, Disaster Risk Management and Law Enforcement.		
58	Public Transport	Public Transport and	Inadequate integration of public transport data and planning	Need for consolidation of public transport data with traffic models to improve planning and service delivery.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
		Traffic Planning				
59	Public Transport	Public Transport System Analysis	Building on the current public transport system as a catalyst for urban change	Need for modelling and analysis to develop a responsive and efficient public transport system.		
60	Public Transport	Public Transport Route Descriptions	Language issues in route descriptions, duplication of routes, incomplete digitisation, and utilisation of floating car data.	Need for standardised route descriptions, completion of digitisation, and utilisation of floating car data for better planning.		
61	Public Transport	Permission for PT Operations	Any PT that operates to/from the airport must obtain permission from ACSA	Need for streamlined processes to obtain permissions for public transport operations at the airport.		
62	Public Transport	Public Transport Efficiency	Mismatch between public transport efficiency and user preferences for faster travel modes.	Need for optimisation of public transport routes and services to improve efficiency and meet user preferences.		
63	Public Transport	Bus and Taxi Operations	Buses operate on a schedule, whereas taxis work on demand.	Need for a transport model that accommodates both scheduled bus services and on-demand taxi services.		
64	Public Transport	Taxi Operation Model in Mossel Bay	Taxis in Mossel Bay operate on an area-based model.	Need for consideration of an area-based taxi operation model for George to improve efficiency and accessibility.		
65	Rural Transport	Farm Transport	Accommodate farm transport in plan	Need for adjustments to accommodate farm transport operations and reduce wait times for GO GEORGE services.		
66	Rural Transport	Informal Settlements	Need for comprehensive data on informal settlements	Need for gathering and updating information on informal settlements to support transport planning.		
67	Rural Transport	Informal Settlements	Single access to Thembalethu posing significant concern	Need for exploration of alternative access routes to Thembalethu to improve safety and reduce congestion.		
68	Rural Transport	Informal Settlements	Outdated Rural Transport Study (5 years old).	Need for an updated Rural Transport Study to reflect current conditions and needs.		
69	Rural Transport	Rural Strategy	The current rural strategy is outdated and lacking.	Need for the development of an updated and comprehensive rural transport strategy.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
70	Rural Transport	Single Access to Thembalethu	High residential growth leading to pressure on single access.	Need for the development of an additional access route to alleviate pressure and enhance connectivity.		
71	Sustainability	Emissions model	Concerns regarding noise and temperature from airport operations	Need for the development of an emissions model to address noise and temperature concerns from airport operations.		
72	Sustainability	Environmental Impact Assessment	Emission calculations and impact of transport developments on emissions	Need for the integration of an emissions component in the transport model to support planning and funding.		
73	Sustainability	Economic Impact and Emissions	Model to evaluate economic impact and reduction in emissions	Need for incorporation of economic impact assessments and emissions reduction goals into the transport model.		
74	Sustainability	Environmental Considerations	Need to consider environmental impacts in transport planning, including emissions and green index capacity.	Need for environmental considerations to be central to the CITP, focusing on emissions reduction and green initiatives.		
75	Transport Infrastructure	Infrastructure	All traffic signal infrastructure	Need for inclusion of all traffic signal infrastructure details in the CITP.		
76	Transport Infrastructure	Infrastructure	Heavy freight traffic in CBD on York Street.	Need for appropriate strategies to reduce heavy vehicle traffic congestion in the CBD.		
77	Transport Infrastructure	Infrastructure Development	Need for strategic development of infrastructure to support growing populations and economic activity, particularly in terms of water and transportation.	Need for a strategic infrastructure development plan that aligns with population and economic growth projections.		
78	Transport Infrastructure	Infrastructure Planning	Utilisation of comprehensive live model for infrastructure and land use planning.	Need for implementation of a live transport model to support dynamic infrastructure and land-use planning.		
79	Transport Infrastructure	Roads Master Plan	Consolidation and future scenario planning	Need for a comprehensive roads master plan that projects future growth and prioritises road upgrades.		
80	Transport Infrastructure	Roads Master Plan	Ensure model matches the George Municipality's Roads Masterplan.	Need for an updated model that reflects the Roads Master Plan, zoning schemes, and traffic data.		
81	Transport Infrastructure	Roads Master Plan	High costs to develop roads and "red tape" in processes.	Need for strategies to manage road development costs and streamline approval processes.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
82	Transport Infrastructure	Roads Master Plan	Knysna Road issue in Kraaibosch area (TIA planning), challenging terrain, and George Municipality road standard of a 2m road shoulder.	Need for solutions that address terrain challenges and improve road safety standards on Knysna Road.		
83	Transport Infrastructure	Roads Master Plan	Need for a consolidated roads master plan that aligns with future growth and development strategies	Need for integration of transport models with strategic road development plans that accommodate future growth.		
84	Transport Infrastructure	Roads Master Plan	Need to communicate with municipality regarding studies on port/airport.	Need for enhanced coordination between transport planners and municipal authorities for port and airport studies.		
85	Transport Infrastructure	Roads Master Plan	Need record of proposed planned road upgrading for the GM Municipal Areas.	Need for inclusion of all proposed road upgrades in the CITP for strategic planning.		
86	Transport Infrastructure	Roads Master Plan	Need for a Local Road Master Plan including proposed road upgradings for the GM Municipal Areas.	Need for development of a Local Road Master Plan that includes all proposed road upgrades.		
87	Transport Infrastructure	Road Link Upgrades	The need for various road link upgrades identified for inclusion in the transport model.	Need for inclusion of proposed road link upgrades in the transport model to improve connectivity.		
88	Transport Infrastructure	Covered Bus Terminal	ACSA requires a covered bus terminal with walkways to Airport Terminals	Need for planning and construction of a covered bus terminal with appropriate walkways to support airport access.		
89	Transport Infrastructure	Infrastructure Management	Dilapidated public transport interchanges and inadequate maintenance of transport infrastructure.	Need for upgrading and maintenance of transport interchanges to ensure functionality and safety.		
90	Transport Infrastructure	Gravel Roads	Need feedback and information on extent of gravel roads in the GM area. Maps, length, condition assessment, etc.	Need for inclusion of gravel road maps, condition assessments, and potential upgrades in the CITP.		
91	Transport Safety and Security	CCTV cameras	Extensive CCTV cameras in area	Need for evaluation of CCTV camera distribution and effectiveness in transport safety monitoring.		
92	Transport Safety and Security		Concerns about the safety of public transport modes and security at transport facilities.	Need for enhanced safety and security measures at public transport facilities to ensure passenger safety.		
93	Transport Safety and Security	Dangerous Intersection	The current airport access road is a very dangerous intersection	Need for road safety improvements at the airport access road to prevent accidents.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
94	Universal Accessibility	Road Access and Infrastructure	Challenges with road access in certain areas, e.g., Thembalethu	Need for alternative access strategies to alleviate congestion and improve connectivity in these areas.		
95	Universal Accessibility	Transportation and Accessibility	Inadequate road access and transportation planning, affecting the viability of proposed developments and the overall traffic flow.	Need for coherent transportation and accessibility plans that align with development goals.		
96	Universal Accessibility	Accessibility	Parking, accessibility, and provision not adequately addressed	Need for the inclusion of parking and accessibility considerations in the CITP scope.		
97	Urban Transport and Smart Cities	Urban Edge Policy	Uncertainty regarding the urban edge policy application, hindering the approval of development applications outside the current urban edge.	Need for clear and consistently applied urban edge policies to support development.		
98	Urban Transport and Smart Cities	ITS Technology Applications	ITS used in other municipalities but not fully implemented in current strategy.	Need for future utilisation of ITS technologies for public transport and traffic management in George.		
99	Urban Transport and Smart Cities	Airport Capacity	George Airport is currently over capacity	Need for support for the extension of GO GEORGE bus routes to improve access to the airport.		
100	Urban Transport and Smart Cities		Approximately 80% of capacity post-Covid	Need for adjustments to CITP models to reflect current capacity utilisation.		
101	Urban Transport and Smart Cities	Data and Technology Application	Existing technologies in different departments are not integrated for optimal use; lack of centralised operational control.	Need for integration of existing technologies into a centralised operational centre to enhance transport management.		
102	Urban Transport and Smart Cities	Arterial Management Plans	Any available planning documentation or information regarding AMPs. Influence of GO GEORGE IPTN on AMP development.	Need for alignment of AMPs with public transport initiatives such as the GO GEORGE IPTN.		
103	Urban Transport and Smart Cities	Smart Technology	Operational rail link between Mossel Bay and George and integration of various existing technologies.	Need for operational strategies that integrate existing smart technologies with the rail link for effective traffic management.		
104	Integrated Land use and Transport Planning: Transport Model	Access to digitised taxi route data	Lack of comprehensive digitised taxi route data	Need for comprehensive digitised taxi route data to support transportation planning.		
105	Integrated Land use and Transport Planning: Transport Model		Inadequate consideration of future land use and demographic changes in the model	Need for incorporation of future growth nodes, economic development, and potential absorption areas into the transport model.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
106	Integrated Land use and Transport Planning: Transport Model	Living model	Discussion on the 'Living model'	Need for clarification and development of the 'Living model' for transport planning and decision-making.		
107	Integrated Land use and Transport Planning: Transport Model	Model and Data Integration	Integrating planning and model for informed decision-making	Need for a transport model that integrates land use and demographic data for comprehensive planning.		
108	Integrated Land use and Transport Planning: Transport Model		Lack of information on developments affecting transport services	Need for a dynamic model to anticipate and plan for future developments that impact transport services.		
109	Integrated Land use and Transport Planning: Transport Model	Model Overview	Development anticipation and route alterations	Need for a comprehensive model that identifies potential links for future transport developments.		
110	Integrated Land use and Transport Planning: Transport Model	Model Refinement	Need for detailed traffic analysis zones	Need for refinement of the transport model to include detailed traffic analysis zones for better accuracy.		
111	Integrated Land use and Transport Planning: Transport Model	PTV Visum Software	Acquisition and training for modelling software	Need for acquisition of PTV Visum software and staff training to enhance transport modelling capabilities.		
112	Integrated Land use and Transport Planning: Transport Model	Traffic and Transport Model	Expensive and complex traffic modelling	Need for an affordable, comprehensive traffic model to inform infrastructure projects.		
113	Integrated Land use and Transport Planning: Transport Model	Traffic Data Acquisition	High cost of traffic data acquisition	Need for cost-sharing strategies among stakeholders to acquire comprehensive traffic data for planning purposes.		
114	Integrated Land use and Transport Planning: Transport Model	Traffic Data for Specific Periods	Difficulty obtaining traffic data for specific periods (e.g., holiday seasons) due to high costs	Need for collaborative financial contributions from stakeholders to acquire seasonal traffic data.		
115	Integrated Land use and Transport Planning: Transport Model	Traffic Operation	Traffic Operation Centre	Need for establishment of a traffic operation centre to manage and monitor transport systems.		
116	Integrated Land use and Transport Planning: Transport Model	Transport Model Maintenance	Consideration of operational skills opportunity for maintaining the transport model at a district or provincial level.	Need for skilled staff to maintain the transport model, with discussions on management responsibilities beyond the municipality.		

No	NLTSF Focus Area	Topic	Issue / Concern	Needs	Impact Relevancy	
					1	2
117	Integrated Land use and Transport Planning: Transport Model	Transport Network Analysis	Identifying missing links in the transport network and testing their importance	Need for a comprehensive model that identifies and justifies potential transport links for network improvements.		
118	Integrated Land use and Transport Planning: Transport Model	Seasonal Workers	Significant numbers of seasonal workers not accounted for in transport model.	Need for inclusion of seasonal workers in the transport model, particularly during peak seasons like fruit picking.		
119	Integrated Land use and Transport Planning: Transport Model	Floating Car Data	Current use and potential of floating car data not fully realised.	Need for obtaining and using at least 3 months of floating car data to enhance understanding of transport patterns and route choices.		
120	Integrated Land use and Transport Planning: Transport Model	Model Management	Uncertainty about the application for model management (Visum/Vissim mentioned).	Need for clarification and decision on the model management system to be used for ongoing transport planning and management.		

Table 4-4: Impact on Access, Accessibility, and Mobility and associated Beneficiaries.

No.		Focus Area	Impact	Beneficiaries
1		**Integrated Transport Network**	Enhances the connectivity between different modes of transport, reducing transfer times and improving overall network efficiency.	All users, especially those reliant on multiple modes of transport for their daily commute.
2		**Smart Traffic Management**	Reduces congestion and improves traffic flow, leading to quicker travel times and less frustration for road users.	Motorists, bus users, minibus taxi user's emergency services, and commercial transport.
3		**Digital Platforms and Data Analytics**	Development of digital platforms for journey planning, ticketing, and real-time passenger information. Utilisation of big data analytics for transport planning and operational improvements.	Provides real-time information to users, enabling better travel planning and decision-making.
4		**Sustainable and Green Transport Solutions**	Promotes environmentally friendly modes of transport, contributing to a reduction in emissions and improved air quality.	Environmentally conscious users, future generations, and the community at large.

No.		Focus Area	Impact	Beneficiaries
5		**Public Engagement and Participation**	Ensures that the transport system evolves in line with community needs and preferences.	All community members, particularly those who actively participate in feedback and consultation processes.
6		**Safety and Security**	Increases user confidence in the transport system, encouraging more people to use public transport.	All transport users, especially vulnerable groups like children, the elderly, and people with disabilities.
7		**Policy and Governance**	Provides a structured approach to transport management, ensuring long-term sustainability and efficiency.	Policy makers, transport operators, and users who benefit from a well-regulated transport system.
8		**Economic and Financial Models**	Ensures the financial sustainability of the transport system, allowing for continuous improvement and expansion.	Taxpayers, transport users, and the local economy.
9		**Technology and Innovation**	Keeps the transport system at the forefront of technological advancements, enhancing user experience and operational efficiency.	Tech-savvy users, transport operators, and the municipality.
10		**Resilience and Adaptability**	Prepares the transport system to adapt to future challenges, including environmental changes and population growth.	Future users, city planners, and the environment.
11		**Accessibility and Inclusivity**	Ensures that the transport system is usable by all, regardless of physical ability or socio-economic status.	People with disabilities, low-income groups, and other marginalised communities.
12		**Education and Awareness**	Cultivates a culture of sustainable transport use and awareness of smart transport options.	New and existing users of the transport system, particularly young and impressionable community members.
11		**Spatial Structuring**	Increases economic vitality by improving access to job markets and education facilities. Enhances land value and promotes development in underutilised areas due to improved transport options.	Local businesses experiencing increased patronage due to improved accessibility. Property owners and developers benefiting from increased property values.

In the context of transforming George Municipality into a smart city, while there are many important components, one core focus that often stands out is the *Integration of Technology and Data Analytics*. This component is pivotal because it acts as the central nervous system of a smart city, enabling and enhancing various other components. **Table 4-5** summarises the main reasons to focus with the *Integration of Technology and Data Analytics* is so crucial, whilst the others can be pursued in context of the status quo and needs as identified in the CITP.

Table 4-5: Integration of Technology and Data Analytics: The Core Focus.

No.		Focus Area	Objective
1		**Enabler of Smart Solutions**	• Technology and data analytics are the foundation for smart solutions across different sectors like transportation, energy, waste management, and public services. • They enable the collection, analysis, and application of data to improve city operations and services.
2		**Real-Time Decision Making**	• The use of IoT devices and sensors provides real-time data, allowing city administrators to make informed decisions quickly. • This real-time data management is essential for traffic control, emergency response, and utility management.
3		**Enhanced Citizen Engagement**	• Digital platforms facilitate better communication between the city and its residents, leading to more effective and responsive governance. • These platforms can be used for feedback, reporting issues, and disseminating important information.
4		**Efficiency and Cost Savings**	• Smart technologies lead to increased operational efficiency, reducing costs for the city and improving service delivery for citizens. • Automation and AI can streamline processes, reducing the need for manual intervention.
5		**Sustainability and Environmental Management**	• Data analytics help in monitoring environmental parameters and managing resources more sustainably. • Smart solutions can significantly reduce a city's carbon footprint through efficient energy use, waste reduction, and promoting sustainable practices.
6		**Economic Development**	• A smart city attracts businesses and investments by offering a technologically advanced and efficient urban environment. • It also fosters innovation by providing a platform for developing and testing new technologies.

No.		Focus Area	Objective
7		**Quality of Life Improvements**	• By making the city more efficient, responsive, and sustainable, technology and data analytics directly contribute to improving the quality of life for its residents. • Enhancing community well-being and sustainable development through the analysis and management of population distribution trends and future growth patterns.

Integration of these smart city building blocks into George CITP will significantly enhance access, accessibility, and mobility across all transport modes. It will create a more inclusive, efficient, and sustainable transport network that caters to the needs of all citizens and users.

Confirming from a user needs point of view their expectation in terms of access, accessibility and mobility, the following:

- **Access to Transport**: It refers to the availability of transport options within a reasonable distance or effort. It's crucial for ensuring that all areas, especially underserved communities, are connected to the transport network.
- **Accessibility**: Goes beyond mere access; it's about how easily and equitably people can reach desired services and destinations, including for those with disabilities or limited mobility.
- **Mobility**: Focuses on the ease of movement within the transport network. It encompasses the efficiency, speed, and convenience of transport services.

The catalytic impact and the role which "*Transport Access, Accessibility and Mobility"* fulfil is summarised in **Table 4-6**.

Table 4-6: Catalytic impact and role of Access, Accessibility, and Mobility.

No.	Focus Area	Impact
1	**Catalyst for Inclusive Planning**	• These concepts drive the development of transport systems that cater to the needs of all community members, not just the majority. This includes special considerations for the elderly, children, people with disabilities, and economically disadvantaged groups. • By enhancing transportation access, economic opportunities and uplift disadvantaged areas, fostering transformative and sustainable community development are catalysed.
2	**Economic Development and Social Equity**	• Improved access and mobility can stimulate economic growth by connecting people to jobs, education, and markets more efficiently. • Accessibility ensures equitable opportunities for all, reducing social disparities.
3	**Environmental Sustainability**	• A well-planned transport system that prioritises accessibility and mobility can lead to reduced reliance on private vehicles, lowering emissions and contributing to environmental sustainability.
4	**Urban Planning and Land Use**	• These concepts influence urban planning, encouraging the development of compact, walkable communities with mixed-use developments, reducing the need for long commutes.
5	**Safety and Quality of Life**	• Enhanced mobility and accessibility contribute to safer transport systems, reducing accidents and improving the overall quality of life for residents.
6	**Technological Integration**	• The focus on accessibility and mobility encourages the adoption of smart technologies in transport systems, leading to more efficient and user-friendly services.
7	**Public Health**	• Accessible and mobile transport systems promote active modes of transport like walking and cycling, which have significant public health benefits.
8	**Resilience and Adaptability**	• These principles ensure that transport systems are resilient to changes, such as population growth, urban expansion, and environmental challenges.

In summary, "*Access to, Accessibility, and Mobility*" are not just components of an Integrated Transport Plan; they are its **backbone/core thread**. They guide the development of transport systems that are equitable, efficient, sustainable, and responsive to


the needs of all users. By focusing on these principles, George Municipality can ensure that its transport system is not only functional but also enhances the quality of life for its residents.

4.6.1 City Macro and Micro level

Approximately 84% of all the people in George live in the urban centre, whilst the remainder is distributed in the larger George Municipal Rural Area in the smaller rural towns such as Haarlem, Uniondale, Herold's Bay, Touwsranten, Hoekwil, – and various hamlets and rural places like Avontuur, De Vlogs, Herold and Noll, coastal areas of Kleinkrantz, Wilderness, Victoria Bay, Harolds Bay, etc. which each has a small semi-urban context serving the broader rural areas. It is evident that the needs from a transport perspective of the semi urban and the rural areas, towns and villages poses different challenges and opportunities compared to urban settings.

The concept of "*Accessibility* and *Mobility*" at a macro and micro level involve a set of unique characteristics, components, and needs. The unique characteristics are not only between urban and rural areas but also in terms of access, accessibility, and mobility at a macro and micro level of the transport network and system. This unique context requires specific attention as set out below.

4.6.1.1 Transport Access, Accessibility and Mobility at a Macro Level

The macro level deals with a city-wide or regional scale, considering the overall transport network, major routes, interchanges, and the integration of different modes of transport like buses, trains, and airports as listed below:

- **Macro Access** involve the overall connectivity of different regions or the entire city, focusing on the main transport networks that facilitate movement between major areas, such as highways, main roads, and public transport routes.
- **Macro Accessibility** is assessed by evaluating how well the transport network serves the city, including the availability of transport modes like buses, trains, and roads that link major areas of the city.
- **Macro Mobility** involves looking at the movement patterns on a large scale, such as the flow of traffic across the city, the capacity and efficiency of major transport corridors, and the integration of different modes of transport.

Urban "City" Context (Macro)

Table 4-7 shows the typical key components, characteristics and specific needs associated with *Accessibility* and *Mobility* in at a macro level in an urban context.


Table 4-7: Key components, characteristics and specific needs associated with accessibility and mobility at a macro level in an urban context.

Accessibility and Mobility at Macro Level in an Urban City Context		
Key Component	**Characteristic**	**Needs**
• Integrated Public Transport System: This includes buses, minibus taxis and trains, ideally integrated for seamless transfers. • Road and Street Network: Well-designed and maintained roads and streets that cater to both vehicles and non-motorised users. • Non-Motorised Transport Infrastructure: Dedicated and safe pathways for pedestrians and cyclists, like sidewalks, bike lanes, and public open space (greenways). • Transport Hubs and Interchanges: Key nodes where different transport modes converge, facilitating efficient movement and transfers.	• High Population Density: Urban areas typically have high population densities, leading to greater demand for efficient and diverse transport options. • Diverse Demographic and Socioeconomic Groups: Cities cater to a wide range of residents with varying mobility needs, including commuters, students, elderly, and people with disabilities. • Mixed Land Use: Urban areas often have a mix of residential, commercial, and industrial zones, requiring a transport system that accommodates varied travel purposes. • Environmental and Space Constraints: Challenges include managing traffic congestion, pollution, and limited space for transport infrastructure expansion	• Efficient Public Transport: High-capacity, reliable, and frequent public transport services to reduce reliance on private vehicles. • Sustainable and Eco-Friendly Solutions: Emphasis on reducing carbon emissions through electric public transport, promoting cycling, and walking. • Smart Traffic Management: Utilising technology for traffic flow optimisation, real-time information systems, and smart parking solutions. • Accessibility and Inclusivity: Ensuring transport systems are accessible to all, including those with disabilities and economically disadvantaged groups. • Urban Planning Integration: Aligning transport planning with urban development, ensuring transport infrastructure supports and is supported by land use planning. • Safety and Security: Prioritising the safety and security of all transport system users. • Resilience and Adaptability: Building a transport system that can adapt to future challenges, including population growth, technological advancements, and climate change.

Semi-Urban Rural Context (Macro)

Table 4-8 shows the typical key components, characteristics and specific needs associated with *Accessibility* and *Mobility* at a macro level in a semi-urban and rural context.

Table 4-8: Key components, characteristics and specific needs associated with accessibility and mobility at a macro level in a semi-urban and rural context.

Accessibility and Mobility at Macro Level in a Semi-Urban and Rural Areas		
Key Component	**Characteristic**	**Needs**
• Road Infrastructure: Well-maintained roads suitable for all weather conditions are crucial for ensuring reliable access.	• Lower Population Density: Rural and semi-urban areas typically have lower population densities, affecting the demand and feasibility of frequent public transport services.	• Strategic Connectivity: Establishing strategic connections to major towns, cities, and essential services (like hospitals and markets) is vital.

Accessibility and Mobility at Macro Level in a Semi-Urban and Rural Areas		
Key Component	**Characteristic**	**Needs**
• Public Transport Services: Provision of basic public transport services, even if less frequent, is essential for those without access to private vehicles. • Non-Motorised Transport Facilities: Safe pathways and lanes for walking and cycling can significantly enhance local mobility. • Transport Hubs: Centralised locations where different modes of transport converge can facilitate easier movement and transfers.	• Longer Travel Distances: Residents often need to travel longer distances to access essential services, employment, and amenities. • Limited Public Transport Options: There's often a lack of comprehensive public transport systems, leading to a higher reliance on private vehicles. • Diverse User Needs: The population in these areas may have varied transport needs, including farmers needing to transport goods, elderly residents requiring access to healthcare, and youth needing access to education and employment opportunities.	• Flexible Transport Solutions: Services like on-demand transport, community shuttles, and shared mobility options can be more suitable for these areas. • Infrastructure Investment: Investment in basic transport infrastructure, including roads, bridges, and transport hubs, is necessary. • Digital Connectivity: Enhancing digital connectivity can facilitate access to information, emergency services, and digital platforms for ridesharing or logistics. • Sustainable Practices: Incorporating sustainable practices, such as using eco-friendly vehicles and preserving natural pathways, is important. • Inclusive Planning: Transport planning should consider the diverse needs of the population, including the elderly, disabled, and economically disadvantaged groups

4.6.1.2 Transport Access, Accessibility and Mobility at a Micro Level

At the micro level, the focus is on localised areas, neighbourhoods, and access to business premises and schools, looking at pedestrian pathways, cycling lanes, local bus stops, and the quality of footpaths as shown below:

- **Micro Access** would look at the local level, such as the availability of footpaths, cycle lanes, and local streets that connect people to the macro network or directly to their destinations.
- **Micro Accessibility** focus on the pedestrian or cycling infrastructure within neighbourhoods, the availability of transport services in rural vs urban areas, or the design of areas around transit stations.
- **Micro Mobility** would be concerned with the finer details of movement within smaller areas, such as the availability and usage of bike-sharing schemes, e-scooters, or the efficiency of local shuttle services.

Urban "City" Context (Micro)

Table 4-9 shows the typical key components, characteristics and specific needs associated with *Accessibility* and *Mobility* in at a micro level in an urban context.

Semi-Urban Rural Context (Macro)

Table 4-10 shows the typical key components, characteristics and specific needs associated with *Accessibility* and *Mobility* at a micro level in a semi-urban and rural context.

Table 4-9: Key components, characteristics and specific needs associated with accessibility and mobility at a micro level in an urban context.

• Accessibility and Mobility at Micro Level in an Urban City Context		
Key Component	**Characteristic**	**Needs**
• Pedestrian Infrastructure: Well-maintained and safe sidewalks, pedestrian crossings, and public spaces. • Cycling Infrastructure: Dedicated and secure bike lanes, bike parking, and bike-sharing facilities. • Local Roadways and Traffic Management: Properly designed and maintained local streets with effective traffic calming measures and parking management. • Public Transit Access Points: Conveniently located and accessible bus stops, tram stations, and subway entrances.	• Localised Needs and Preferences: Understanding the specific mobility needs and preferences of residents and businesses in a particular area. • Street-Level Design and Infrastructure: The design and quality of sidewalks, bike lanes, street crossings, and local roadways. • Proximity to Services and Amenities: The distance and ease of access to essential services like grocery stores, schools, healthcare facilities, and parks. • Local Traffic Conditions: Managing local traffic flow, parking availability, and pedestrian safety.	• Efficient Public Transport: High- Safety and Security: Ensuring safe environments for all users, particularly pedestrians and cyclists, through design and enforcement. • Local Accessibility: Making sure that transportation is accessible to all, including elderly residents, children, and people with disabilities. • Community Engagement: Involving local communities in the planning and decision-making process to ensure that solutions meet their specific needs. • Quality and Aesthetics of Public Spaces: Enhancing the visual appeal and comfort of streets and public spaces to encourage walking and cycling. • Integration with Wider Network: Ensuring that local transport options connect effectively with broader city-wide transportation networks. • Flexibility and Responsiveness: Ability to adapt to changing local needs, such as shifts in population or land use. • Environmental Sustainability: Incorporating green infrastructure and sustainable practices in local transport planning.

Table 4-10: Key components, characteristics and specific needs associated with accessibility and mobility at a micro level in a semi-urban and rural context.

Accessibility and Mobility at Micro Level in a Semi-Urban and Rural Areas		
Key Component	**Characteristic**	**Needs**
• Road Infrastructure: Well-maintained roads that can accommodate varying weather conditions and are suitable for the types of vehicles commonly used in rural areas. • Basic Public Transport Services: Even minimal public transport services can significantly impact mobility, especially for those without access to private vehicles. • Non-Motorised Transport Facilities: Safe and practical pathways for walking and cycling, considering the longer distances in rural areas. • Community Transport Solutions: Tailored transport solutions like community buses or shared mobility	• Geographic Isolation: Many rural areas are geographically isolated, making access to basic services and amenities a significant challenge. • Limited Public Transport Options: There's often a scarcity of public transport services, leading to a higher dependence on private vehicles. • Varied Terrain and Road Conditions: Rural areas can have diverse terrain, affecting road conditions and transport infrastructure. • Economic Activities: The economic activities in rural areas, like agriculture or mining, often influence transport needs.	• Reliable and Accessible Transport Options: Providing reliable transport options that cater to the needs of all community members, including the elderly and those with disabilities. • Safety and Security: Ensuring that all modes of transport and infrastructure are safe and secure, with particular attention to pedestrian and cyclist safety. • Connectivity to Key Services: Facilitating connectivity to essential services such as healthcare, education, and markets. • Affordability: Ensuring that transport options are affordable for all segments of the rural population. • Community Involvement: Engaging with local communities to understand their specific needs and preferences.

Accessibility and Mobility at Micro Level in a Semi-Urban and Rural Areas		
Key Component	**Characteristic**	**Needs**
services that cater to the specific needs of the community.		• Sustainability: Incorporating sustainable practices and technologies that are suitable for rural contexts. • Adaptability and Resilience: Developing transport solutions that are adaptable to changing needs and resilient to environmental challenges. Understanding economic patterns and transportation requirements in the rural areas.

4.7 Needs Summary

The Transport Register, MSDF, and Stakeholder Engagements have provided an extensive compilation of issues, concerns, and needs across various focus areas, each contributing to a holistic understanding of George Municipality's transport requirements. This summary outlines key areas to address George's smart city goals through a comprehensive needs assessment analysis.

4.7.1 Transport Register Needs

A diverse range of transport issues has been captured, highlighting the need for enhanced freight transport management, public transport accessibility, and the rejuvenation of rail services. Concerns around the ageing fleet of public transport vehicles and inadequate operating licenses suggest an urgent need for system upgrades and regulatory compliance. Specific actions such as weighbridge installations for overload control, improving transport infrastructure, and establishing safer, more efficient public transport options are imperative.

4.7.2 Land Use Needs

The MSDF reflects a critical interplay between land use and transport, emphasising the necessity for integrated planning to solve housing affordability crises, parking management, and social infrastructure provisioning. It suggests actions to balance land use and transport planning, development of Non-Motorised Transport (NMT) infrastructure, and expansion of public transport services to integrate rural and urban linkages.

4.7.3 Stakeholder Engagement Needs

Feedback from various stakeholders has been categorised by impact relevancy, identifying high-priority issues like congestion, the need for strategic integration of transport planning, and enhancing safety and security measures. Stakeholders have emphasised the significance of developing alternative transport routes, managing hazardous goods transportation, and improving accessibility for all community segments.

4.7.4 Access and Mobility Needs

Reflecting the CITP transformational goals, there is a pronounced need to focus on modal change, leveraging digitalisation, enhancing

safety, and nurturing economic growth through improved accessibility and mobility. Ensuring the transport system's financial sustainability and resilience to adapt to future challenges is also highlighted.

The integration of smart city building blocks is crucial for enhancing "*Access, Accessibility, and Mobility*," aiming to create a more inclusive and efficient transport network that responds to the needs of all citizens. This includes ensuring transport options are within a reasonable distance for all communities, improving ease of access to services and destinations, and focusing on the efficiency of movement within the transport network.

4.7.5 Macro and Micro Level Needs

The unique characteristics and needs at both macro (city-wide or regional) and micro (localised areas and neighbourhoods) levels are recognised. At the macro level, there is a focus on the overall connectivity and movement patterns across the city, while the micro level concentrates on local accessibility and mobility, including pedestrian and cycling infrastructure.

4.7.6 Integration into George's CITP

All these aspects will feed into the needs assessment analysis for the CITP, where strategic connectivity, tailored transport solutions, and community involvement will play pivotal roles in achieving an integrated, sustainable, and adaptable transport network. Addressing these needs will contribute to economic vitality, environmental sustainability, and improve the overall quality of life for the residents of George

4.8 Needs Assessment Analysis

Table 4-11 presents an attempt to consolidate all the aforementioned needs in this chapter into some high-level needs that need to be addressed in the context of the CITP. This table is laid out similarly to the other Needs tables from this chapter (**Table 4-1**, **Table 4-2** and **Table 4-3**). Also, the tables focussing on Access, Accessibility and Mobility (**Table 4-4** - **Table 4-10**). Also, the NLTSF's 13 Focus Areas were used to categorise these needs and to align with the NLTSF. One additional area called "Cross-cutting" was included to help identify the Cross-cutting needs applicable to the CITP that needs to be considered. Finally, **Table 4-12** contains some high-level future needs that are not relevant at this moment, but can be taken into consideration, especially in light of internation exports and the airport potentially becoming an international airport, and even imports and exports from the Port of Mossel Bay.

Table 4-11: Consolidated High-level Needs for CITP based on the Transport Register Needs, Land Use Needs, Stakeholder Engagement Needs, and using the Lens of Access, Accessibility and Mobility categorised according to the 13 NLTSF Focus Areas.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
1	Integrated Land use and Transport Planning	Holistic Planning and Implementation	Disjointed land use and transport planning leading to inefficiencies and unsustainable development. Limited stakeholder engagement and outdated models not fully accounting for current and future dynamics.	Need for the development and implementation of comprehensive integrated planning frameworks that encompass land use, transport, environmental sustainability, and economic development.
2	Integrated Land use and Transport Planning	Sustainability and Resilience	Current planning practices often overlook the long-term environmental impacts and the need for resilience against climate change.	Need for incorporating sustainability and resilience as core principles in all land use and transport planning efforts.
3	Integrated Land use and Transport Planning	Accessibility and Social Equity	Inequitable access to mobility options and urban services, particularly for marginalised communities and areas with limited transport connectivity.	Need for ensuring that planning processes explicitly address accessibility and social equity, providing transport solutions for all community segments.
4	Integrated Land use and Transport Planning: Surveys	Comprehensive Data Collection and Analysis	Existing survey methods are often fragmented and do not capture the full spectrum of land use and transport dynamics. Additionally, there is underutilisation of technology in survey processes, leading to gaps in data quality and accessibility.	Need for the employment of advanced, integrated survey techniques that provide comprehensive data across all demographics and transport modes.
5	Integrated Land use and Transport Planning: Surveys	Stakeholder Engagement and Feedback Integration	Limited mechanisms for capturing and integrating broad-based stakeholder feedback within transport planning processes.	Need for enhanced stakeholder engagement through innovative platforms that facilitate community input and ensure it is incorporated into planning models.
6	Integrated Land use and Transport Planning: Transport Model	Advanced Modelling and Integration	Current transport models lack the sophistication to accurately predict outcomes and integrate diverse data sets, including emerging trends like autonomous vehicles and shared mobility. There's also a gap in incorporating accessibility and equity considerations effectively.	Need for advanced transport models that incorporate real-time data and future trends while representing all community segments.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
7	Integrated Land use and Transport Planning: Transport Model	Stakeholder Participation and Model Transparency	Transport modelling processes often lack transparency and meaningful stakeholder engagement, limiting community trust and input.	Need for improved transparency in transport modelling and active stakeholder engagement throughout the process.
8	Integrated Land use and Transport Planning: Transport Model	Adaptation to Technological and Social Changes	Transport models do not always adequately adapt to rapid technological advancements and changing social behaviours, reducing their relevance over time.	Need for transport models that are flexible and adaptive to technological innovations, societal trends, and environmental changes.
9	Urban Transport and Smart Cities	Smart City Integration and Sustainable Mobility	Urban areas struggle with integrating transport into broader smart city initiatives, often missing opportunities to enhance sustainability, efficiency, and liveability.	Need for integrating transport systems with smart city technologies to improve mobility management and reduce environmental impacts.
10	Urban Transport and Smart Cities	Public Participation and Accessibility	Smart urban transport solutions frequently overlook the need for universal accessibility and fail to engage the public effectively in their development and implementation.	Need for designing smart urban transport initiatives that prioritise universal accessibility and involve public participation in their development.
11	Urban Transport and Smart Cities	Resilience and Adaptation to Change	Urban transport systems and smart city infrastructures are often not adequately resilient to socio-economic shifts, technological advancements, and climate change.	Need for incorporating resilience and adaptability into urban transport systems to ensure sustainability amidst future challenges.
12	Universal Accessibility	Comprehensive Accessibility and Inclusion	Transport systems often fail to provide universal accessibility, overlooking the needs of persons with disabilities, the elderly, and other mobility-impaired individuals.	Need for adopting and enforcing universal design standards across all transport modes and ensuring accessibility for all.
13	Universal Accessibility	Technology and Innovation for Accessibility	Underutilisation of technology and innovation in addressing accessibility challenges within transport systems.	Need for leveraging emerging technologies and assistive solutions to enhance accessibility in transport systems.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
14	Universal Accessibility	Stakeholder Engagement and Policy Support	Lack of active involvement from stakeholders, including persons with disabilities, in the planning and policy-making processes for transport accessibility.	Need for strengthening stakeholder engagement to ensure inclusive transport planning and the development of comprehensive accessibility policies.
15	Rural Transport	Enhanced Connectivity and Service Provision	Rural areas often suffer from inadequate transport connectivity and limited access to essential services, contributing to economic and social isolation.	Need for improving rural transport connectivity through infrastructure development and flexible service provision tailored to rural needs.
16	Rural Transport	Sustainability and Safety	Rural transport systems face challenges in sustainability and safety, with higher rates of accidents and limited adoption of sustainable transport options.	Need for promoting sustainable transport practices and improving safety in rural areas through targeted road infrastructure and awareness campaigns.
17	Rural Transport	Digital Inclusion and Access to Information	Limited digital connectivity and access to transport information in rural areas hinder the use and efficiency of transport services.	Need for enhancing digital connectivity in rural areas and developing accessible platforms that provide real-time transport information.
18	Rural Transport	Community Participation and Empowerment	Rural communities are often not sufficiently involved in the planning and management of transport services, leading to solutions that may not fully address local needs.	Need for fostering community participation in rural transport planning to ensure that services address local needs effectively.
19	Public Transport	Quality, Reliability, and Coverage	Public transport systems often face challenges related to service quality, reliability, and comprehensive coverage, particularly affecting underserved areas.	Need for implementing urban development controls and green space protection measures to preserve environmental sustainability.
20	Public Transport	Affordability and Inclusivity	The cost of public transport can be a significant barrier for low-income populations, and services may not be fully inclusive of all community members, including those with disabilities.	Need for promoting urban greening initiatives and implementing controlled development practices to protect natural assets.
21	Public Transport	Sustainability and Environmental Impact	Public transport's contribution to environmental sustainability is often limited by reliance on fossil fuels and inadequate promotion of green transport modes.	Need for establishing new transport linkages and upgrading existing infrastructure to support future growth.
22	Public Transport	Stakeholder Engagement and Innovation	Lack of stakeholder engagement in public transport planning and service delivery can result in services that do not fully meet user needs. Additionally, there is often a slow adoption of technological innovations that could enhance service efficiency and user experience.	Need for strategic investment in critical infrastructure that aligns with long-term spatial and economic development objectives.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
23	Non-motorised Transport	Infrastructure and Safety	Lack of safe, dedicated infrastructure for walking and cycling, leading to safety risks and discouraging non-motorised transport use.	Need for developing alternative emergency access routes and integrating disaster risk management into all transport planning processes.
24	Non-motorised Transport	Integration and Accessibility	Poor integration of non-motorised transport with public transport systems and limited accessibility for all community members.	Need for upgrading and maintaining transport infrastructure to improve service quality and safety.
25	Non-motorised Transport	Promotion and Awareness	Insufficient promotion of non-motorised transport benefits and lack of public awareness regarding safety and best practices.	Need for implementing road safety improvements, including upgrading infrastructure and enforcing traffic regulations.
26	Non-motorised Transport	Policy Support and Investment	Lack of policy support and investment in non-motorised transport infrastructure and initiatives.	Need for designated freight routes to reduce congestion and improve safety in residential and commercial zones.
27	Learner Transport	Safety, Reliability, and Accessibility	Learner transport services often face issues with safety, reliability, and lack of accessibility, especially in rural or underserved areas.	Need for installing weighbridges and enforcing regulations to control overloading of freight vehicles.
28	Learner Transport	Affordability and Inclusivity	The cost of learner transport can be prohibitive for many families, and services may not cater to the needs of all learners, including those with disabilities.	Need for expanding and enhancing public transport services, ensuring accessibility for all residents, including those in underserved areas.
29	Learner Transport	Integration with Local Transport Policies	Learner transport services are often developed in isolation from broader local transport and urban planning initiatives.	Need for replacing or upgrading aging public transport vehicles to improve safety and reliability.
30	Learner Transport	Environmental Sustainability	Learner transport contributes to traffic congestion and environmental pollution, with limited use of clean transport options.	Need for re-establishing and expanding tourism rail services to connect key tourist destinations.
31	Freight Transport	Efficiency and Integration	Freight transport operations often suffer from inefficiencies due to inadequate infrastructure, lack of coordination among different transport modes, and outdated logistics practices.	Need for integrating data analytics and smart technologies into transport systems to enhance operational efficiency and decision-making.
32	Freight Transport	Environmental Sustainability	The freight sector significantly contributes to environmental pollution and greenhouse gas emissions, with limited adoption of green transport solutions.	Need for congestion management strategies, including infrastructure upgrades and smart traffic management systems.


No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
33	Freight Transport	Safety and Security	Safety and security concerns in freight transport, including accidents and theft, pose significant risks to operators and supply chains.	Need for consolidating public transport data with other transport models to inform comprehensive planning and service delivery.
34	Freight Transport	Regulatory Compliance and Innovation	Navigating regulatory compliance is challenging for freight operators, and there is often resistance to adopting innovative practices and technologies.	Need for improving rural-urban transport linkages to enhance access to services, markets, and employment opportunities.
35	Transport Infrastructure	Modernisation, Expansion, and Resilience	Aging and inadequate transport infrastructure struggles to meet current demands and is vulnerable to climate change impacts.	Need for establishing strict guidelines and controls for the safe transportation of hazardous goods within the municipality.
36	Transport Infrastructure	Accessibility and Multimodal Integration	Lack of accessible transport options and poor integration between different transport modes restrict seamless mobility for all community members.	Need for improving the availability and accessibility of public transport services to meet the needs of the population.
37	Transport Infrastructure	Sustainable and Smart Infrastructure	Transport infrastructure development often does not fully embrace sustainability or the potential of smart technology to improve efficiency and user experience.	Need for upgrading and expanding transport infrastructure to ensure accessibility for persons with disabilities.
38	Transport Infrastructure	Funding, Maintenance, and Lifecycle Management	Insufficient funding for infrastructure projects and maintenance leads to deterioration of assets and reduced service quality over time.	Need for improving and expanding cargo infrastructure to enhance freight operations.
39	Transport Safety and Security	Comprehensive Safety Measures and Security Protocols	Transport systems face varied safety and security challenges, including road safety issues, vulnerability to security threats, and safety concerns within public transport.	Need for formalising taxi operations and enforcing licensing requirements to ensure service quality and safety.
40	Transport Safety and Security	Emergency Preparedness and Response	Lack of preparedness for emergencies and security incidents within the transport sector can lead to significant impacts on safety, operations, and public confidence.	Need for re-establishing commuter rail services to connect George with the larger rail network and enhance mobility options.
41	Transport Safety and Security	Technology and Data-Driven Approaches	Underutilisation of technology and data analytics in enhancing transport safety and security, limiting the ability to predict, prevent, and respond to safety and security issues.	Need for promoting and investing in environmentally friendly transport options to reduce emissions and improve sustainability.


No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
42	Transport Safety and Security	Stakeholder Engagement and Public Awareness	Limited engagement with stakeholders and the general public on transport safety and security issues, reducing effectiveness of safety initiatives and security awareness.	Need for the provision of rural transport services, such as demand-responsive transport, to connect rural residents to urban services and markets.
43	Institutional Management	Capacity Building and Governance	Transport institutions often face challenges in governance and lack the capacity to effectively manage and innovate within transport systems.	Need for aligning transport planning with land use to support sustainable urban development and efficient resource utilisation.
44	Institutional Management	Policy Development and Regulatory Frameworks	Existing policy and regulatory frameworks are sometimes outdated, inflexible, and not conducive to promoting efficient, safe, and sustainable transport systems.	Need for cost management strategies and streamlined approval processes to facilitate road infrastructure development.
45	Institutional Management	Stakeholder Collaboration and Public Engagement	Limited engagement of stakeholders, including the public, private sector, and non-governmental organisations, in transport planning and decision-making processes.	Need for developing traffic calming policies that balance pedestrian safety with emergency service access.
46	Institutional Management	Adaptation to Technological Change	Transport institutions are often slow to adapt to technological changes and leverage digital transformation opportunities.	Need for regular maintenance and upgrading of rural roads to improve travel safety and efficiency.
47	Funding	Sustainable Financing and Investment Strategies	Transport sector funding is often constrained, leading to insufficient investment in infrastructure, maintenance, and innovation.	Need for encouraging the use of rail freight to reduce the burden on road networks and lower environmental impacts.
48	Funding	Equitable and Efficient Allocation	Funding allocation does not always address the most critical needs or promote equitable access to transport services across different regions and communities.	Need for improving integration between public transport and non-motorised transport options, such as cycling and walking.
49	Funding	Financial Management and Accountability	Inefficient financial management and lack of accountability can lead to wastage and undermine public confidence in transport investments.	Need for implementing multilingual transport information systems and signage to enhance accessibility for all residents and visitors.
50	Funding	Funding for Innovation and Sustainability Initiatives	Limited dedicated funding for research, innovation, and sustainability initiatives within the transport sector.	Need for adopting sustainable waste management practices in transport infrastructure projects to minimise environmental impact.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs
51	Cross-cutting	Emerging Technologies and Innovation	The transport sector's slow adoption of emerging technologies and innovations limits its ability to improve efficiency, sustainability, and user experience.	Need for improving the reliability and frequency of public transport services to encourage use and reduce traffic congestion.
52	Cross-cutting	Social Equity and Inclusion	Transport systems often fail to adequately consider social equity and inclusion, impacting accessibility and mobility for vulnerable and marginalised communities.	Need for developing formal, integrated public transport facilities that cater to multiple transport modes and improve user experience.
53	Cross-cutting	Health and Well-being	Insufficient integration of health and well-being considerations into transport planning and operations can contribute to negative health outcomes.	Need for exploring the development of air cargo services to support economic growth and reduce reliance on road transport.
54	Cross-cutting	Digitalisation	The transport sector (all transport modes included is largely un-digitalised, and thereby missing out on opportunities to increase efficiencies, reduce costs and optimise the transport system. GO GEORGE has been doing well in this area.	Need for creating a centralised data platform to ensure consistency and support integrated land use and transport planning.

Table 4-12: Potential future consolidated High-level Needs for CITP that are not yet applicable, based on the Transport Register Needs, Land Use Needs, Stakeholder Engagement Needs, and using the Lens of Access, Accessibility and Mobility categorised according to the 13 NLTSF Focus Areas.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs to be Addressed
1	Cross-border Transport	Infrastructure and Operational Efficiency	Cross-border transport infrastructure is often inadequate, leading to congestion and delays. Operational inefficiencies further exacerbate these issues.	Upgrade and expand cross-border transport infrastructure to facilitate smoother flow of goods and people. Streamline operations through enhanced coordination and the use of technology for faster processing at borders.
2	Cross-border Transport	Regulatory Harmonisation and Security	Varied regulatory standards and security requirements across borders complicate transport operations and impact efficiency.	Work towards regulatory harmonisation and mutual recognition of security standards to simplify cross-border transport. Implement advanced security measures that do not impede the flow of trade and travel.

No	NLTSF Focus Area	Topic	Issue/Concerns	Needs to be Addressed
3	Cross-border Transport	Sustainability and Environmental Protection	Cross-border transport contributes significantly to environmental pollution and often lacks a coordinated approach to sustainability.	Promote sustainable cross-border transport practices, including the use of cleaner vehicle technologies and the development of green corridors. Encourage collaborative efforts to mitigate environmental impacts.
4	Cross-border Transport	Collaboration and Capacity Building	Limited collaboration between neighbouring countries on cross-border transport initiatives and capacity building.	Enhance collaboration between countries on cross-border transport projects and policies. Support capacity building for border and customs officials to improve efficiency and service quality.

The Needs Assessment Analysis in the context of the Comprehensive Integrated Transport Plan (CITP) for George Municipality offers a strategic consolidation of identified transport needs across various domains, ensuring alignment with the National Land Transport Strategic Framework (NLTSF) and addressing emerging trends and future considerations. This assessment crucially integrates the insights from diverse sources, encapsulating overarching themes of sustainability, inclusivity, and technological advancement. Here's a distilled insight summary from the presented tables:

4.8.1 Holistic and Integrated Planning

There is a clear imperative for a more cohesive approach that bridges land use and transport planning. This involves a multidimensional strategy encompassing sustainability, resilience to change, accessibility, and social equity. The emphasis is on establishing dynamic planning frameworks that are responsive to environmental concerns, community needs, and future growth dynamics.

4.8.2 Data-Driven Decision-Making

Enhanced data collection and analysis are pivotal. Utilising advanced methodologies and technology will underpin evidence-based planning, ensuring that decisions are informed by robust, comprehensive data sets. This approach extends to integrating stakeholder feedback more systematically into planning processes, ensuring transport systems are reflective of and responsive to community needs and preferences.

4.8.3 Technological Integration and Smart City Alignment

Advancing CITP's alignment with smart city principles is essential. This involves leveraging data analytics, IoT, and smart technologies to improve transport efficiency, sustainability, and urban liveability. Encouraging innovation and ensuring transport systems are adaptable to rapid technological and societal shifts will be key in maintaining their relevance and effectiveness.


4.8.4 Universal Accessibility and Equity

Transport systems should be designed and operated with a strong focus on accessibility and inclusivity, ensuring that all community members, regardless of their physical abilities or socio-economic status, have equitable access to mobility options. This includes enhancing rural transport connectivity, improving the accessibility of public transport, and integrating non-motorised transport more effectively into the urban fabric.

4.8.5 Public Transport and Infrastructure Enhancement

Upgrading public transport quality, reliability, and coverage is fundamental to meeting current and future mobility needs. This entails modernising infrastructure, expanding service networks, and integrating sustainable practices to mitigate environmental impacts. Engaging stakeholders in public transport planning and embracing technological innovation can significantly elevate service quality and user satisfaction.

4.8.6 Future-focused and Adaptive Strategies

Recognising the potential shifts, especially related to cross-border transport and international connectivity, future planning should incorporate flexibility to adapt to evolving global trade dynamics, potential expansions in airport and port facilities, and the broader implications of international tourism and commerce.

4.8.7 Cross-cutting Themes

Addressing cross-cutting issues like emerging technologies, social equity, health, and well-being, alongside digitalisation, underscores the necessity of a comprehensive, forward-looking approach that integrates these dimensions into the core of transport planning and operations.

The integration of these insights into the CITP will facilitate a transport ecosystem that is not only functional and efficient but also sustainable, inclusive, and prepared to embrace the challenges and opportunities of the future. Ensuring that these high-level needs are addressed in a coordinated, strategic manner will be crucial for the CITP's success in fostering an accessible, resilient, and dynamic transport environment in George Municipality.

4.9 Main Needs and Issues for the CITP

Current Transport Infrastructure and Capacity:

- Urban Congestion: The CBD and key transport corridors are frequently congested, with significant delays caused by overcapacity and inefficient infrastructure.
- Roads and Public Transport: Aging infrastructure, including roads and the public transport fleet. There are concerns over the inability of the current infrastructure to accommodate growing demands. Inadequate integration between different modes of transport also contributes to inefficiency and poor user experience.
- Heavy Goods Vehicles: The industrial zones located within residential areas force heavy vehicles to traverse narrow city roads, causing damage to infrastructure and posing safety risks.


Population Growth and Demographics:

- Urban and Rural Needs: George Municipality must account for both urban intensification and rural mobility needs. There is a pronounced need for tailored solutions that improve rural accessibility, including better road maintenance and the provision of non-motorised transport options.

Key Transport Needs:

- Strategic Planning: Emphasis is placed on the need for holistic, integrated planning that ties transport development to spatial development frameworks (SDF) and land-use planning.
- Non-Motorised Transport (NMT): The assessment acknowledges the necessity of improving NMT infrastructure to reduce congestion and promote environmental sustainability.

Public Transport Needs:

- Fleet and Service Quality: There is a need for the modernisation of the public transport fleet and the improvement of service reliability, frequency, and coverage, particularly in under-served areas.
- Coverage and Service Quality: There are gaps in public transport coverage, particularly in rural areas and low-income urban neighbourhoods. Improving safety and ensuring reliability are also flagged as top priorities.
- Regulatory Compliance: Current gaps in regulatory enforcement, such as the lack of proper licensing.

Non-Motorised Transport (NMT) Requirements:

- Pedestrian and Cyclist Infrastructure: Safety concerns for pedestrians and cyclists are high on the agenda. The assessment identifies the need for dedicated NMT lanes that connect with public transport hubs.

Freight and Logistics Needs:

- Freight Corridors: The integration of logistics with city planning is critical. There are calls for dedicated freight corridors that divert heavy vehicle traffic away from densely populated urban areas.
- Overload control: Lack of weighbridge installations for freight overload control must be addressed.

Stakeholder and Public Consultation:

- Engagement Mechanisms: The transport planning process must include broad-based stakeholder engagement to capture community needs and preferences, especially concerning alternative transport routes and safety improvements.

Funding and Resources:

- Sustainable Funding: There are challenges in securing sustainable funding for infrastructure upgrades and maintenance. The need for long-term financial strategies to support ongoing projects is a pressing issue.

5 PRINCIPLES FOR USING THE TRANSPORT MODEL AS A TOOL IN THE CITP

5.1 Key Aspects

- Provides the purpose of the Transport Modelling Strategy document.
- Highlights the Objectives and the Approach of the Transport Model.
- The various applications of the Transport Model for George Municipality in terms of integrated transport planning.
- Indicated the benefits of using a transport model in a CITP.

5.2 Introduction

The George CITP Transport Model, developed as part of the broader CITP according to the scope of works, is designed to enhance transportation planning and policymaking within the George Municipality. The transport model is a dynamic, innovative tool that enables the examination of current and future transportation demands and patterns, facilitating informed decisions regarding infrastructure development and transportation system improvements. The model integrates land use data that generates demand with the transportation network that provides the supply. The model the capability to test various demand scenarios on different supply scenarios.

A Transport Modelling Strategy report, as shown in **Figure 1-3**, was written as a separate stand-alone document that accompanies the George CITP Transport Model outlining four main sections. These sections comprise the Objective and Approach, Demand Model, Supply Model and Quality Assessment Framework, Forecasting and Scenarios.

The Objective and Approach section details the model's goals, and the methodology employed to achieve accurate and reliable modelling outcomes. It underscores the systematic approach adopted in capturing both current and projected future travel demands, incorporating a wide array of data and employing advanced modelling techniques.

The Demand Model section focuses on the demand side of the transport equation, this section elucidates the methods used to estimate travel demand. It outlines how various factors, including population growth, socio-economic data, and land use patterns, are

analysed to forecast travel needs and preferences within the George area.

The Supply Model section, the counterpart to the demand model, describes the development of the supply side model, encompassing private, public, and non-motorised transport networks. It provides insights into how road infrastructure, public transport services, and facilities for non-motorised transport are represented and validated within the model.

The Quality Assessment Framework section presents the mechanisms and methodologies employed to ensure the model's accuracy and reliability. It highlights the validation and calibration processes undertaken to compare modelled outcomes with observed data, ensuring the model accurately reflects real-world transportation patterns and can be trusted for future planning purposes.

The Forecasting section describes the process of demand forecasting based on the new land use development and general background traffic growth. Additionally, it describes the supply forecasting in terms of new road projects and additional public transport lines.

The last sections summarises the Scenarios where various combinations of the demand and supply models were applied and assigned. All the Transport Model outputs associated with this CITP is attached as **Annexure C**.

5.3 Purpose of the Transport Modelling Strategy Document

The purpose of this document is to articulate the comprehensive development and application of the George CITP Transport Model within the broader framework of the Comprehensive Integrated Transport Plan (CITP). This model stands as a vital instrument for enhancing transportation planning and decision-making across the George Municipality, offering a meticulous examination of current and future transportation demands and infrastructure capacities.

As an integral component of the CITP documentation suite, this model underpins the strategic assessment and forward-looking planning of George's transport system. It facilitates informed decisions on infrastructure development, service enhancements, and policy interventions aimed at optimising the efficiency, sustainability, and accessibility of the transport network.

The document delineates the structured methodologies adopted in constructing the transport model, encompassing objective setting, demand and supply analysis, and a rigorous quality assessment framework. By elucidating the model's development across distinct sections—Objective and Approach, Demand Model, Supply Model, and Quality Assessment Framework—it provides stakeholders with a clear understanding of the model's foundation, objectives, and operational mechanisms.

Crucially, the transport model's role extends beyond mere analytical assessment; it is envisioned as a live, evolving tool that will continuously inform and align with the George CITP. It aims to anticipate and adapt to future mobility trends, infrastructure developments, and policy shifts, ensuring the transport system's


responsiveness to the evolving needs of the municipality and its inhabitants.

Incorporating the transport model within the CITP documentation suite empowers the municipality with a robust, data-driven foundation for strategic transport planning and investment. It exemplifies a commitment to evidence-based policymaking, ensuring that transportation initiatives are not only well-informed and strategic but also aligned with the broader goals of sustainability, inclusivity, and integrated urban development.

5.4 Transport Modelling Approach and Objectives

The principal aim of the transport modelling exercise for George was to develop a mesoscopic travel demand model. This model illustrates both current travel patterns and future demands, incorporating projections for new developments and Spatial Development Frameworks (SDFs). Achieving this required the assembly of a strategic and mesoscopic model in PTV Visum, focusing on intricate traffic dynamics including junction coding, lane configurations, and a refined demand model.

The modelling process was comprehensive, beginning with an in-depth analysis of current and future travel demands, integrating population growth, economic development, and infrastructural improvements. This laid the foundation for the strategic and mesoscopic models' development, followed by rigorous testing and validation to ensure precision, reliability, and their utility in informing future travel demand patterns.

This approach underlined a meticulous effort to balance accuracy with practical applicability, leveraging existing data, focusing on peak travel times, and applying advanced modelling techniques to predict the impacts of future projects and SDFs on George's transport network.

5.5 Use of the Transport Model for George CITP

All current information obtained was used as input to develop a Base (Status Quo) model. The base model was then built upon to create the future scenarios by incorporating the following elements:

- Demand forecasting (Need for Transport)
  - Background traffic growth
  - Future demand projects where new land use developments are proposed and according to the Spatial Development Framework (SDF)
  - Population growth based on Integrated Zoning Scheme (IZS), the National Household Surveys.
  - Growth rate for Heavy vehicles.
- Supply forecasting (Provision of Infrastructure and Transport Services)
  - All future Master Plan Road Links in forecast scenarios for
    - 5 -10 years
    - 20 years; and
    - Beyond 20 years
  - Future Public Transport Routes
    - Future GO GEORGE Phases
    - New PT line and line routes to serve the Master Plan Roads.


- Analysis and Outputs
    - Testing of different Private and Public Transport assignments.
    - Generate graphic outputs for all Scenarios that are summarised in **Table 5-1** (see **Annexure C** attached for examples).
- Model Maintenance (Updating with new information)
    - The model should be updated continually with new land use approvals, transport impact assessment information, new network links, new PuT services, etc. which by default would serve as a model maintenance process.
    - However, the model should be maintained annually to ensure its relevance and ability to properly inform on developments (land use), public transport, freight and road upgrade impacts. It is helpful to update the model to a specific annual date with all changes applicable up to that date. This provides a clear indication of what the status of the model is and a starting point (new base model) for new information.
    - The maintenance for the future scenarios can coincide with the every 5 year CITP update cycle.

Figure 5-1 (PrT and PuT growth and effects), **Figure 5-2** (Volume to capacity ratio effects for different scenarios) and **Figure 5-3** (Operating to posted speed ratio effects for different scenarios) are examples of how the model can be used. The effects of different growth scenarios can be observed, as well as the effects of different interventions. This is a process that can iteratively be repeated to test the network effects of land-use changes, development uptakes, additional PuT services, adding new links, or upgrading some roads, and thereby promote data-driven decision making, as alluded to in **Chapter 1**.

Table 5-1: Model Outputs

No.	Mode	Description	Analysis period
1	PuT & PrT	Volumes	AM PH
2	PrT	Volumes (AM Peak Hour)	AM PH
3	PuT	Passenger Volumes	AM PH
4	PrT	PrT - Volumes Classified	AM PH
5	PuT	GO GEORGE & Minibus Taxi - Passenger Volumes	AM PP
6	PuT	Minibus Taxi - Passenger Volumes	AM PP
7	PuT	GO GEORGE - Passenger Volumes	AM PP
8	PuT	Taxi Vehicle Journeys	AM PP
8	PuT	GO GEORGE Vehicle Journeys	AM PP
9	PrT	Vehicle Capacity on Link Level	AM PH
10	PrT	Heavy vehicle Volumes	AM PH
11	PrT	Heavy vehicle - Percentages HGV on Links	AM PP
12	PrT	Volume to Capacity Ratio	AM PH
13	NMT	Non-Motorised Transport - Volumes	AM PH
14	PrT	Operating to Posted Speed Ratio	AM PH

Notes:
AM PH – AM Peak Hour
AM PP – AM Peak Period (06:00 – 08:00)

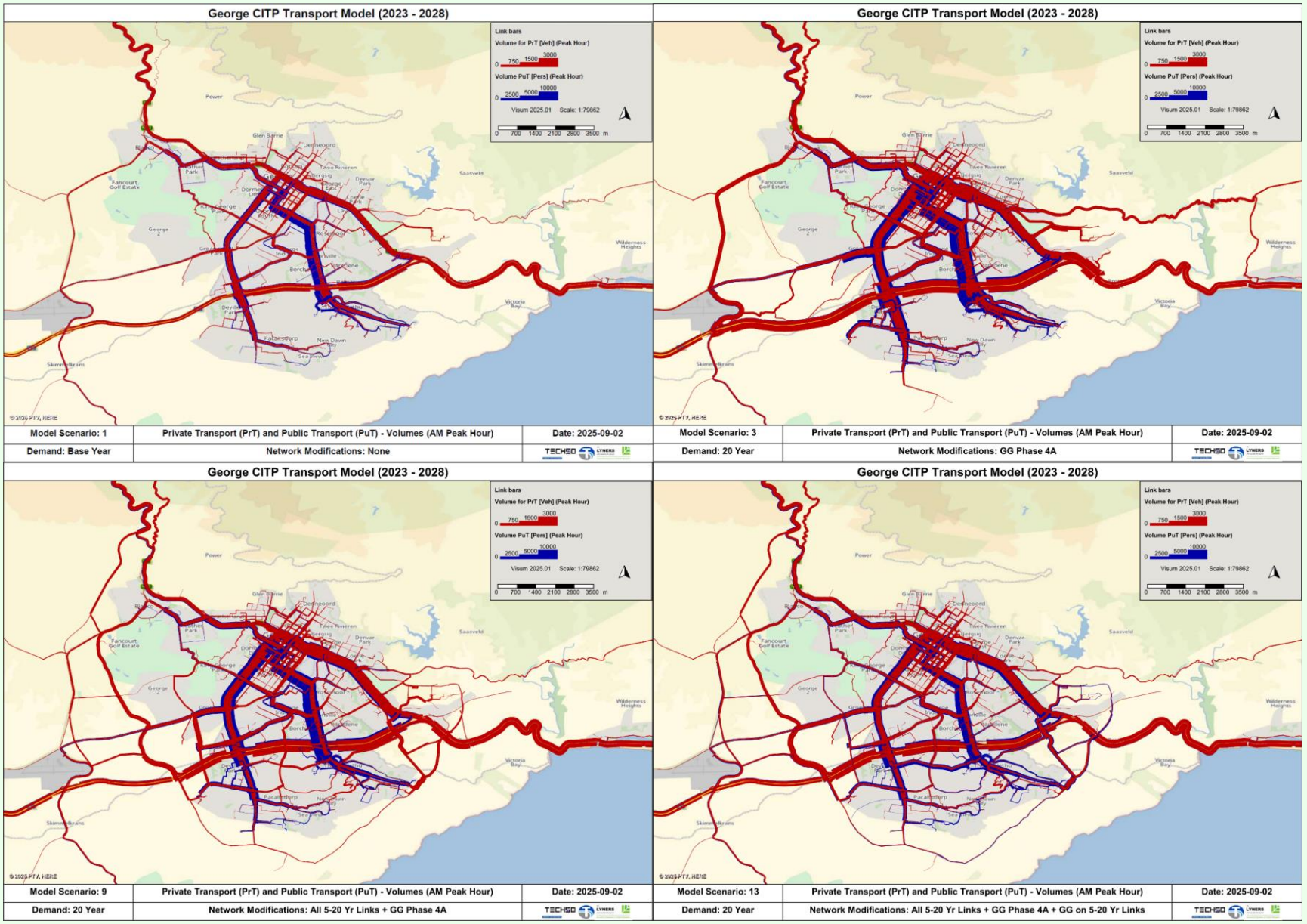


Figure 5-1: Private and Public transport Volumes (AM Peak hour) Model output examples.

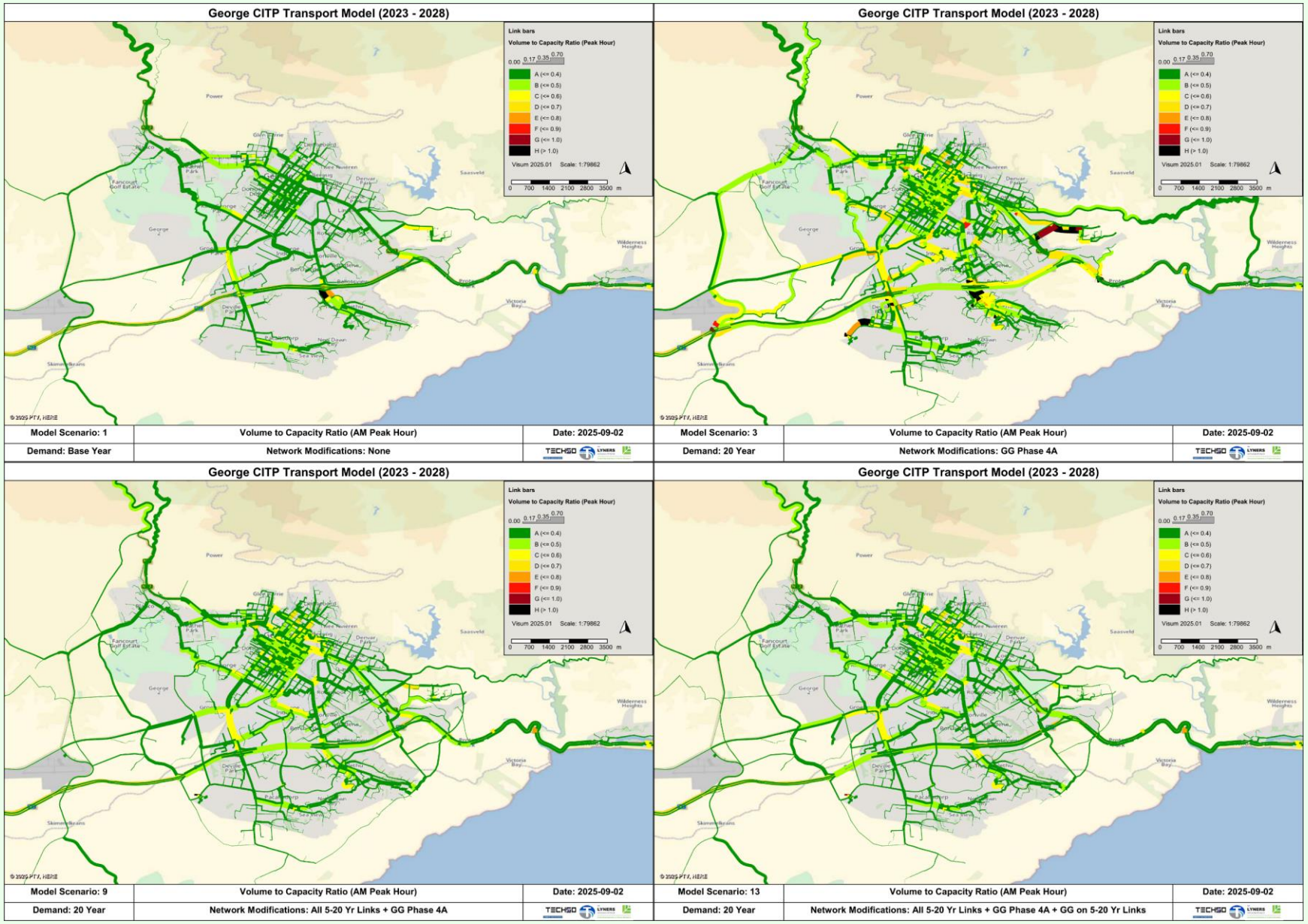


Figure 5-2: Volume to Capacity Ratio (AM Peak hour) Model output examples.

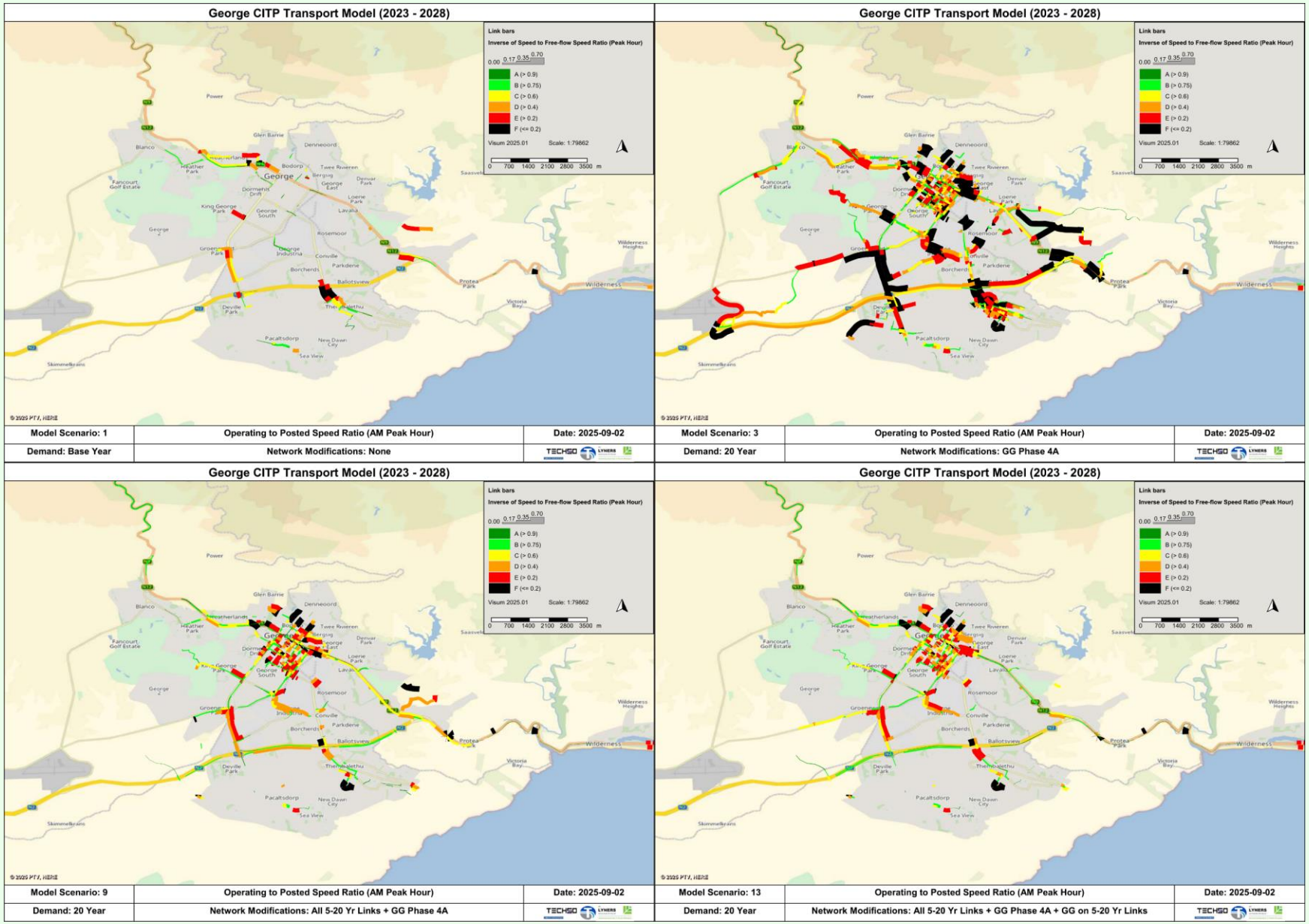


Figure 5-3: Operating to posted Speed Ratio (AM Peak hour) Model output examples'

5.6 Benefits of using Transport Model in a CITP

Some of the benefits using a Transport model in a CITP are listed below:

- One database for all data
- The model can be updated yearly by adding the projects that were implemented since the last update (demand and supply projects).
- Future growth in land use can be tested by means of adding demand modifications to the model.
- Future road projects and PT lines can be tested by adding supply modifications to the model.
- If rail becomes feasible, the rail can be activated within the model.
- More than one Traffic Impact Assessment (TIA) can be tested simultaneously to test the impact thereof.
- Lack of supply provision can easily be identified with the model and guide the process of addressing the problem.
- Generation of sub models to assign smaller areas for more detailed analysis.

Integration of a Transport model into the CITP facilitate strategic planning efforts, guiding investments in infrastructure and services to meet current and future transportation needs. By offering a window into the potential outcomes of various planning scenarios, the model supports the municipality's goal of creating a more efficient, sustainable, and accessible transportation system for all residents and visitors of George.

5.7 Summary

The transport model serves as a foundational pillar of the Comprehensive Integrated Transport Plan for George. It provides a critical tool for decision-makers, enabling them to:

- Assess the impact of planned infrastructure developments and policy changes on travel patterns and network performance.
- Identify congestion hotspots and areas in need of transportation enhancements.
- Explore the implications of different land use scenarios on travel demand and transport network loads, including freight vehicle response to the Roads Master Plan.
- Evaluate the effectiveness of proposed public transport improvements and non-motorised transport initiatives.

The model's integration into the CITP has already facilitated strategic planning efforts, guiding investments in infrastructure and services to meet current and future transportation needs. By offering a window into the potential outcomes of various planning scenarios, the model supports the municipality's goal of creating a more efficient, sustainable, and accessible transportation system for all residents and visitors of George.

In essence, the transport model not only illuminates the path to a better-connected George but also serves as a dynamic tool for continuous improvement and adaptation in the face of evolving transportation landscapes, whereby transportation planning and land use integration may be realised.

5.8 Key Benefits of the Transport Model

- The model's integration into the CITP has already facilitated strategic planning efforts.
- The model supports the municipality's goal of creating a more efficient, sustainable, and accessible transportation system for all residents and visitors of George.
- The model serves as a dynamic tool for continuous improvement whereby transportation planning and land use integration may be realised.
- The model serves facilitates the integration of land use and transport planning and measures the combined network effects of new road links, land use development applications, added PuT services, the impact of modal shift strategies.
- The model is also a tool to measure emissions for various scenarios which aids in sustainability planning.
- Lastly, the model serves as a tool to foster inter-departmental engagements and planning by synchronising departmental specific objectives with alignment of the vision of the IDP, MSDF and CITP.

6 PUBLIC TRANSPORT PLAN

6.1 Key Aspects

This section provides a concise overview of the core elements of George Municipality's Public Transport Plan (PTP).

- The strategies and plans in this chapter aim to comprehensively address:
  - Integrated Transport Strategy.
  - Learner Transport Strategy.
  - Transport Strategy for Special Needs Passengers.
  - Metered Taxi Strategy.
  - Cross-Border Transport Strategy.
  - Public Transport Fare System.
  - Initiatives to Enhance Public Transport Utilisation.
  - Operating License Strategy.
  - Rationalisation Plan.

- The George Integrated Public Transport Network (GIPTN) forms a key component of the George Comprehensive Integrated Transport Plan and service.
- Description of the current initiatives.
- There are individual initiatives to improve the quality of infrastructure and operations of PuT, but there is no cohesive PTP.
- More GO GEORGE Phases are being rolled out and further Phases planned.
- Funds are allocated for capital and operational expenditure within the Public Transport (PuT) environment.
- Focus should be on development and integration on PuT services.
- Evaluating and refining fare systems to ensure PuT remains affordable and consider integrations are fare systems over different PuT services.
- Advocate the use of PuT to surpass Private Transport (PrT) preference
- Improve transport provisions for learners and disabled users (Universal Accessibility (UA) improvements included).

6.2 Introduction

This chapter presents the Public Transport Plan tailored for George Municipality, guided by the National Land Transport Strategic Framework (NLTSF). The plan targets enhancing public transport service development and integration, focusing on improving


accessibility, affordability, and convenience. It champions a shift from private vehicle reliance to public transport usage, embracing a sustainable and inclusive approach that meets the varied transportation needs of the community, including those of learners and persons with disabilities.

The plan encapsulates a range of strategic components: the Integrated Transport Strategy, Learner Transport Strategy, Transport Strategy for Special Needs Passengers, Metered Taxi Strategy, Cross-Border Transport Strategy, and the Public Transport Fare System.

As the Public Transport Plan lays the foundation for a comprehensive and integrated approach to enhancing George Municipality's mobility landscape, it is essential to understand the guiding principles and legislative mandates that shape its strategies. The following sections delve into the rationale behind the plan's development, highlighting the critical role of rationalisation in aligning public transport services with the National Land Transport Strategic Framework (NLTSF) and ensuring a balanced, efficient, and sustainable transport system.

6.2.1 Rationalisation for a Public Transport Plan

The **National Land Transport Strategic Framework (NLTSF) (2023 - 2028)** published in March 2023 and based on the **National Land Transport Act, 2009, NLTA, (Act, No.5 of 2009)**, section 34 states that Municipalities are mandated to include Rationalisation Plans in their Integrated Transport Planning (ITP):

> *"Municipalities are mandated to prepare Public Transport Plans (PTPs) to **address rationalisation of public transport services** and Operating Licence Strategies (OLS) incorporating potential new routes. The Municipality could then provide a municipal public transport service or outsource the service to an approved operator, restricting the number of routes according to the Operating Licence Strategy, thereby preventing oversupply of services, and potential violence and fatalities. All new contracted public transport services will be a function of municipalities, and provinces if need be will enter into contracts with municipalities to perform such services on behalf of municipalities."*
>
> *One of the Key Performance Areas of the Land Use and Transport Planning is to:*
>
> *"prepare and/or update Comprehensive, District, and Local Municipal ITPs incorporating Public Transport Plans comprising of IPTN, **Rationalisation plan**, Operating Licence Strategy and any Land Use Plans;"*
>
> *One of the objectives of an Urban transport and Smart City is to promote the development of an urban land use restructuring programme as part of the Urban Renewal Strategy.*
>
> *"The transport sector in government will support and make inputs to the Urban Renewal Strategy by means of a three-pronged urban restructuring initiative aimed at*
>
> *(a) urban corridor development,*
>
> *(b) densification and infilling, and*
>
> *(c) **rationalisation of transport** and housing strategies."*
>
> *Implementation of Universal Accessibility has similar objectives as the Smart City.*


One condition of the Public Transport Operational Grant is that designs and business plans for subsidised services must be approved by the Public Transport Integration Committee (PTIC), which includes representatives from the three spheres of government. This approval process is to ensure that the plans align with IPTNs. A more rigorous review process should be established to assess the feasibility of project applications throughout their life-cycle. One of the applications listed NLTSF is the rationalisation of all public transport operations.

The above mandate serves as guiding input for the development of the Public Transport Plan and the Rationalisation Strategy.

6.2.2 Purpose Statement

Prior to this CITP, George Municipality did not have a clear plan for Public Transport. The aim of this Public Transport Plan is to provide a definitive, action-oriented framework that uplifts George Municipality's public transport services, ensuring they are secure, reliable, affordable, and accessible for all. As an integral element of the George CITP, this plan serves as a strategic guide to foster the development, integration, and enhancement of public transport, in sync with the NLTSF's directives.

Key Objectives include:

- Promoting the integration of diverse public transport modes to ensure smooth and cohesive user experiences.
- Crafting fair fare systems to make public transport more appealing and affordable.
- Enacting specific strategies to boost public transport use and diminish private vehicle dependence.
- Catering to the unique transportation requirements of learners and persons with disabilities, endorsing inclusivity and accessibility.
- Encouraging the rationalisation and optimisation of transport services to increase their efficiency and impact.

The George Integrated Public Transport Network (GIPTN), with GO GEORGE serving as the core component for the George Mobility Strategy. A fundamental aspect of this strategy is the recognition of the need for scheduled public transport to meet the growing mobility demands of the area. The National Land Transport Act 2009, NLTA, (Act, No.5 of 2009) clearly differentiates between scheduled and unscheduled public transport services. By placing GO GEORGE at the forefront, George Municipality is reinforcing its commitment to establishing a reliable and structured public transport system. This scheduled service provides predictable, consistent, and accessible transport options, effectively addressing the broader goals of the Mobility Strategy and ensuring that public transport in George is future-proof and aligned with the requirements of modern urban planning.

GO GEORGE aims to achieve this by focusing on the following key areas:

- Economic prosperity
- Environmental consciousness
- Efficient design
- Good governance
- Institutional knowledge and capacity
- Transformed industry

Therefore, this Public Transport Plan is vital for shaping George's future mobility landscape, underpinning the municipality's aspiration for a connected, sustainable, and inclusive environment. It demonstrates a commitment to improving community life through enhanced transport services that comply with national standards and respond to local needs.

Additionally, this plan emphasises:

- Fostering the development and integration of public transport services.
- Evaluating and refining fare systems to ensure public transport remains affordable.
- Advocating for public transport to surpass private transport preferences.
- Focusing on the transportation requisites of learners and those with disabilities.

The strategies and plans in this chapter aim to comprehensively address:

- Integrated Transport Strategy.
- Learner Transport Strategy.
- Transport Strategy for Special Needs Passengers.
- Metered Taxi Strategy.
- Cross-Border Transport Strategy.
- Public Transport Fare System.
- Initiatives to Enhance Public Transport Utilisation.
- Operating License Strategy.
- Rationalisation Plan.

6.3 Context

6.3.1 Current initiatives in George to improve Public Transport

The following initiatives are being undertaken that aim to improve the planning, development, and implementation of public transport service in the George Municipality:

- GO GEORGE Phase 1, 2, 3 and Phase 4B, and two routes (18A and 18B) of Phase 4A are currently operational.
- The remaining routes of Phase 4A will be rolled out in 2024 and entails a CBD service, a Garden Route Mall service, an industrial service and community services.
- GO GEORGE Phase 5 lines are planned to expand from George CBD to Wilderness, Victoria Bay. Touwsranten, Hoekwil and Kleinkrantz are planned to be rolled out in 2025/26.
- GO GEORGE Phase 6 lines expanding to Herolds Bay, Oubaai, George Airport, as well as Nelson Mandela University towards Saasveld Campus and connect them with George CBD are planned to be rolled out in 2025/26.
- Improve the quality of infrastructure and operating conditions of existing Public Transport Facilities i.e. Taxi Ranks.
- A tender for the planning, design, and construction monitoring for a permanent bus depot for the GO GEORGE bus service was advertised in December 2022. The permanent depot is to replace the temporary depot currently in use situated on Erf 3472 in York Street, George
- Funds are allocated for capital and operational expenditure within the public Transport environment:
    - Capital expenditure includes:

- Computer equipment
- Furniture and fittings
- Office equipment
- Information Technology Hardware (Connectivity)
- Electrical Back-ups
- Infrastructure

  - Operational expenditure includes:

    - Employee related costs
    - Overhead costs
    - Planning costs
    - Regulation

- Appoint dedicated resource/s to focus on NMT policy, guidelines, standards and NMT Masterplan resulting in a well considered, appropriate NMT network and associated infrastructure in George. Although there are NMT proposals, George Municipality does not have an official NMT plan. In the interim, the following are considered to improve NMT by focusing on and prioritising NMT safety and NMT infrastructure maintenance as below:

  - Safety for Vulnerable (young, elderly) road users.
  - Reduce speed limits.
  - Implement traffic calming.
  - Safety for NMT users.
  - Create safer NMT crossings at road network nodes and on road links.
  - Maintenance of NMT infrastructure
  - Fix broken incorrect NMT infrastructure.
  - Provide Universal Access infrastructure.

- Rationalisation of taxi routes to improve service and avoid competition on roads.
- Improve access to Learner Transport Services by evaluating Operating License (OLS) requirements, specifically for Rural Areas. This also includes utilising the current GO GEORGE bus stops at schools and adding additional routes and stops at schools to improve scheduled services to schools rather than an ad hock WCED Learner Transport (LT) services.
- Investigate the utilisation of Park & Rides at public transport hubs to minimise parking and provide better access to PT.
- Improve Real-Time Traveller information to Commuters and passengers.
- Investigate the potential re-activation of a sustainable rail commuter service between Mossel Bay and George.
- Investigate the commuter rail service in terms of Tourism access in the Garden Route District Municipal Area, specially between Mossel bay, via George, Wilderness to Knysna.

6.4 Transport Vision and Objectives

The vision, goals and objectives encapsulate in essence what the municipality would like to achieve and aspire towards. They identify key areas of service, qualifies service delivery and points to specific outcomes (objectives and goals).

6.4.1 Transport Vision

The proposed **New Transport Vision and Mission Statement** for George the is shown in **Figure 1-15** and could be summarised as follows: To create an integrated, equitable, and sustainable transport ecosystem in George Municipality that enhances mobility and


accessibility, serves as a catalyst for economic development, and uplifts the community.

6.4.2 Public Transport Objectives

The CITP Goals expressed as Broad Targets are:

- A robust Operational Plan
- A transport authority to manage contracts
- A process of business planning and negotiation to include existing operators in the IPTN

To align with the vision of an integrated, accessible, safe, affordable, and sustainable transport system that is well-managed and maintained for all in George, and the mission statement to enhance mobility and accessibility with equitable and sustainable standards, catalysing economic development and community upliftment, the 2040 updated objectives are the following as shown in **Table 1-4.**

A sustainable public transport service is a system which has economic, health, social, safety and financial benefits for the community, the industry and government; while ensuring limited environmental emissions and minimising the impact on the use of land and the generation of noise.

The focus areas of the CITP 2040 objectives are:

1. Integrated accessibility over all modes
2. Affordable and inclusive mobility that accommodates needs over all demographics
3. Health and safety – promote healthier lives by promoting active travel options
4. Sustainable and efficient Infrastructure design
5. Land synergy by integrating lands use planning with transport infrastructure
6. Proactive safety measurements by securing funding to transport projects
7. Strategic planning that prioritising accessibility and shorten travel times
8. Community-centric empowerment by leveraging transport projects to provide empowerment opportunities
9. Environmental consciousness and stewardship
10. NMT Integration
11. Sustainable travel culture
12. Impactful, comprehensive transport planning
13. Residential area design for safety
14. Good governance
15. Institutional knowledge and capacity building

6.5 Transport Strategies

6.5.1 Integrated Transport Strategy

6.5.1.1 Strategic Directives

The 2007 Public Transport Strategy and Action Plan is anchored in two fundamental approaches: Accelerated Modal Upgrading and Integrated Rapid Public Transport Networks. Accelerated Modal Upgrading focuses on the immediate enhancement of bus, taxi, and rail services, targeting improvements in service delivery over the short to medium term. Conversely, Integrated Rapid Public Transport Networks aim at the prompt execution of high-calibre Phase 1


networks, which include Rail Priority Corridors and Bus Rapid Transit Corridors, as outlined in the imminent Action Plan. The Strategy underscores the notion that "Integrated rapid public transport service networks represent the future of mobility, offering the sole sustainable, equitable, and congestion-free transportation solution in thriving urban areas."

The heart of the Strategy lies the concept of multi-modal integration, realised through a network connecting essential rail and road trunk corridors, complemented by additional feeder and distribution routes. The goal of this integration is twofold. Firstly, it seeks to achieve physical integration through a well-coordinated transfer system that promotes high-quality public spaces and ensures straightforward, wheelchair-accessible pedestrian movement across various transport modes and corridors. Secondly, it aims for fare integration by establishing a unified fare system that supports complimentary transfers within this network. This approach is intended to enhance the reachability of multiple destinations at a single, economical network fare, thereby eliminating the need for extra payments when switching modes.

6.5.1.2 Status Quo

There is not currently fare integration between the different transport systems, however the following should be noted regarding integration of systems:

Public Transport Management System:

- GO GEORGE buses are outfitted with Automated Vehicle Location Systems to ensure they adhere to designated routes and schedules.
- Additionally, GO GEORGE employs a comprehensive scheduling system to optimise bus operations and efficiency.

Onboard vehicle control systems

- GO GEORGE buses are equipped with audible signals to indicate door operations.
- Stop buttons are available for passengers to signal the driver when they wish to alight.
- The buses also feature performance indicators that monitor metrics like speeding, harsh braking, acceleration, and emergency call activations.

Automated Fare Collection:

- GO GEORGE buses are equipped with an EMV-compliant AFC system that includes card readers for processing fares.
- The system is complemented by the GO GEORGE Smart Card, an integral component of the AFC network.
- A new Verifone e285 Mobile Point-of-Sale (POS) device has been introduced to facilitate transactions.
- This POS device is equipped with Bluetooth™ and Wi-Fi capabilities, supporting various payment methods, including contactless options for enhanced convenience.

Data Acquisition and Management Systems:

- A dedicated ITS Data Warehouse has been established for GO GEORGE to enhance data management and analytics.


6.5.1.3 Strategy

From the Transport Needs Assessment physical integration of transport options has been highlighted, as well as the need for fare integration between different transport modes.

In terms of overall Transport Strategy, Vision and objectives are shown in **Table 6-1**.

Table 6-1: Strategic Components aligned with the Vision and Objectives of the Transport Strategy.

No.	Strategic Component	Vision and Objectives
1.	**Integrate transport systems (and all its components)**	• Ensuring that local transport options connect and integrated effectively with broader municipality-wide transportation networks. • Identify and develop park-and-ride facilities that support the PuT system and align with Land Use goals (MSDF support). These facilities should be part of a network of integrated PuT hubs. • Improve and integrate the Public Transport system with the Non-Motorised Transport (NMT) network to enhance access, mobility, and accessibility, focusing on safety, security, and universal accessibility. • Integrate land use planning with transport infrastructure development to support the creation of communities where daily needs are within a 30-minute reach on foot or by bike.
2.	**Fare Integration**	Investigate fare integrations between different public transport mode options.
3.	**Technological advancement**	Incorporate and test the equipment of GO GEORGE buses with connected vehicle technologies.
4.	**Inclusive**	Deliver an inclusive transport system that accommodates the needs of all demographics, ensuring that transport for all is not just a concept but a tangible reality.
5.	**Health & Safety**	Promote healthier lives by encouraging active travel options that contribute to well-being and ensure that every journey is underpinned by the highest safety standards to reduce accidents and injuries.
6.	**Efficiency**	Maintain and operate a public transport network and infrastructure that supports the30-Minute Town and 60-Minute City concept, ensuring efficient transit times and high-quality service provision.

6.5.2 Learner Transport Strategy

The phrase "learner transport (LT) service" is defined in Section 72 of the NLTA as the dedicated conveyance of scholars, students, teachers, and lecturers. This service is distinctly designed to address the transport requirements of these groups, distinguishing it clearly from their travel on standard public transport services.


6.5.2.1 Strategic Directives

The following Strategies are considered in developing a Transport Plan for Learners:

National level

- The National Learner Transport Policy 2015

  places emphasis on integrating learner transport with the public transport system directly relates to the planning of public transport. The policy emphasises the need for a uniform remuneration regime for services to guide budgetary requirements and highlights the development of safety norms, standards, and operational guidelines for learner transport. The policy acknowledges the importance of integrating learner transport with the public transport system. Challenges highlighted include the lack of a uniform way of managing and operating learner transport, diverse funding methods, and unsustainability of operations due to varying compensation methods across provinces.

- Integrated School Health Policy (Oct 2012)

  is an initiative by South Africa to prioritise the health and well-being of children in schools. Public transport routes should be planned keeping in mind the school timings and locations to ensure children have safe and timely access to schools. The policy aims to ensure that learners are healthy, attentive, and emotionally secure, which is essential for their academic success. This policy focuses on addressing both immediate health problems of learners and implementing interventions that promote their health during childhood and adulthood. The policy emphasises strong intersectoral collaboration involving various departments, including the Department of Health (DOH), Department of Basic Education (DBE), and Department of Social Development (DSD). The policy is governed by several legislative frameworks and is influenced by various health and education policies and programs. The document emphasises the importance of children's health and well-being. When planning a comprehensive transport system for a city like George, it's essential to consider the safety and health of school-going children. This includes ensuring safe routes to schools, promoting non-motorised transport, and integrating public transport to cater to school timings. The Integrated School Health Policy directly or indirectly impact the movement, safety, and well-being of school-going children, making them relevant in the context of the transport plan for George.

Provincial Level

- Learner Transport Scheme WCED and South African Small Bus Operators Council - Oct 2022

  This scheme discusses the concerns of small bus operators, which could impact the public transport plan for learners and discusses the challenges faced by small bus operators in the Western Cape, including concerns about contract extensions, tariff increases, and competition with taxis. These issues could have implications for the transport plan in George,


particularly in terms of managing demand, planning public transport, and developing funding strategies.

- WCED and Small Bus Operators Council – Learner Transport Scheme – Sep 2018

  The Learner Transport Scheme is a form of public transport, and the experiences and lessons learned from this scheme could inform the development of a public transport plan for George.

  The document discusses the Learner Transport Scheme, a collaboration between the Western Cape Education Department (WCED) and the South African Small Bus Operators Council (SANSBOC). It outlines the challenges and concerns raised by small bus operators regarding the scheme, particularly around the proposed 10% increase in tariffs, which the operators felt was not approved and was suddenly withdrawn. It also highlights the WCED's efforts to align provincial service level agreements with national ones, and the introduction of new systems and processes to address issues such as overpayments and incorrect distances. The WCED also acknowledged communication issues regarding the proposed 10% increase.

- WCG – Standard Operating Procedure for Learner Transport Schemes - Nov 2020

  It primarily discusses the procedures and guidelines for managing learner transport schemes. The key points are:

  - *Roles and responsibilities of various stakeholders in the learner transport scheme, including principals, district offices, and the Directorate: Institutional Resource Support. These responsibilities range from ensuring compliance with the scheme, maintaining records, and addressing any deviations or issues that arise.*
  - *Guidelines for managing learner transport routes, including maintaining a database of all Learner Transport Schemes (LTS) applications, ensuring that all parties involved are trained, and monitoring the routes on an an*
  - *ual basis.*
  - *The process for handling complaints, aligning the Infrastructure Plan with the LTS Plan, and the revision of the Standard Operating Procedure (SOP) manual.*
  - *Detailed procedures for vehicle testing, route, and vehicle inspections, and addressing non-compliance with contractual conditions.*

  The SOP's focus on managing learner transport, ensuring compliance, and addressing issues aligns with the goals of these chapters in the Comprehensive Integrated Transport Plan for George. It provides a detailed framework for managing learner transport that can be incorporated into the overall transport plan.

- Western Cape Education Department Policy on Learner Transport Schemes - Apr 2013

  The policy is directly related to public transport, as it involves the transportation of learners to and from school.

  The document primarily focuses on the transportation of learners to and from school. The policy outlines the responsibilities of contractors, the safety of learners, and the


funding mechanisms for these transport schemes. Here are the key points:

- *The policy applies only on school days as decided by the Western Cape Education Department. The buses can be substituted only for valid reasons with the written approval of the principal and confirmation by the district director. The replacement vehicle shall be s*
- *bject to a roadworthy test.*
- *Learners are picked up and dropped off at the approved pick-up or drop-off points in accordance with the school's learner transport schedule. The authorised number of learners to be transported forms the basis for monthly payments to the contractor.*
- *Contractors must provide an efficient, safe, and reliable means of transport. Every learner on the bus must have an appropriate seat and no learner must be allowed to stand when transported to and from school.*
- *The amount paid to contractors is based on the tariff, number of learners, distance, and the number of school days. Only the actual number of learners transported must be used in the calculation of the amount payable to contractors.*

The relevance of these chapters is due to the policy's focus on the logistics of transporting learners, the safety standards required for vehicles, the planning of routes, and the funding mechanisms for these transport schemes. These aspects align with the chapters' focus on transport planning, needs assessment, infrastructure strategy, and public transport planning.

6.5.2.2 Status Quo

This section covers school transport and the Nelson Mandela University George Campus (NMU) transportation services. The detailed information is included in **Chapter 3.4.4** of the **Transport Register**.

In the context of learner transport (LT) services, understanding the flow between residential areas and educational institutions is crucial. These services facilitate the movement of learners and educators between their homes and places of learning, such as primary and secondary schools. The origins in this system are typically broad residential areas, which serve as the starting points for the journeys to specific educational destinations. Conversely, for the return trips, schools act as the origins, with the residential areas becoming the destinations. This dynamic establishes a network of origin-destination (OD) pairs, each representing a unique travel path from a specific residential area to a school or vice versa. While the residential areas are generally large and less defined geographically, the schools represent specific, pinpointed locations, creating a structured flow of transport between these varied points.

Due to the nature of the data received from the OLAS Database, it was not possible to determine the exact number of flows for each OD pairs. Each LT Operating License in the database was described with a pickup point (origin) which was described as a few residential areas, a drop-off point (destination) which was described as a few schools, and a passenger capacity associated with that vehicle. A graphical image is shown in **Figure 6-1** to illustrate this concept. The image describes the realistic scenario of how these LT vehicles would operate, by picking up various learners within residential areas and then dropping them off at the respective schools. Due to data not

giving enough insight, a proxy was created instead to try and visualise the various origins and destinations, as well as the passenger capacities for the same OD pair. This was done by linking each origin with each destination, and so creating a direct OD pair link. If, for example there are 4 residential areas and 5 schools, as depicted in **Figure 6-1**, that would mean that a total 4 x 5 = 20 OD pairs would exist in the analysis. Say, for example there is a bus with a passenger capacity of 84 people, you would then distribute that capacity to all the OD pairs, therefore for this example a passenger capacity of 4.2 (84 / 20) would be assigned to each of the OD pairs associated with that LT operating license. This is then done for all of the LT operating licences, and then all the passenger capacities are summed together for identical OD-pairs. The results of this analysis is depicted in **Figure 6-2** (zoomed out) and **Figure 6-3** (zoomed in), which reveals some interesting spatial information in terms of where learners are picked up and dropped off all across George. It should be noted that this analysis contains pre-primary schools, primary schools, secondary schools, and tertiary schools (universities). The **Learner Transport** section in the **Transport Register** contain the graphical output as seen for the analysis, but for each school sector with additional details.

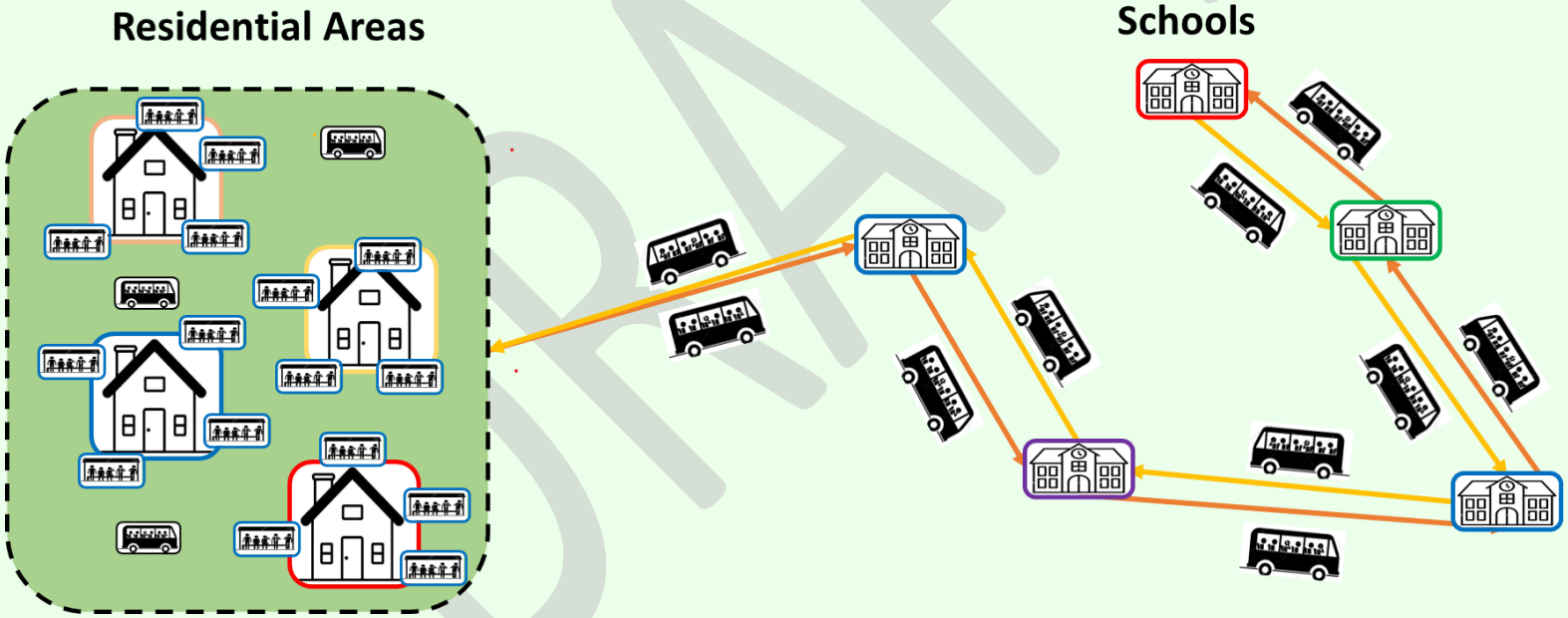


Figure 6-1: Illustration of Residential Area and Schools for Learner Transport as described in the LT OLAS Database.

Currently about 65% of learner transport is dedicated to tertiary education, namely Nelson Mandela University. Also, 17% and 15% of the total learner transport capacity are dedicated to primary and secondary schools, respectively. Overall, it is estimated that that there is approximately a 10 500 learner transport capacity for the 3-hour peak periods, if one assumes that some of the learner transport vehicles are able to do 2 trips in that period.

When considering the available enrolment data of the various schools, another calculation can be made by determining how many of a school's enrolled learners receive Public Transport in the form of Learner Transport. Only the schools that had these numbers available at the time were used to calculate this measurement and may be seen in the Transport **Register**. Around 10% of primary school students receive Learner Transport, and around 12% of secondary school students in George Local Municipality.

6.5.2.2.1 Schools

A total number of 150 vehicles are active and WCED registered on the OLAS DB for GLM. The total passenger capacity provided by all vehicle types is 5012.

6.5.2.2.2 Nelson Mandela University – George Campus

The various route timetables and capacities for NMU contracted learner transport for stops in George, Pacaltsdorp, Thembalethu and the weekend shopping service are included in the **Transport Register**. The University confirmed that they would benefit greatly from an hourly or two-hourly service from early morning to late evening for access to research facilities and the library.

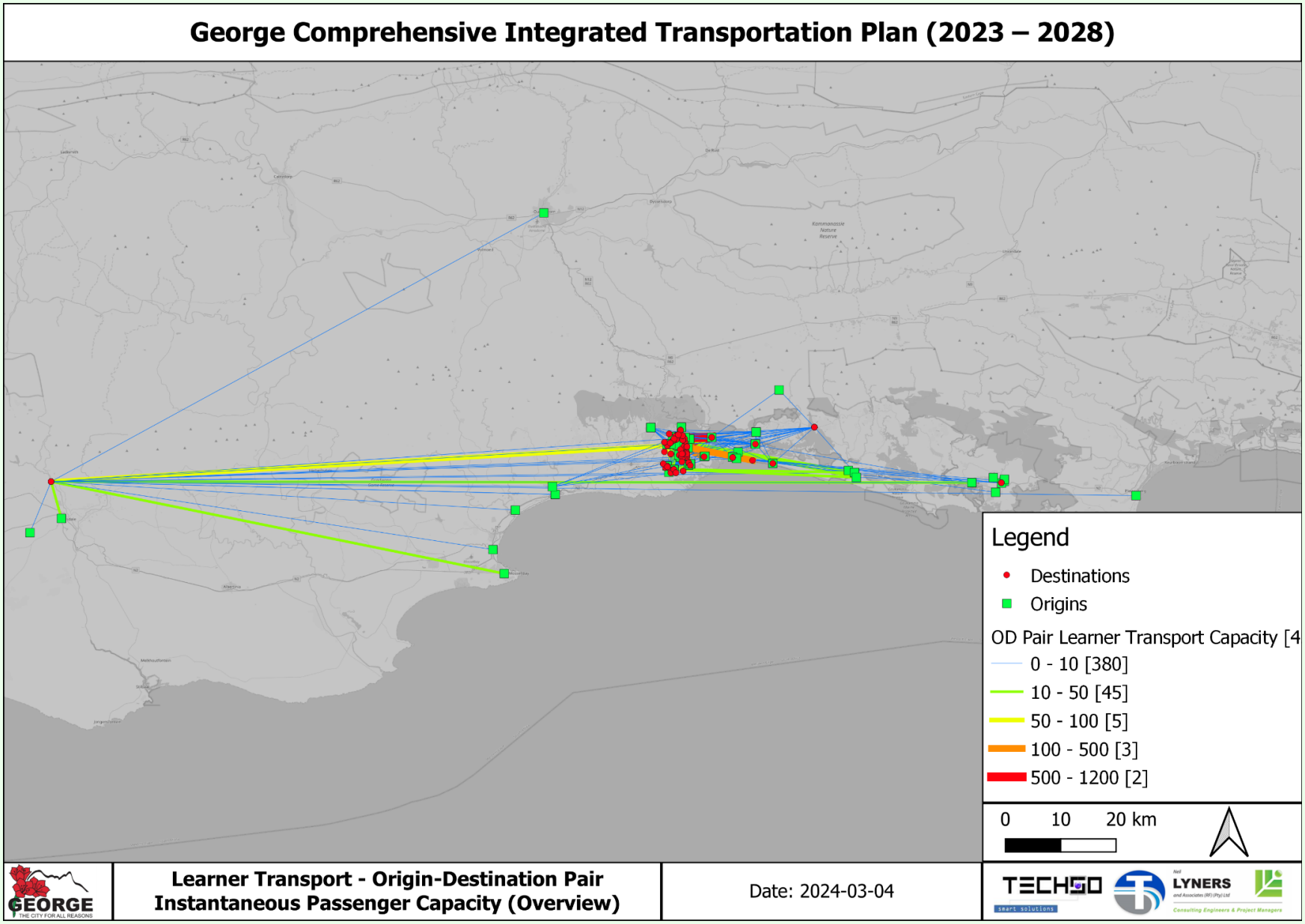


Figure 6-2: Learner Transport – Origin-Destination Pair Instantaneous Passenger Capacity (Overview).

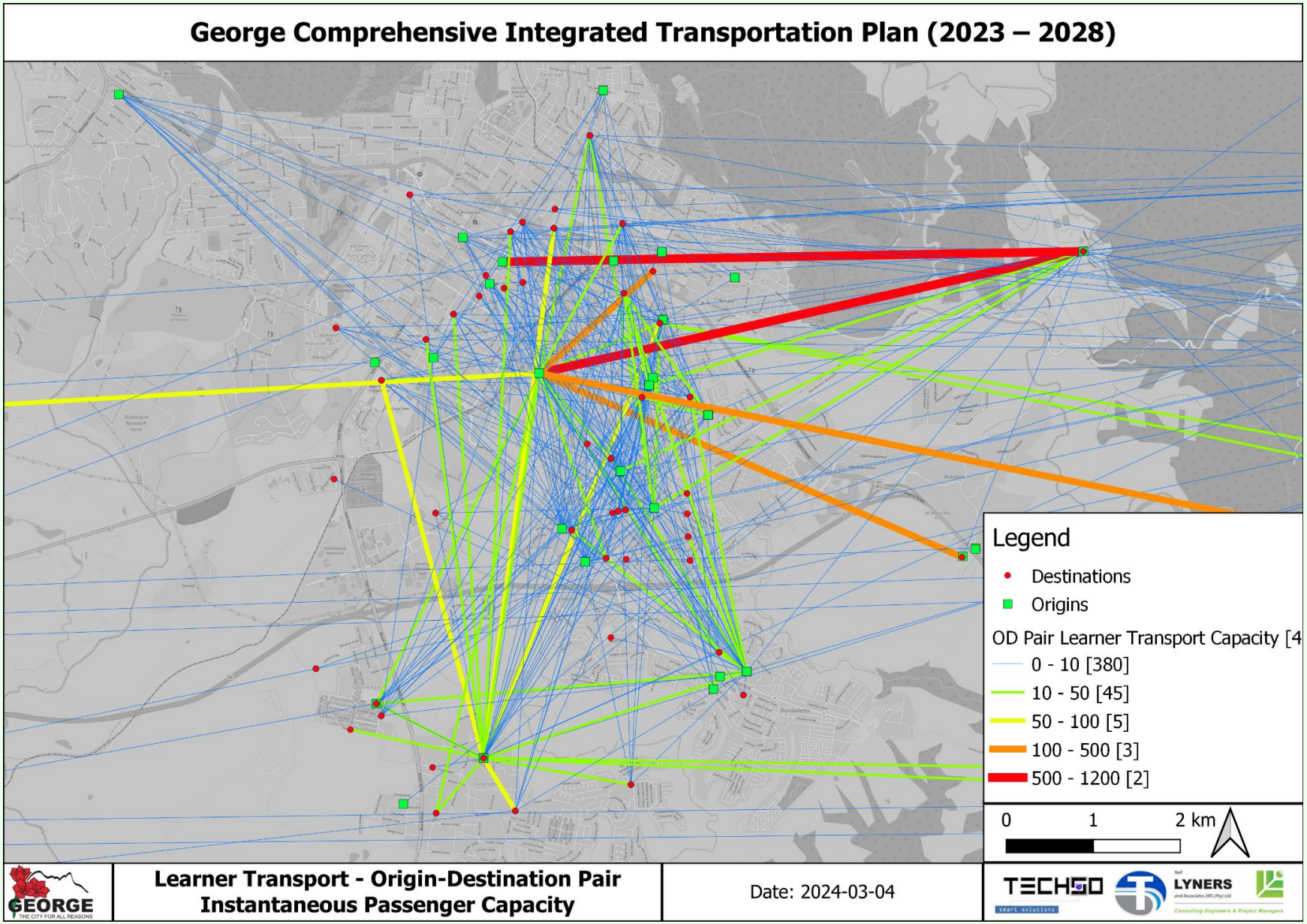


Figure 6-3: Learner Transport – Origin-Destination Pair Instantaneous Passenger Capacity.

6.5.2.3 Strategy

Generally, learner transport should prioritise safety, accessibility and efficient.

Strategies based in terms of Transport Needs and modelling results:

- In terms of the regular PuT system, there exist some opportunities where drop-off location can be planned to be close to schools, which may lead to attract more ridership and can reduce the need for subsidies.
- Also, the provision of OLS for serving schools in rural areas can be increased, as there are less GO GEORGE buses operating in the rural areas.
- In terms of GO GEORGE, identify some places where you can extend services to locations where learner transport is not greatly covered, like the Kraaibosch area for example.
- When you have a scheduled PuT system that serves schools and learner facilities (destinations), it provides an opportunity to learners to participate in a range of activities (sports, libraries, research). Having a scheduled service running (not like traditional scheduled service) will help facilitate this. In general, the pickup and drop off ranges from 06:00-08:00 and 12:00-17:00. Such a system can enable students to get to their activities.
    - Not restricted by transport to get access to opportunities (sport activities, extra-curricular activities), can get to library etc. and get home.
    - With one payment method (smart card), can grant subsidies to students (load on their cards). Therefore, you can reduce subsidies of OLs, and rather invest into scheduled service, which is more sustainable.
    - From data you can see at rural routes where a scheduled system can be introduced,
    - Can even consider opening the system to the broader community.

In terms of overall Transport Strategy and vision and objectives are:

Table 6-2:Overall Transport Strategy, Vision and Objectives for Learner Transport

No.	Strategic Component	Vision and Objectives
1.	**Safe Routes**	Maintain, identify and establish safe routes to schools, and other educational institutions. This may involve implementing traffic calming measures, pedestrian crossings, and designated school zones with reduced speed limits.
2.	**Public Transport Accessibility**	Ensure that public transportation options are readily available and accessible to learners.
3.	**Subsidised or Free Fare Programs**	Encourages the use of public transport and help alleviate financial burdens on families and reduce traffic congestion around schools.
4.	**School Bus Services**	Maintain efficient and reliable school bus services, especially for areas not well-served by public transportation. Ensure that buses are equipped with safety features and adhere to strict safety standards.
5.	**NMT Infrastructure**	Develop bicycle lanes, sidewalks, and safe walking paths to encourage active transportation among learners and students.
6.	**Collaboration with Educational Institutions**	Work closely with schools and other educational institutes to understand their transportation needs and tailor services accordingly

No.	Strategic Component	Vision and Objectives
7.	**Data Collection and Analysis**	Collect data on learner and student transportation patterns, such as mode choice, travel times, and congestion hotspots, to inform decision-making and improve transportation services over time.
8.	**Integration with Urban Planning**	Integrate learner transport strategies with broader urban planning efforts to create transit friendly communities.
9.	**Continuous Evaluation and Improvement**	Regularly evaluate the effectiveness of learner transport strategies through feedback mechanisms, surveys, and performance indicators. Adjust policies and initiatives as needed to address emerging challenges and improve the overall quality of student transportation.

6.5.3 Transport Strategy for Special Needs Passengers (SNP)

6.5.3.1 Strategic Directives

The strategy directives on different government levels are considered:

- National: The White Paper on an Integrated National Disability Strategy[1] (November 1997); and
- Provincial The Western Cape Provincial Transport Policy, as set out in the White Paper[2] of June 1997

National level:

- The White Paper on an Integrated National Disability Strategy (November 1997) recognises the need for the rapid progress in developing a public transport system that is flexible and accessible, which also accommodated users with special needs. The policy objective of the national strategy is:

  "to develop an accessible, affordable multi-modal public transport system that will meet the needs of the largest numbers of people at the lowest cost, while at the same time planning for those higher cost features which are essential to disabled people with greater mobility needs"

- The Department of Transport has also made available its Public Transport Strategy in March 2007. It has two key thrusts: Accelerated Modal Upgrading and Provision of Integrated Rapid Public Transport Networks. The strategy requires that:

  "the core network (both road and rail corridors as well as their precincts and stations) is 100% accessible to wheelchair users and others with special needs such as the blind and the deaf. In addition, the designs of the space at the stations, terminals and on the vehicles should be user friendly and child friendly. Special needs user organisations will form part of the Network advisory planning and monitoring team."

- National Land Transport Act 5 of 2009 and National Land Transport Regulations (17 December 2009)

  The Act defines special categories of passengers as persons with disabilities, the aged, pregnant women and those who are limited in their movements by children.

  The Act states that the municipal sphere of government is responsible for ensuring for the needs of special categories of


passengers in planning and providing public transport infrastructure, facilities and services, in so far as possible by the system provided for mainstream public transport. The municipality is also required to determine concessionary fares for special categories of passengers in the prescribed manner.

Provincial level:

- The Western Cape Provincial Transport Policy, as set out in the White Paper of June 1997, complements the objectives of the Integrated National Disability Strategy. One of its key principles is that:

  "Discriminatory practices against specific groups, such as women and disabled persons, must cease, and their special needs must be identified and addressed in all transport plans and programmes".

- Some items addressed in provincial transport plans and programmes are identified within the **Integrated Provincial Disability Strategy**, published by the Office of the Premier, Western Cape in November 2002 include:

  - *Seek to appoint a representative of the Western Cape Disability Network to one of the existing standing committees on transport;*
  - *Identification of different transport systems that respond to the specific user requirements of special needs passengers and evaluate their operation in the Western Cape;*
  - *Establish Provincial minimum acceptable operational standards and requirements for transport suitable for use by disabled persons*
  - *Ensure that all public transport plans formulated in the Western Cape make provision for transport that is suitable for use by disabled persons and conforms to Provincial minimum standards*
  - *Lobby SARCC and Metrorail to further their programmes for providing access to and carriage of disabled persons*

- The Public Transport Policy Statement for Special needs passengers (SNP) in the Western Cape sets out the Provincial Government Western Cape: Department of Transport and Public Works' policy statement for the provision of public transport with respect to SNP's in the Western Cape, as well as the actions to promote the provision of Public Transport for SNP in the province.

  The policy also highlights key themes drawn from the extensive body of South African documentation on transport accessibility:

  - *No unfair discrimination*
  - *Provision of "reasonable" accommodation*
  - *Self-representation*
  - *Multi-disciplinary response to issues*
  - *Integrated transport system that supports economic and social development*
  - *Special Needs Passengers have specific user requirements*
  - *Mainstream transport is to be suitable for Special Needs Passengers plus dedicated systems where appropriate*
  - *Need for defined standards*
  - *Formulation of viable action plans*


This policy focuses on the needs of Special Needs Passengers (SNP) and the promotion of universally accessible public transport systems. These principles will be used as directives in developing a strategy for George Municipality.

6.5.3.2 Status Quo

Currently not all public transport services accommodate Special Needs Persons (SNP), as discussed below.

GO GEORGE public transport service (vehicles and facilities) does accommodate SNP as below:

- GO GEORGE Buses
  - All buses are fitted with ramps or hoists to accommodate people using wheelchairs or other mobility aids.
  - Service dogs such as guide dogs for the blind are allowed on buses.
  - GO GEORGE buses provide a designated seating area for people who use wheelchairs. The SNP red priority seats offer more space and have seatbelts for comfort and safety. Audible signals warn persons who are blind of doors opening and closing. Electronic information boards inside the bus indicate to persons who are deaf which stop comes next.

GO GEORGE Transport Facilities

- George Transport Hub at Craddock Street
  - An important design principle at George Transport Hub is universal accessibility for SNP, like tap rails for people with limited vision.
- GO GEORGE "Ticket" Office at George Mall
  - An important design principle at GO GEORGE Ticket office is universal accessibility for SNP accommodating wheelchair access.
- GO GEORGE Bus Stops
  - GO GEORGE bus stops have raised platforms to facilitate easier assess to buses, for all people.

Taxi (mini and midi bus) public transport service (vehicles and facilities) lacks provision for SNP as below:

- Taxi Vehicles
  - The taxi service, vehicles and facilities are particularly lacking in respect to provision for SNP.
- Taxi Facilities

SNP issues at George Public Transport Taxi Facilities is shown below:

- Thembalethu Taxi Rank
  - The narrow NMT access from Nelson Mandela Boulevard to the rank has no hard surfaced ramp for wheelchairs. In addition, sections of the existing sidewalks in the vicinity of the rank are missing pavement bricks that could prove hazardous for pedestrians in wheelchairs.
- Cradock Street Taxi Rank Facility
  - NMT access must be improved (universal access). The existing sidewalks are not wheelchair friendly and some NMT access must be provided (universal access). The

existing parking area does not accommodate easy access to public transport (taxis and buses) apart from mini-bus taxis not accommodating wheelchairs.
    - of the sidewalk paving bricks are missing.
- Garden Route Mall Informal Taxi Rank
    - NMT access must be provided (universal access). The existing passenger platform is raised with no ramp for wheelchair access, apart from mini-bus taxis not accommodating wheelchairs.
- St Mark Street Taxi Rank Facility

On a broad level, accommodation for SNP need to be improved, especially in the modal integration nodes.

6.5.3.3 Strategy

The strategy is similar to the learner transport with a focus on special needs of all passengers including elderly residents, children and people with disabilities, ensuring accessibility, safety and inclusivity.

In terms of overall Transport Strategy, vison and objectives.

Table 6-3:Overall Transport Strategy, Vision and Objectives for Special Needs Passengers

No.	Strategic Component	Vision and Objectives
1.	**Accessible Public Transportation**	Ensure that public transportation services, including buses and taxis, are accessible to passengers with special needs. This may involve equipping vehicles with wheelchair ramps, priority seating areas, and audible announcements for visually impaired passengers.
2.	**Paratransit Services**	Provide specialised paratransit services, such as dial-a-ride or door-to-door transport, for individuals who are unable to use conventional public transportation due to their disabilities
3.	**Training and Sensitisation**	Conduct training programs for public transportation staff and drivers to raise awareness about the needs of passengers with disabilities and how to assist them effectively. This includes training on how to operate wheelchair ramps, interact respectfully with passengers, and aid as needed
4.	**Accessible Infrastructure (Universal Access)**	Transportation infrastructure, such as bus stops and taxi ranks, are designed and maintained to be accessible to passengers with disabilities. This may involve installing ramps, elevators, tactile paving, and signage with braille.
5.	**Affordability**	Implement fare policies that ensure transportation services are affordable for passengers with disabilities, considering potential financial barriers they may face
6.	**Information and Communication**	Provide accessible information and communication channels for passengers with disabilities to plan

No.	Strategic Component	Vision and Objectives
		their journeys and access transportation services. This may include accessible websites, customer service hotlines, and alternative formats for printed materials
7.	**Community Engagement**	Engage with organisations and advocacy groups representing people with disabilities to gather feedback, identify needs, and collaborate on solutions to improve transportation services
8.	**Monitoring and Evaluation**	Establish mechanisms for monitoring the implementation of the transport strategy for special needs passengers and regularly evaluate its effectiveness. This may involve collecting feedback from passengers, conducting accessibility audits, and tracking key performance indicators related to service provision and passenger satisfaction

By implementing these measures and considering the specific needs of passengers with disabilities, the George Municipality can work towards creating an inclusive and accessible transportation system for all residents.

6.5.4 Metered Taxi Strategy

6.5.4.1 Strategic Directives

National level:

The Public Transport Strategy sees metered taxis playing a limited role in South Africa.

It is envisaged that metered taxis operate in parallel with the public transport networks. Metered taxis will be regulated and contracted to provide an additional low volume public transport service for choice users, as well as an alternative to single occupant car use and a service for off-peak periods.

National Land Transport Act 5 of 2009 and National Land Transport Regulations, 17 December 2009

According to the Act, a ''metered taxi service'' is a public transport service operated by means of a motor v

hicle contemplated in section 66 which:

"(a) is available for hire by hailing while roaming, by telephone or

otherwise;

(b) may stand for hire at a rank; and

(c) is equipped with a sealed meter, in good working order,

for the purpose of determining the fare payable, that is calibrated for such fare or complies with any other requirements applicable to such meters."

From a licensing perspective **section 66 of the NLTA** states that in the case of a metered taxi service:

"(1) (a) The entity granting the operating license may specify an area for picking up passengers.

(b) If the operating license or permit specifies such an area, the vehicle may leave that area if, on the return journey, it is to carry the same passengers that it carries

on the outward journey or if the vehicle is to return empty.

(c) The vehicle may pick up passengers outside of that area if the fare is pre-booked and the passengers will return to such area; and

(d) Any particular journey may be operated at a fare not determined by the meter if the fare for that journey has been agreed upon before the journey begins, but the meter must be kept running for the information of passengers.

(2) In the absence of requirements published in terms of the Trade Metrology Act, 1973 (Act No. 77 of 1973), the Minister must set standards for sealed meters for metered taxis in accordance with standards set by the South African Bureau of Standards in terms of the Standards Act, 1

93 (Act No. 29 of 1993).

(3) The Minister or MEC, in consultation with the relevant planning authority, may determine a fare structure for metered taxi services and the MEC must publish such fare structure in the Provincial Gazette.

Section 11 (1)(c) of the NLTA lists the responsibilities of the municipal sphere of government for land transport. One of these duties is to exercise control over service delivery through the setting of operational and technical standards and monitoring compliance therewith. As a result, the City will need to set stringent regulatory requirements in terms of metered taxi operating license application approvals."

White Paper on National Transport Policy, Aug 1996

The document discusses the conveyance of people or freight for reward by any travel mode whether car, metered taxi, minibus-taxi, bus, tram and light and heavy rail.

6.5.4.2 Status Quo

The so-called metered taxis operate without actual meters, but charge a fee based on calculated distance. The taxis operating in George Municipality and Garden Route District operate from various locations, and these vary from registered business premises to private properties (homes).

- Zeelies Taxis operate from George Airport.
- Eden D Taxi Company operates from George Airport.
- Dans Tours and Transfers operates from Market Street.
- Get a Cab operates from Courtenay St.
- Woober Transfers and Shuttle Service operates from Blue Mountain Blvd.
- Various individuals (approximately 10) are also registered on the OLAS database that operate from various locations.

The grand total number of vehicles and the total capacities of metered taxi transportation (excluding e-hailing) registered on the OLAS DB is 14 motor car vehicles (62 seats).

6.5.4.3 Strategy

Ultimately the goal should be to standardise an elevate the quality the metered taxis. To achieve this objective, several considerations

must be considered for new operating license applications and the introduction of compliant vehicles.

In terms of overall Transport Strategy and Vision and Objectives are listed in **Table 6-4**.

Table 6-4: Overall Transport Strategy, Vision and Objectives for Metered Taxi Services

No.	Strategic Component	Vision and Objectives
1.	**Transport Safety**	Implementing stringent vehicle safety requirements.
2.	**Environmental Stewardship**	Establishing criteria for vehicle age and condition and specifying vehicle specifications to meet GM standards
3.	**Information and Communication**	Requiring uniform insignia or branding for all operating vehicles
4.	**Fare Integration**	Mandating the advertisement of fares on the vehicles

These criteria pertain specifically to the metered taxis and their equipment. Additionally, there is a necessity for the GM to establish criteria for drivers, focusing on driving skills, customer service, and tourist guidance abilities. To ensure that drivers represent GM positively and act as tourism ambassadors, driver competency requirements include:

- Possession of a valid driving license.
- Acquisition of a Professional Driving Permit.
- Completion of an advanced driving or defensive driving course from an accredited institution.
- Training in customer service.
- Attainment of an accredited tourist guide certificate.
- Training in assisting customers with disabilities and elderly clients.
- Completion of first aid training.

Strengthening institutional arrangements with the GM is crucial to achieving these goals.

6.5.5 Cross-Border Transport Strategy

6.5.5.1 Strategic Directives

The following Strategies were considered in reviewing a Cross-Border Strategy:

- National Land Transport Act 5 of 2009 and National Land Transport Regulations, 17 December 2009

  The NLTA mandates that municipalities coordinate with various law enforcement agencies to ensure effective transport law enforcement. Section 75 emphasises that operators involved in cross-border transport must hold the necessary licenses and permits, especially when picking up or dropping off passengers near international borders. Violations are presumed if activities occur within two kilometres of a border unless proven otherwise, and planning authorities must be consulted when using local terminals for cross-border transport.

- The Cross-Border Road Transport Act 4 of 1998

  This Act regulates cross-border road transport for passengers and freight between South Africa and neighbouring countries.

It established the Cross-Border Road Transport Agency (CBRTA) to oversee regulation, advice, and law enforcement. Operators must hold permits from the CBRTA's Regulatory Committee, while foreign operators need permits from their home countries under bilateral or multilateral agreements. The Act also addresses cabotage, restricting foreign operators from transporting goods or passengers between two points within South Africa or to a third state.

6.5.5.2 Status Quo

The term "cross-border road transport" refers to the transportation of passengers or freight, with the intention of crossing the borders of the Republic of South Africa into another country's territory or transiting through the Republic or another country's territory.

George is not situated near any South African border with neighbouring countries. However, it is served by George Airport, which offers flights to other airports within South Africa that have international connections. Additionally, Mossel Bay, relatively close to George, has a harbour that facilitates the crossing of goods and people across borders. For ground transport, George is a hub for long-distance bus services, such as Intercape, which provides services beyond South African borders. Although George is not situated directly next to international borders, some of these international trips originate or end in George. It is therefore important to recognise and cater for this need and ensuring proper modal integration.

For example, Intercape has some bus routes that link to cross-border services, as seen in **Figure 6-4.** Otherwise, there are not many cross-border routes operating from George, but feed transfer facilities that have cross-border services. Within George, Intercape mainly operates from the George Railway Station and the N2 Sasol Garage.

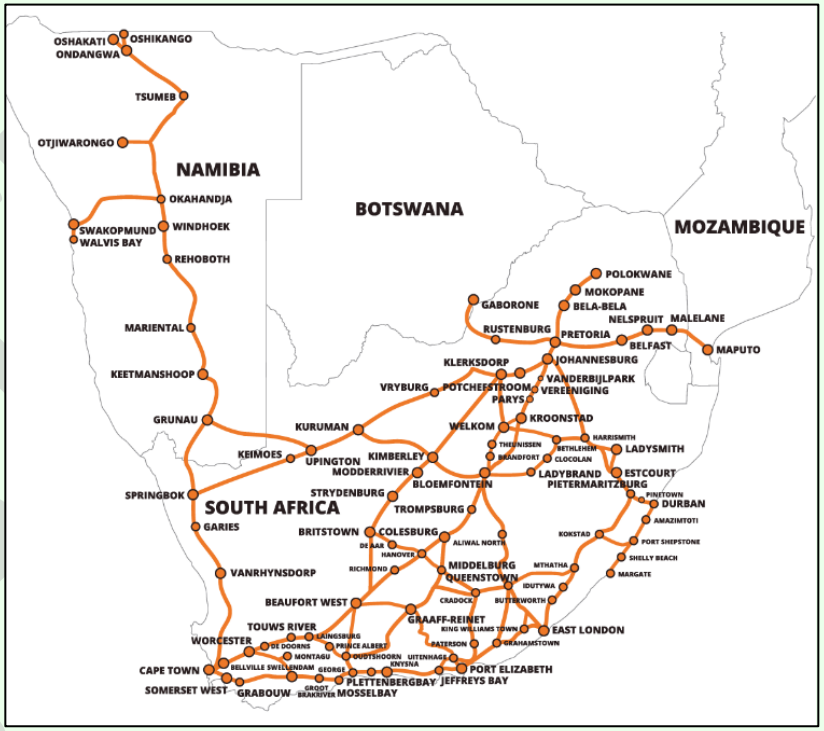


Figure 6-4: Bus routes for Intercape services (Intercape, 2023).

6.5.5.3 Strategy

GM Cross Border Strategy:

- Need for appropriate planning and funding to ensure that facilities are available.
- GM needs to strengthen its planning and operational relationship with the Cross-Border Road Transport Agency (CBRTA).

6.5.6 Public Transport Fare System

6.5.6.1 Strategic Directives

National Level

- The White Paper on National Transport Policy (1996) states that the mission of Land Passenger Transport is:

  "*The promotion of a safe, reliable, effective, efficient, coordinated, integrated, and environmentally friendly land passenger transport system in South African urban and rural areas, and the southern African region, managed in an accountable manner to ensure that people experience improving levels of mobility and accessibility*".

  For the George Municipality's Public Transport Fare System to give effect to the policy objectives of the White Paper it will need to be integrated with all transport operations within the service area yet be affordable and promote public transport usage.

  The overarching aim of transportation is to facilitate seamless and efficient interaction, enabling society and the economy to evolve in desired directions. To fulfil this function, transport sector policies are designed with an outward perspective, influenced by the collective needs of society, the users or consumers of transportation services, and the economic activities reliant on transportation networks. Additionally, transportation can assume a leadership role, serving as a catalyst for development and addressing spatial disparities. Consequently, the allocation of resources and the utilisation of transportation infrastructure should align with national priorities.

- From a public transport point of view, the Public Transport Strategy and Action Plan (2007) provides specific direction.

  The approach adopted focuses on a network approach based on an Integrated Rapid Public Transport Network with city-wide/ town-wide coverage as one of its features. This would improve access to public transport within a 2 kilometre walk for users and a move away from commuter- based transport planning to public transport-based services.

  The following main principles to govern the fare strategy should be considered:

  - ***The Fare Structure:***
    - Should support the principle of containing urban sprawl, while at the same time support contradictory policy principles such as providing affordable transport to low-income displaced communities.
    - Should ensure system financial sustainability within budget constraints.
    - Should recognise discounted fares for regular users (multi-journey tickets).
    - The revision and annual increase should be based on a transparent process, inclusive of public participation.
  - ***Cross-subsidisation***


- The principle of cross-subsidisation is unavoidable in terms of concessionary user groups, long- and short-distance passengers, and socio-economic differentiation.

- ***Benchmarking of fare levels***

- To support the national policy directive that the GO GEORGE fare level should be benchmarked against the existing minibus-taxi fares.

6.5.6.2 Status Quo

GO GEORGE

GO GEORGE uses an automated fare collection system in the form of a Smart Card that can be loaded with trips. These tickets may be purchased at kiosks found at the transfer stations, and there is even a mobile station where tickets may be bought. Fares for GO GEORGE buses are determined per trip distance. Most routes fall within the 0-15 km range in and around the main George urban area.

GO GEORGE has a stage-distance fare system, but it currently works as a flat fare system.

(There is a sliding scale of fares for increasing distances over 15km, but that is not presently being used. That system is based on a 15km base distance and then fare increments every 5km thereafter. This arrangement is intended to accommodate rural communities appropriately while not favouring inter-town commuting).

The number of trips taken are deducted from the GO GEORGE Smartcard. When buying trips, on the other hand, certain discounts are applicable based on how many trips are purchased at a time**.** The cost of the trip varies between R11.00 and R15.00 depending on how many trips are loaded per transaction.

GO GEORGE passengers may travel in any direction in town with one ticket, as long as the last boarding falls within one hour of the first boarding. Fares are determined annually as part of the municipalities rates & tariffs budgeting process and are informed by an affordability formula.

Minibus Taxis

Passengers are charged fares per trip in the form of cash. These services are non-contracted, non-subsidised, unscheduled services that are provided by minibus taxis throughout George LM.

The average taxi trip fare surveyed was R12.85 per trip. The **Transport Register** provides a summary of all the fares per route for minibus taxis.

Long distance services

In accordance with section 65 of the NLTA, the term "long-distance service" refers to a public transport service, whether scheduled or unscheduled, that operates outside the boundaries defined by an integrated transport plan. This service is distinct from regular commuting services. It involves individual fare charges for passengers and extends beyond the designated area covered by the integrated transport plan.

Intercape and Translux are the two main long distance bus operators operating through George, and their routes for their long-distance services and fares are included in **Annexure B** of the **Transport Register**. Within George, Intercape and Translux operate from George Railway Station and the N2 Sasol Garage.

6.5.6.3 Strategy

From the Transport Needs Assessment, it is clear that transport options are affordable for all segments of the population.

In terms of overall Transport Strategy, vision and objectives:

Figure 6-5: Overall Transport Strategy, Vision and Objectives for Public Transport Fare System

No.	Strategic Component	Vision and Objectives
1.	**Integrated Accessibility and Inclusive mobility**	Provide affordable, sustainable and quality services that are accessible to all public transport users and inclusive of all demographics, ensuring that transport for all is not just a concept, but a tangible reality.
3.	**Subsidised or Free Fare Programs**	Develop funding strategies, secure and judiciously allocate funding to subsidise public transport
4.	**Fare Integration**	An integrated fare system between different public transport modes needs to be investigated and developed

6.5.7 Rail Strategy

6.5.7.1 Strategic Directives

The **SA-TIED Proposed Freight and Passenger Road -to-Rail Strategy for South Africa, Nov 2021** states that the development of a road-to-rail strategy for both freight and passengers is a cornerstone of the rail improvements in South Africa.

The provision of rail passenger transport services in George LM is the responsibility of the Passenger Rail Agency of South Africa (PRASA). The rail infrastructure has been extensively vandalised to the point where it is no longer feasible to operate a rail service on important routes. As a result, minibus taxi services now transport people who were previously reliant on rail transportation.

The White Paper on the National Rail Policy, of 12 May 2022, seeks to promote policy that will revitalise rail transport to fulfil its potential role in transport in South Africa by 2050. This would be achieved through state initiatives and involve private sector partnerships.

The implementation of the government policy aimed at revitalising rail services in South Africa, will not resolve the current challenges facing rail overnight, but does encourage private partnership involvement and concessionaires operating on the rail network.

Besides political will, substantial financial investment is required to reinstate passenger and goods rail operations.

6.5.7.2 Status Quo

Currently there is no passenger rail service operational, and needs to be expanded between Mossel Bay, George and Knysna. Limited public transport options and integration impacts on accessibility and mobility.

In late 2021, Transnet Freight Rail (TFR), which owns the George-Knysna line, released a Request for Proposals (RFP) to the private sector. The objective was to find a partner for the restoration and operation of the Outeniqua Choo Tjoe on that railway line. The tender period concluded on 19 April 2022, attracting bids from two

companies. One of these bidders was The Outeniqua Choo Tjoe (Pty) Ltd (Outeniqua Choo Tjoe (Pty) Ltd, 2022).

For their proposal, The Outeniqua Choo Tjoe (Pty) Ltd formed a team consisting of skilled professionals such as track repair contractors, bridge engineers, hydrologists, steam and carriage restoration specialists, tourism specialists, and tourism journalists, among others. Many of these team members had previously worked on the successful Kruger Shalati Train Hotel on the Bridge project at Skukuza in the Kruger National Park.

TFR's is still to announce the successful bidder for the operation of the Outeniqua Choo Tjoe on the George-Knysna Line.

Rail service between George and Wilderness and Mossel Bay would also require investment to reintroduce that service.

6.5.7.3 Strategy

PuT services should be expanded and integrated and consideration given to rail network, as well as enhancing the GO GEORGE service.

- Revitalise rail freight and commuter service between George, Mossel Bay and Knysna.
- The immediate focus should be the services between George and Mossel Bay, whilst investigating the condition of the rail infrastructure between George and Knysna, with the vision of revitalising that line also.
- Existing rail infrastructure should be retained for future use and not be disposed of, but in the interim it can be utilised for other purposes or temporarily leased until the passenger and freight lines are re-established.
- An option could be to lease the railway infrastructure to concessionaires and foster Private-Public Partnerships in support of a strong tourism activity in George.
- An infrastructure strategy should be developed for rail.

6.5.8 Transformational Measures to Enhance and Promote Public Transport

6.5.8.1 Strategic Directives

Since 1996, prioritising public transport over private transport has been a key policy objective. While various strategic and planning initiatives have aimed to encourage the use of public transport, the most comprehensive approach was embodied in the Public Transport Strategy and Action Plan.

One critical area identified for improvement is the poor quality of current public transport services managed by different entities. Many cities have embarked on integrated efforts to address this issue, notably through the planning and implementation of Integrated Rapid Public Transport Networks.

From the perspective of the George Municipality, the following key areas require attention to promote public transport:

- Establishing institutional certainty in managing and promoting public transport, clarifying the roles and responsibilities of various agencies involved.
- Coordinating public transport planning with other developmental departments within the municipality, the province, and State-Owned Companies.

- Emphasising the provision of public transport that meets customer needs, rather than solely focusing on operator requirements.

6.5.8.2 Status Quo

Traffic and Surveillance Systems:

- Traffic signals and CCTV enhance traffic management and security

6.5.8.3 Strategy

Technology could play a major role in promoting public transport. The focus on accessibility and mobility encourages the adoption of smart technologies in transport systems, leading to more efficient and user-friendly services.

In terms of overall Transport Strategy, Vision and objectives are:

Table 6-5: Overall Transport Strategy, Vision and Objectives for Public Transport Transformation

No.	City's Transformational Goal	Vision and Objectives
1.	**Promote modal change and encourage modal shift**	Promote and facilitate modal shift.
2.	**Enhance safety, security, and health**	Expand and Integration CCTV usage for traffic analysis and incident detection
3.	**Improve accessibility and mobility for people, goods, and services**	• Establish a centralised operations centre for hosting the ITS system to inform decision-making and analysis • Community engagement to gather feedback to ensure ITS enhancements meet used needs • Implement real-time Information Systems to enhance user experience with timely travel data • Implement real-time Information Systems to enhance user experience with timely travel data
4.	**Leverage digitalisation and benefits of the 4th and 5th Industrial revolutions**	• Robust ITS Date Warehouse supports informed decision-making and analysis • Integration of ITS Components to improve efficiency and effectiveness across the network
5.	**Reduce congestion and emissions**	Upgrade Traffic Management Infrastructure to adopt automated Urban Traffic Control (UTC)

6.6 Operating License Strategy

6.6.1 Strategic Directives

The core aim of the Operating License Plan (OLP) is to ensure that public transport adequately meets customer demand while regulating the number of operations. As such, the strategy fulfils a regulatory function by firstly addressing any excess or insufficient service provision and secondly by mitigating detrimental competition on routes through the prevention of illegal operations. In pursuit of this primary goal, careful attention is paid to promoting integration, safety, affordability, and the overall quality of public


transport services. Additionally, consideration is given to aspects such as modal efficiency, entry barriers, license conditions, and enforcement measures. The OLS is guided by various developmental initiatives undertaken by George Municipality, which encompass efforts to enhance the transportation.

The Operating License Plan (OLP) is formulated in accordance with the Minimum Requirements specified in section 9.5 of the Act, as outlined below. In areas where an Integrated Public Transport Network (IPTN) Plan has been developed, the IPTN Plan serves as the OLS for the corresponding area. The OLS empowers the planning authority to advise the Provincial Regulatory Entity (PRE) on all categories of public transport services, excluding tourist services and charters, providing a dependable basis for decision-making.

Fundamentally, the OLS determines the necessary supply of contracted and non-contracted public transport through a supply and demand assessment. For regular, daily services within the area, it should:

- Define the public transport routes or groups of routes suitable for contracted and non-contracted services, specifying the number of vehicles of each capacity type authorised by the planning authority based on demand.
- Outline the existing number of active operating licenses on each route (as per OLAS data) and propose additional licenses where there is either an under-supply or over-supply.
- Provide guidance to the planning authority regarding recommendations to the PRE concerning other non-regular services such as metered taxi or long-distance service applications.

Moreover, the OLS must articulate the planning authority's policy and strategy concerning:

- The role of each public transport mode, identifying preferred road-based modes for specific areas, routes, or corridors, including transport to or from areas of other planning authorities and inter-provincial transport.
- Conditions under which operating licenses (OLS) for Public Transport operation within its area should be permitted.
- Considering transitioning of taxi services from route based operating licences to area-based licenses.
- Utilisation of public transport facilities within the area.
- Mitigation of wasteful competition among transport operators.
- Execution of commercial service contracts for unsubsidised public transport services.
- Conditions to be imposed by the PRE regarding operating licenses.

6.6.2 Overview of Public Transport in George

The term transport authority type is used to describe the different types of transport authority a vehicle was registered for on the OLAS database, for example a local minibus taxi, a charter or scholar transport, and in many instances, vehicles are registered for a combination of authority types. Chapter 3.2.2 in the Transport Registry summarised the OLAS database with all the different types of public transport, the authority types, and the proportional capacitates as of January 2023. The minibus taxis provides the highest capacity with the GO GEORGE second highest capacity.

6.6.3 Major Public Transport Corridors

The main road-based minibus taxi PuT with the highest levels of passenger travel in George Municipality are:

5. York Street (Pacaltsdorp – George Central)
6. Knysna Road/ Courtney Street (N12) (N2 – George Central)
7. Nelson Mandela Boulevard (Thembalethu – George Central).

The total number of passengers conveyed with GO GEORGE buses from January 2019 until November 2022 indicate a significant drop in numbers between March 2020 and April 2021 was due to the COVID-19 pandemic.

For the GO GEORGE bus services, the highest corridor capacities (measured in vehicle journeys for the 2-hour AM peak hour) in George Municipality are:

8. York Street (Pacaltsdorp – George Central)
9. Knysna Road/ Courtney Street (N12) (N2 – George Central)
10. Nelson Mandela Blvd (Ballotsview Parkdene / Borcherds / Lawaaikamp – George Central).
11. C. J. Langenhoven Rd (Blanco – George Central)

6.6.4 Major Public Transport Facilities

The relevant approved PuT facilities were surveyed in context of status, functionality, and quality.

George Municipality provides no public transport interchange facilities across its jurisdiction. It does however provide a bus terminal at Cradock Street in very close proximity to Cradock Taxi Rank. This allows passengers to interchange relatively easily between modes in addition to passengers walking to and from, destinations and origins. Planning provides for the CBD Transport Hub to become an interchange facility.

Local taxi services in GLM operate from four taxi ranks, namely Thembalethu Taxi Rank , Cradock Taxi Rank, George Mall informal Taxi Rank and St Mark's Square Taxi Rank. The main findings of the facility assessment surveys are included in the Transport Register.

6.6.5 Parallel Public Transport Services Competing for the Same Market

From an inspection of the routes that are operated by the rail, bus, and minibus-taxi services, it is established that GO GEORGE buses and minibus taxis operate on separate routes, with little overlap.

6.6.6 Regulatory Issues and Impediments

To effectively address the regulatory challenges within the George Comprehensive Integrated Transport Plan (CITP), a detailed analysis and adaptation of best practices from the City of Cape Town's Operating Licence Strategy (CCT OLS) (The City of Cape Town's Transport and Urban Development Authority, 2014), as well as the CCT's Operating Licence Plan (OLP) (City of Cape Town: Urban Mobility Directorate, 2022).

Key regulatory challenges include the need for accurate and up-to-date data management systems to inform decision-making, the harmonisation of regulatory frameworks to support innovative transport solutions, and the establishment of clear guidelines for the rationalisation of services to align with the Integrated Public Transport Network (IPTN) Plan. Additionally, enhancing safety,


security, and accessibility within the public transport system emerges as a critical regulatory focus, underscoring the importance of a collaborative approach involving all stakeholders.

6.6.7 Mode-Specific Operating Licence Guidelines

In developing a comprehensive and effective Operating Licence Strategy, it is crucial to address the specific requirements and regulatory frameworks that pertain to each mode of public transport within George Municipality. This ensures that all forms of transport are adequately covered and that operators follow the necessary regulations. Below is an summary on the guidelines as addressed in more detail in the OLP that should be included for different modes of transport:

6.6.7.1 Metered Taxis

Guidelines for Metered Taxis

- Taxi Meters

  All metered taxis operating within George Municipality must be equipped with calibrated and sealed meters that comply with the specifications set out by the municipality. These meters must accurately calculate fares based on distance travelled and time spent, ensuring transparency and fairness for passengers.
- Display of Identification

  Each metered taxi must clearly display its operating license and identification details, including the driver's professional driving permit (PrDP) and the vehicle's registration details. This transparency helps passengers to verify the legitimacy of the service.
- **Compliance with By-Laws**

  Metered taxis must adhere to all municipal by-laws, including parking regulations, designated taxi ranks, and other operational guidelines. Non-compliance could result in penalties or revocation of the operating license.
- Safety Standards

  Vehicles must undergo regular safety inspections and adhere to roadworthiness standards. This includes maintaining a clean and safe environment within the taxi, ensuring that all safety features are functional, and that the vehicle is regularly serviced.

6.6.7.2 E-Hailing Services

Guidelines for E-Hailing Services:

- **Vehicle Identification**

  E-hailing vehicles must display a tag or sticker, as prescribed by the municipality, indicating that they are operating under a licensed e-hailing service. This identification is essential for both regulatory purposes and passenger assurance.
- **Operating Conditions**

  E-hailing services are subject to specific operational conditions, such as the designated areas within which they can pick up and drop off passengers. These conditions help to prevent congestion in high-traffic areas and ensure that e-hailing services complement existing public transport options.
- **Compliance with Technology Standards**

  The technology platforms used by e-hailing services must meet municipal standards for accuracy and reliability. This includes the ability to provide fare estimates, track vehicle movements, and ensure the safety of both drivers and passengers.
- Driver and Vehicle Requirements


Similar to metered taxis, e-hailing drivers must hold a valid PrDP and vehicles must meet safety and roadworthiness standards. The municipality may also impose additional requirements, such as mandatory background checks for drivers or regular vehicle inspections.

6.6.7.3 Minibus Taxis

Guidelines for Minibus Taxis

- Route Licensing

Minibus taxis must operate strictly on routes for which they have been licensed. Any deviation from these routes without prior approval from the municipality could result in penalties.

- Passenger Capacity

The municipality will enforce strict adherence to vehicle capacity regulations to prevent overloading, which compromises passenger safety and comfort.

- Rationalisation Plans

As part of the broader public transport network, minibus taxis are subject to rationalisation plans designed to balance supply with demand, reduce route duplication, and ensure optimal service coverage. These plans must be integrated into the operating license conditions.

- Safety and Compliance

Minibus taxis must meet all safety requirements, including regular vehicle inspections, driver health assessments, and adherence to traffic laws. The municipality may conduct random checks to ensure compliance.

6.6.7.4 Charter and Scholar Services

Guidelines for Charter and Scholar Services

- Contractual Obligations

Charter and scholar services must operate under a contract with either educational institutions or private entities. These contracts must be presented during the operating license application process, and vehicles must only operate within the terms specified in these contracts.

- Safety and Security

Given the nature of these services, additional safety measures may be required, such as the installation of GPS tracking devices, regular safety drills, and the presence of a chaperone or security personnel during trips.

- **Vehicle Standards**

Vehicles used for charter and scholar services must adhere to higher safety standards, including regular inspections, seatbelt requirements for all passengers, and the maintenance of a clean and safe environment.

By setting clear standards and expectations for operators, the municipality can promote a safer, more reliable, and efficient.

6.6.8 Guiding Principles for the Operating License Plan

The Guiding Principles for the OLP within the CITP articulate a vision for a balanced, demand-responsive, and sustainable public transport system. A framework is proposed that prioritises the optimisation of existing transport services, the incorporation of demand-driven

service enhancements, and the strategic expansion of the transport network to address underserved areas.

Central to these principles is the commitment to data-driven decision-making, utilising comprehensive service demand methodologies and route evaluation tools to accurately assess and respond to the transport needs of the community. The emphasis on stakeholder engagement and community involvement ensures that the OLP remains aligned with the public's preferences and contributes to the overall accessibility and mobility strategy of the George area.

Furthermore, the principles underscore the importance of interoperability and service integration, advocating for a seamless public transport experience that facilitates easy transfers, supports diverse transport modes, and encourages the use of public transport as a viable and attractive option for all.

In summary, key principles emphasised in the OLP include the need for rigorous demand analysis to balance supply and demand, the importance of aligning transport services with urban development and land use planning, and the adherence to both local by-laws and national transport legislation. The plan also highlights the importance of continuous monitoring and evaluation of public transport services to ensure that they meet the needs of the community while promoting efficiency and reducing congestion.

By incorporating these guiding principles, the Operating Licence Plan aims to create a more coordinated, reliable, and responsive public transport system that supports George Municipality's long-term vision for urban mobility.

6.7 Rationalisation Plan (RP)

6.7.1 Purpose of a RP

The purpose to be achieved though the development of the Rationalisation Plan are:

- **Eliminate inefficiencies** in the subsidised bus system, identified through the most recent Comprehensive Public Transport Record (CPTR) assessment.
- **Establish a framework** for restructuring tendered bus contracts, considering the entire public transport system and its modes, to achieve a more efficient and cost-effective system.
- **Address the restructuring** of all public transport modes over the long term, including rail concessioning and taxi industry recapitalisation.

Throughout the rationalisation and restructuring of land-based public transport, the impact on passengers should always be assessed, with customer needs taking priority.

The objectives of the Rationalisation Plan include:

- Rationalising within and between public transport modes, including services across local and provincial borders.
- Determining the extent of service subsidies and identifying the appropriate targets for these subsidies.
- Minimising subsidy levels and competition between public transport services and operators.
- Stimulating competitive bidding among public transport operators through structured tenders.
- Ensuring that passenger demand is met effectively and efficiently.

- Facilitating and promoting integration between different transport modes.

A Public Transport Rationalisation Plan (RP) aims to restructure public transport into a sustainable, efficient, and financially viable system that meets the needs of customers. Typical PuT RP areas are indicated in **Table 6-6**.

Table 6-6: Typical Rationalisation Areas for PuT RPs

No.	Area of Rationalisation	Description
1.	**Urban Integration**	Simplifying core networks and relying more on feeder services to improve access.
2.	**Fares rationalisation**	Making short-term improvements to increase efficiency and pave the way for longer-term gains.
3.	**Subsidised service rationalisation**	Rationalising services within and between modes, across planning authority borders, and in relation to interprovincial transport.
4.	**Optimising routes**	Ensuring routes and route networks are used efficiently to meet passenger needs.
5.	**Integrated public transport**	Creating a framework for designing tendered bus contracts and rail concessions.
6.	**Optimising rail services**	Optimising rail services between major cities, major towns and other major centres.

The aims and objectives for public transport rationalisation for improving integrated public transport operations are viewed through the following six key objectives:

- Safety and security
- Efficiency and timelines
- Reliability
- Cost-Effectiveness
- Accessibility and coverage
- User Satisfaction.

6.7.2 Subsidised Service Contracts Rationalisation

6.7.2.1 Overview of current Subsidised Service Contracts

Subsidies are managed by the Provincial Authority, with funding provided by the Department of Transport (DoT). Therefore, it is essential that the Provincial Authority is involved in all stages of decision-making related to subsidised services. The subsidised services operating within and around George Municipality include GO GEORGE, which is subsidised by the National DoT and the Western Cape Department of Transport and Public Works (WCDTPW), as well as Learner Transport subsidised by the Western Cape Education Department (WCED).

GO GEORGE has been managed by the Western Cape Department of Transport and Public Works since 2011, and after 12 years, George Municipality is now in the process of officially taking over the management of this Integrated Public Transport Network (IPTN). Moving forward, the Municipality will seek funding from the National DoT, similar to arrangements in other provinces. GO GEORGE provides approximately 38% of the total road-based public transport capacity in the George.

Private schools in George also subsidise learner transport through school fees. Additionally, some larger farms transport learners to


nearby schools at their own expense, effectively providing a form of subsidy.

These large farms have expressed the need for a more permanent, scheduled public transport service, such as GO GEORGE, to serve both farm workers and learners. A proposed route, based on the needs of these farmers, would also address transport to the airport. Currently, farm workers are transported by a charter service paid for by the farmers, with a designated pick-up/drop-off area located at the red circle shown in **Figure 6-6**.

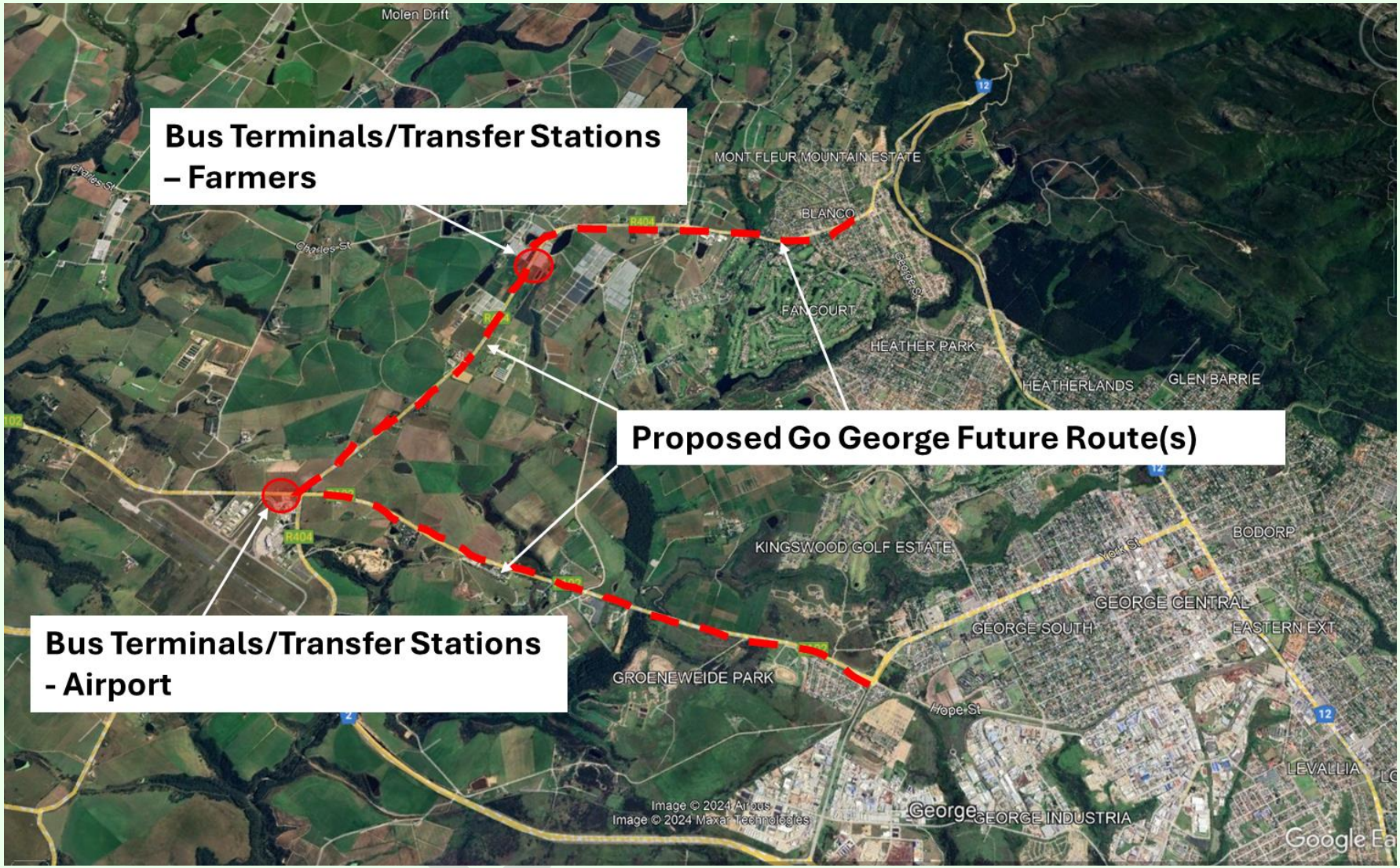



Figure 6-6: Proposed GO GEORGE Routes and Bus Terminals/Transfer Stations.

6.7.2.2 Proposed Subsidised Service Contracts

New subsidised public transport routes are proposed for the additional links in the Road Master Plan. These services could be provided by GO GEORGE buses or an alternative service, such as minibus taxis, operating under the same principles as the GO GEORGE system, with scheduled services extending to newly developed areas.

For the purposes of the forecast model, these subsidised services have been coded as GO GEORGE services, operating at a frequency of every 15 minutes during the 2-hour AM peak period on the new road links.

Figure 6-7 illustrates the existing GO GEORGE services alongside all proposed subsidised transport routes for the new links in the Road Master Plan.

Figure 6-8 depicts the anticipated public transport usage for the ultimate scenario, incorporating subsidised services within the final road network configuration.

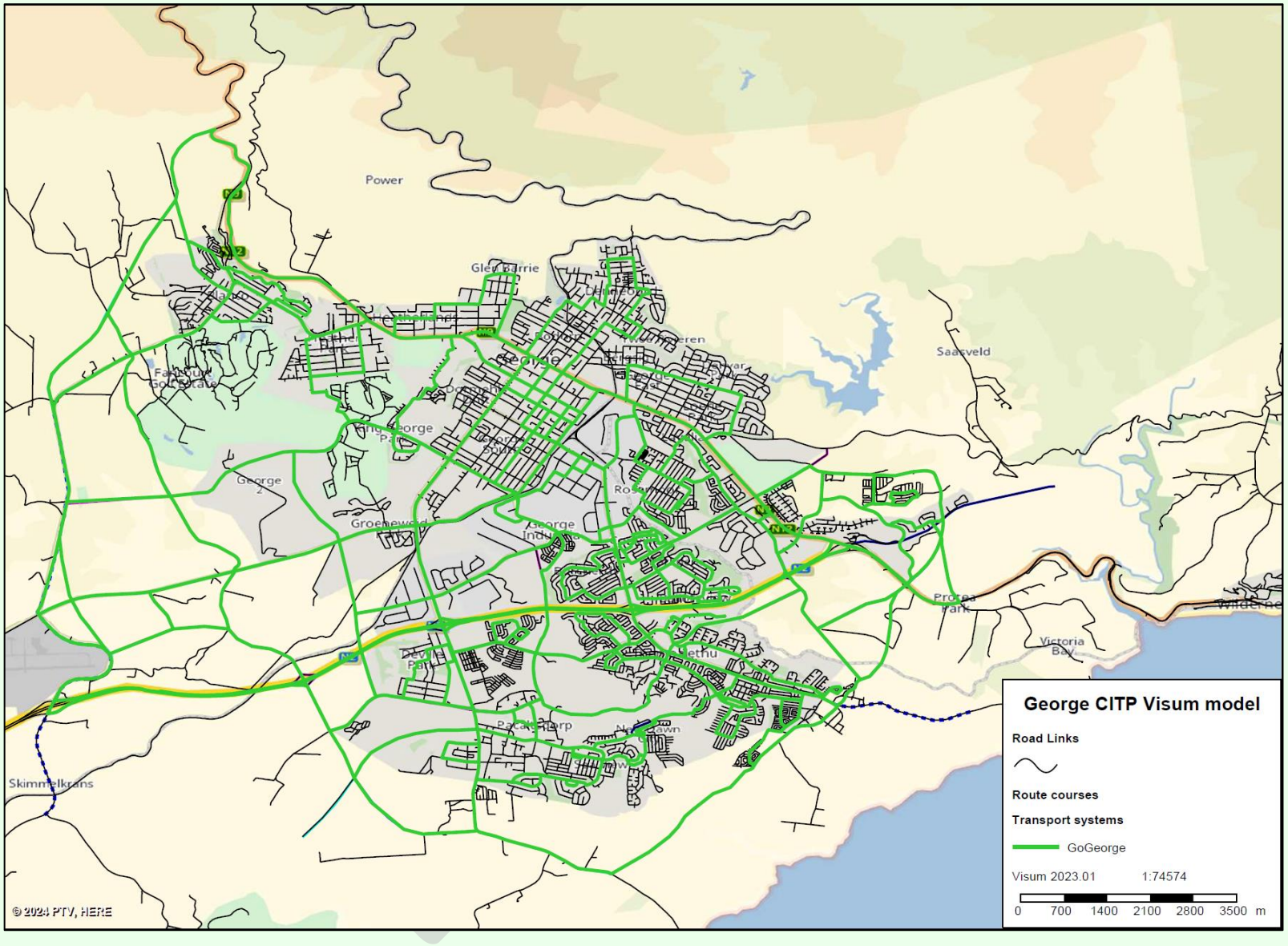


Figure 6-7: Current GO GEORGE lines with proposed subsidised lines combined to reflect network coverage

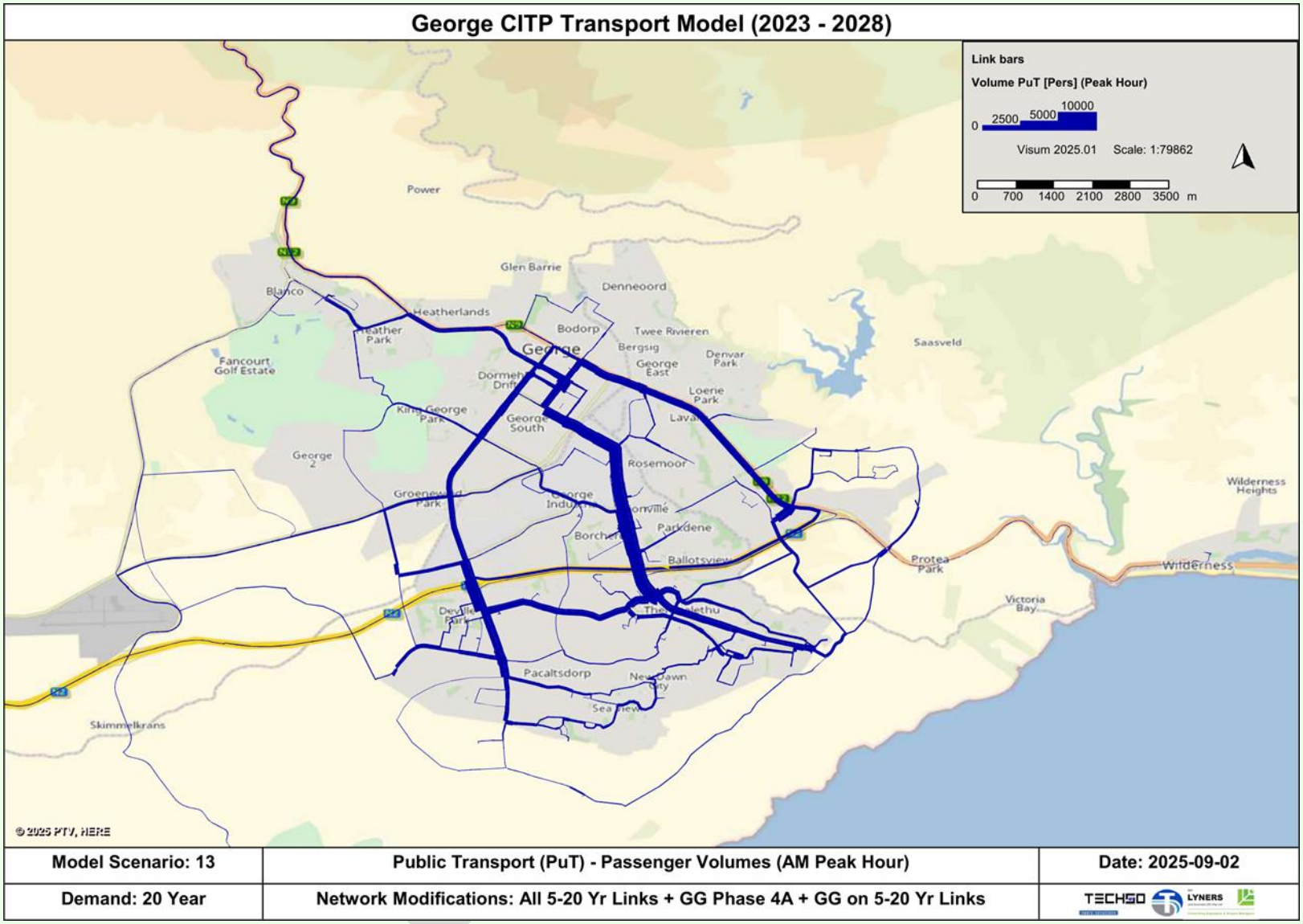


Figure 6-8: Public Transport Output for Ultimate Road Scenario.

6.7.3 Public Transport Rationalisation Interventions

The following Public Transport Interventions are currently planned for George Municipality (GM):

- Funds allocated for capital and operational expenditure
- Improve Park and Ride facilitates
- Improve access to Learner Transport Services by evaluating Operating License (OLS) requirements, specifically for rural areas
- Rationalisation of minibus taxi routes
- New bus depot for GO GEORGE
- New GO GEORGE Phases
- Improvement of real time traveller information
- NMT improvements

Interventions that should be included are:

- Develop a public transformation plan.
- Promote public transport and facilitate a modal shift the private transport mode to public transport.
- Investigate the feasibility of potential re-activation of a sustainable rail commuter service George and other neighbouring areas in the Garden route District. A future rail freight study needs to be conducted for the Garden Route District Municipality with a strong focus on George and Mossel Bay area and the surrounding farms.
- The modelling for commuter rail did indicate that in the 5 to 20 year the uptake was not significant. It could be considered as being a linked service to grow tourism, which would strengthen the sustainability of a daily commuter rail service.

6.7.3.1 Funds allocated for Capital and Operational Expenditure

Funds are allocated for capital and operational expenditure within the public Transport environment:

- Capital expenditure include:
  - Computer equipment
  - Furniture and fittings
  - Office equipment
  - Information Technology Hardware (Connectivity)
  - Electrical Back-ups
  - Infrastructure
- Operational expenditure include:
  - Employee related costs
  - Overhead costs
  - Planning costs
  - Regulation

Table 6-7 summarises the capital and operational expenditure budget of the next three years.

Table 6-7: Budget for Capital and Operational Expenditure.

Budget Item (R)	2024/2025	2025/2026	2026/2027
Capital Costs	**R 43 140 400**	**R 47 912 960**	**R 54 860 000**
Computer equipment	R 112 200	R 82 280	R -
Furniture and Fittings	R 112 200	R 82 280	R -
Office Equipment	R 66 000	R 48 400	R -
IT Hardware (Connectivity)	R 350 000	R -	R -

Budget Item (R)	2024/2025	2025/2026	2026/2027
Electrical Back-ups	R 300 000	R -	R -
Infrastructure	R 42 200 000	R 47 700 000	R 54 860 000
Operating Costs	**R 9 521 732**	**R 14 513 263**	**R 15 592 126**
Employee related costs	R 5 202 236	R 10 641 817	R 11 333 536
Overhead costs	R 2 559 496	R 1 935 446	R 2 128 990
Planning costs	R 1 340 000	R 1 474 000	R 1 621 400
Regulation	R 420 000	R 462 000	R 508 200
Total Costs	**R 52 662 132**	**R 62 426 223**	**R 70 452 126**

A further recommendation is to foster public-private partnerships to support the PuT transformation plan and encourage investment in PuT.

6.7.3.2 Transport Integration

Table 6-8 summarises the Transport Integration RP

Table 6-8: Public Transport Integration RP

No.	Area of Integration	Description
1.	**Park and Ride facilities**	• Develop and identify park-and-ride facilities that support the Public Transport (PuT) system while aligning with Land Use goals, particularly in support of the Municipal Spatial Development Framework (MSDF). These facilities should form part of a network of integrated PuT hubs. • Explore the use of park-and-ride facilities at public transport hubs to reduce parking congestion and enhance access to public transport.
2.	**Public Transport Hubs**	Establish integrated PuT hubs that accommodate various modes of transport, including micromobility, e-hailing, taxis, and services like GO GEORGE.
3.	**Accessibility**	Ensure the PuT network is accessible to visitors and tourists by integrating the rail network with the road-based PuT system and re-establishing long-term commuter rail services between nearby towns, particularly from a tourism perspective.
4.	**Connectivity**	Facilitate connections between major cities and towns in the Garden Route District through a revitalised rail service or a scheduled road-based PuT system.

6.7.3.3 Learner Transport

Enhance access to Learner Transport Services by reviewing Operating License (OLS) requirements, particularly for rural areas. This effort includes optimising existing GO GEORGE bus stops at schools and introducing additional routes and stops to establish a more reliable, scheduled service for students, as opposed to the current ad hoc WCED Learner Transport services.

Expanding the Public Transport system can reduce the need for dedicated scholar services in urban areas, enabling students to utilise the Integrated Public Transport Network (IPTN) at reduced fares. This approach allows for the redirection of subsidies to regions lacking public or scholar transport services, thereby increasing overall PuT ridership and facilitating cross-subsidisation within the system.

Garden Route Mall Taxi Rank is an informal taxi rank, operating on George Mall parking lot, with permission from the landowner. There are no plans to upgrade to a formal rank, however, a paved loading area and roofed shelter should be provided.

6.7.3.4 Chartered Services

To ensure that Chartered services do not interfere with the scheduled GO GEORGE IPTN service, the following guidelines are provided:

In accordance with the Road Traffic Act and the George Municipality By-law 2023, GO GEORGE bus stops are reserved exclusively for GO GEORGE buses. This regulation is justified as these bus stops are located within active traffic lanes, where buses must stop, thereby ensuring that the bus retains the right-of-way. The newly enacted by-law prohibits other bus operators from legally using GO GEORGE bus stops for passenger drop-offs or pick-ups.

There is, however, a need to accommodate other public transport services in George, such as the African Express Transport Service, which operates 61 buses from Brick Road in George Industria and serves destinations including York University, various schools, and community and social organisations within George Municipality and surrounding towns.

To address this, it is advisable to construct bus embayment's for private operators away from GO GEORGE routes, ideally on adjacent side roads, subject to conditions of approval by the George Municipality.

6.7.3.5 Minibus Taxi Industry

Table 6-9 summarises the RP for the Minibus Taxi industry.

Table 6-9 Minibus Taxi Industry RP

No.	Area of Integration	Description
1.	**Formalise Minbus Taxis**	Rationalise taxi routes to enhance service quality and reduce competition on the roads. Develop a Public Transport Transformation Plan that formalises minibus taxi operations, integrating them into proper public transport service models. This plan could involve transitioning taxi operations to a more structured, scheduled service, similar to the GO GEORGE bus system, to achieve the outlined goals and objectives.
2.	**Expansion of services**	Minibus taxi service contracts, similar to those of GO GEORGE, should be developed to serve areas lacking sufficient public transport or to transform existing services into a more formal, scheduled operation that supports the GO GEORGE system.
3.	**Area based services**	Consider transitioning from route-based operating licenses for taxis to area-based licenses where appropriate. This transition could involve a mix of scheduled and unscheduled taxis, with tracking systems implemented to monitor their areas of operation.
4.	**ITS**	Additionally, employ other Intelligent Transportation Systems (ITS) components to support this transition.
5.	**Subsidising**	Subsidising minibus taxis should be part of the transformation plan, with subsidy levels corresponding to the extent of transition within the plan. Tracking devices should be installed to collect data and monitor progress effectively.

6.7.3.6 GO GEORGE Bus Service

6.7.3.6.1 Infrastructure Plan

The GO GEORGE Bus Depot is currently situated on York Street in George South. In December 2022, a tender was issued for the planning, design, and construction monitoring of a permanent bus depot to replace the temporary facility located on Erf 3472, York Street.

The new medium-sized facility will include administrative offices, parking for buses and private vehicles, fuelling stations, cleaning and washing areas, maintenance workshops, and storage facilities. It will be designed with flexible parking layouts to accommodate a mixed fleet of mini-, midi-, standard, and single articulated buses.

The depot will be owned by George Municipality and will serve as the operational base for a single vehicle operating company (VOC). The site for the new Permanent Depot is planned on a portion of Erf 464 George (in the Borchards area) and is approximately 4.6ha in extent. Access is to be obtained from a future access road to be constructed between PW Botha Boulevard and the future Rand Street extension.

6.7.3.6.2 GO GEORGE Route Plan

Figure 6-9 shows the currently (Aug 2024) operating routes, Phases 1- 4 and **Figure 6-10** shows current and planned routes Phases 1 – 6.

Existing routes:

- GO GEORGE Phase 1, 2, 3 and Phase 4B, and two routes (18A and 18B) of Phase 4A are currently operational.

Planned Phases:

- The remaining routes of Phase 4A will be rolled out in 2024 and entails a CBD service, a Garden Route Mall service, an industrial service and community services.
- GO GEORGE Phase 5 lines are planned to expand from George CBD to Wilderness, Victoria Bay. Touwsranten, Hoekwil and Kleinkrantz are planned to be rolled out in 2025/26.
- GO GEORGE Phase 6 lines expanding to Herolds Bay, Oubaai, George Airport, as well as Nelson Mandela University towards Saasveld Campus and connect them with George CBD are planned to be rolled out in 2025/26.
- Consider expanding the GO GEORGE service to include the current farmer community and their labourers West of George urban area (R404), which is currently serviced by a private chartered service (African Express).

Figure 6-11 shows GO GEORGE passenger volumes of the 2-Hour Peak Period zoomed in for the George Urban Area Base Year and **Figure 6-12** shows the same plot for the 20-year forecast with 5-20 year links and new GO GEORGE lines on all new roads. It must be noted that the calibration of the model was done before the rolling out of Phase 4A Lines 18A and 18B.

Figure 6-9: GO GEORGE Current Routes August 2024

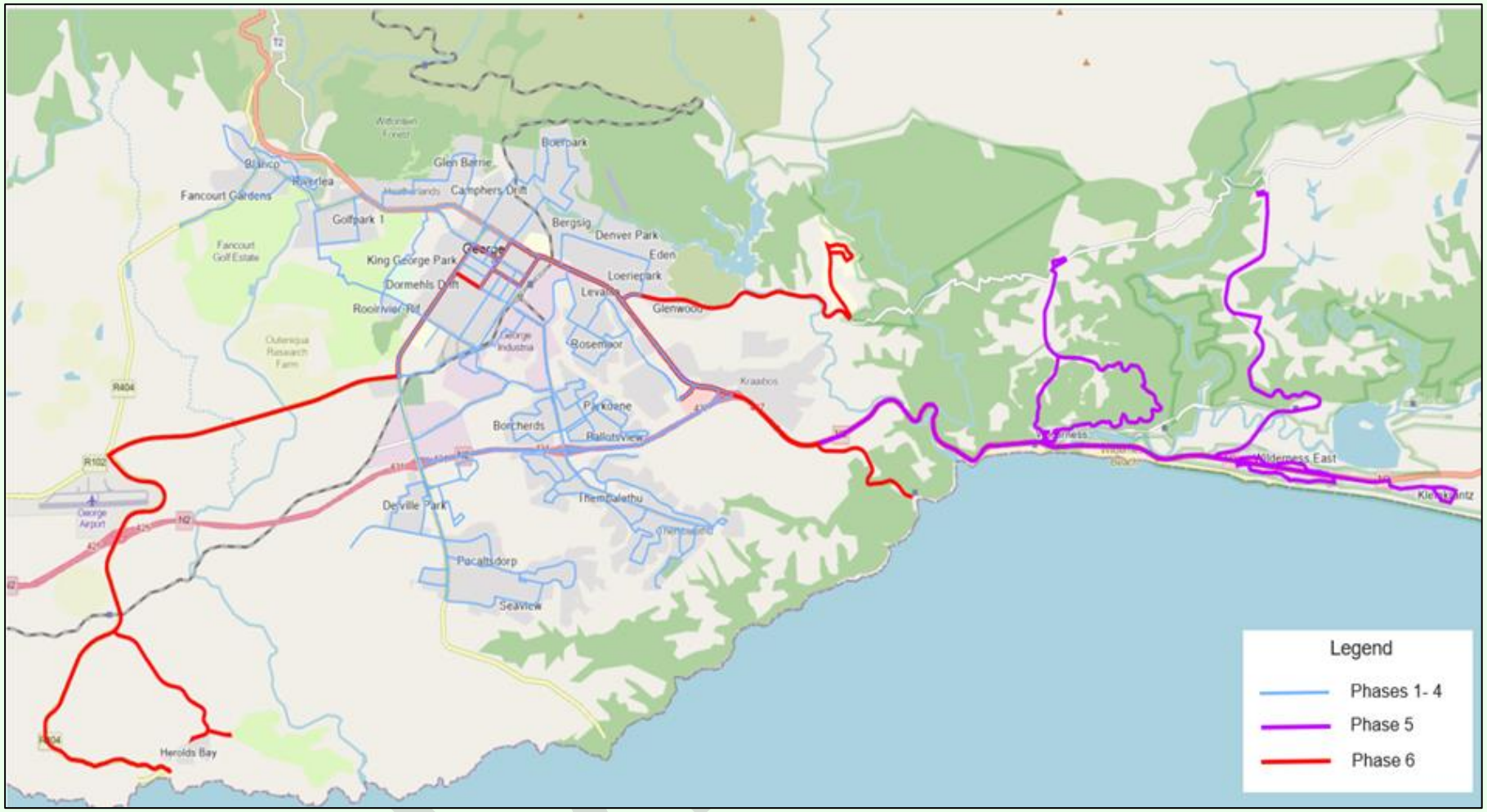


Figure 6-10: Current (Phases 1- 4) and Planned Phases for GO GEORGE

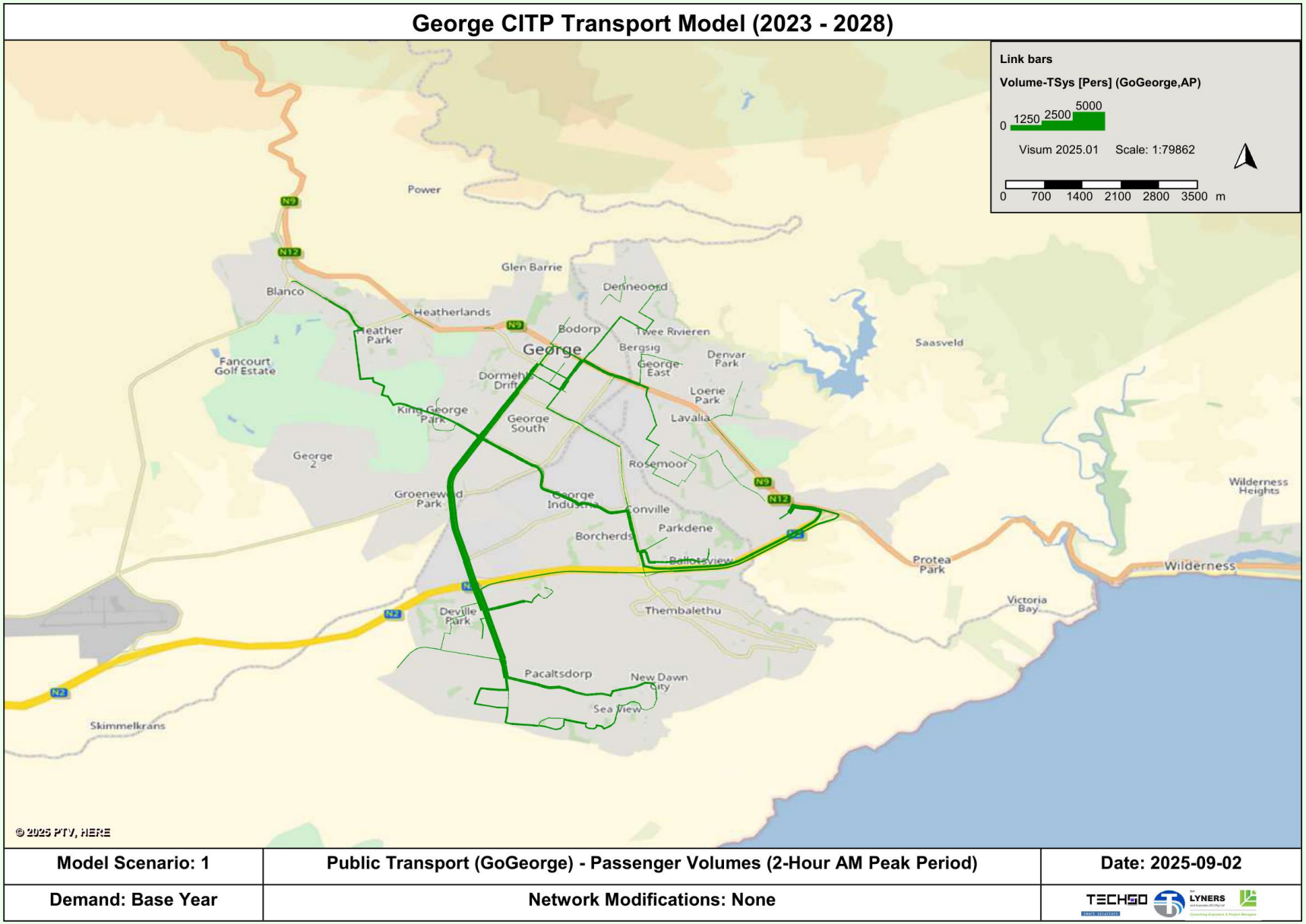


Figure 6-11: GO GEORGE passenger volumes of the 2-Hour Peak Period zoomed in for the George Urban Area Base Year.

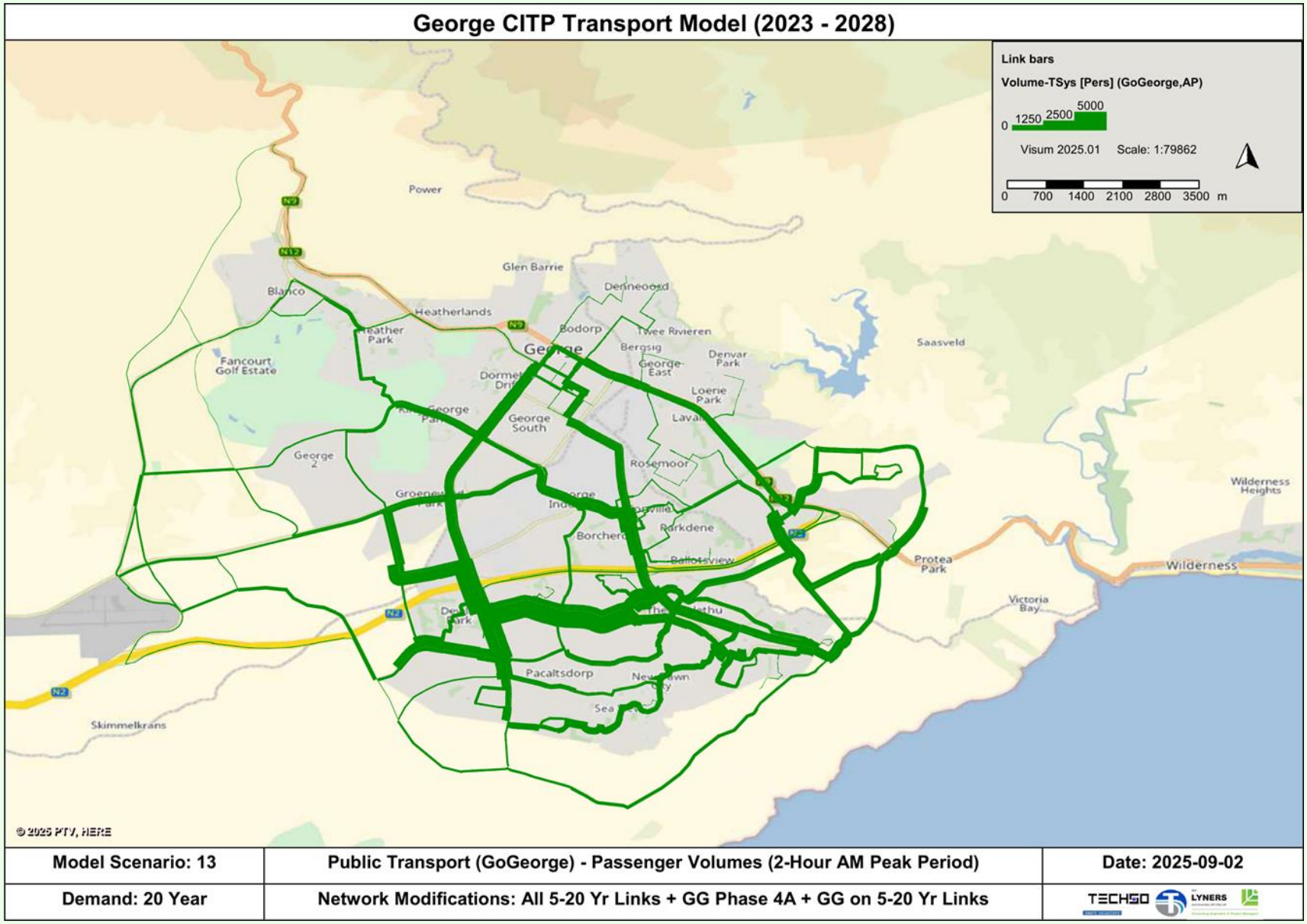


Figure 6-12: GO GEORGE passenger volume for 2-Hour Peak Period zoomed in for the George Urban Area 20-Year Forecast.

6.7.3.7 Real-Time traveller information

Improve Real-Time Traveller information to Commuters and passengers.

6.7.3.8 Fare Integration

Implement integrated fare systems across all public transport (PuT) systems, utilising Intelligent Transportation Systems (ITS) applications.

6.7.3.9 Non-Motorised Transport

Establish a dedicated NMT (Non-Motorised Transport) Section or Branch to focus on the development and implementation of NMT policies, guidelines, standards, and a comprehensive NMT Masterplan. This initiative will ensure the creation of a well-planned and appropriate NMT network and supporting infrastructure in George.

In the interim, the following measures are recommended to enhance NMT by prioritising safety and the maintenance of NMT infrastructure:

- Safety for Vulnerable (young, elderly) road users.
  - Reduce speed limits.
  - Implement traffic calming.
- Safety for NMT users.
  - Create safer NMT crossings at road network nodes and on road links.
- Maintenance of NMT infrastructure
  - Fix broken incorrect NMT infrastructure.
  - Provide Universal Access infrastructure.

For further details refer to the Non-Motorised Plan in **Chapter 9** Non-Motorised Transport Plan (NMT) Plan.

6.7.3.10 Commuter Rail Rationalisation

Explore the feasibility of reactivating a sustainable rail commuter service between Mossel Bay and George. Additionally, the potential of a commuter rail service within the Garden Route District, particularly for enhancing tourism access between Mossel Bay, George, Wilderness, and Knysna, along with the development of an infrastructure strategy for rail.

6.7.4 Rationalisation Plan Summary

In summary, the CITP Rationalisation Plan is a pivotal step toward creating a more efficient, accessible, and sustainable transport system within the municipality. By thoroughly evaluating current subsidised service contracts, engaging in comprehensive stakeholder consultations, and strategically planning future public transport initiatives, the plan establishes a strong foundation for the ongoing evolution of George's transportation landscape. The forward-looking strategies for GO GEORGE bus services highlight a commitment to improving service reliability, safety, and user satisfaction, thereby encouraging greater public transport use. This plan not only aligns with national and regional transportation goals but also addresses the specific needs of George's community, setting the stage for a future with enhanced mobility.

The integration of innovative technologies and sustainable practices is crucial to achieving the vision of a connected, efficient, and user-centric public transport system in George. The rationalisation of public transport is essential, focusing on developing the most appropriate transport solutions while reducing competition among different systems. The ultimate goal is to create an integrated Public Transport System that aligns with the municipality's objectives, improving accessibility and mobility for commuters, residents, and visitors alike. A key component of this rationalisation process is the transformation of non-scheduled public transport services, such as taxis, into scheduled services. The consideration of a shift from route-based permits to area-based permits represents a significant advance, offering greater service flexibility and catering to a broader range of community needs, including transportation for events like funerals, sporting events, and other activities.

6.8 Conclusion

The Public Transport Plan for George Municipality represents a critical step toward developing a more integrated, efficient, and sustainable transport system that meets the diverse needs of its community. By aligning with national and regional objectives, the plan lays a comprehensive foundation for transforming George's mobility landscape.

Key strategies, such as the continued expansion of the GO GEORGE bus service, rationalisation of taxi routes, and the potential reactivation of rail services, underscore the municipality's commitment to enhancing accessibility, safety, and user satisfaction. The emphasis on stakeholder engagement and the integration of innovative technologies and sustainable practices further ensures that the public transport system remains responsive to the evolving demands of the community.

Through the rationalisation of services and the strategic planning of future transport interventions, George Municipality is poised to achieve a modal shift towards greater public transport utilisation. This approach not only addresses current transportation challenges but also sets the stage for a more connected, inclusive, and environmentally responsible transport system, ultimately improving the quality of life for all residents and visitors.

The plan also recognises the importance of creating a transport system that is not only efficient and reliable but also inclusive of all demographics, including learners, persons with disabilities, and those in rural areas. By doing so, George Municipality is paving the way for a future where public transport is the preferred mode of travel, contributing to the broader goals of social equity, economic development, and environmental sustainability.

6.9 Summary of The Public Transport Plan

The key actions of the Public Transport Plan are summarised below:

Expand and Enhance the GO GEORGE Bus Service

- Continue with the development and implementation of GO GEORGE Phases, including expanding to underserved areas in George urban area.
- Roll out new routes planned for 2024-2026, including routes to Wilderness, Victoria Bay, and George Airport.

- Expanding the GO GEORGE service to include the current farmer community and their labourers West of George urban area (R404).

Formalise and Integrate Minibus Taxis

- Rationalise minibus taxi routes to improve service quality and reduce unnecessary competition.
- Ensure integration with the GO GEORGE system for better network cohesion.

Improve Learner Transport Services

- Subsidise learner transport and consider integrating these services with GO GEORGE.
- Evaluate and enhance Operating License requirements specifically for rural areas to improve access for learners.

Develop and Upgrade Public Transport Infrastructure

- Construct a permanent bus depot for the GO GEORGE bus service.
- Improve Park-and-Ride facilities to support better access to public transport.
- Enhance the quality of existing public transport facilities, including taxi ranks.

Promote Sustainable and Accessible Transport

- Implement integrated fare systems across all public transport services using Intelligent Transport Systems (ITS).
- Improve real-time traveller information for commuters and passengers.
- Develop a Non-Motorised Transport (NMT) Masterplan and improve NMT infrastructure, prioritising safety and accessibility.

Explore Rail Service Opportunities

- Investigate the reactivation of a commuter rail service between Mossel Bay and George.
- Explore the feasibility of using rail for tourism within the Garden Route District, connecting Mossel Bay, George, Wilderness, and Knysna.

Operating Licences

- **Regulate Supply and Demand**: Assess and align the number of Operating Licences with actual public transport demand to avoid over-supply and inefficiencies.
- **Ensure Compliance with the Integrated Public Transport Network (IPTN)**: Review and adjust OLs to ensure they align with the routes and services defined in the IPTN.
- **Transition to Area-Based Licensing**: Implement the transition from route-based OLs to area-based OLs to enhance flexibility and better meet community needs.
- **Coordinate with Provincial Regulatory Entity (PRE)**: Provide guidance and recommendations to the PRE on OL applications to ensure alignment with local transport policies and this George CITP.

- **Balance Public Transport Services**: Manage OLs to maintain a balance between the GO GEORGE bus service and minibus taxis, preventing overlap and competition on key routes.

7 TRANSPORT INFRASTRUCTURE STRATEGY

7.1 Key Aspects

- George Municipality has a high population growth rate due to rapid urbanisation, with estimated 1.2% growth per annum.
- A dynamic Transport Model (TM) incorporating current and future land-use development, road-based transport (private, public and freight) and Non-motorised Transport (NMT) and PRASA was developed to analyse the existing road network and to identify future road network infrastructure needs.
- A road hierarchy plan is also provided.

The Roads Master Plan (RMP) is informed by the TM. The purpose of a transport infrastructure strategy is to support the goals and objectives for the development of an integrated transport network. It focusses on the development and maintenance of all transport infrastructure including roads and public transport facilities. To guide transport related infrastructure planning, a dynamic Transport Model (TM) was prepared to refine the further develop the existing George Roads Master Plan (RMP), to meet future spatial planning and associated transport requirements.

7.2 Status Quo Transport Infrastructure, Planning and Projects

George Municipality (GM) is the second biggest municipality in the Western Cape, second to the City of Cape Town (CCT). The Census 2022 figures indicate that the population has grown at 4,1% per annum since 2011, which appears to be the highest growth rate among the 19 intermediate cities in South Africa. The population growth of the area is estimated at 1.2% per annum for the period 2021 to 2031.

Urban expansion and densification resulting from rapid population growth impacts on the demand for municipal services. To facilitate planning to accommodate the future growth in George a dynamic Transport Model (TM), that can be updated according to development and transport growth needs, was developed.

The TM incorporates comprehensive current and future land-use development input. The TM has four (4) transport model assignments i.e., freight transport (Ft), private transport (Pt), public transport (Put) and Non-motorised transport (NMT) that is used to model transport demand and supply and to evaluate traffic flow and capacity constraints on the current and future road network. The TM Model evaluates the transport requirements for various land-use and road development scenarios [base year (2022), 5-year, 20-year, +20-year scenarios].

7.2.1 Previous Planning Input

Previous planning documentation were used as input to the development of the Transport Infrastructure Strategy and updated RMP.

- 2005 George Roads Master Plan by Kantey and Templer
- Current CITP 2013 as updated in 2014/15
- George CBD Traffic Modelling – September 2020 – SMEC report.

7.2.2 Previous Road Infrastructure Planning Input

The George Road Master and Hierarchy Plan (by Messrs Kantey & Templer in 2005) recommended the implementation new road links and road network upgrades (which were subsequently incorporated in the 2009 Spatial Development Framework (SDF) for George LM). The proposals are listed in **Table 7-1** and status of each are indicated. Note that only Phase 1 of Rand Road Extension has been implemented.

7.2.3 Previous CITP Objectives 2013 (2014/15 Update) Input

The CITP 2013 contains the following objectives, with highlighted items having particular influence on the Transport Infrastructure Strategy.

- To coordinate and integrate all transport modes and services.
- To provide, maintain and operate efficient public transport infrastructure.
- To promote and integrate land use and public transport corridors.
- To ensure safety for all users of public transport.
- To ensure continuous short-term and long-term planning of all public transport aspects.
- To ensure the acquisition of funds and its effective expenditure on all transport infrastructure.
- To maximise empowerment opportunities for people using public transport.
- To improve the general levels of service of public transport.
- To minimise adverse impacts on the environment.
- To promote and plan for the role of appropriate non-motorised forms of transport such as walking and cycling.
- To promote and plan for universal access in IPTN, including walking and cycling.
- To promote travel demand management measures to encourage less car usage, to improve the environment and to improve road safety.
- To promote walking, cycling and other non-motorised transport measures.
- To provide non-motorised transport facilities and include their requirements in traffic impact studies.
- To incorporate self-enforcing traffic calming measures in the design of new residential areas and to apply the traffic calming policy for existing areas.

7.2.3.1 George CBD Traffic Modelling – September 2020 – SMEC report

The following road network upgrades depicted in **Table 7-2** below, are based on 50% and 100% development density scenarios for years 20283 and 2038 respectively, are identified in the George CBD Traffic Modelling report.

Table 7-1: George Road Master and Hierarchy Plan New Road Links (Kantey & Templer – 2005)

No	New road links	Description
1	George CBD one-way streets	The proposals for one-way street systems are described as follows: Between York and Hope Street, the one-way pair of Hibernia (eastbound) and Market (westbound) Between Albert and Courtenay Streets, two one-way pairs with Meade (northbound), Cradock (southbound).
2	Blanco / Heather Park / Plattner Boulevard	The western extension of Plattner Boulevard towards the MR 347 will aid traffic flow and access in the western parts of the town, this area currently has limited access from the north and south. The western extension of Plattner Boulevard will intersect with DR 1618 and MR 347.
3	Southern Arterial / Extension of DR1618 (Gwaing Road)	The southern arterial will improve the development potential of vacant land to the south of Pacaltsdorp and Thembalethu for residential development. The southern arterial connects Pacaltsdorp and Thembalethu to the N2 and the Kraaibosch area in the west.
4	Western Bypass	The Western Bypass route provides a more direct connection between the Outeniqua Pass and the N2. It will link with the MR 347 outside Blanco and will reduce the extent of travel through the centre of George on already congested routes such as Courtenay Road. This project provides an alternative route to the existing MR347 route, which winds through the Blanco Residential area. At this stage it is important to protect this route and to proclaim the route based on a preliminary design.
5	PW Botha Boulevard Extension	The western extension of PW Botha Boulevard from York Street to the TR2/9 (R102) will serve the expansion of the industrial area of George.
6	Rand Road Extension **(Implemented Phase 1 in 2023)**	The extension of Union Street under the railway line to link into Rand Road in the industrial area south of the rail. The second phase of the project is the Rand Street extension southwards across the N2 to connect with Pacaltsdorp.
7	Servitude Road	A road from Kraaibosch to the Industrial area, by means of series of servitudes, is required to provide a more direct route from the Kraaibosch area to the Industrial area skirting Thembalethu.


Table 7-2: George CBD Modelling Network Upgrades (SMEC 2020).

Horizon Year	Development Scenario	No	Road	Road Section
2028	50%	1	Widen Knysna Road (N9/N12)	Inbound to Memorium Street and outbound from Memorium Street to Madiba Drive (3 lanes per direction);
		2	Widen Memorium Street/Hope Street	Between Knysna Road/Courtenay Street and Union Street/Rand Street (2 lanes per direction);
		3	Widen Nelson Mandela Boulevard	Between Foundry Street and York Street (2 lanes per direction).
2038	100%	1	Widen Courtenay Street (N9/N12)	Between York Street and Memorium Street (3 lanes per direction)
		2	Widen Hope Street (N9/N12)	Between Union Street and York Street/Hope Street/ R102 (2 lanes per direction).

Notes:

1. The 2018 base year proposed lane configuration of the George CBD requires the following road improvements to accommodate the anticipated 2028 Horizon Year (CBD 50% densification) traffic flows at an acceptable Level of Service.
2. The 2018 base year proposed lane configuration of the George CBD requires the following road improvements to accommodate the anticipated the 2038 Horizon Year (CBD 100% densification) traffic flows at an acceptable Level of Service.

7.2.3.2 Public Transport

Predominant public transport services in George are mini-bus taxis and the GO GEORGE bus service as well as Airport Company South Africa (ACSA). Key public transport facilities in the George area are summarised in **Table 7-3**. GO GEORGE bus routes, public transport interchanges, termini and bus stops are shown in **Figure 7-1**.

Table 7-3: Public Transport Services in George.

No.	Name of Facility	Type of facility	Location of facility	Comments
1	GO GEORGE Bus Depot	Bus Holding Area/Depot	York Street	Plans to be relocated to a permanent facility, Erf 464 (in Borchards area)
2	GO GEORGE Bus Stops	On-street bus stops	Throughout GO GEORGE Public Transport Routes	GO GEORGE route extended into Thembalethu in 2023. Continual expansion and maintenance.
3	GO GEORGE "horseshoe" Terminus	Bus Terminus	Craddock Street	Was upgraded in 2016
4	Thembalethu Taxi Rank	Taxi Rank	Nelson Mandela Boulevard in Thembalethu	To be repurposed due to recent extension of GO GEORGE Bus Service to serve Thembalethu
5	Craddock Taxi Rank	Taxi Rank	George CBD	Requires maintenance
6	Garden Route Mall Informal Taxi Rank	Informal Taxi Rank	Garden Route Shopping Centre parking lot	Taxi Rank requires shelters for commuters and facilities for taxi operators
	GIPTN Garden Route Mall terminus & temporary transfer location	Transfer Location	Portion 286 of Erf 195	Facility is currently being upgraded with a ticket office, waiting areas, and toilets.
7	St Marks Square Taxi Rank	Taxi Rank	St Marks Square Shopping Centre parking lot	Long distance taxi service and college bus charter stop.
8	Long Distance bus stop (Translux and Intercape)	Bus Stop	At George Railway Station	Operates from George Railway Station parking area
9	Long Distance bus stop (Translux and Intercape)	Bus Stop	At Sasol Garage off the N2	Operates from area behind Sasol Garage
10	ACSA George Airport	Regional Airport	R404	Considering to expand operations to include international travel and freight.

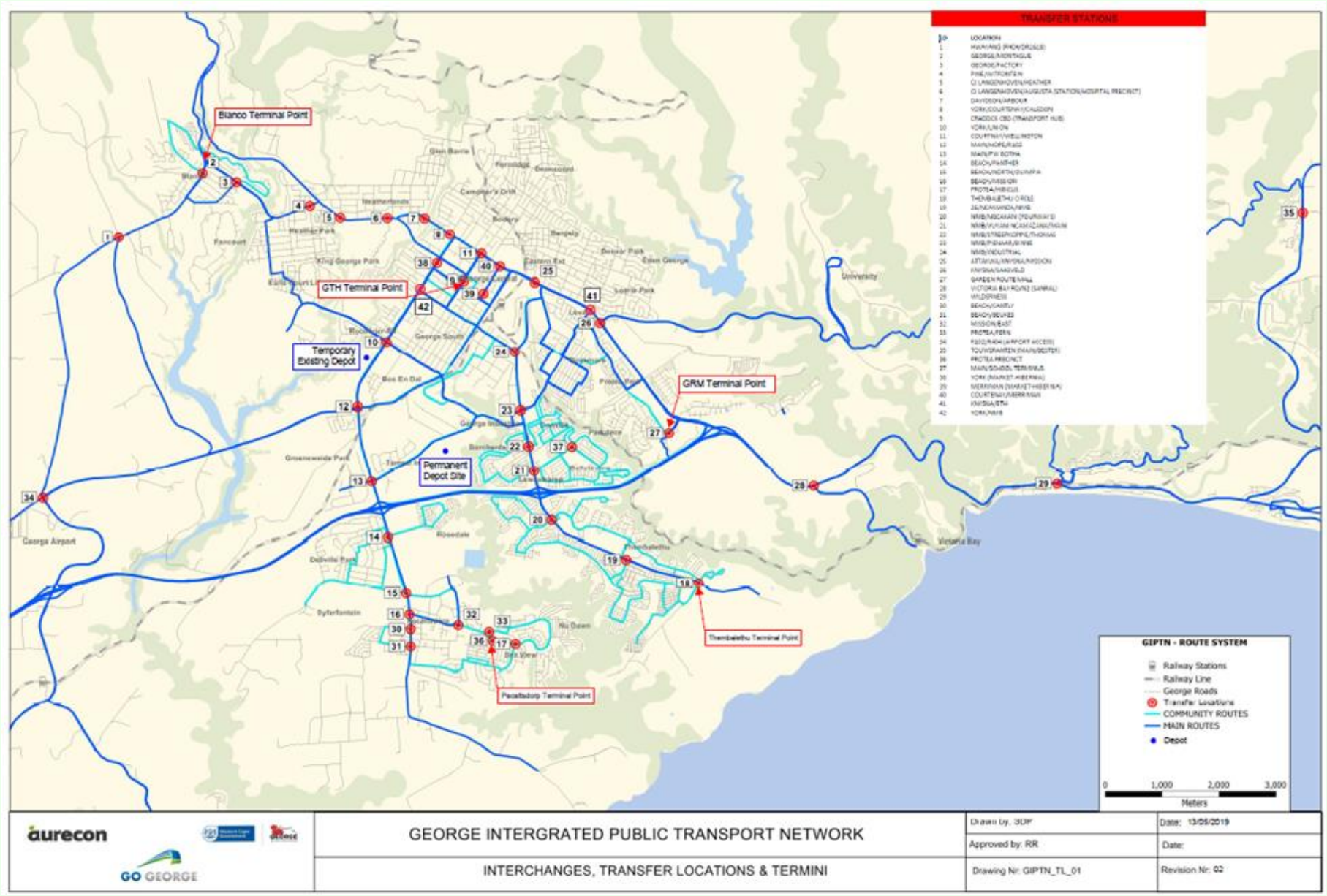


Figure 7-1: George Integrated Public Transport Network.

Expansion of GO GEORGE bus routes and facilities

Phase 4a of the GO GEORGE Bus Service into Thembalethu township, as depicted in **Figure 7-1**, was recently implemented (in November 2023).

Further phases of the GO GEORGE bus service area planned to extend its reach to other areas, such as Herolds Bay, Victoria Bay, Wilderness, Kleinkrantz, Touwsranten, Wilderness Heights and Hoekwil. It is anticipated that the GO GEORGE bus service could also include Mossel Bay.

It is planned to relocate the existing bus depot to Erf 464 in Borchards area.

Other Bus Services in George

GO GEORGE Bus stops are exclusive to GO GEORGE buses in terms of the Road Traffic Act, supported locally by the George Municipality By-law 2023. This is understandable with these bus stops being in travelled lanes (i.e. following traffic forced to stop or pass stopped buses) to maintain bus right-of-way in the lane. The recently approved by-law precludes other bus operators from legally stopping in GO GEORGE bus stops to drop-off / collect passengers.

There is a need to provide bus embayment's for other public transport services bus operators in George (i.e. African Express Transport Service located in Brick Road in George Industria has 61 buses and provides a public transport service to York University, various schools, community and social organisations in George Municipality and other towns). In principle bus embayments for private enterprises should not be built on GO GEORGE routes, but should rather be built on a side road, within a 500 metre walking distance to the nearest GO GEORGE bus stop, to the approval of GM.

7.2.4 Non-Motorised Transport (NMT)

NMT transport is predominantly walking or cycling, with other non-motorised forms of transport (i.e. skateboard, donkey cart) playing a lesser role.

Non-motorised transport (NMT) is a highly cost-effective transportation strategy and brings about significant health, economic and social benefits, particularly for the urban poor. It is a healthy, non-polluting, and reliable mode of transport and encourages local movement and support of local community facilities.

Many cyclists commute to work or school to reduce household expenses by lowering transportation costs. Utility cycling also includes bicycle delivery services, which are growing in popularity thanks to the assistance of e-bikes

Besides cycling as an essential need / utility, providing needed cost-effective transport to work, cycling is also a popular sport and recreational activity.

Sport cyclists usually travel long distances (over 15 km) at high cycle speeds. They often travel different routes and prefer to be on roads where they are not confronted by impedances and where traffic "sweeps" the travelled way, reducing likelihood of punctures by thorns. It is not feasible to provide dedicated cycle paths in this instance, and care should be taken in road planning to accommodate cyclists along the roadway (road shoulders) and at pinch points (structures, intersections kerb offsets) to enhance NMT cyclist traffic safety.

Recreational cyclists typically cycle for fun or entertainment purposes with destinations being recreational facilities, such as

public parks, tourist attractions, CBD. It is not uncommon to find families cycling with young children where suitable safe cycle paths are available. Ideally separate cycle paths to, in and around identified recreational facilities and including George CBD should be provided, as well as bicycle lock up facilities.

A shift from private car use to non-motorised transport, plays an important role in using the existing road network more efficiently and delivering significant potential economic and environmental benefits to society, as well as enhancing health and lifestyle benefits for individuals.

78% of all NMT trips in George are between 0,0 and 2,0 km as depicted in **Figure 7-2**. Approximately 97% of High-Income Home Based to Work trips are between 0,0 to 2,0km as depicted in the **Figure 7-3**.

Approximately 50% of low-income workers travel more than 2,0km to work, with half of this being over 5,0km, as depicted in the **Figure 7-4**.

Approximately 25% of the Low-Income Home Based to Work trips are between 2,0 km to 5,0 km and 24% are more than 5 km.

Distances greater than 2,0 km (30 minutes' walk) lend themselves to cycling. Consequently, there is a high number of cyclists on Nelson Mandela Boulevard, between Thembalethu (home) and George Industrial (work) area and on Beach Road and York Street, between Pacaltsdorp (home) and Industrial (work) area, as depicted in **Figure 7-6**.

High NMT use by low-income earners is primarily due to financial constraints. It is also important to strategically plan and cater for this demographic by providing quality NMT facilities (sidewalks and cycle lanes) along main routes, particularly from residential areas to workplace. This is in addition to creating a pedestrian and cycle friendly CBD hub.

It is reasonable to assume that utility cycle ridership from Thembalethu and Pacaltsdorp would be increased with provision of appropriate cycle facilities.

It is also important to recognise and respond to the need for effective Public Transport and NMT provision in high income residential areas, that provide work opportunities for lower income earners, such as domestic; gardening; child-care; building services, etc.

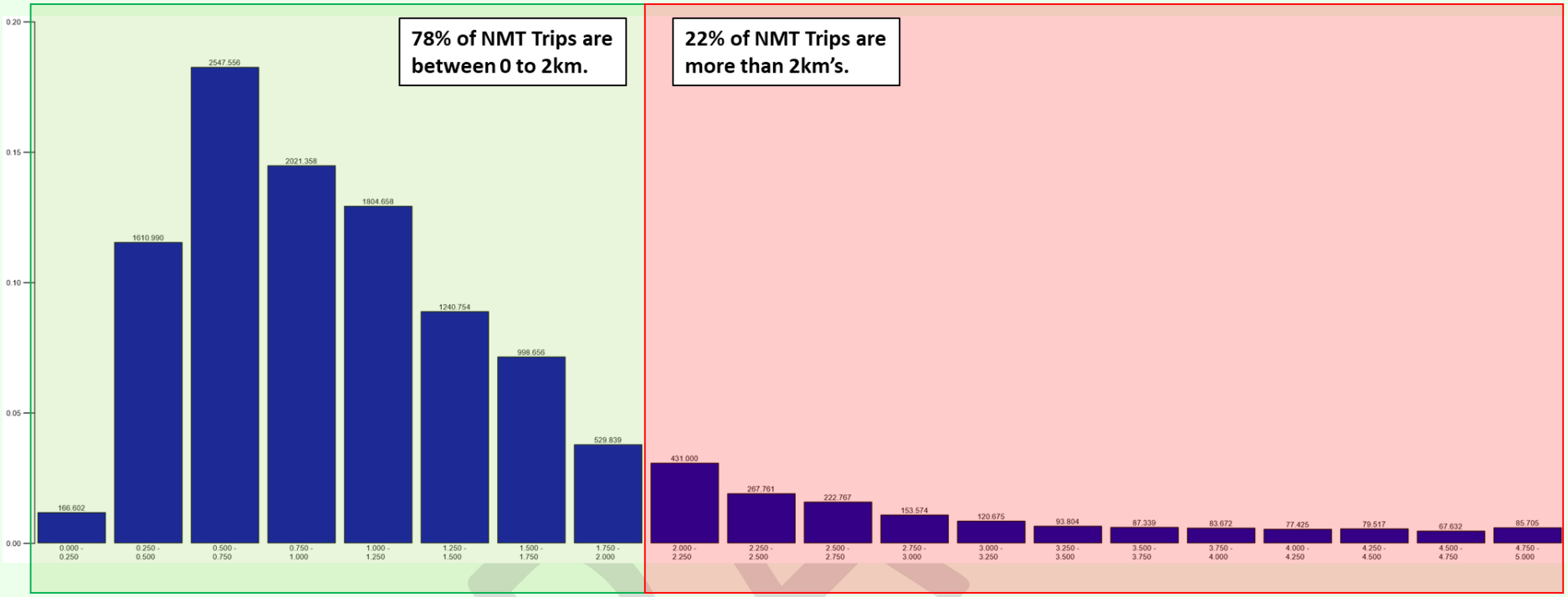


Figure 7-2: George ALL NMT Trips (STATS SA, 2020).

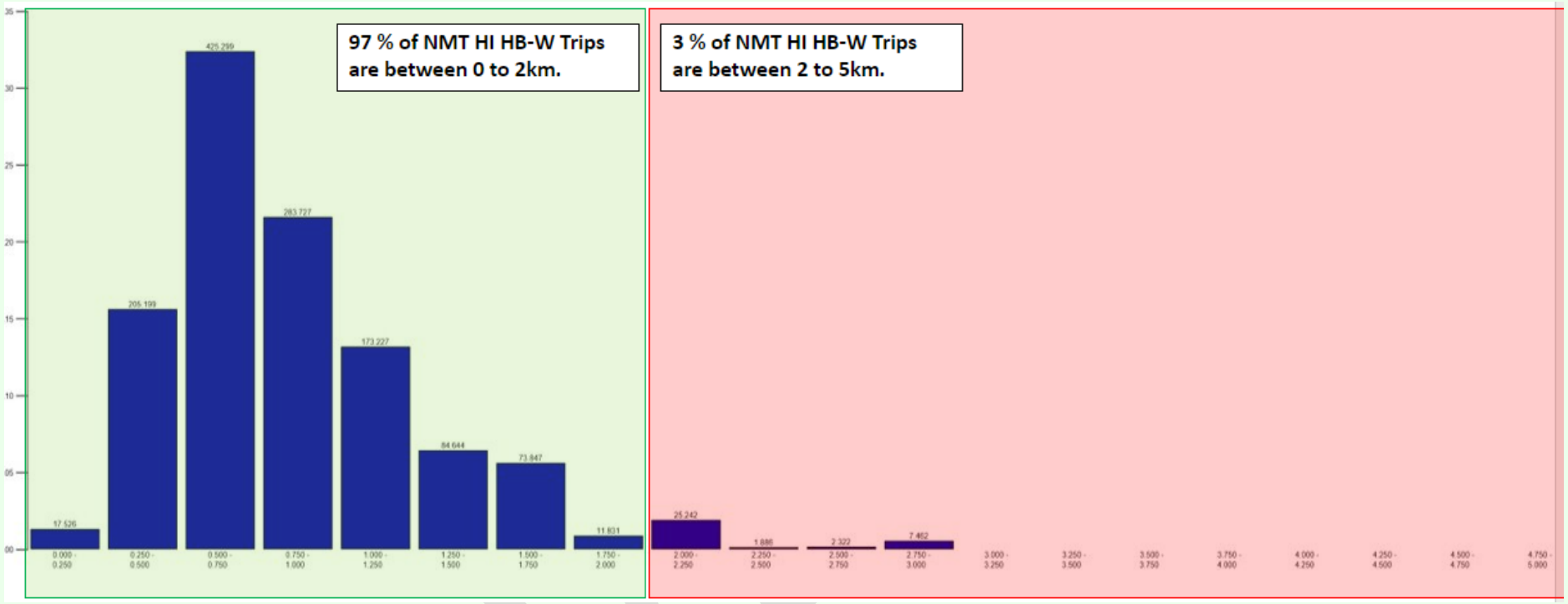


Figure 7-3: George NMT – High Income Trips in AM Peak Period (STATS SA, 2020).

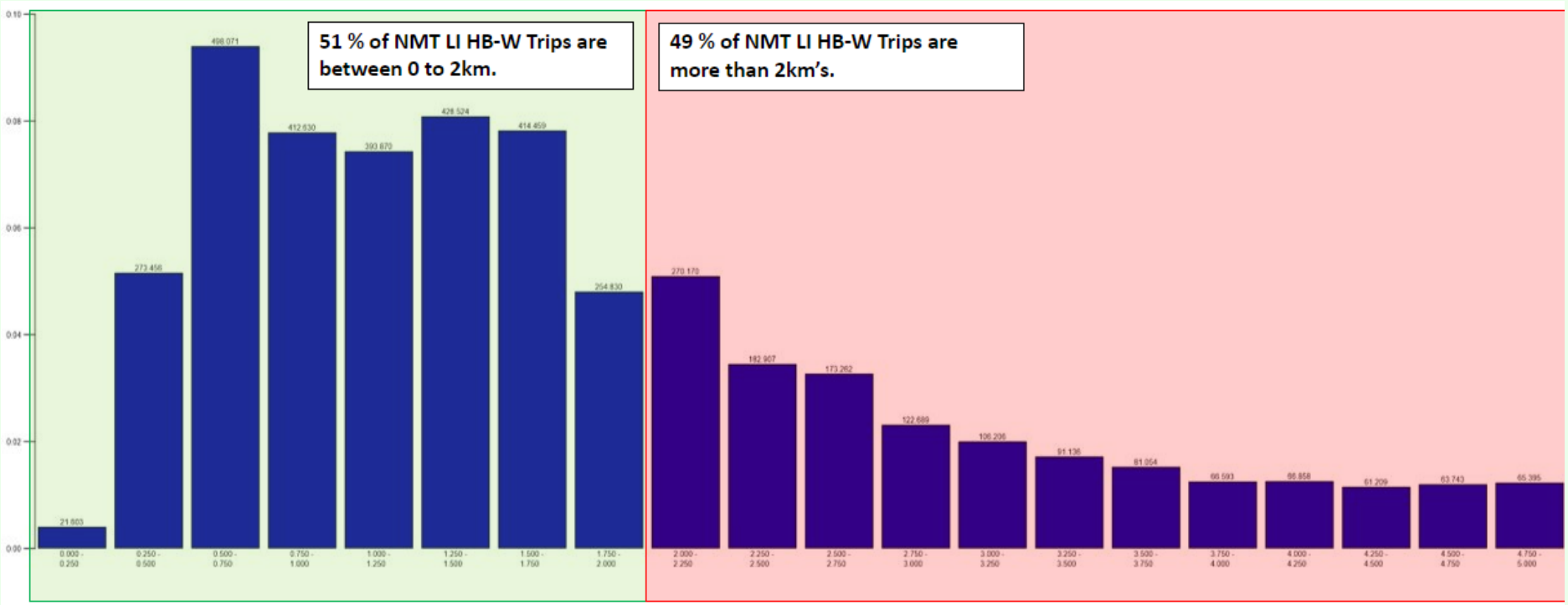


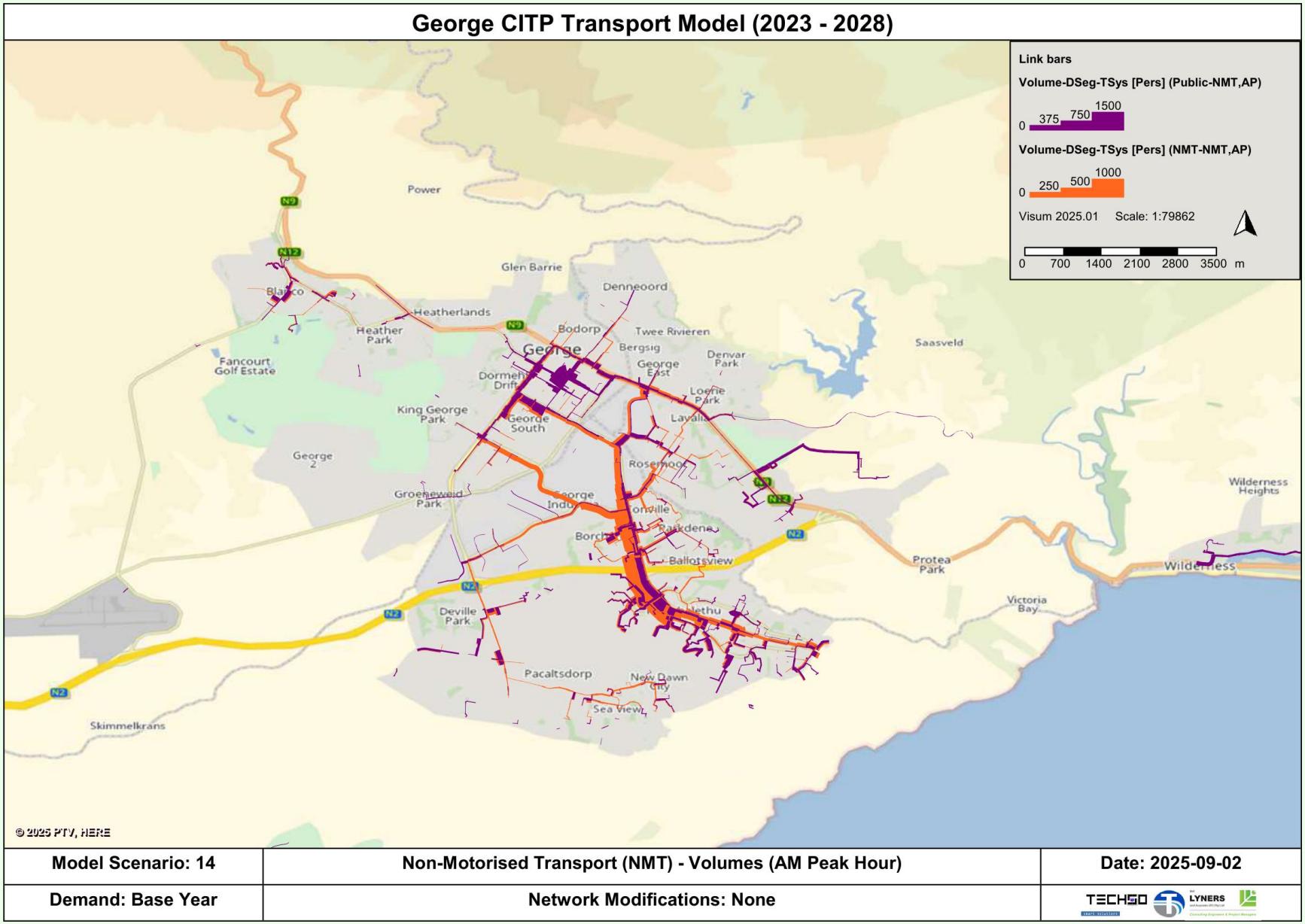
Figure 7-4: George NMT – Low Income Trips in AM Peak Period (STATS SA, 2020).

7.2.4.1 Existing NMT demand

For very short trips, walking is the main mode of transport in most societies, for both rich and poor. Most trips in all countries involve some walking to access public transport. Walking is the most important means of transport in developing countries, followed by public transport.

Most transport in South Africa is by road, ranging from walking on unpaved paths to motor transport on well-paved roads. For the majority of people in rural areas, walking is the only available option, and comprises mainly essential trips rather than leisure trips. NMT is available to almost everyone and universal access measures are important to improve accessibility for the mobility impaired.

The AM peak hour pedestrian demand in George LM is shown in **Figure 7-5**. The PM peak hour demand would be contraflow to the AM peak hour flow.



Model Scenario: 14	**Non-Motorised Transport (NMT) - Volumes (AM Peak Hour)**	**Date: 2025-09-02**
Demand: Base Year	**Network Modifications: None**	

Figure 7-5: NMT – Volumes in AM peak hour.

7.2.4.2 NMT - Sidewalks

George LM has paved sidewalks with universal access in the CBD and along key road links providing pedestrian accessibility to the CBD and Industrial areas.

Even though walkways and cycle ways are quite prominent, other NMT amenities such as benches, roadside furniture and bicycle lock up facilities are limited.

Seven main routes identified as significant for NMT users are listed in **Table 7-4**. Three short roads with low traffic volumes and high pedestrian volumes identified as significant for NMT users are listed in **Table 7-5**.

Table 7-4: Significant NMT Routes in George.

No.	Description	NMT Provision	Interventions
1	Nelson Mandela Boulevard/Albert Road corridor	This route has the highest pedestrian flows in George, with wide hard surfaced sidewalks.	Maintenance is required to sidewalks on the N2 interchange. The interchange is currently being upgraded to a divided dual carriageway on Nelson Mandela Boulevard.
2	Ngcakani Road corridor	This route has high pedestrian flows in George, with paved sidewalks on both road edges north of Tshefu Street and a paved sidewalk along one road edge from just south of Tshefu Street.	Some maintenance is required to existing paved sidewalks and a sidewalk should also be provided on the eastern road edge.
3	Beach/York corridor	The road section between the N2 and the R102 has low pedestrian flow, and sidewalks are provided on along both sides of the road along its length.	Not applicable
4	Knysna/Courtenay corridor	Knysna Rd has sidewalks. Courtney St has sidewalks and has separated sidewalk/cycle lane from Casani St to Mission Rd.	Not applicable
5	From Garden Route Mall into town as well as the N9/N12 corridor between town and Blanco area.	These routes have wide paved sidewalks.	Not applicable
6	Wellington Rd from George CBD to Denneoord.	This route has sidewalks along both road edges.	Not applicable
7	Access road and Glenwood Rd serving Kraaibosch	This route has a sidewalk along one road edge.	Not applicable

Table 7-5: Significant short NMT Routes in George.

No.	Description	NMT Provision	Interventions
1	Thaba Street in Thembalethu from Nelson Mandela Boulevard into the residential area	Has sidewalks along both road edges.	Not applicable
2	13th Street in Thembalethu from Nelson Mandela Boulevard into the residential area	Lacks sidewalks.	Requires sidewalks.
3	Thomas St from Nelson Mandela Boulevard into the residential area	Has paved sidewalks along both road edges.	Not applicable

7.2.4.3 NMT - Cycle Facilities

There are three main reasons for cycling as listed below:

- Saving money
- No other available transport option
- Doing exercise

The main factor influencing cycling is transport costs and the vast majority of cyclists are low-income earners.

Cycling reduces reliance on taxi trips. It saves money and improves cyclist's household standard of living, particularly for lower income households where some 25% of income might normally be spent on public transport (ITS Engineers (Pty) Ltd, Dresden University of Technology, and IVAS Dresden, 2010).

Three basic conditions should be changed to attract more cyclists:

- Provision of a cycling network (or at least along an appropriate main route)
- Easier access to bicycles (i.e. Bloomberg Initiative for Cycling infrastructure: Funding Application, George Municipality (GM) - 31 January 2023 is intended to facilitate funding to improve cycle facilities and attract cycling as a mode of transport)
- Educational work with cycling community regarding road use, safety

A high number of cyclists have been observed on York Street, connecting Pacaltsdorp to George Industrial Area. A significant number of cyclists have also been observed traversing Nelson Mandela Boulevard, connecting Thembalethu township and the George industrial area, as seen in **Figure 7-6**.

At the N2/Nelson Mandela Boulevard interchange, the existing narrow sidewalks fail to accommodate cyclists adequately (see **Figure 7-7)**, and issues with traffic congestion and driver behaviour pose risks for cyclists sharing the road. Although the interchange is

being upgraded into a divided dual carriageway over the N2, featuring 3-meter wide sidewalks designed for shared use by pedestrians and cyclists, there remain areas for improvement. For instance, the upgrade introduces a 1.2-meter-wide shoulder on Nelson Mandela Boulevard over the N2. While not designated as a cycle lane, it is likely that cyclists will utilise this space.

North of the N2, Nelson Mandela Boulevard boasts marked cycle lanes extending to Industrial Street within the industrial area. To enhance cyclist safety and connectivity, it is recommended that these cycle lanes be extended from Industrial Road all the way to the CBD. This could be achieved by capitalising on existing road reserves to establish shared pedestrian and cycle facilities or by implementing on-street lanes in areas with limited verge space. Additionally, on Nelson Mandela Boulevard south of the N2, the 3-meter wide sidewalks present an opportunity for dual usage if appropriately marked to support both pedestrians and cyclists, thereby ensuring a safer and more integrated NMT environment in the area.

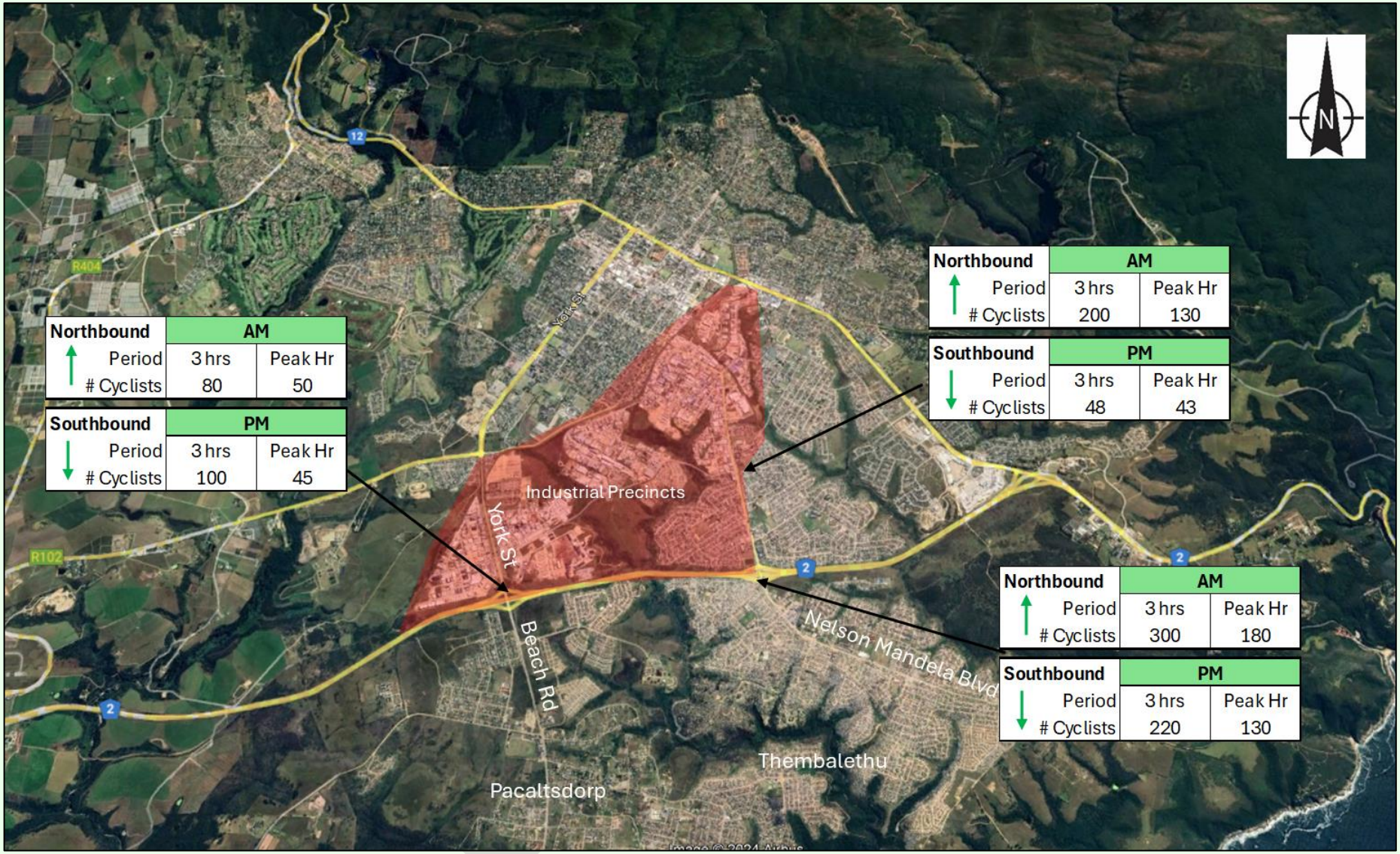


Figure 7-6: Cyclists on York Street and Nelson Mandela Boulevard.

Figure 7-7: Cyclists and Pedestrians on Nelson Mandela Boulevard at the N2/Sandkraal Interchange.

George Municipality has a municipal public road network (Road Class 2 to 5) which is accessible to Cycling. Cycling is not permitted on Class 1 Roads (Freeways). Few roads (approximately 2.45 km) currently provide on-street demarcated cycle lanes adjacent to vehicle lanes, as depicted in **Figure 7-8**. There are currently no separated (fully protected) dedicated cycle lanes in George Municipality.

Figure 7-9 shows the extent of the public road network where Cycling is permitted not permitted in the George urban area. It also depicts the current GO GEORGE public transport network, locations of schools and Closed-Circuit Television (CCTV) camera network (Pan-tilt-zoom (PTZ) and static cameras) on the road network.

The proposed bicycle project on Nelson Mandela Boulevard Corridor is depicted by the red shaded area in the diagram below. The

proposed corridor is approximately 8.0 km long, stretching from Thembalethu residential area (south of the N2) to the George CBD, intersection with York Street.

A portion of this corridor incorporates the current 2.45 km demarcated cycle lanes as indicated by the blue shaded area but requires a complete redesign and implementation to create a first fully accessible cycle network based on the cycling vision for George Municipality.

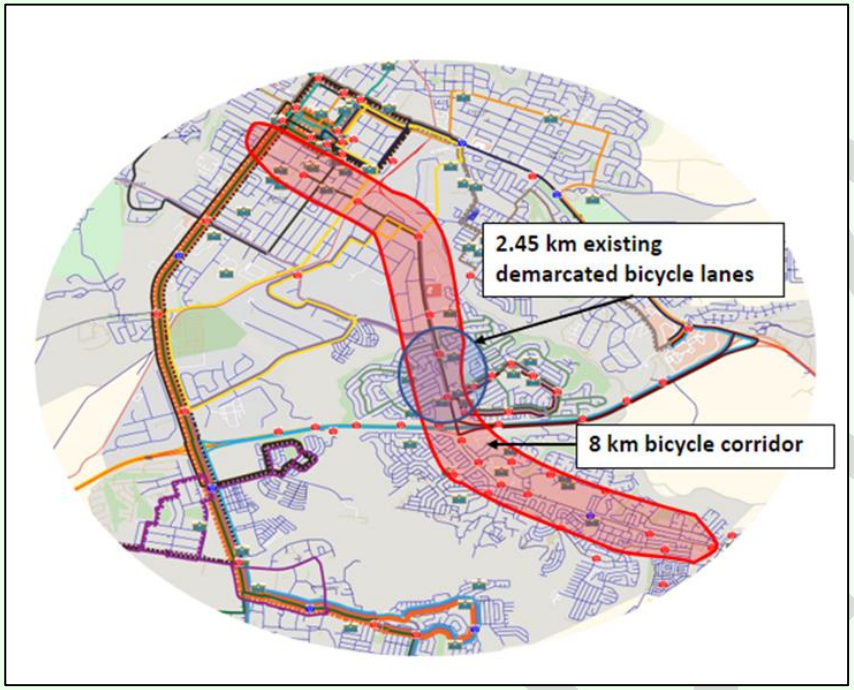


Figure 7-8: Nelson Mandela Boulevard cycle corridor, between Thembalethu and George CBD.

Beach Road/York Street Street, from Pacaltsdorp to George CBD is also a strong NMT corridor used by cyclists travelling in the paved road shoulder, as depicted in **Figure 7-9**.

Cycle lanes are absent from George CBD and would require careful and creative planning in view of pedestrian sidewalks spatial needs, on-street parking, parking areas, driveway accesses, traffic signals, street furniture, etc, to create a safe cycling facility. Potential Cycle routes are depicted in **Figure 7-9**.

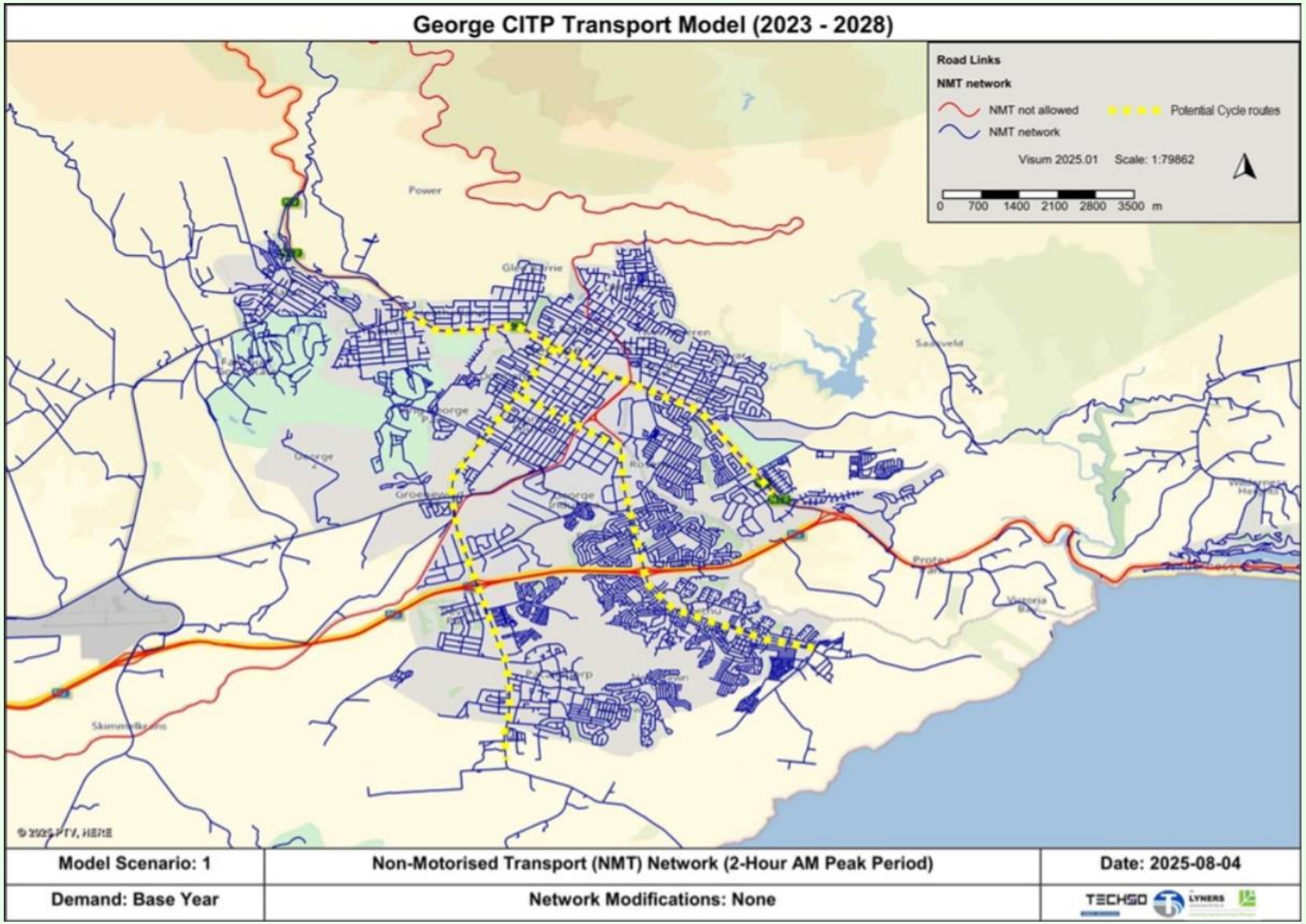


Figure 7-9: Potential cycle network in George Municipality.


7.2.5 Other Transport Services

7.2.5.1 Airport

The George airport is located southwest of George between the R102 and the N2. The airport currently has capacity to accommodate 800 000 passengers per annum. Airport Company South Africa (ACSA) are planning to upgrade the airport to serve international travel and to handle freight, which would increase the number of passengers as well as industrial related trips to and from the airport. ACSA also plan to develop an airport related industrial area close to the airport.

George airport has good access to the N2 and provides car rental services and some 330 parking bays. ACSA approved Public Transport taxi services operate from the airport. There are no scheduled public transport services to the airport.

7.2.5.2 Commuter or long-distance railway facilities

In alignment with the aspirations outlined in the Comprehensive Integrated Transport Plan (CITP), the development of commuter or long-distance railway facilities emerges as a critical component in enriching the Road Infrastructure Strategy. Drawing insights from Chapter 4, which delineates tourism needs, the significance of establishing an operational tourism rail service between Mossel Bay, George, and Knysna is underscored. This initiative is pivotal in augmenting public transport options, thereby enhancing accessibility and mobility while fostering integration with the existing transport network, including the enhancement of the GO GEORGE service.

The necessity for integrated planning across the Eden District Municipal level is pronounced, advocating for a cohesive transport framework that interlinks the Port, Airport, Agriculture, and Tourism sectors. Moreover, the emphasis on professionalism and ambassadorship among drivers, as detailed in the Metered Taxi Strategy, further accentuates the role of transport in sculpting a positive image of George Municipality.

In this context, the envisioned commuter or long-distance railway facilities are integral to George's broader tourism and transport strategy. Such infrastructure not only facilitates efficient travel for daily commuters and tourists but also embodies a sustainable transport modality, enhancing the region's environmental stewardship. A nuanced consideration of travel times, cost-effectiveness, and the synergistic potential of integrating commuter, tourist, and potentially freight services through multifunctional station infrastructure is paramount.

The strategy envisages revitalising and upgrading existing rail stations, many of which have languished or been repurposed, alongside identifying new station locations to optimise tourist accessibility and connectivity to key attractions. Ensuring parking adequacy, especially during peak tourism seasons and events, aligns with balancing private and public transport needs, advocating for park-and-ride facilities to stimulate public transport and non-motorised transport usage.

The envisioned railway enhancements are intertwined with enhancing airport accessibility, anticipating future expansions that may elevate its status to an international gateway. This foresight aligns with a strategic vision where an integrated transport system


enables seamless tourist mobility across the Garden Route District, minimising reliance on private vehicle hire.

To actualise these aspirations, a robust implementation and monitoring framework is essential, one that articulates clear actions, delineates responsibilities, and establishes performance metrics to gauge success and inform iterative strategy refinements, ensuring the transport sector's pivotal role in advancing George's tourism landscape and broader economic prosperity.

7.3 Infrastructure Maintenance

The GO GEORGE public transport system travels on many municipal roads that do not have sufficient structural strength to handle the resultant wheel axle loading. There is also heavy vehicle freight movement in and through the industrial and CBD, which also contributes towards the degradation of the roads.

A condition assessment of the road pavement along the GO GEORGE bus routes was undertaken by SMEC in 2018 and road rehabilitation strategy proposed, as seen in **Figure 7-10**. The road pavement conditions are shown in **Figure 7-11**.

The proposed road rehabilitation interventions amount to an estimated R20 million per year over 5 years period.

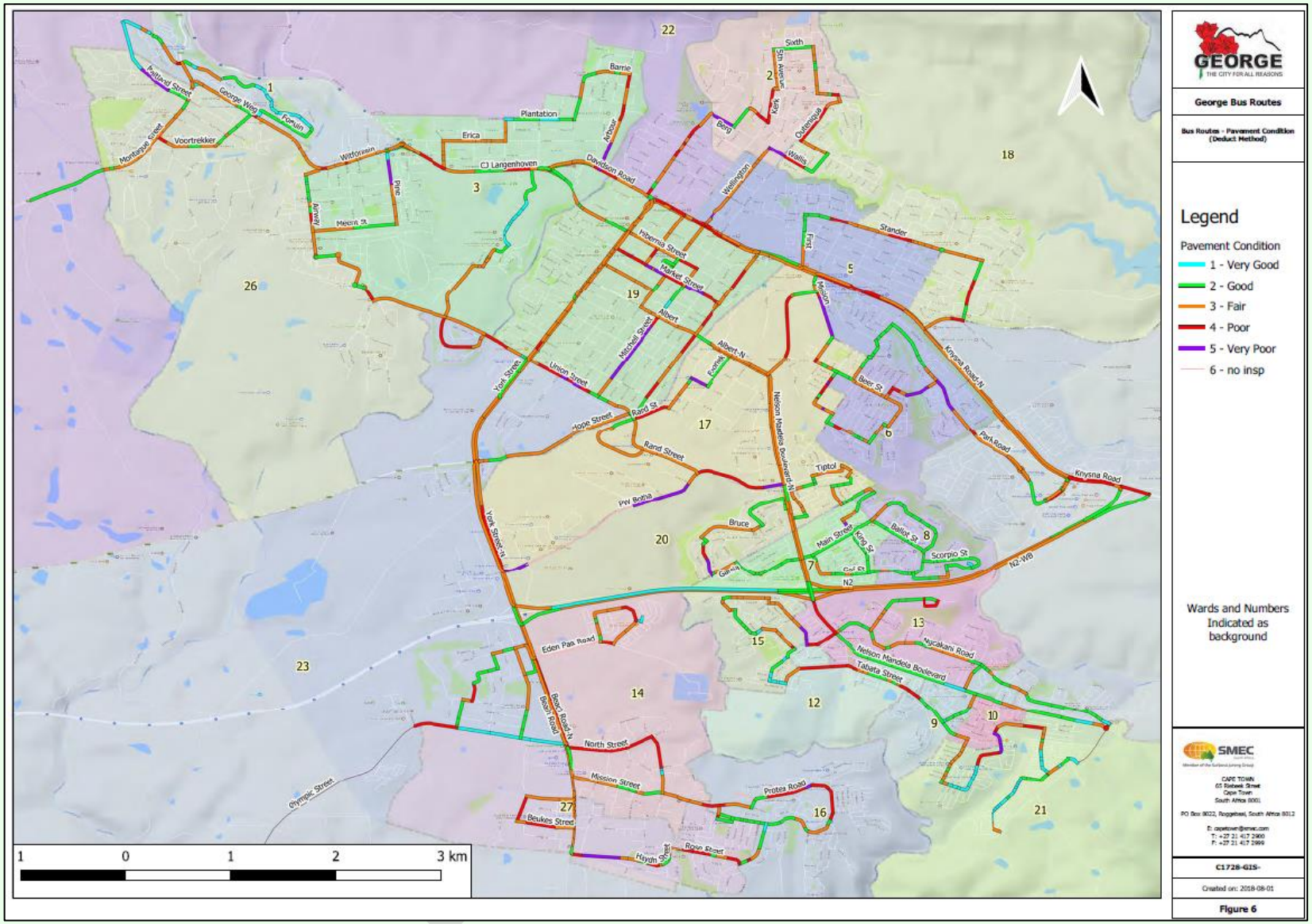


Figure 7-10: Bus Route Pavement Condition of roads in George - George Municipality: Bus Route Pavement Assessment, June 2018.

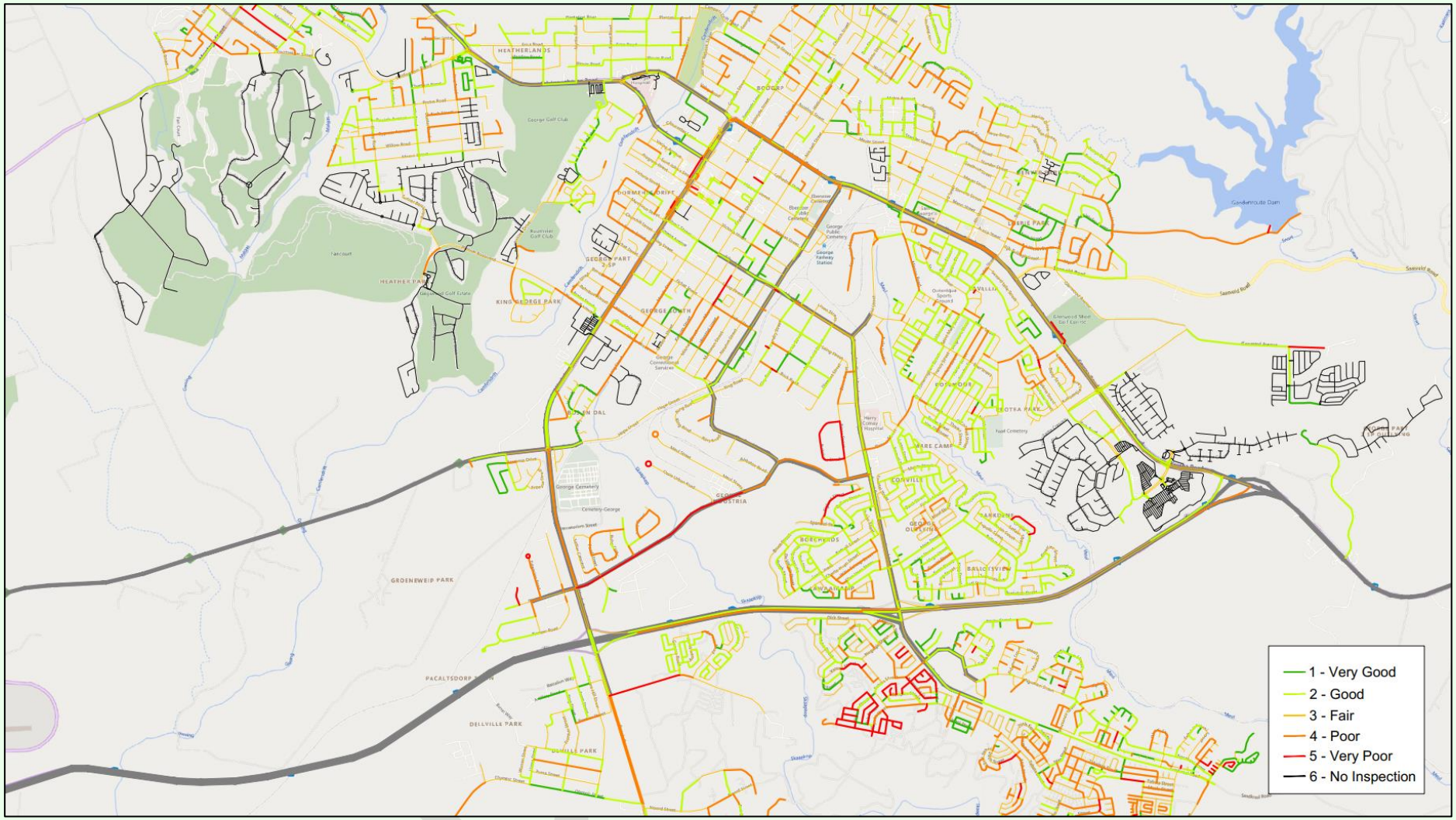


Figure 7-11: Condition of roads in George according to the George Municipality Pavement Management System, 2019.

7.4 Future Transport Infrastructure, Planning and Projects

Current planning documentation was used as input to the development of the Transport Infrastructure Strategy and updated RMP.

- CITP 2040 Objectives and Broad Strategy
- Budget and Capital projects made available by the George Municipality 2023

7.4.1 George Municipality CITP 2040 Objectives and Broad Strategy.

To align with the vision of an integrated, accessible, safe, affordable, and sustainable transport system that is well-managed and maintained for all in George, and the mission statement to enhance mobility and accessibility with equitable and sustainable standards, catalysing economic development and community upliftment, the updated objectives are the following as shown in **Table 7-6**

7.4.2 Budget and Capital projects made available by the George Municipality.

George Municipal allocated R298 392 744 to roads and stormwater maintenance works and upgrading of various streets in George LM, as shown in the George Municipality Transport Register Section D.2 – Revised George Municipality Budget of 2022/23. George Municipality upgrading projects are shown in **Table 7-7** and **Table 7-8**.

Table 7-6: CITP 2040 Objectives and Broad Strategy.

No.	Objective	Focus	Broad Strategy
1	Develop a cohesive transport network that seamlessly integrates various modes of transport, ensuring accessibility and ease of transfer for all users.	**Integrated Accessibility**	Forge a transport network that offers comprehensive accessibility, enabling most journeys, whether by public transport (30min), walking (60 min), or cycling (40min), to be completed within 30 minutes in local towns and 60 minutes across the city.
2	Maintain and operate a high-quality public transport infrastructure that meets the needs of the community and supports sustainable growth.	**Inclusive Mobility**	Deliver an inclusive transport system that accommodates the needs of all demographics, ensuring that transport for all is not just a concept but a tangible reality.
3	Foster a symbiotic relationship between land development and transport planning to create efficient public transport corridors.	**Health and Safety**	Promote healthier lives by encouraging active travel options that contribute to well-being and ensure that every journey is underpinned by the highest safety standards to reduce accidents and injuries.
4	Prioritise safety across all transport systems to protect users and instil public confidence.	**Sustainable and Efficient Infrastructure**	Maintain and operate a public transport infrastructure that supports the 30-Minute Town and 60-Minute City concept, ensuring efficient transit times and high-quality service provision.

No.	Objective	Focus	Broad Strategy
5	Engage in proactive and strategic planning for the evolution of public transport, addressing both immediate and future community needs.	**Land Use Synergy**	Integrate land use planning with transport infrastructure development to support the creation of communities where daily needs are within a 30-minute reach on foot or by bike.
6	Secure and judiciously allocate funding to transport projects that demonstrate the highest impact on community mobility and sustainability.	**Proactive Safety Measures**	Implement proactive safety and well-being measures across all modes of transport, with a focus on reducing risks and promoting health through design and operation.
7	Maximise empowerment and employment opportunities within the transport sector, particularly for historically disadvantaged groups.	**Strategic Planning for Accessibility**	Engage in strategic planning that prioritises accessibility, ensuring that transport systems are designed to shorten travel times and make daily commutes more efficient.
8	Continuously enhance the quality and reach of public transport services to meet and exceed community expectations.	**Community-Centric Empowerment**	Leverage transport projects to provide empowerment opportunities, with a focus on improving access to jobs and services, particularly for underserved communities.
9	Implement environmentally responsible practices and technologies to reduce the transport system's ecological footprint.	**Environmental Stewardship**	Commit to environmental stewardship by adopting transport solutions that minimise pollution and contribute to the creation of green, liveable urban spaces.
10	Promote and improve infrastructure for non-motorised transport, ensuring it is safe, efficient, and well-integrated into the urban fabric.	**Non-Motorised Transport Integration**	Enhance the infrastructure for non-motorised transport, ensuring that walking and cycling are not only safe and accessible but also integrated into the broader transport strategy to support the 20-Minute Town concept.
11	Advocate for and implement travel demand management strategies to encourage a shift towards sustainable transport modes.	**Sustainable Travel Culture**	Cultivate a culture of sustainable travel by implementing demand management strategies that incentivise the use of public and non-motorised transport modes.
12	Ensure that non-motorised transport considerations are integral to transport planning and impact assessments.	**Impactful Transport Planning**	Incorporate comprehensive transport planning and impact assessments that prioritise access, mobility, and the health of the community.
13	Incorporate community-centric traffic calming and safety measures in the design and retrofitting of residential areas.	**Residential Area Design for Safety**	Design and retrofit residential areas with traffic calming measures that support safe, accessible, and quick travel within the community.
Note: Focus Areas particularly applicable to the Infrastructure Strategy are underlined in the above Table			


Table 7-7: Road upgrade projects currently being planned.

No	Name/short description of project	Type of project	Description of project	Value of project (Excl VAT)	Status
1	Rand Road Link	New road link	A New Road between Pacaltsdorp and the George Industrial Area connecting the Southern Parts of George directly with the Industrial Area crossing under the existing N2 Highway. The Rand Street link will also provide improved access from the Pacaltsdorp and Thembalethu residential areas to the commercial and recreational areas to the north of the rail.	R 50 000 000	EIA Phase – Scoping Report Accepted (ROD Expected by March 2010)
2	Southern Arterial	New road link	The route stretches from the N2 (West) Engen/Sasol Intersection, passing south of Thembalethu and Pacaltsdorp crossing the N2 near the Gwaing River, linking with District Road 1618 and will serve as a bypass linking the developments to the South of George with the N2 and Western parts of George.	R 400 000 000 – R 800 000 000 Depending on the chosen alternative and complexity of structures needed	EIA Phase – Public Review of EIA Report Started Mid-September 2009 (ROD Expected by the end of the year)
3	Plattner Boulevard	New road link	The route stretches from the existing section of Plattner Boulevard in the east at Kingswood Golf Estate to the R347 in the west, crossing the R1618 (Gwaiing Rd). This road is set to open up the area to the west of George for Development and alleviate traffic from the Witfontein/CJ Langenhoven Road links.	R 90 000 000	EIA Phase – Scoping Report and Plan of Study accepted by Department of Environmental Affairs (DEA) &DP on August 4th 2009. Specialist studies to be completed and submitted (ROD for route determination Expected by February 2010)
4	Victoria Heights	New road link	A link road to provide access to various properties in the Victoria Heights area.	R 4 000 000	EIA Application Layouts amended. Public Review to start early October 2009 (ROD Expected by the end
TOTAL				R 544 000 000 – 944 000 000 (See costing in Item 2)	


Table 7-8: Road upgrade projects relating to freight movement.

No	Name/short description of project	Type of project	Description of project	Value of Project
1	Reconstruct Corners	Upgrade	Insert glide rounds at York/Langenhoven, Courtenay/Mission, Courtenay/Memorium and Binne/Sandkraal (Nelson Mandela Boulevard)	R 500 000
2	Binne Road	Upgrade	Upgrade width and provide shoulders	R 1 million
3	Sandkraal	Upgrade	Upgrade Sandkraal (NMB) between M2 and Binne	R 1 million
4	Outeniqua Pass	Upgrade	Upgrade the Outeniqua Pass to include a warning system and arrestor beds	R 20 million
5	Truck Stop	Infrastructure	Construction of a truck stop	R 10 million
6	Weighbridge	Infrastructure	Construction of a weighbridge	R 20 million
7	City Centre Signage	Infrastructure	Install no entry signage for heavy vehicles in the city centre.	R 1 million
TOTAL				R53 500 000

7.4.3 Transport Infrastructure Improvements

The Transport Infrastructure Strategy prioritises the following areas:

- Public transport routes
- Public transport facilities
- Roads facilitating accessibility to support future development of George LM
- Roads improving mobility and alleviating traffic congestion and safety on residential and freight routes
- Non-motorised Transport (NMT)
- Road safety
- Disaster Risk Management (DRM) routes and infrastructure

The Transport Infrastructure Strategy identifies projects that aligns with George Municipality objectives and are required to support the George spatial planning and transport needs.

Envisaged developments as included in TM are shown in **Figure 7-12** below (Map 43 from GM 2022 Spatial Budget).

The Roads Master Plan as shown in **Figure 7-14** is prepared in accordance with the above strategies relating to public transport routes, roads facilitating development and alleviating traffic congestion, accommodating freight transport.

Key public transport infrastructure are the GO GEORGE Bus Depot, and 4 taxi ranks, namely Thembalethu Taxi Rank , Cradock Taxi Rank, George Mall informal Taxi Rank and St Mark's Square Taxi Rank.

There are plans underway to relocate the GO GEORGE Bus Depot to the Borchards area. The main findings of the facility assessment surveys for the four Taxi Ranks are included in the Transport Register. In terms of the assessment, the identified infrastructure maintenance items need to be evaluated and costed.


Road maintenance activities (roads reseal, taxi facility maintenance) are not listed in this chapter as the funded from operating budget rather than capital expenditure.

Road safety projects should identify traffic safety issues for attention (i.e. use crash statistics) and should also prioritise NMT safety at intersections.

Identified Disaster Risk Management routes and roads infrastructure, i.e. bridges, culverts, need to be well maintained to ensure it is able to effectively carry emergency vehicles and also evacuate community where required.

7.4.3.1 2023 CITP Roads Master Plan

The 2023 CITP Transport Model (TM) incorporates current and future land-use, existing transport (freight, private and public transport) and the current and planned road network, from which a Roads Master Plan (RMP) was developed. The Roads Master Plan serves as a strategic guide for the development, maintenance, and operation of a road network within a specific area. It identifies road infrastructure required to serve the current and future needs of the community, balancing factors like safety, efficiency, and environmental sustainability. The transport demand model has been developed for the base, 5 year and 20-year horizons. The Roads Master Plan (RMP) road classifications are shown in **Figure 7-13**. The proposed new network links have been identified for the 5, 10, 20 and beyond 20 years scenarios, as shown in **Figure 7-14**.

The Road Link Classes that were utilised in the Transport Model are indicate in **Figure 7-15** and **Figure 7-16** for the Base Year and the Beyond 20 Year Scenarios, respectively.

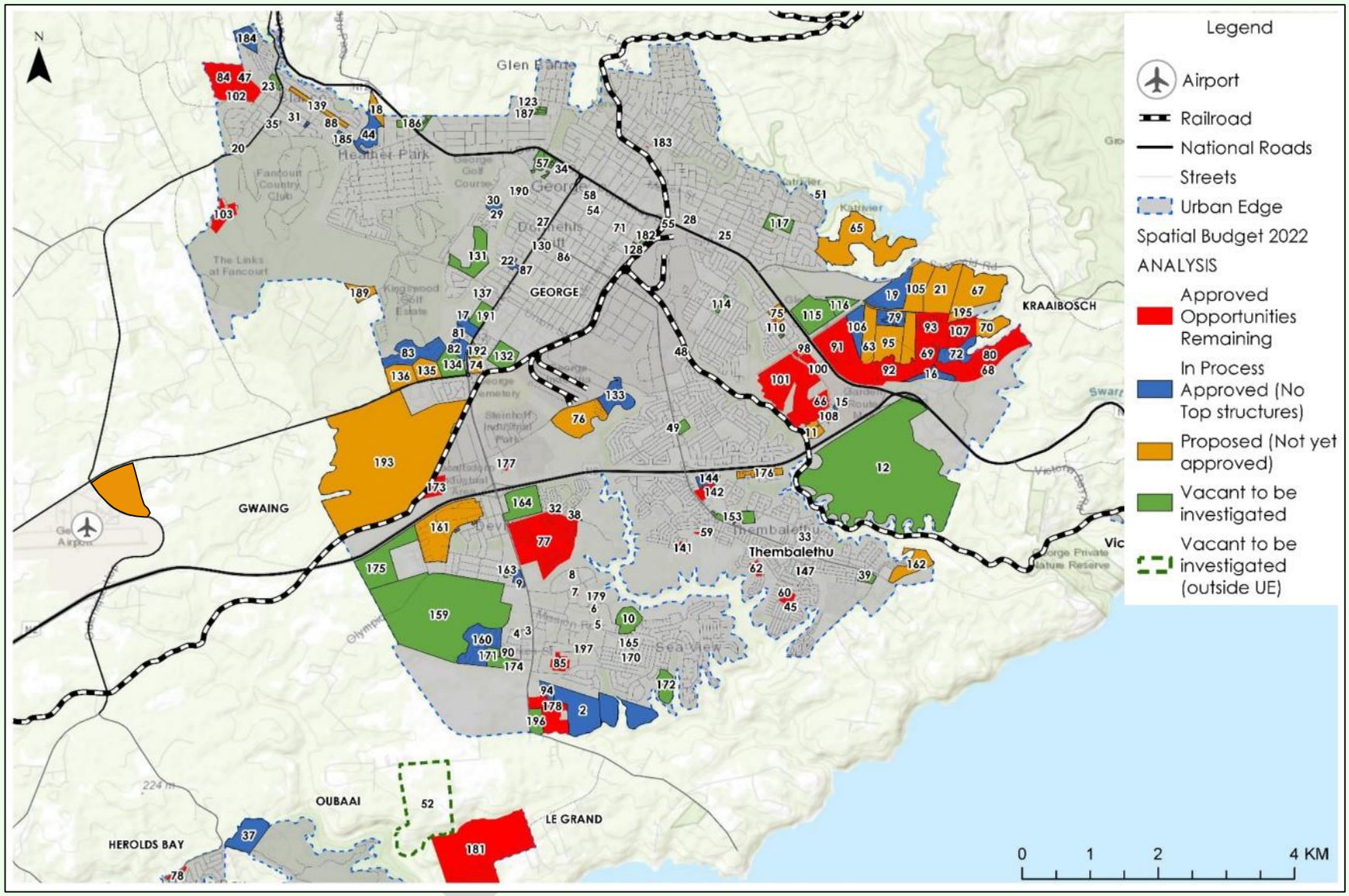



Figure 7-12: Spatial Development envisaged for George (George Municipality, 2023), and amendment added for the George Airport North Eastern Precinct proposed development.

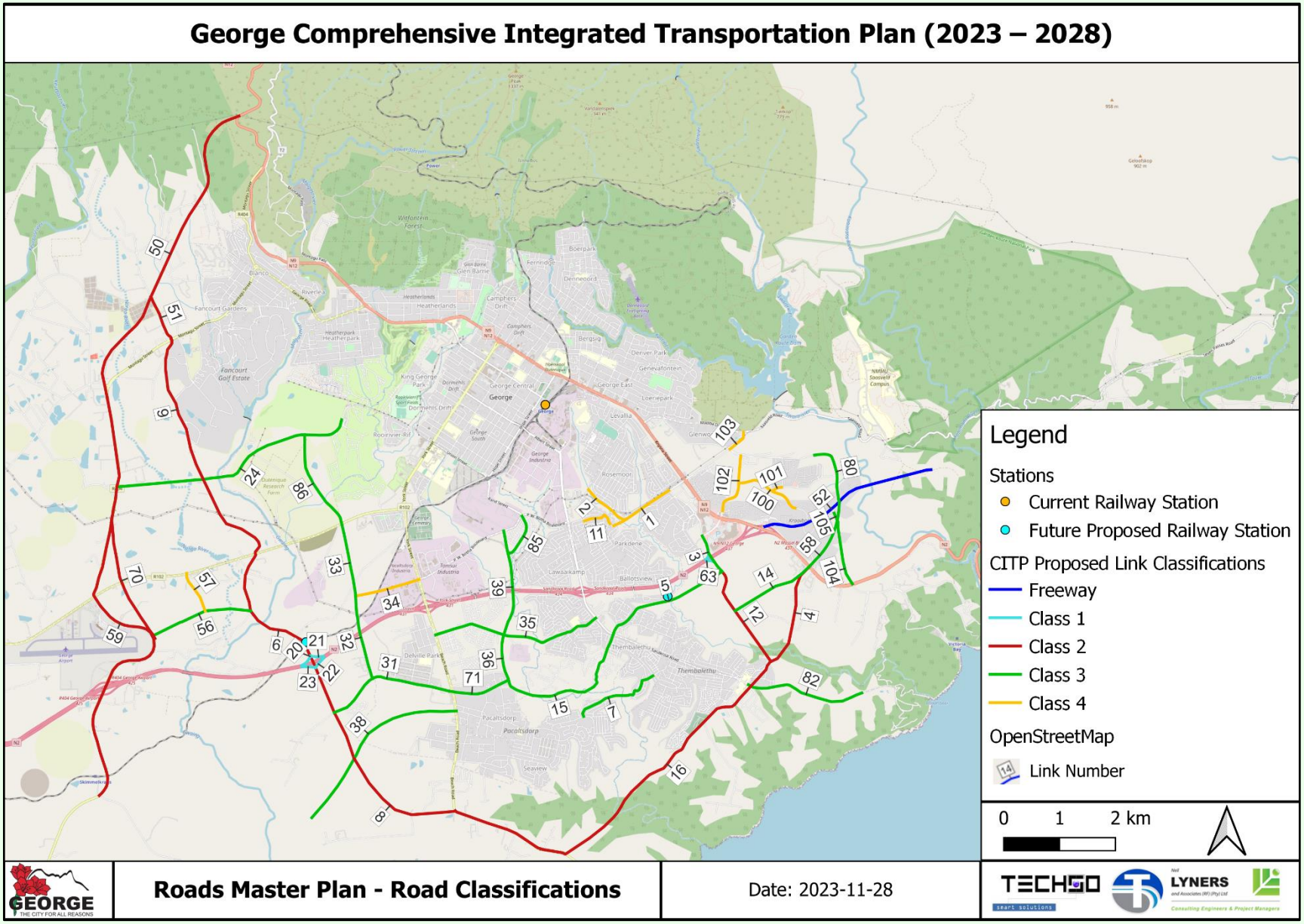


Figure 7-13: George Municipality Roads Master Plan Road Classifications.

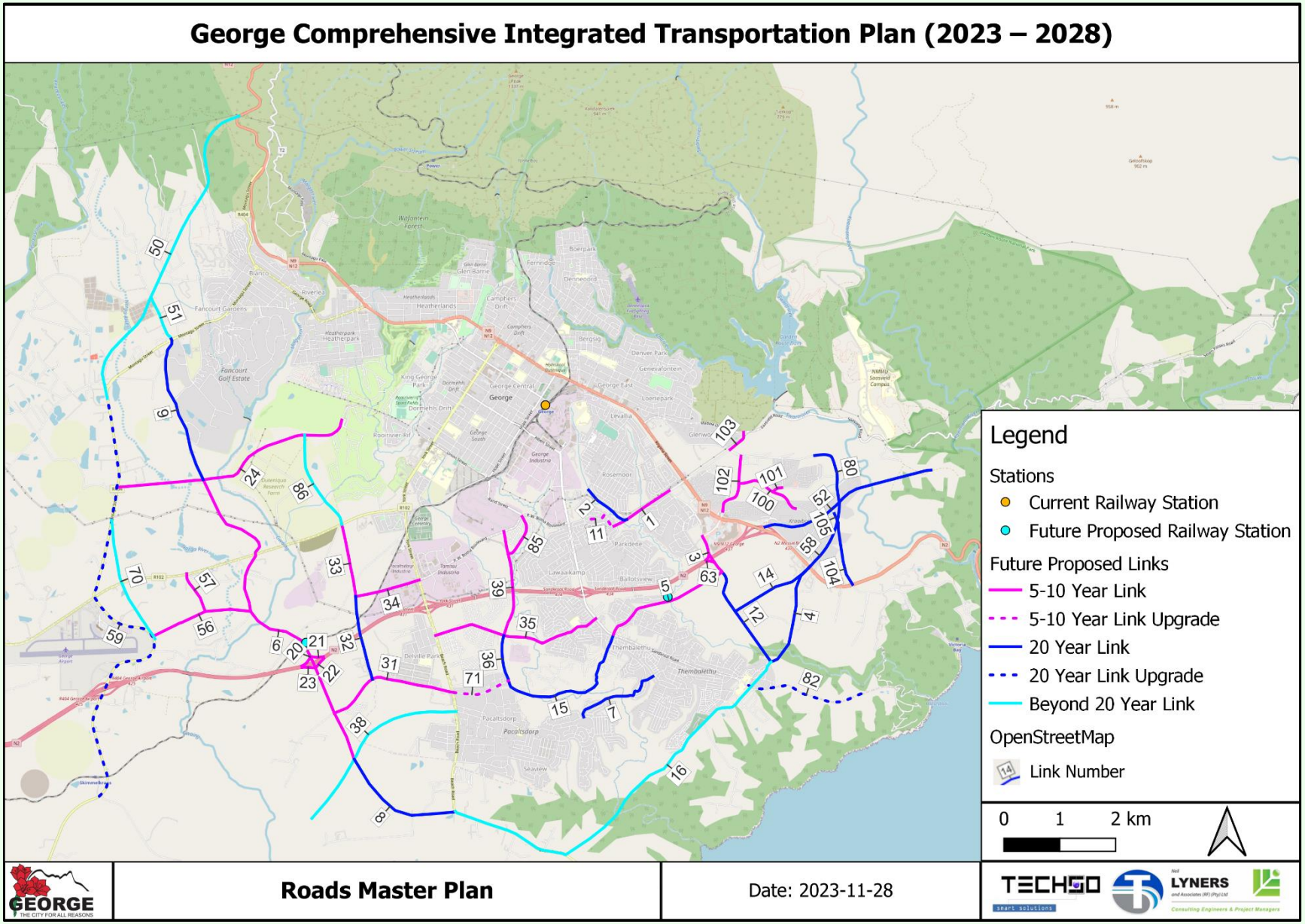


Figure 7-14: George Municipality Roads Master Plan 2023 - Time Horizons.

Roads Master Plan network upgrades / links for 5 to 10 Years, 5 to 20 Years, and beyond 20 Years are listed below in **Table 7-9**, **Table 7-10** and **Table 7-11** respectively.

Table 7-9: Road network improvements (5-10 years Horizon).

Route No	Description	Num Lanes	Speed Limit [km/h]	Road Class	Length [km]	Comments
1	Kraaibos to Conville Link	2	50	Class 4	1.175	bridge over gorge
3	Thembalethu to George Mall Link	2	60	Class 3	0.738	
5	Thembalethu to George Mall Link	2	60	Class 3	2.314	
6	New West Development Link	2	80	Class 2	6.304	(N2 interchange separate)
11	Conville - Industrial link	2	50	Class 4	0.591	
20	N2 Interchange 1	2	60	Class 1	0.233	interchange on N2
21	N2 Interchange 2	2	60	Class 1	0.235	interchange on N2
22	N2 Interchange 3	2	60	Class 1	0.220	interchange on N2
23	N2 Interchange 4	2	60	Class 1	0.243	interchange on N2
24	Platner Blvd link to West	2	60	Class 3	4.443	short bridge
31	New West Development Link - Delville Park link	2	60	Class 3	2.415	
33	R102 - Plattner Blvd link South of R102	2	60	Class 3	1.310	Bridge over N2
34	Discovery St - West link	2	50	Class 4	1.176	
35	Beach Rd - Nelson Mandela Blvd link	2	60	Class 3	3.070	Bridge over rail
39	PW Botha Blvd - Tabata St linkvia George Industria	2	60	Class 3	1.907	
56	R404 link with New North-South link	2	60	Class 3	1.858	Bridge over gorge
57	R102 link to New East-West link	2	50	Class 4	0.765	
60	N2 Interchange 1 Off-ramp EB	2	60	Class 1	0.126	0
63	N2 Interchange 4 On-ramp WB	2	60	Class 1	0.135	
71	Pacaltsdorp Link Upgrade	2	60	Class 3	1.053	Bridge over ravine
85	Rand Street Extension	2	60	Class 3	0.819	
100	New Kraaibosch Link to Welgelegen	1	50	Class 4	1.201	
101	New Kraaibosch Link to Groenkloof Link	1	50	Class 4	0.185	
102	Glenwood to Kaaimans Road	1	50	Class 4	1.131	
103	Knysna Street to Saasveld Road	1	50	Class 4	0.418	
TOTAL					**34**	

Table 7-10: Road network improvements (10-20 years Horizon).

Route No	Description	Num Lanes	Speed Limit [km/h]	Road Class	Length [km]	Comments
2	Kraaibos to Conville Link to Pienaar Street Link	2	50	Class 4	0.888	along river
4	Southern Bypass to N2 Sasol Garage Link	2	80	Class 2	2.500	Ravines and rivers
7	Pacaltsdorp - Thembalethu Link 1	1	60	Class 3	1.637	Bridge over ravine
8	New West Development Link	2	80	Class 2	2.268	
9	New West Development Link	2	80	Class 2	2.678	
12	Mall - Southern bypass link	2	80	Class 2	1.908	Bridge over ravine
14	Forest - N2 Sasol Garage	2	60	Class 3	1.557	Forest area
15	Pacaltsdorp - Thembalethu link 2	1	60	Class 3	2.728	ravine area
32	Delville park - R102 link	2	60	Class 3	1.515	structure over N2
36	Pacaltsdorp - George Industria link	1	60	Class 3	0.823	edge of ravine
52	N2 Extension towards Wilderness	2	120	Freeway	3.242	Bridge over river
58	Kraaibosch to N2 Sasol Garage	2	60	Class 3	1.290	Crossing small gorge
59	Western Bypass South Upgrade	2	100	Class 2	8.456	
80	Kraaibosch - New N2 Connection	1	60	Class 3	1.148	
82	Sandkraal Road Extension	1	60	Class 3	2.145	
104	Kraaibosch to Victoria Bay	2	60	Class 3	1.184	
105	Welgelegen to Kraaibosch Small Link	2	60	Class 3	0.140	
TOTAL					**36**	


Table 7-11: Road network improvements (Beyond 20 years Horizon).

Route No	Description	Num Lanes	Speed Limit [km/h]	Road Class	Length [km]	Comments
16	Southern Bypass	2	80	Class 2	6.742	
38	Pacaltsdorp - Westbound link	4	60	Class 3	3.484	bridge over river
50	Western Bypass	2	80	Class 2	5.909	Crossing river and gorge
51	Western Bypass Link to R404 extension	2	80	Class 2	0.842	
70	Western Bypass Expressway	2	80	Class 2	2.301	Crossing small gorge and minor structiure
86	R102 - Plattner Blvd link North of R102	1	60	Class 3	1.799	
TOTAL					**21**	

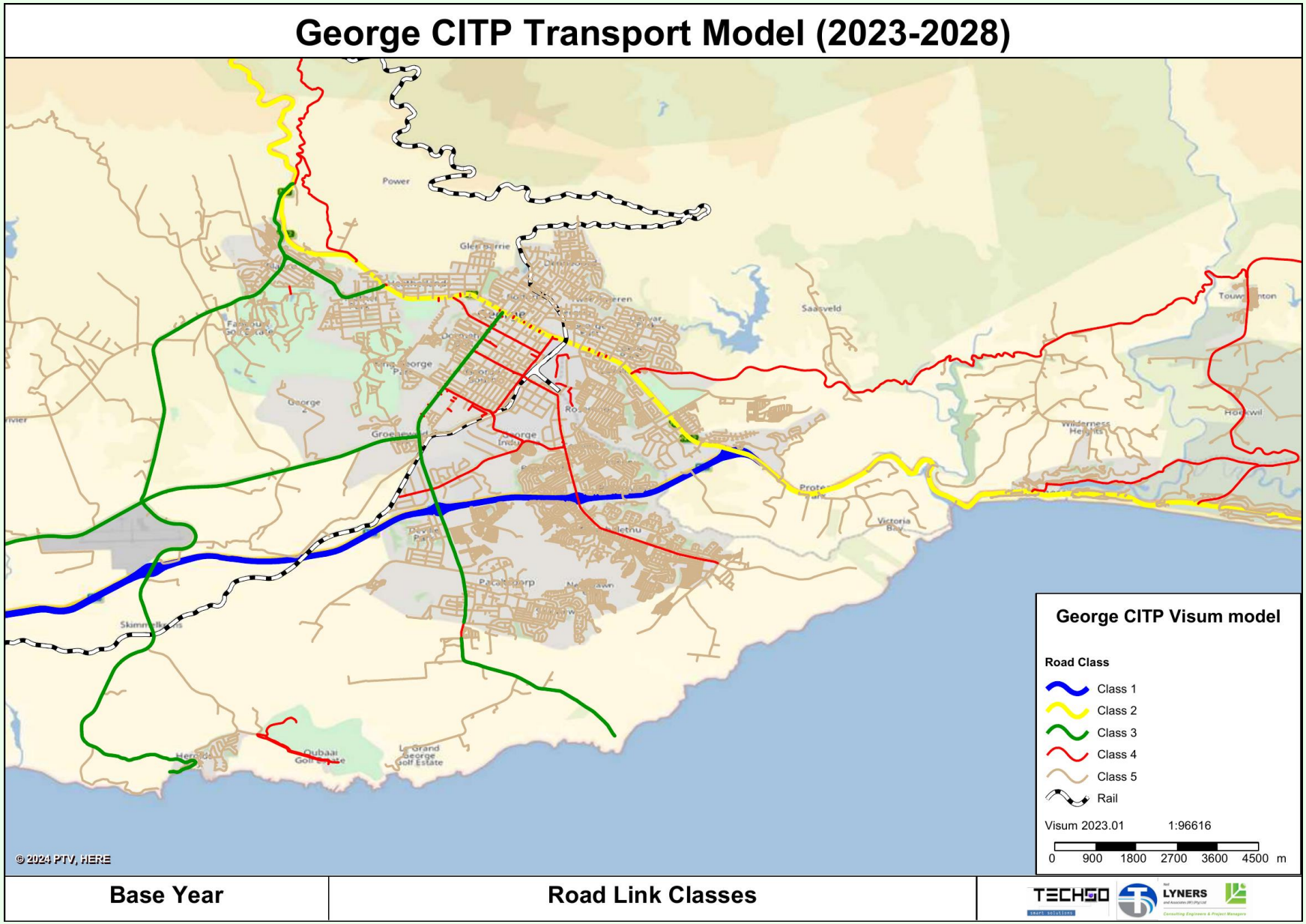



Figure 7-15: Road Link Classes Utilised in the Transport Model for the Base Year Scenario.

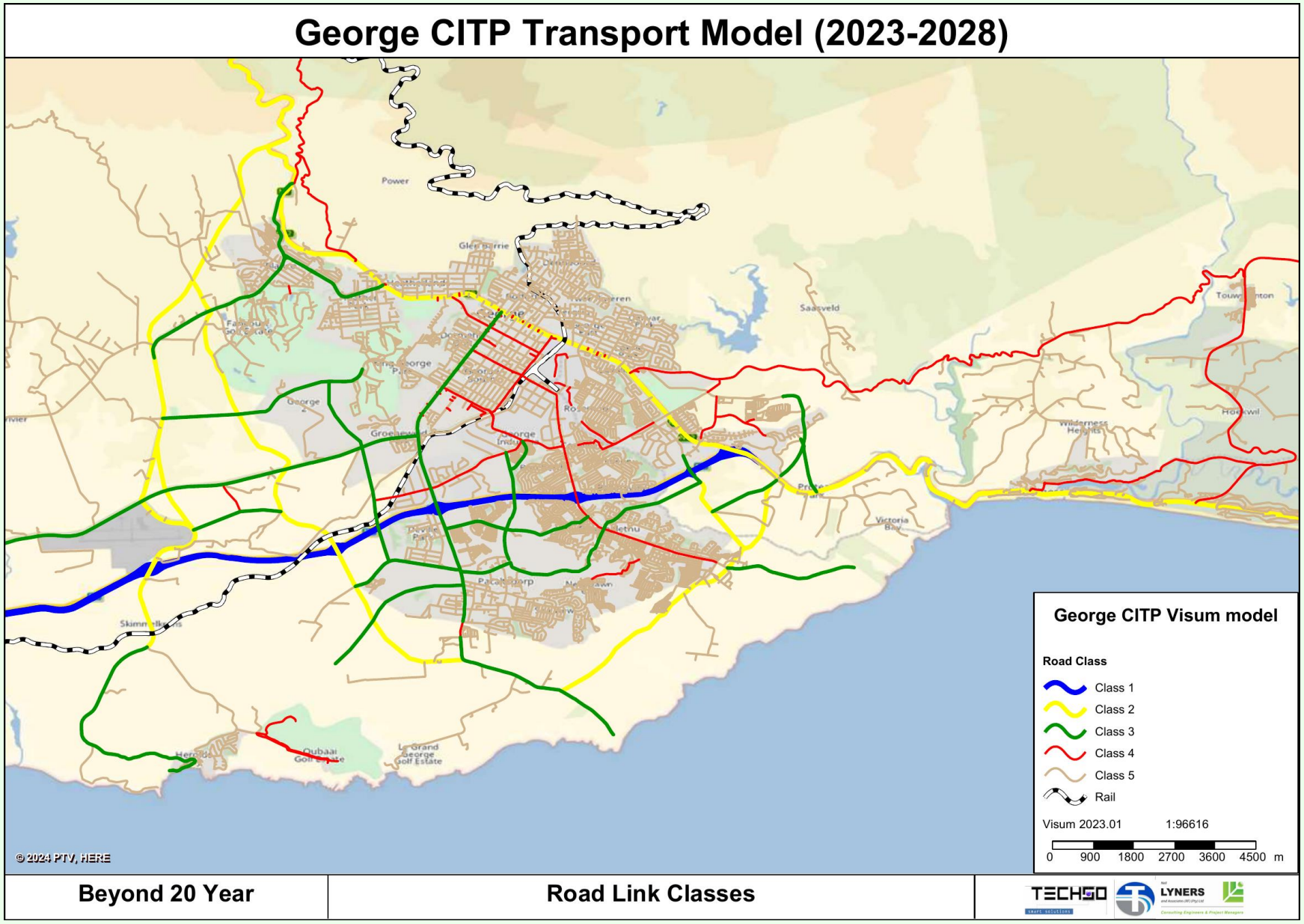


Figure 7-16: Road Link Classes Utilised in the Transport Model for the Beyond 20 Year Scenario with all proposed links included.

7.4.4 NMT Improvements

7.4.4.1 NMT - Sidewalks

Raised sidewalks provide a physical separation between vehicle traffic and pedestrians and promote mobility, accessibility, and safety for pedestrians by reducing potential for vehicle/pedestrian crashes.

The following pedestrian facilities are required:

- The establishment of a safe east-west link for pedestrians *(shared cycle/pedestrian facility)* along the N2.
- 13th Street in Thembalethu from Nelson Mandela Boulevard into Thembalethu residential area.

7.4.4.2 NMT – Cycle Facilities

Cycle lanes are created by allocating part of the roadway for bicycles (i.e. adjacent to vehicle lanes) or by building exclusive cycle paths (segregated from the roadway). Where cycle lanes are shared with pedestrians, adequate width (3 m or more) should be provided and the facility should be signed accordingly. Cycle facilities should connect homes, workplaces, shopping areas, recreation areas, etc..

The following Cycle facilities are recommended:

- Shared pedestrian / cycle lanes should be created along Nelson Mandela Boulevard in Thembalethu and across the N2 to link with the kerbside cycle lanes in Nelson Mandela Boulevard north of the N2 up to Industrial Road in George Industrial Area.
- Cycle lane network should be extended along Nelson Mandela Boulevard to provide access to the George CBD.
- The establishment of a safe east-west link for cyclists *(shared cycle/pedestrian facility)* along the N2.
- Cycle lanes should be marked along Beach Road and York Road.
- The cycle network should be extended into George CBD.

7.4.4.3 NMT – Road Signs and Markings

A Road Signs and Markings plan needs to be developed for George LM.

- General Signage in George needs to be updated where affected by new infrastructure / roads / developments.
- Improved commuter and pedestrian wayfinding to PuT facilities and services.
- Consider technology to enhance wayfinding, for example on buses, at transport hubs including smartphone applications.

7.4.5 Other Transport Facilities

7.4.5.1 Airports

The GO GEORGE bus service should liaise with ACSA to determine whether there is a need for a scheduled bus service to George airport and whether this could be reasonably accommodated, in view of ACSA staff shifts and general preference for passengers to hire transport at the airport, as opposed to travelling by public transport.


7.4.5.2 Commuter or long-distance railway facilities

The PRASA rail service should be reinstated to serve George Municipality and particularly between George and Mossel Bay.

7.5 Summary of The Transport Infrastructure Strategy

Roads

- The future road network (RMP) road network upgrades as identified in the TM needs to be implemented in conjunction with spatial development.

NMT

- Sidewalks – Safe NMT (pedestrian facility) eat west link along the N2, and along 13th Street from Nelson Mandela Boulevard into Thembalethu residential area
- Cycle – Along Nelson Mandela Boulevard in Thembalethu and across N2; Provide safe NMT (cycle lanes) east-west link along the N2, Mark cycle lanes on Beach and York Roads, extend cycle lanes into George CBD
- ACSA – GO GEORGE bus service should liaise with ACSA to determine need for possible future GO GEORGE service to service ACSA planned passenger and industrial development.

PRASA

- Rail service between George and Mossel Bay should be considered and reinstated when proven economical viable.

8 TRANSPORT DEMAND MANAGEMENT (TDM) STRATEGY

8.1 Key Aspects

The key aspects considered for the Transport Demand Management (TDM) Strategy are:

- TDM aims to reduce reliance on private vehicles and encourage sustainable transportation modes in George's urban and rural areas.
- The George Integrated Public Transport Network (GIPTN) is a key initiative, with plans to expand services to rural settlements.
- TDM strategies focus on three pillars: Capacity Creation, Network Management, and Behaviour Change.
- The strategy addresses unique challenges of integrating urban and rural transportation needs in George.
- Guiding principles include sustainability, equity, integration, and collaboration.

8.2 Background

Transport Demand Management (TDM) has emerged as a critical component in urban planning and transport policy. With its unique blend of urban and rural landscapes, George faces distinctive challenges in managing traffic congestion, air pollution, and ensuring equitable transportation access across both its urban centres and expansive rural areas. TDM offers a suite of strategies designed to reduce reliance on private vehicles and encourage sustainable transportation modes by influencing travel behaviour and promoting sustainable transportation, such as public transit, cycling, and walking.

The advent of the George Integrated Public Transport Network (GIPTN) at the end of 2014 marked a significant stride towards addressing these challenges, offering a more sustainable and inclusive mobility future.

The GIPTN initiative began with services within the Central Business District (CBD) and progressively expanded to cover broader areas, aiming to include the outlying rural settlements in future phases. This expansion is particularly crucial as the current GIPTN services do not extend to several rural settlements, where the transportation needs are markedly different but equally pressing. Commercial farmers

within the municipality have voiced the need for extending the GIPTN network to these areas, highlighting the importance of accessible, reliable public transport for their large numbers of permanent and seasonal workers commuting from George to the farms.

Following the recommendations from the George Comprehensive Integrated Transport Plan (CITP) review of 2014/2015, efforts have been increased to extend the GIPTN master planning to investigate outlying settlements and places. This is with a view to evaluate existing rural transportation systems and respond effectively to the rural community's needs. A comprehensive public survey conducted as part of this initiative has been instrumental in quantifying and prioritising current accessibility levels and satisfaction, laying the groundwork for developing strategies that speak to the community's needs (SMEC, 2015).

The inclusion of rural communities in the GIPTN is not merely a logistical expansion but a step towards integrating George's transportation ecosystem. It aims at reducing reliance on private vehicles by promoting sustainable transportation modes like public transport, cycling, and walking.

The TDM strategies devised seek to influence travel behaviour across the municipality, advocating for a shift from private vehicle use to more sustainable forms of transportation. This shift is vital not only for reducing traffic congestion but also for contributing to environmental sustainability, enhancing public health, and improving the overall quality of urban and rural life in George.

8.3 What is Transport Demand Management (TDM)?

Transport Demand Management includes various strategies that aim to influence transportation habits to improve traffic conditions and reduce demand for private vehicle use. It focuses on changing travel behaviour, particularly during peak hours, through incentives, policies, and alternatives to driving alone. TDM is not just about reducing traffic congestion; it also contributes to environmental sustainability, public health, and improved urban quality of life.

One definition provided in a Federal Highway Administration report reads as follows: “Managing demand is about providing travellers, regardless of whether they drive alone, with travel choices, such as work location, route, time of travel and mode. In the broadest sense, demand management is defined as providing travellers with effective choices to improve travel reliability.” (The Association for Commuter Transportation, 2004).

8.4 Legislation and Policies

TDM is supported by various legislative frameworks and policies, which underline the importance of sustainable transport. These policies often emphasise reducing private vehicle dependency, enhancing public transport systems, and promoting non-motorised transport modes. Effective TDM strategies are typically aligned with broader transport and environmental policy objectives.

The George Municipal By-law includes the municipality’s authority to establish, extend, or de-establish public transport facilities, and the specific requirements for facilities like bus stops, taxi ranks, and holding areas. The by-law also allows for the establishment of

temporary facilities during emergencies or special events, which is vital for planning and responding to dynamic public transport needs.

The CCT Travel Demand Management for the City of Cape Town (City of Cape Town, 2017) mentions that The National Land Transport Act (Act No. 5 of 2009) (NLTA) (Department of Transport, 2009), specifically Section 2, c, xxii, requires the formulation and application of TDM measures within each municipal sphere of government and their functional areas. This could not be found in the act but is assumed to be correct.

In the NLTSF (National Department of Transport, 2023), some key focus areas stand out with regard to TDM.

- **Integrated Land Use and Transport Planning** focuses on harmonising land use and transport development to support compact, efficient, and sustainable urban forms. This involves promoting higher density development near transit nodes to reduce travel distances and reliance on private vehicles, enhancing the viability of public transport, walking, and cycling.
- **Urban Transport and Smart Mobility** address the challenges of rapid urbanisation and the aspiration towards consumerism, which exacerbates demand for motorised travel. The strategy encourages the adoption of smart mobility solutions, including advanced public transportation systems, demand-responsive services, and the integration of technology to optimise the transport network's efficiency and reduce congestion.
- **Sustainable Environmental Practices** emphasise the transition towards a low-carbon economy. This involves promoting green transport initiatives, such as electric and non-motorised transportation, to reduce greenhouse gas emissions and the environmental impact of transport activities.

8.5 TDM Objectives

Objectives of TDM include:

- Reducing traffic congestion and improving mobility.
- Lowering greenhouse gas emissions and improving air quality.
- Promoting the use of public and non-motorised transport.
- Improving transport accessibility for all community segments.
- Supporting sustainable urban development and land use planning.

8.6 TDM Strategies

The document called Travel Demand Management Toolkit for the United Kingdom Department of Transport (Mott MacDonald, 2021) has been reviewed, and some key takeaways listed in this section. This report also took into account the impact that the COVID-19 pandemic had on the transportation system. These strategies are organised around the toolkit's three key pillars: Capacity Creation, Network Management, and Behaviour Change, each offering a blueprint for sustainable and efficient transportation within George's unique urban and rural makeup.

- **Capacity Creation**: George aims to expand its public transportation services and infrastructure, drawing inspiration from the toolkit's emphasis on additional roadspace for buses, reserved public transport capacity for essential travel, and emergency active travel measures. The


municipality will explore the feasibility of dedicated bus lanes, extend the hours of existing bus lanes, and invest in cycling and walking infrastructure to encourage non-motorised modes of transportation.

- **Network Management**: Implementing solutions such as temporary ticket and timetable changes, low traffic neighbourhoods, and improved traffic signals management will be crucial. These strategies aim to optimise the efficiency of George's transportation network, addressing congestion hotspots, and enhancing the reliability of public transport services.
- **Behaviour Change**: Influenced by the toolkit's 'Four R's' approach (Reduce, Re-mode, Re-time, Re-route), George's TDM plan will promote sustainable travel choices through targeted communication and engagement strategies. This includes encouraging telecommuting, flexible working hours, and the use of public transportation and active travel modes. Marketing communications and engagement will play a pivotal role in reshaping travel behaviours, employing a mix of traditional and digital platforms to reach a broad audience.

Incorporating these strategies into George's TDM plan aligns with both local needs and international best practices, ensuring a resilient and adaptable transportation system. It acknowledges the challenges posed by COVID-19 and the need for a dynamic response to the evolving transportation landscape.

TDM strategies in George encompass a range of approaches:

- Public Transport Enhancement: Improving the efficiency, reliability, and coverage of public transport services.
- Active Transport Promotion: Developing infrastructure for cycling and walking and launching awareness campaigns.
- Travel Demand Measures: Implementing carpooling initiatives, flexible work hours, and telecommuting options.
- Parking Management: Optimising parking policies to discourage long-duration parking in congested areas.

Figure 8-1 illustrates some of the solutions within the context of the three pillars of TDM. The Travel Demand Management Toolkit document (Mott MacDonald, 2021) has guidelines for implementing TDM solutions, even though COVID-19 was a big factor in 2021, the principles are still relevant.

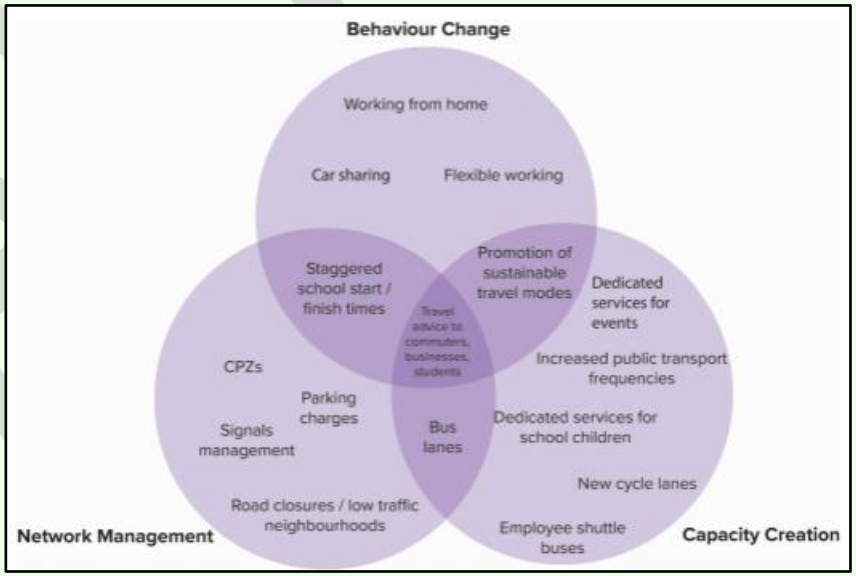


Figure 8-1: Three pillars of TDM and related example solutions (Mott MacDonald, 2021).

8.7 Status Quo

The current state of TDM in George highlights the challenges and opportunities in implementing TDM strategies. The city has seen a


steady rise in private vehicle usage, and public transport usage has not kept pace. There is a growing need to shift this trend towards more sustainable modes of transport.

The GIPTN is making good progress in terms of connecting rural areas with George urban area, although this is mainly true for the rural areas close to George urban area. The roll-out of GO GEORGE Phase 4A is underway, and thereby connecting Thembalethu, which is a large demand generator, with the rest of George urban area. Some of the more outlying areas still need to be connected.

Densification is underway in the CBD area, thereby reducing the need for many to travel far distances, thereby reducing the need for travel.

The updated Transport Register of this CITP gives valuable insights into the transportation system of George, and is a step in the right direction for TDM.

After the COVID-19 pandemic, many people started working from home or work from home more regularly, and thereby reducing the need for travel.

According to the authors' knowledge, there are not many initiatives that aim at changing commuter behaviour, but with the GIPTN being accessible to many commuters, this may create a shift in attitudes towards public transport and using it, as opposed to using private transport.

8.8 Guiding Principles

The guiding principles for TDM in George are key elements that underpin the municipality's approach to developing a resilient, inclusive, and sustainable transportation system. These principles are designed to guide the selection, implementation, and evaluation of TDM strategies, ensuring they meet the needs of George's population and landscape. These guiding principles are as follows:

- **Sustainability**: Committing to a TDM strategy that supports long-term environmental stewardship, promotes economic viability, and fosters social well-being. This principle emphasises the importance of reducing carbon emissions through increased use of public and non-motorised transport modes, alongside the implementation of smart traffic management systems to decrease congestion and pollution.
- **Equity**: Ensuring that all residents of George, regardless of their socio-economic status, have access to safe, reliable, and affordable transport options. Equity in transportation means addressing the specific mobility challenges faced by rural communities, ensuring that TDM strategies enhance connectivity across both urban and rural areas.
- **Integration**: Aligning TDM efforts with broader urban development and land use planning initiatives. This involves coordinating transportation planning with housing, commercial development, and recreational spaces to create compact, mixed-use communities that reduce the need for long-distance travel and support a shift towards sustainable transport modes.
- **Collaboration**: Fostering a culture of engagement and partnership among stakeholders, including local government, transport providers, businesses, educational institutions, and the community. Collaboration entails active participation in the planning and implementation of TDM measures, ensuring that strategies are informed by a wide range of perspectives and grounded in the specific needs and aspirations of the George community.


These guiding principles serve as the cornerstone of George Local Municipality's TDM strategy, ensuring that transportation planning and policy-making are guided by a commitment to sustainability, equity, integration, and collaboration. Through adherence to these principles, George aims to create a transportation system that supports the health and happiness of its residents, contributes to the municipality's economic prosperity, and preserves the environment for future generations.

8.9 George Local Municipality TDM Strategy

The TDM Strategy for George Local Municipality is crafted to address its unique urban and rural transportation dynamics, reflecting a strategic response to current challenges and future opportunities. This strategy is articulated through specific actions and initiatives, structured around the core objectives of enhancing mobility, reducing congestion, promoting sustainable transport modes, and ensuring accessibility for all community members. Additionally, Continuous Monitoring and Evaluation, as well as Stakeholder Engagement around TDM cannot be ignored, and are also included as objectives to be pursued. The following action plan outlines the strategic priorities and detailed actions to be undertaken:

8.9.1 Objective 1: Promoting greater intensity and mix of land uses, which is accessible by a greater mix of modes.

Action 1.1: The proportional allocation of space within the areas dedicated to movement should be reflective of the actual modal share in George.

Action 1.2: Specific attention should be given to the infrastructure and operational requirements to promote walking and cycling within the greater CBD.

8.9.2 Objective 2: Enhance Public Transport Systems

Action 2.1: Expand the George Integrated Public Transport Network (GIPTN) to underserved rural areas, ensuring connectivity between urban and rural regions.

Action 2.2: Introduce additional bus lanes and extend operational hours on critical routes to improve public transport reliability and efficiency.

Action 2.3: Collaborate with transport providers to increase service frequency during peak hours and introduce new routes that respond to community needs and patterns.

8.9.3 Objective 3: Promote Active and Non-motorised Transport

Action 3.1: Develop and enhance cycling and walking infrastructure, focusing on safe, accessible pathways connecting key urban and rural locations.

Action 3.2: Launch public awareness campaigns to encourage walking and cycling, highlighting health, environmental, and financial benefits.

Action 3.3: Implement bike-sharing schemes in urban centres and major rural nodes to facilitate easy access to non-motorised transport options.


8.9.4 Objective 4: Implement Smart Traffic Management Solutions

Action 4.1: Deploy intelligent traffic management systems to optimise traffic flow and reduce congestion, particularly in urban areas.

Action 4.2: Introduce adaptive traffic signal systems that respond in real-time to traffic conditions, improving journey times and reducing vehicle emissions.

Action 4.3: Establish a central control room for monitoring traffic conditions and coordinating responses to traffic incidents and peak demand periods.

8.9.5 Objective 5: Encourage Sustainable Travel Behaviours

Action 5.1: Promote telecommuting and flexible working arrangements through partnerships with local businesses, aiming to reduce peak-period travel demand.

Action 5.2: Facilitate carpooling and ride-sharing initiatives by creating designated pick-up and drop-off points and supporting digital platforms that connect commuters.

Action 5.3: Implement educational programmes in schools and community centres to foster an early understanding of sustainable travel options and benefits.

8.9.6 Objective 6: Continuous Monitoring and Evaluation

Action 6.1: Establish a comprehensive monitoring and evaluation framework to assess the effectiveness of implemented strategies, using key performance indicators such as mode shift, travel times, public transport ridership, and user satisfaction levels.

Action 6.2: Regularly review and adapt the TDM strategy based on feedback, data analysis, and emerging transportation trends, ensuring the strategy remains responsive to the needs of George Local Municipality.

8.9.7 Objective 7: Continuous Stakeholder Engagement

Action 7.1: Engage with community members, local businesses, educational institutions, and transportation providers throughout the planning and implementation phases, ensuring a collaborative approach to TDM.

Action 7.2: Create a TDM stakeholder forum to facilitate ongoing dialogue, share updates, and gather input on transportation initiatives and policies.

8.10 Summary of The Travel Demand Management (TDM) Strategy

This section provides a summary of the TDM Strategy:

Enhance Public Transport Systems

- Expand the GIPTN to underserved rural areas, improving urban-rural connectivity.
- Introduce additional bus lanes and extend operational hours on critical routes.
- Increase service frequency during peak hours and introduce new routes based on community needs.

Promote Active and Non-motorised Transport

- Develop safe, accessible cycling and walking pathways connecting key urban and rural locations.
- Launch public awareness campaigns highlighting health, environmental, and financial benefits of active transport.
- Implement bike-sharing schemes in urban centres and major rural nodes.

Implement Smart Traffic Management Solutions

- Deploy intelligent traffic management systems to optimise traffic flow and reduce congestion.
- Introduce adaptive traffic signal systems responding in real-time to traffic conditions.
- Establish a central control room for monitoring and coordinating traffic responses.

Encourage Sustainable Travel Behaviours

- Promote telecommuting and flexible working arrangements through partnerships with local businesses.
- Facilitate carpooling and ride-sharing initiatives with designated pick-up points and digital platforms.
- Implement educational programmes in schools and community centres on sustainable travel options.

Land Use Integration

- Promote greater intensity and mix of land uses accessible by various transport modes.
- Allocate space within movement areas reflective of actual modal share in George.
- Focus on infrastructure and operational requirements to promote walking and cycling within the greater CBD.

Continuous Monitoring and Evaluation

- Establish a comprehensive framework to assess strategy effectiveness using key performance indicators.
- Regularly review and adapt the TDM strategy based on feedback, data analysis, and emerging trends.

Stakeholder Engagement

- Engage with community members, businesses, educational institutions, and transport providers throughout planning and implementation.
- Create a TDM stakeholder forum for ongoing dialogue and input on transportation initiatives and policies.

9 NON-MOTORISED TRANSPORT PLAN (NMT) PLAN

9.1 Key Aspects

The key aspects of the Non-motorised Transport (NMT) Plan are:

- The National Framework for Sustainable Development in South Africa of 2008 outlines South Africa's vision for sustainable development.
- Provision of NMT facilities is important to foster sustainable development.
- NMT is a critical transport mode, providing equal access to opportunities, particularly for the poor.
- Individuals with lower income rely significantly on NMT
- All transport planning should promote sustainable transport.

9.2 NMT Action Plan outlines actions for George Municipality NMT role in sustainable transport

Non-Motorised Transport (NMT) includes all forms of human or animal-powered movement, such as walking, cycling, using rickshaws, skateboarding, rollerblading, operating manual wheelchairs, riding horses, and utilising animal-drawn carts. The National Framework for Sustainable Development in South Africa, issued in July 2008 by the Department of Environmental Affairs and Tourism, outlines the nation's vision for sustainable growth and identifies strategic initiatives to steer the country's developmental journey towards sustainability. This document articulates a vision and principles and delineates strategic areas for intervention that will support and shape the creation of a national strategy and action plan.

Promoting sustainable human settlements is identified as a critical area for fostering sustainable development. The framework emphasises that sustainable development seeks to improve human well-being and quality of life indefinitely, especially for those most impacted by poverty and inequality. Consequently, individuals with lower incomes depend significantly on NMT and public transportation, as highlighted in the National Framework for Sustainable Development in South Africa – July 2008.

The above framework document rightly calls for investment in public transport and NMT "*Investments in public transport and non-motorised transport must become the norm, and incentives should be introduced that discourage the use of the private car (e.g. toll roads, special lanes, limits on parking, etc)*" (Republic of South Africa: Department of Environmental Affairs and Tourism, 2008).

It is important to recognise that a sustainable transport system is one of the key components to achieving sustainable development.

Sustainable transportation refers to energy-efficient, low emissions, affordable modes of transport that reduces the population carbon footprint.

All transport related planning should promote sustainable transport, with sustainable development as the imperative. Sustainable transport is aided by the provision of public transport and NMT, with NMT being a critical transport mode providing access to public transport. NMT provides public transport accessibility to opportunities for all income groups, and more particularly it serves the needs of the poor (United Nations Human Settlements Programme, 2013). Investment in NMT in support of public transport achieves the following objectives:

- Reduce reliance on private motor vehicle travel.
- Reduce traffic congestion.
- Reduce environmental impacts, greenhouse gas emissions (GHG) associated with private vehicle travel.
- Reduce levels of traffic congestion
- Less air pollution.
- Reduce traffic accidents.
- Improve NMT safety.
- Reduce infrastructure and land required for private motor vehicles.
- Enhance socially inclusive development.
- Promote economic sustainability.
- Promote sustainable development.

9.3 Principles of NMT

To effectively advance Non-Motorised Transport (NMT), the following guiding principles should be employed:

- Acknowledge NMT as a vital element of transportation, serving as the initial and concluding segments of any journey.
- Advocate for NMT as a dependable, healthy, economical, accessible, and secure mode of transport.
- Seamlessly integrate NMT within the broader transportation framework.
- Embed NMT considerations into spatial and developmental planning.
- Foster a high-quality, appealing NMT setting.
- Enhance road safety by integrating secure NMT infrastructures, notably around educational institutions and intersections.
- Dedicate adequate financial and personnel resources for the planning, development, promotion, and upkeep of NMT.
- Apply traffic calming strategies, such as reduced speed limits near key facilities like schools, elderly care centres, and clinics, to bolster NMT safety for at-risk users.

For George Local Municipality (LM) to prioritise NMT effectively within its transport strategy, it should adopt a methodical approach, outlined as follows:

- Ascertain the specific needs of NMT users.
- Strategically plan for NMT, taking into account demographic data, spatial configurations, land utilisation, topography, key origins and destinations, and the dynamics of traffic and NMT safety.

- Construct a comprehensive NMT network that ensures connectivity to public transport, workplaces, commercial areas, educational institutions, and public amenities like libraries and clinics.
- In the absence of local NMT standards, adopt the National Department of Transport (NDoT) NMT Guidelines, 2014.
- Formulate tailored NMT guidelines for George that align with the municipality's vision and spatial planning goals.
- Systematically identify and prioritise essential NMT network and safety projects for execution.
- Allocate adequate institutional and financial support for the formulation, execution, and maintenance of NMT policies and infrastructure.

9.4 Status of NMT in George

9.4.1 Modal Split for all Trips

In most societies, walking serves as the primary mode of transport for very short distances. Almost every journey, regardless of the country, incorporates some degree of walking, especially when accessing public transport. In developing nations, walking is a crucial mode of transport, second only to public transport.

In South Africa, road transport varies widely, ranging from walking along unpaved tracks to driving on well-maintained roads. For numerous individuals in rural regions, walking remains the sole mode of transport, predominantly for essential journeys rather than leisure activities. Non-Motorised Transport (NMT) is accessible to virtually everyone, and it is vital to implement universal access measures to enhance accessibility for those with mobility challenges.

Figure 9-1, **Figure 9-2**, and **Figure 9-3** shows the modal split for all trips, work trips and education trips for George and George Rural, respectively, as extracted from the 2020 National Household Travel Survey (STATS SA, 2020).

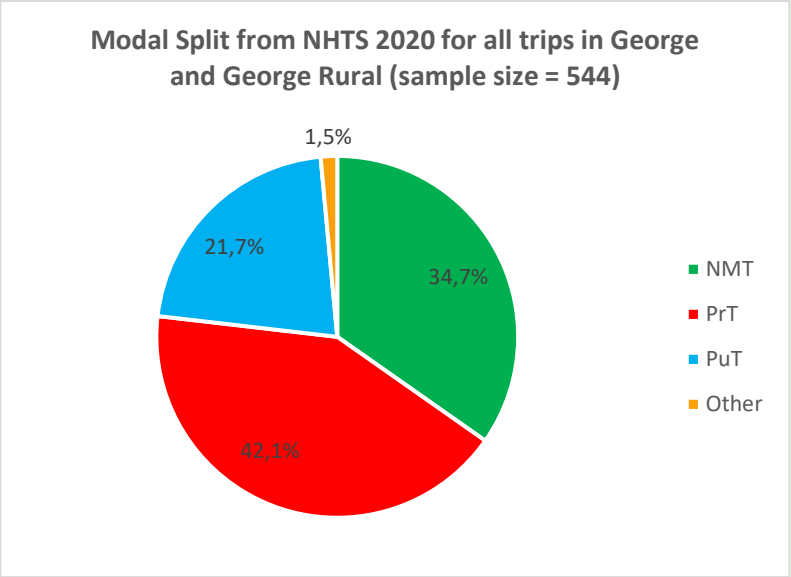


Figure 9-1: Modal Split from NHTS 2020 for all trips in George and George Rural (STATS SA, 2020).

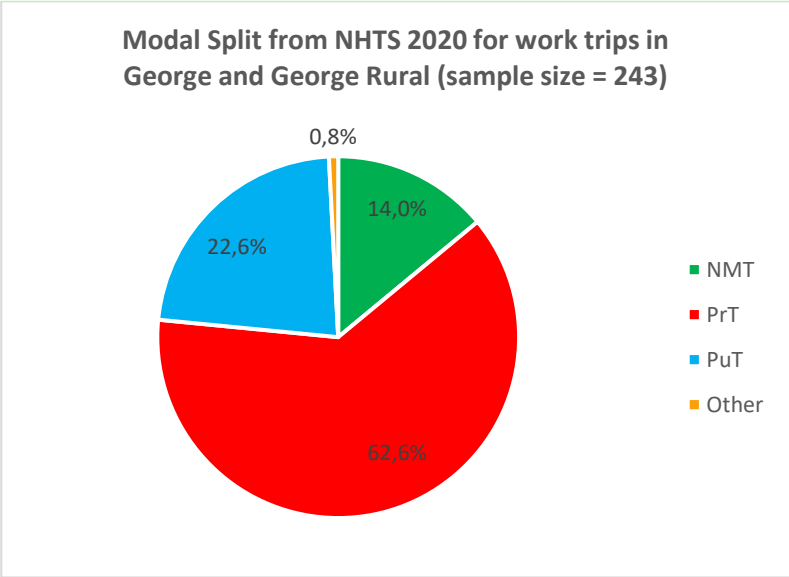


Figure 9-2: Modal Split from NHTS 2020 for work trips in George and George Rural (STATS SA, 2020).

It should be noted that the MSDF (George Municipality, 2023) estimated that walking is the main mode of transport for about 45% of the George city area's residents.

9.4.2 NMT in George

George and its surrounding areas boast a commendable level of walkability, which the George Municipal Spatial Development Framework (GMSDF) aims to enhance further. The city's principal public transport routes, integrated with its city-wide open space system, are envisioned to underpin the Non-Motorised Transport (NMT) network.

Infrastructure for NMT should be established along major transport corridors and connecting key destinations, receiving priority in road enhancements and upgrades.

According to the National Household Travel Survey 2020, walking is the predominant mode of transport for 45% of residents in the George city area, with noteworthy insights revealing that half of the NMT trips by low-income residents extend beyond 5 km.

In the central business district (CBD) and along vital roadways, George Local Municipality has installed paved sidewalks featuring universal access, thereby facilitating pedestrian connectivity to both the CBD and industrial zones.

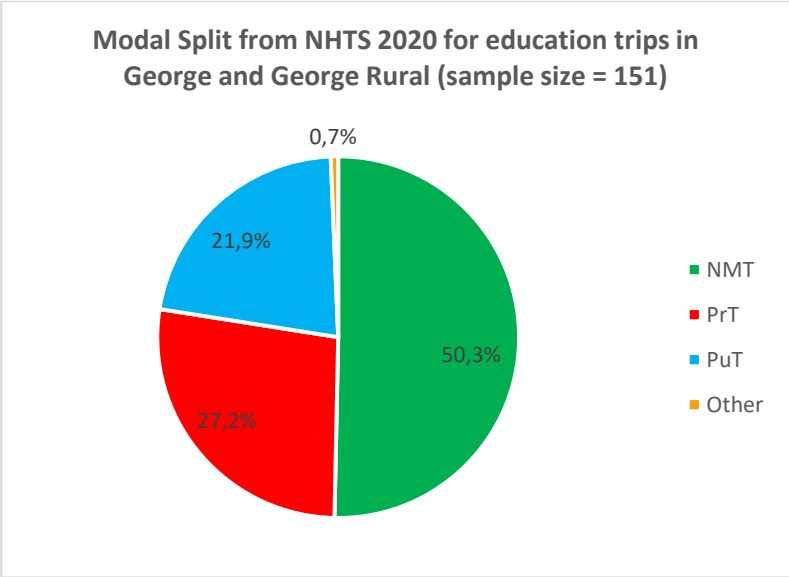


Figure 9-3: Modal Split from NHTS 2020 for education trips in George and George Rural (STATS SA, 2020).

George LM has paved sidewalks with universal access in the CBD and along key road links providing pedestrian accessibility to the CBD and Industrial areas.

Even though walkways are quite prominent in George LM, other NMT amenities such as benches, roadside furniture and bicycle lock up facilities are limited.

The modelled AM peak hour pedestrian demand in George LM is shown in **Figure 9-4** below. The PM peak hour demand would be contraflow to the AM peak hour flow.

The Isochrone **Figure 9-5** below shows accessibility of NMT to public transport within George. It is clear to see that public transport is within 9 minutes walking time for most of George urban and sub-urban area, including lower income areas such as Thembalethu and Pacaltsdorp. Despite close proximity to public transport, there is a high percentage of NMT walking to/from work from lower income areas, as discussed further below.

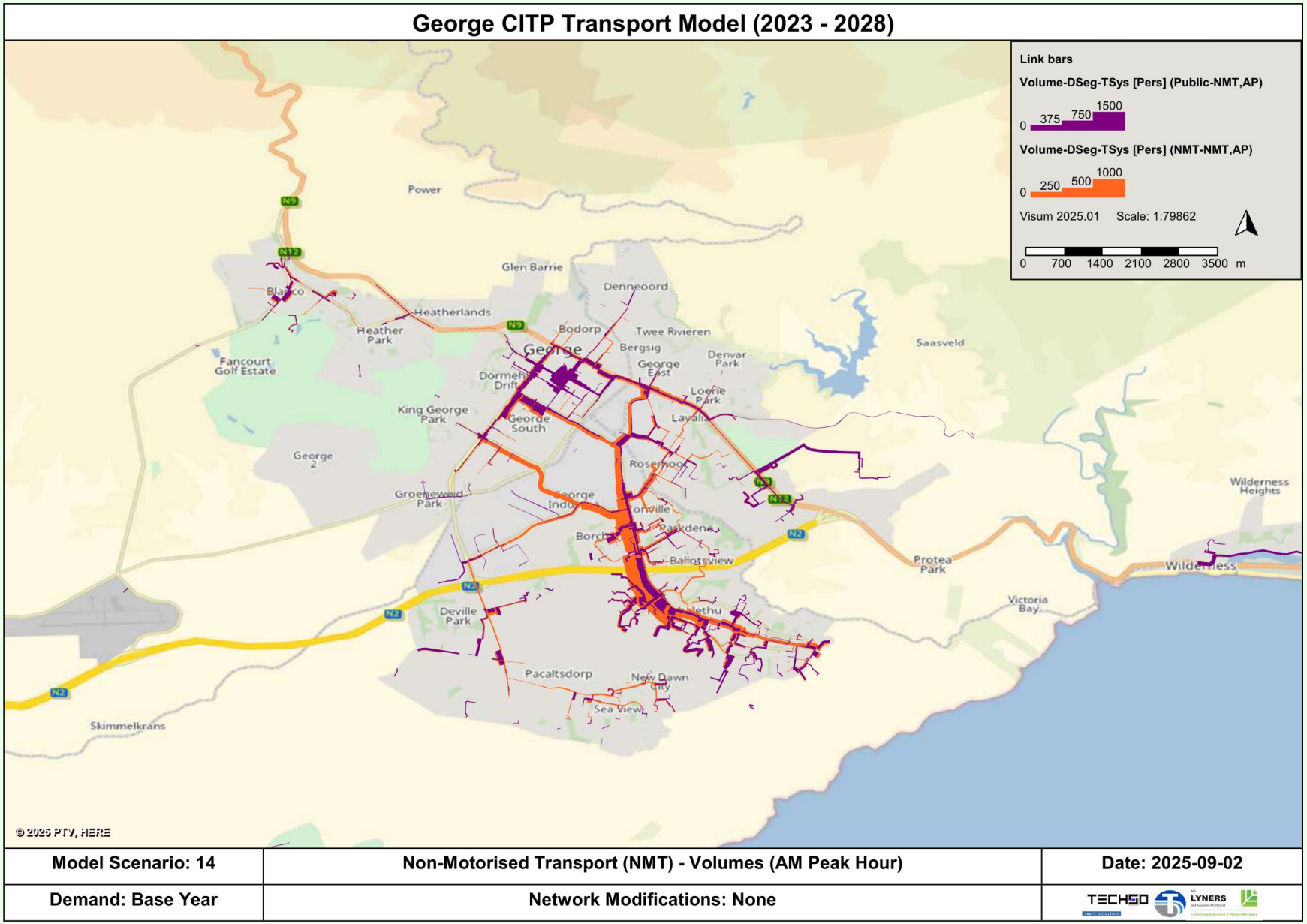


Figure 9-4: Modelled NMT Volumes for the AM Peak Hour for George Urban Area.

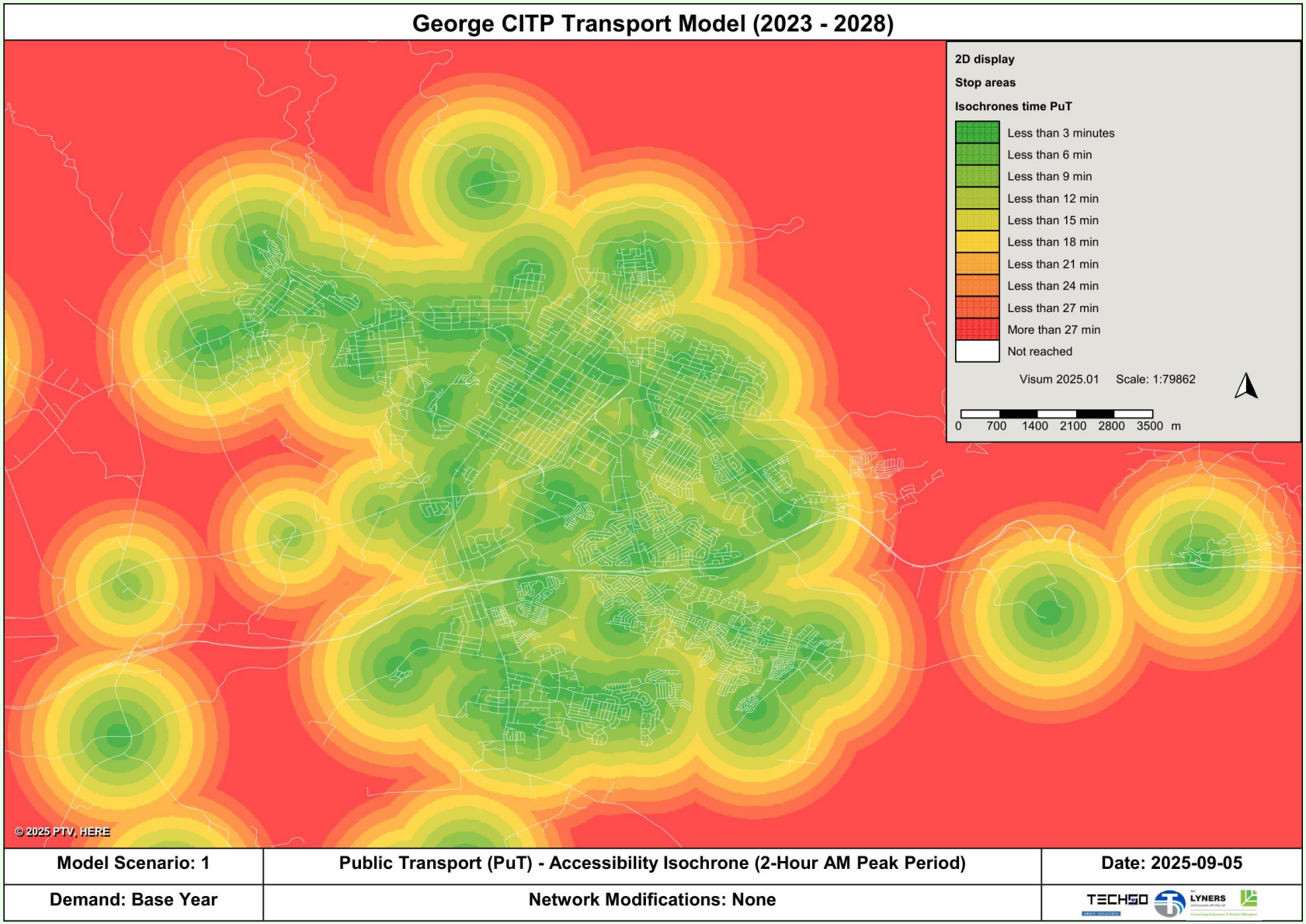


Figure 9-5: An isochrone image of accessibility to public transport measured in walking minutes to a public transport access point for the George area for the two-hour AM peak period.

9.4.3 Effect of income on NMT

The Tables below illustrate the significant impact of income levels on the choice of travel mode, revealing that a majority of low-income individuals rely on walking or cycling for their commutes. Specifically, 58 % of those earning R500 per month or less typically walk or cycle to their workplaces. Despite the social stigma sometimes associated with these modes of transportation, they offer valuable opportunities for non-motorised travel. Such modes are particularly beneficial for covering the 'last mile'—the final segment of a journey—linking non-motorised transport with public transport systems or connecting to destinations that are well-suited for walking or cycling.

It is important to recognise that high income areas attract domestic servants, thus PT / walkability is as critical in these areas as it is in low-income areas. Spatial proximity, as well as service frequency and affordable fares are crucial to the creation of a PT orientated walkable urban environment

Key statistics on non-motorised transport in George highlight:

- A striking 88% of all NMT journeys in George cover distances ranging from 0 to 2 km.
- Remarkably, around 97% of high-income, home-based work commutes via NMT are within the 0 to 2 km range.
- For low-income commuters, about 25% of NMT trips to work span between 2 km and 5 km, and another 24% exceed 5 km in distance.
- Overall, approximately 50% of low-income individuals using NMT travel over 2 km to reach their workplaces, with half of these journeys extending beyond 5 km.

Figure 9-6 contains the number of people travelling by using NMT and the distance travelled in km for George Local Municipality, and **Figure 9-7** contains the associated Cumulative Percentages (CPs) per distance travelled range. **Figure 9-9** - **Figure 9-15** illustrates the various Low-income (LI) and High-income (HI) demographic split for Home to Education-based (HEB) and Home to Work-based (HWB) NMT trips, respectively, as extracted from of the National Household Travel Survey (STATS SA, 2020).

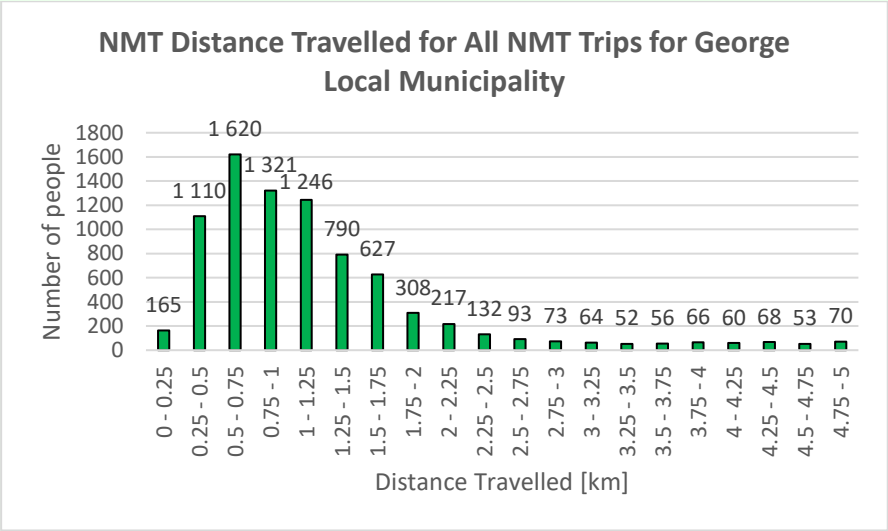


Figure 9-6: All NMT Trips and Distance Travelled.

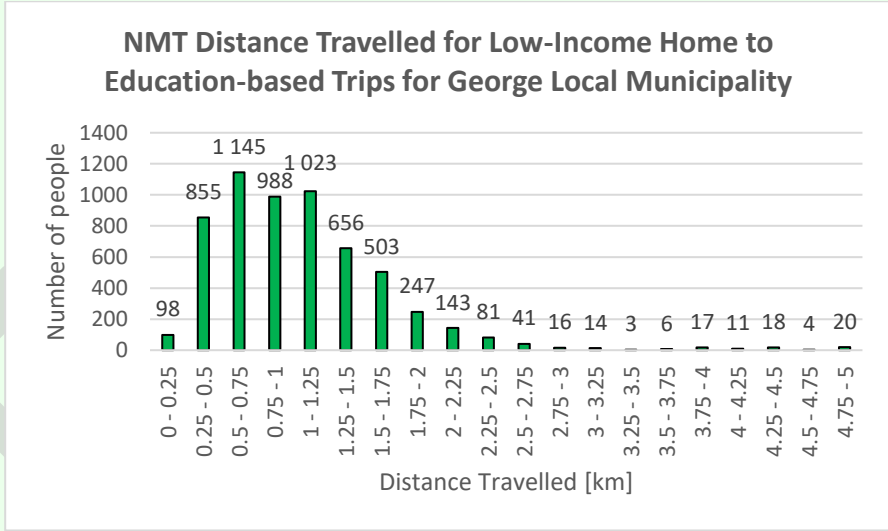


Figure 9-8: LI HEB NMT Trips and Distance Travelled.

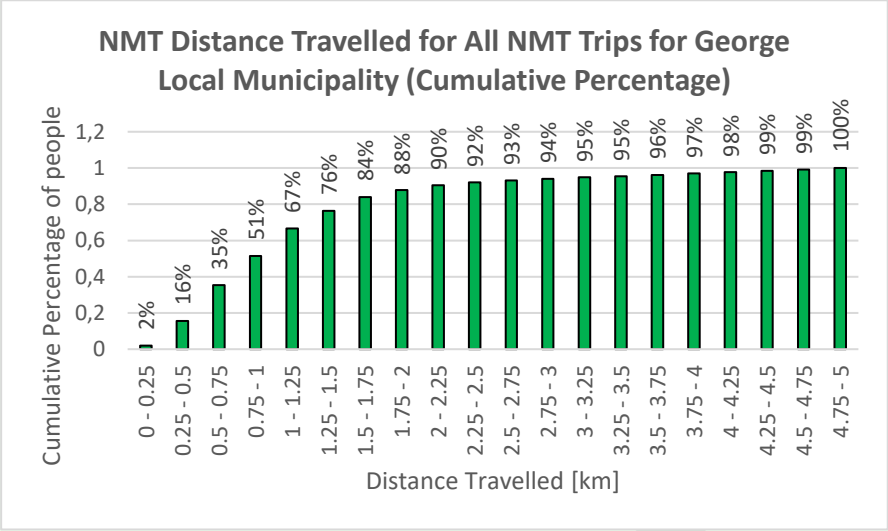


Figure 9-7: All NMT Trips and Distance Travelled (CP).

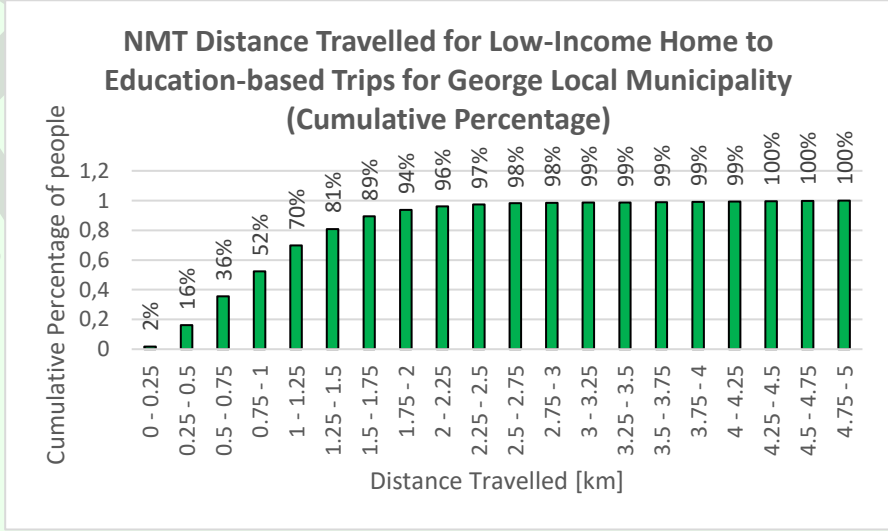


Figure 9-9: LI HEB NMT Trips and Distance Travelled (CP).

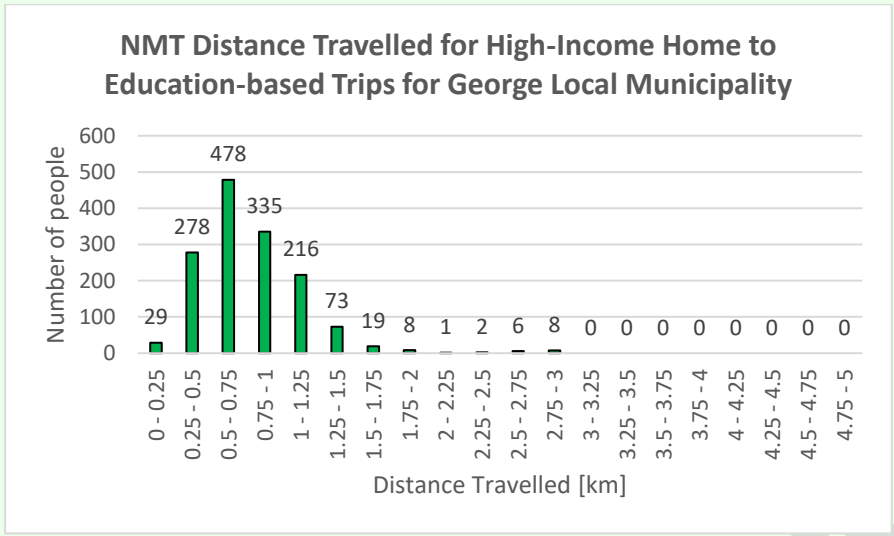


Figure 9-10: HI HEB NMT Trips and Distance Travelled.

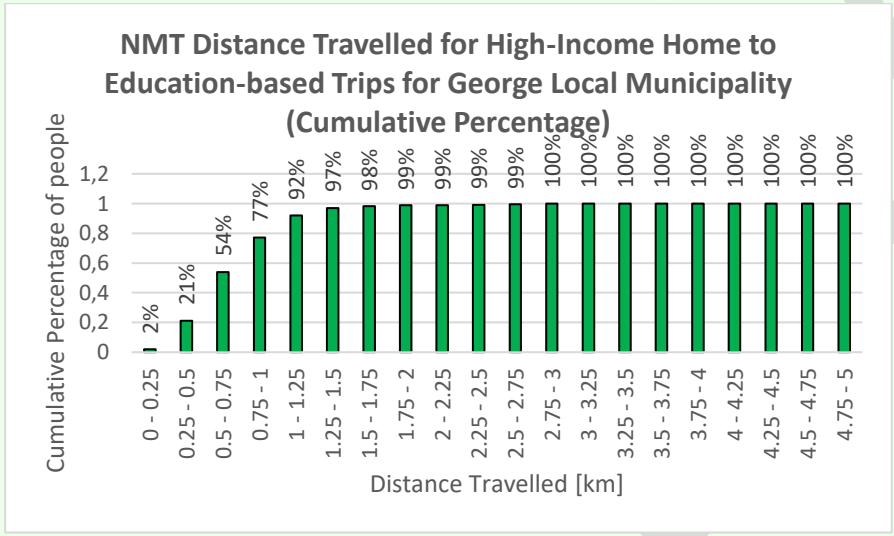


Figure 9-11: HI HEB NMT Trips and Distance Travelled (CP).

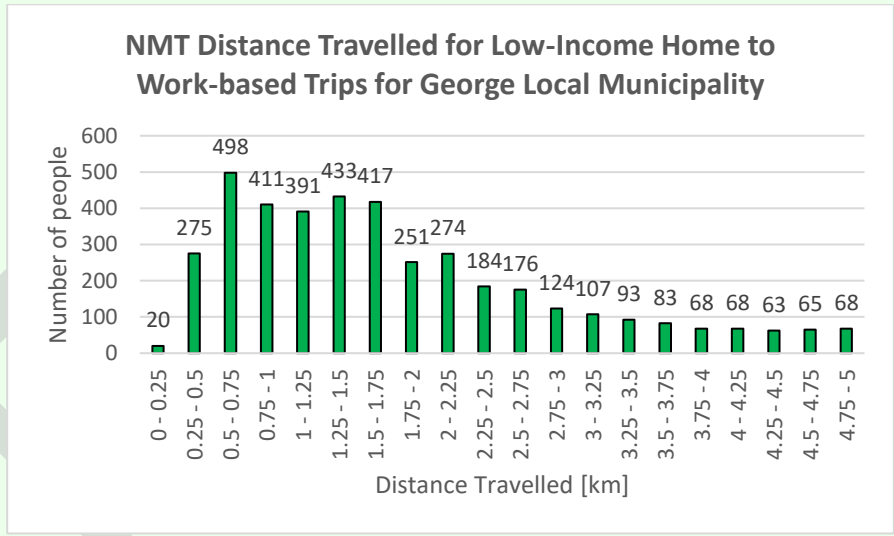


Figure 9-12: LI HWB NMT Trips and Distance Travelled.

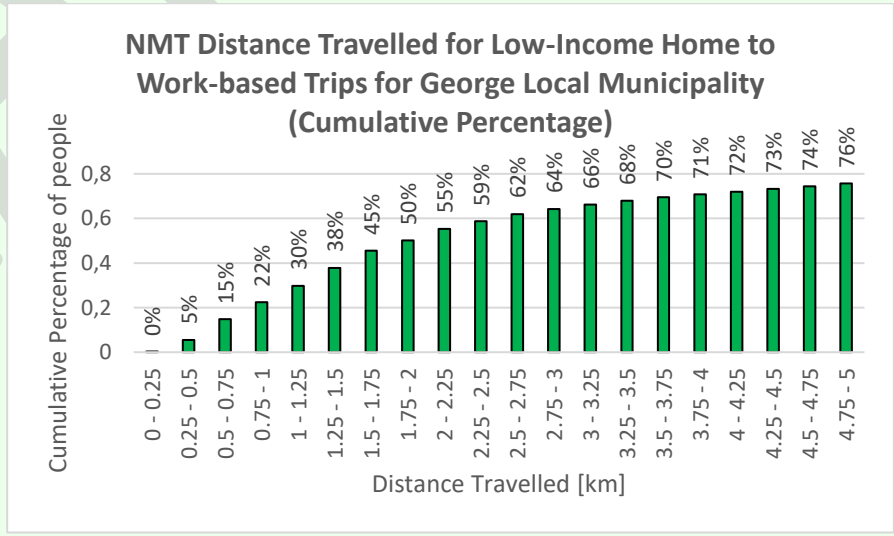


Figure 9-13: LI HWB NMT Trips and Distance Travelled (CP).

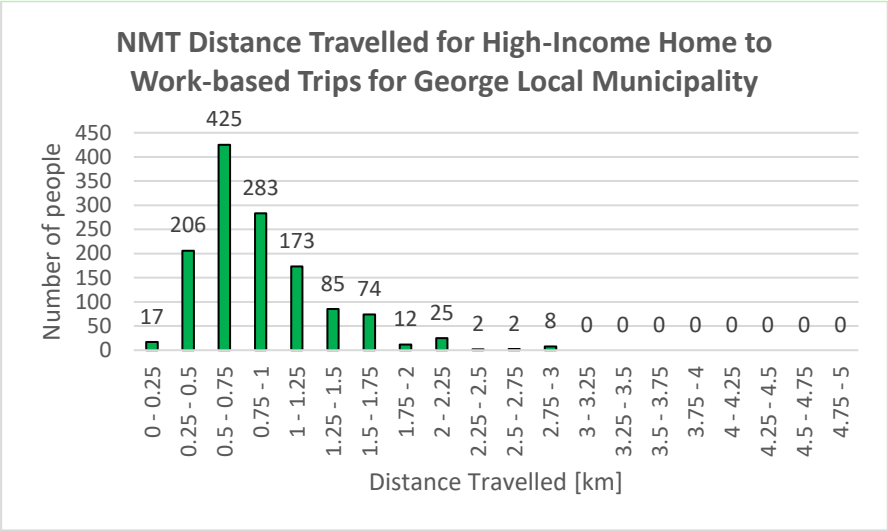


Figure 9-14: HI HWB NMT Trips and Distance Travelled.

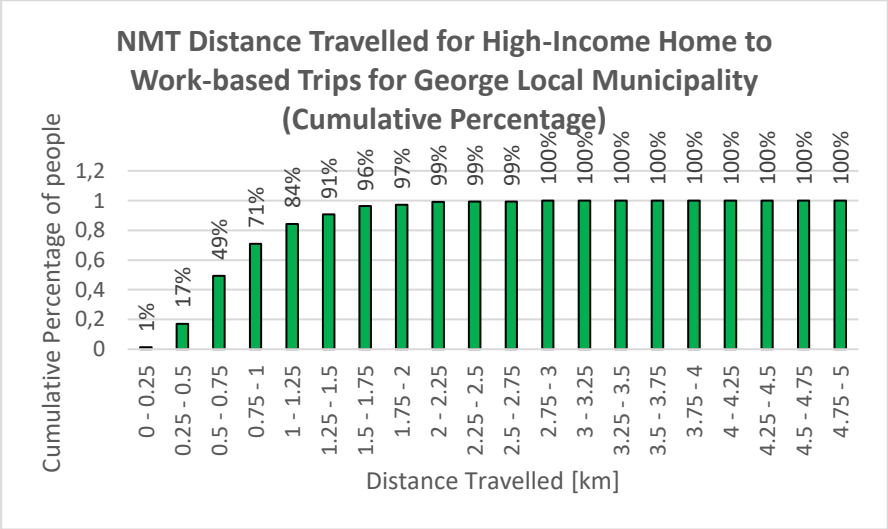


Figure 9-15: HI HWB NMT Trips and Distance Travelled (CP).

9.4.4 Travel Times per Mode

The duration of travel across different transportation modes is depicted in **Figure 9-16** and **Figure 9-17**, focusing on commutes for work and education. Currently, individuals tend to spend a significant portion of their travel time walking or cycling to access public transport services. This observation underscores the importance of the "last-mile" connection in enhancing the efficiency and appeal of public transport systems, particularly for those relying on non-motorised transport.

The key statistics for non-motorised transport in George underline the following aspects:

- The majority (88%) of all NMT trips in George are within a 0 to 2 km range. 2 km take approximately 30 minutes walking.
- An impressive 97% of NMT commutes to work by high-income earners fall within this 0 to 2 km distance.
- Among low-income commuters, around 25% cover a distance between 2 km and 5 km to work, with another 24% travelling beyond 5 km. (5 km take approximately 70 minutes walking)
- Notably, half of the low-income individuals travelling over 2 km for work do so for distances exceeding 5 km.

These figures provide a comprehensive view of the travel patterns within George, illustrating the reliance on NMT for varying distances. The data reflects the significance of integrating NMT effectively with public transport to cater to the diverse mobility needs of the city's residents. **Figure 9-6** - **Figure 9-15** further detail these travel patterns, capturing the nuances of NMT usage among different income groups for education and work-related commutes, as reported in the National Household Travel Survey.

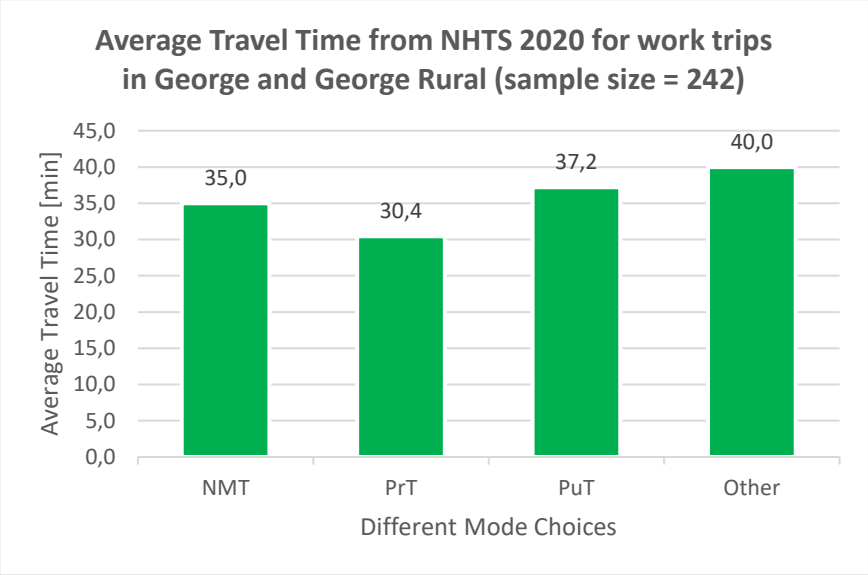


Figure 9-16: Average Travel Time from NHTS 2020 for work trips in George and George Rural (STATS SA, 2020).

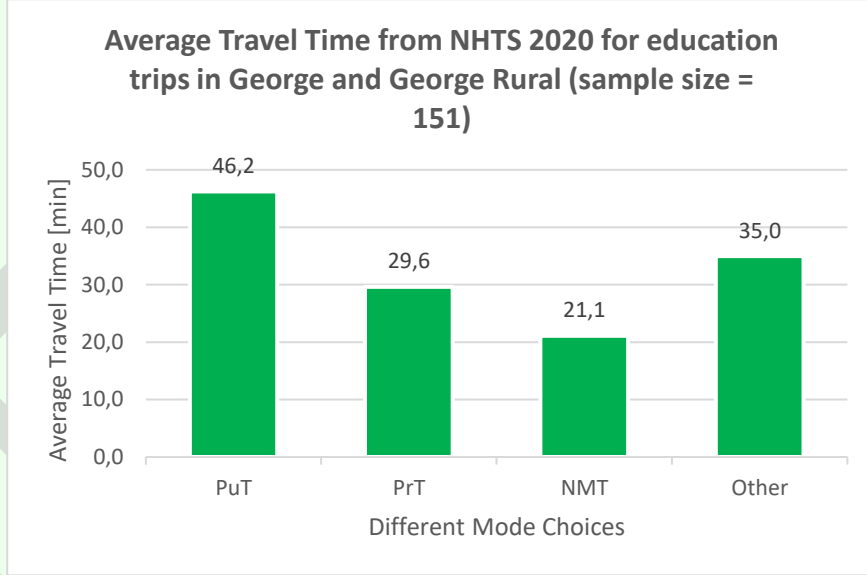


Figure 9-17: Average Travel Time from NHTS 2020 for education trips in George and George Rural (STATS SA, 2020).

9.4.5 Other NMT Trips

In George, additional forms of non-motorised transport include animal-drawn conveyances, which are predominantly observed in rural locales, alongside micromobility options such as skateboards, roller skates, handcycles, and non-motorised wheelchairs, more common in urban settings. These modes of transport also highlight the aspect of NMT vulnerability and the related concerns regarding traffic safety.

9.4.6 NMT and Road Safety

South Africa bears a high burden of road fatalities in Africa, accounting for 25.1 fatalities per 100 000 population. A study in 2015 found that road traffic crashes* (RTCs) have continued to be the 9th

leading cause of death for 15 years in SA. Historical data suggests that for every fatality on the road, there are 4.6 serious injuries and 14.9 slight injuries (Saferspaces, 2024).

Key risk factors are described below (Saferspaces, 2024):

- **Speeding**: The risk is higher for pedestrians, who have shown to have a 90% chance of survival when hit with a car travelling at 30 km/hr, but less than 50% survival chance when hit with a car travelling at 45 km/hr. Pedestrians are also considered vulnerable road users because of this fact, since they have less protection on them when hit with a car.
- **Alcohol**: The World Health Organisation's (WHO's) findings state that an alcohol impaired driver is 17 times more likely to be involved in a crash than an unimpaired driver.
- **Seatbelt and child restraint**: A study conducted by Arrive Alive found that seatbelt usage varied from 45 – 60% among drivers in South African provinces. In every crash, there are three collisions that occur when occupants are unrestrained. The first collision is between the vehicle and another object. The second collision is between unbelted occupant and the vehicle interior. Finally, the third collision is when the internal organs of the body hit the chest wall. It is the second collision that results in majority of the injuries that occur, and seatbelts for passengers and child restraints for children have found to greatly reduce the injury risk.
- **Unsafe vehicles**: Poor vehicle roadworthiness, due to gross neglect of elementary maintenance, causes defects to the tyres, brakes, and lights. These defects have been found to cause approximately 9% of road accidents.
- **Infrastructure**: Due to the legacy of Apartheid planning, fragmentated and segregated development in South Africa continues to dominate. Households and people living in townships and other low-income areas have been the real victims. These areas lack proper road and pedestrian infrastructure such as pedestrian pathways; street lighting is poor even though pedestrian movement is high; and inadequate open spaces prevent the use of areas for recreational purposes. There is also the establishment of further formal and informal settlements near highways, where high speeds are norm, that is increasing the risk of road traffic crashes.

The spatial development patterns and the resulting necessity for non-motorised transport (NMT) users to travel long distances along road shoulders, often beyond daylight hours, particularly along major transport routes characterised by high vehicle speeds and incidences of speeding, significantly contribute to elevated NMT accident rates. Economic constraints necessitate that planning for NMT infrastructure prioritises critical areas such as intersections and pedestrian crossing points, especially along arterial roads with substantial pedestrian traffic. In locales frequented by a high number of "vulnerable" road users, including schools, parks, and clinics, it is crucial to give precedence to NMT facilities enhancement. Additionally, reducing the allowable travel speed in these areas, where feasible, can further safeguard these road users.

9.4.7 NMT and the Future Land Use Planning in George

Land-use planning is essential for ensuring that all non-motorised transport (NMT) users have safe access. The design of land use and the built environment significantly influences the demand for NMT, necessitating the integration of appropriate NMT facilities within broader planning initiatives to enhance mobility, accessibility, and safety. Effective strategies include:


- Promoting mixed-use developments that reduce trip lengths and encourage NMT usage.
- Implementing higher density urban development to support sustainable public transport services.
- Offering high-quality, affordable scheduled public transport services that improve access to essential opportunities for all residents.
- Providing learner transport services that cater to the needs of students in rural or outlying areas.
- Facilitating access to urban centres for rural residents through public transport or charter services, potentially as a scheduled service that operates during off-peak hours on selected days.
- Arranging charter services to transport workers to and from farms, particularly during peak seasons of agricultural activity.

9.5 NMT Policy and Planning

The George CBD Pedestrian Network Framework – June 2015 (MVA Architects Pty Ltd and Jakupa Architects & Urban Designers Pty Ltd, 2015) is one of numerous plans for the revitalisation of George CBD. It considers key focus areas in a select portion of the CBD (see **Figure 9-18**). The document outlines vision and recommendations per precinct.

The focussed study is essentially creation of a pedestrian corridor midway between Hibernia and Market Street. Importantly it provides NMT accessibility to the CBD from public transport facilities (Station Square, Market Square and Bus Terminus Precinct).

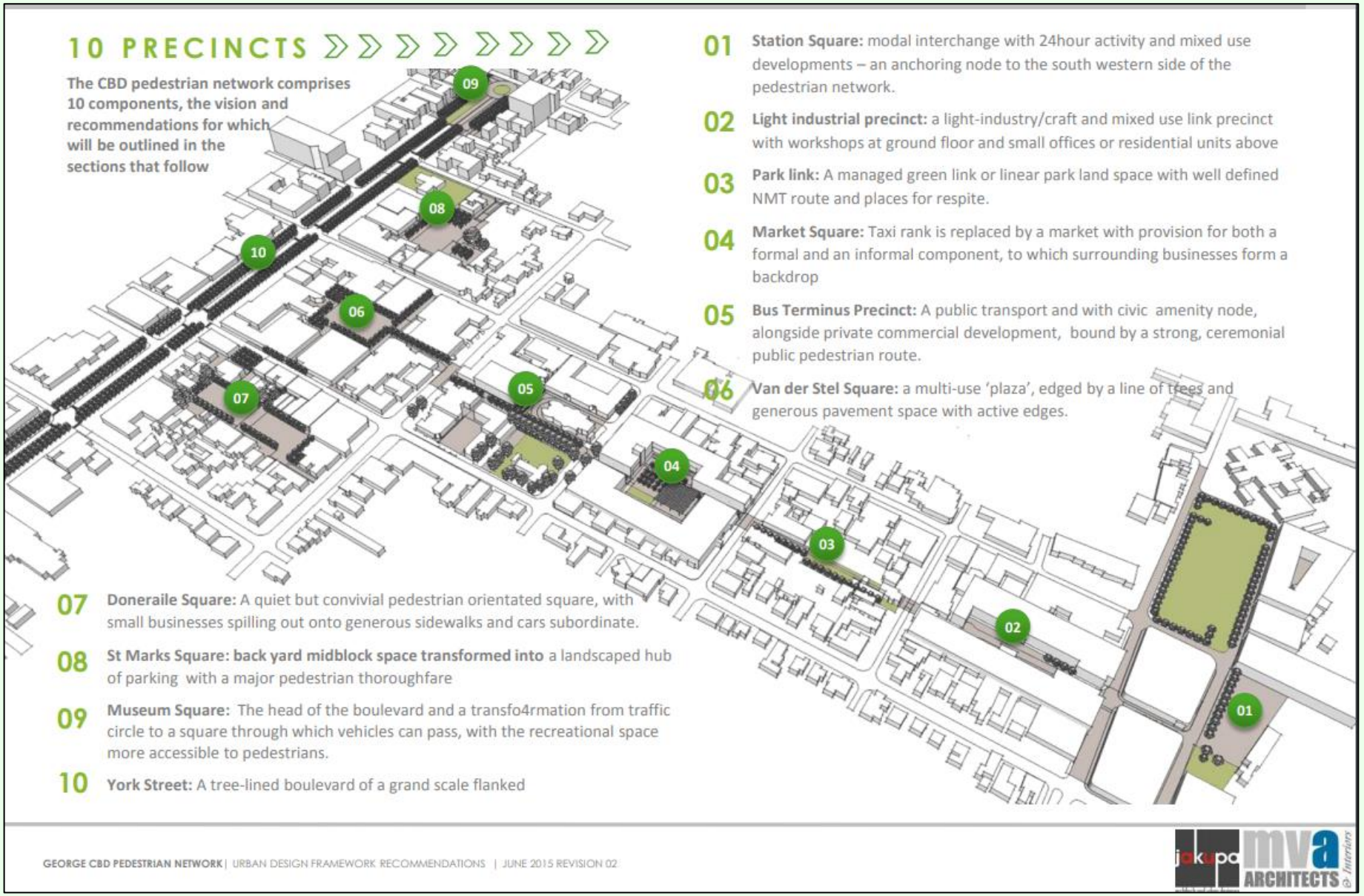



Figure 9-18: George CBD Pedestrian Network (MVA Architects Pty Ltd and Jakupa Architects & Urban Designers Pty Ltd, 2015).

The George MSDF 2023 identifies key public transport/activity corridors and priority nodes as seen in **Table 9-1**.

Table 9-1: Principal Public Transport / Activity Corridors: City Area (George Municipality, 2023).

Public Transport/Activity Corridors	Priority Nodes
George CBD - Pacaltsdorp on York Road/ Beach Road, Rosedale Road, Mission Street, Olympic Road	George CBD
	Western/ Gwayang Industrial
	Pacaltsdorp Nodal Precinct
George CBD - Thembalethu on Nelson Mandela Boulevard/ Nelson Mandela Boulevard. Future Lateral links	Nelson Mandela Boulevard / Conville / George Industrial Area intersection
	Thembalethu CBD (Northern Nodal Precinct)
	Nelson Mandela Boulevard/ Thembalethu Southern Node
George CBD - Garden Route Mall on Courtenay Street / Knysna Road	Eastern Commercial Precinct
George CBD - Blanco CBD on George Road	Blanco Precinct
The Airport Precinct to York Street Node on R102	Airport Precinct
	Southern York node

The MSDF prioritises non-motorised transport, public transport, freight transport and then the private motor car – aligned to a route hierarchy, for investment, as an equitable approach directly correlated with the needs in George Municipal Area. Further it encourages focus on accessibility and mobility (i.e. public transport, NMT) rather than focussing on peak hour car-based traffic congestion.

NMT facilities (sidewalks and a few cycle facilities) have been provided in George along major transport routes, linking residential development with industrial areas and George CBD.

NMT strategy, planning (network) and local NMT guidelines are required to develop a quality NMT network for George. This needs to be both reactive and proactive, reactive in enhancing and improving the current NMT and proactive in planning and establishing new NMT routes (and NMT guidelines) for future planned development and transport routes in George.

George LM needs to develop a NMT Master Plan to connect trip origins and destinations, as well as a Sidewalk and Bicycle Management Plan, for pedestrians and cyclists.

9.5.1 NMT Vision

The vision of George Local Municipality (LM) is to establish an integrated, accessible, safe, affordable, and sustainable transport system that is effectively managed and maintained for the residents of George. This vision encompasses the enhancement of both the public transport service and the non-motorised transport (NMT) necessary for comprehensive access to public transportation.

9.5.2 NMT Objective

The Comprehensive Integrated Transport Plan (CITP) 2040 aims to advance and refine infrastructure for NMT, ensuring its safety, accessibility, efficiency, and integration within the larger transport framework. This initiative supports the "20-Minute Town" concept, facilitating essential services and activities within a 20-minute walk or cycle from home.

9.6 NMT Design Guidelines for George

9.6.1 Background

Historical transport planning in George prioritised private vehicle use, gradually shifting towards public transport with insufficient focus on NMT, leading to sporadic and often substandard NMT facilities. The need has emerged to retrofit and prioritise NMT infrastructure, particularly along key transport and public transit routes.

Reflecting on national progress and acknowledging NMT's role in sustainable development, the following policy documents have guided NMT enhancements:

- White Paper on National Transport Policy, 1996
- National Land Transport Strategic Framework, 2006 (NLTSF)
- Public Transport Strategy and Action Plan, 2007
- Rural Transport Strategy for South Africa, 2007
- Department of Transport Draft Policy Document on NMT, 2008

With a global shift towards valuing NMT for sustainable urban development, South Africa's Department of Transport introduced the NMT Facility Guidelines in 2014. These guidelines empower municipalities to devise localised NMT design standards. Notable examples include NMT guidelines developed by the cities of Cape Town, Johannesburg, and Tshwane.

Given its status as the second-largest municipality in the Western Cape and its rapid population growth, George LM is positioned to create its own NMT Facility Guidelines. These guidelines would be specifically tailored to the local context, aligning with George LM's vision, spatial planning, and anticipated transport evolution (GIBB, 2015).

Amidst a global focus on non-motorised transport (NMT) as a key element of sustainable development, the South African National Department of Transport released the NMT Facility Guidelines in 2014. These guidelines offer local municipalities the chance to establish NMT design standards that resonate with their specific environments. Several cities, including Cape Town, Johannesburg, and Tshwane, have already crafted their unique NMT guidelines and standards. Given its status as the second-largest municipality in the Western Cape Province and its rapid population increase, George Local Municipality is well-positioned to create its own NMT Facility Guidelines. These guidelines would be specifically tailored to fit the local context, aligning with George LM's vision, spatial planning strategies, and anticipated transport developments.

9.6.2 NMT Interventions in George

The following interventions should be considered for George NMT projects:

- **NMT Network**
  - Design NMT (pedestrian and cycle) network for current needs
  - Improve network paths connectivity
  - Plan and produce conceptual design guidelines for NMT network to be incorporated in future spatial development
- **Infrastructure**


- Maintain and fix broken/damaged NMT
- Fill in gaps (join discontinuous NMT links)
- Prioritise NMT safety projects (at intersections, schools, clinic)
- Create an accessible, safe NMT environment (streetlighting, benches, cover from inclement weather, wayfinding, landscaping)

- **Incorporate Universal Access measures** to accommodate people with disabilities and other special needs
  - To accommodate people with disabilities or special needs.
- **Provide traffic calming**
  - Speed reduction measures at areas with high numbers of vulnerable NMT users (schools, clinics, parks, etc)
  - Lowered speed limit at areas with high numbers of vulnerable NMT users (schools, clinics, parks, etc)
- **Provide secure Bicycle Parking and Storage Facilities**
  - Safe bicycle lock-up facilities clear of pedestrian walkway
- **Education and Promotion of NMT**:
  - Create NMT transport safety education programmes for schools.
  - Promote NMT by highlighting projects, etc. in local news media.
  - Elevate status of cycling (from transport by necessity to a wise health choice).
- **Improve Safety for NMT**
  - At intersections
  - At crossings (consider the latest New Zealand Pedestrian Crossing Guidelines)
  - At bus-stops
  - At Public Transport Facilities
  - Along routes and at locations with high number of vulnerable user (schools, old age homes, clinics, parks, etc)
- **NMT Security**
  - Identify and address NMT security issues, i.e. security personnel, camera surveillance, lighting

9.7 NMT Action Plan

9.7.1 NMT Institutional Capacity

Ensuring that non-motorised transport (NMT) receives the necessary focus and direction is crucial to prevent its ad-hoc implementation, which could lead to varying levels of integration and detail within the overall NMT network. Given the rapid population growth and spatial planning dynamics within George Local Municipality (George LM), establishing a dedicated NMT Branch is pivotal. This branch would be responsible for researching, planning, developing NMT policy, guidelines, and standards, and overseeing the implementation of an integrated NMT network that underpins a sustainable transport system in George.

9.7.2 NMT Policies and Framework

It is essential for all transport authorities to develop and enforce policies and frameworks that encourage NMT usage, thereby


contributing to sustainable development. Effective public policy should encompass well-defined, actionable goals with clear benchmarks for success.

NMT-focused policies should:

- Align with the municipality's vision and objectives.
- Clearly define the scope of envisaged NMT within George LM.
- Embrace good design principles and best practices.
- Be flexible to address specific, non-standard design challenges.
- Maintain consistency with other relevant organisational policies, budgets, and plans.
- Garner public support.
- Be clearly articulated for comprehension by the general public.
- Be communicated effectively within the municipality.
- Be accessible to stakeholders and the public.
- Be integrated into municipal by-laws.

9.7.3 NMT Implementation

The establishment of an NMT Branch dedicated to guiding NMT policy, guidelines, standards, and the NMT Masterplan is key to developing a thoughtful and suitable NMT network and infrastructure in George. While this branch is being established, there are immediate actions that can be taken to enhance NMT by focusing on and prioritising NMT safety and infrastructure maintenance, as follows:

- Safety for Vulnerable (young, elderly) Road Users:
  - Reduce speed limits.
  - Implement traffic calming measures.
- Safety for NMT Users:
  - Develop safer NMT crossings at critical nodes and along road links.
- Maintenance of NMT Infrastructure:
  - Repair damaged or incorrect NMT infrastructure.
  - Install and maintain Universal Access facilities.

9.8 Conclusions and Recommendations

The Non-Motorised Transport (NMT) Plan for George Local Municipality aligns with the broader goals of the Comprehensive Integrated Transport Plan (CITP) to create an integrated, accessible, safe, affordable, and sustainable transport system. The NMT Plan provides a structured approach to enhance NMT infrastructure and policies, ensuring they are integrated with the overall transport strategy and contribute to the realisation of the 20-Minute Town concept in George.

The plan underscores the importance of NMT in promoting sustainable transport, offering numerous benefits such as reduced vehicular congestion, lower environmental impacts, improved public health, and enhanced social inclusion. To capitalise on these benefits, the NMT Plan outlines a series of actionable steps and strategies:

- Establishing a dedicated NMT Branch within the municipality to oversee the development and implementation of NMT initiatives.
- Leading from predominant NMT routes between home and work/school, ascertain finer grain utility cycle and NMT

patterns in George, particularly and in and around work (industrial area) and schools.

- Developing localised NMT design guidelines and standards that cater to the specific needs and context of George, informed by both national guidelines and successful practices from other cities.
- Prioritising the integration of NMT facilities within the existing and planned transport infrastructure to ensure seamless connectivity and accessibility.
- Focusing on safety and security measures to protect vulnerable road users and encourage more people to adopt NMT for their daily commutes.
- Engaging with the community and stakeholders to garner support, raise awareness, and ensure the NMT network meets the diverse needs of George's residents.

The NMT Plan should not be viewed in isolation but as a key component of George's broader transport and urban development framework. Its successful implementation requires collaboration across various municipal departments, alignment with other transport and land-use plans, and a commitment to ongoing evaluation and refinement.

In conclusion, the NMT Plan represents a forward-thinking approach to urban mobility in George, emphasising the critical role of non-motorised transport in achieving a more sustainable, liveable, and equitable city. By adopting and implementing the recommendations within this plan, George Local Municipality can set a benchmark for sustainable urban transport in South Africa, enhancing the quality of life for all its residents and paving the way for a more resilient and sustainable future.

9.9 Summary of the Non-Motorised Transport (NMT) Plan

- Establish a NMT Section within GM
- Develop localised NMT guidelines
- Prioritise integration of NMT facilities and planned transport infrastructure
- Focus on NMT safety and security measures
- Engage community in NMT planning

10 FREIGHT TRANSPORT STRATEGY

The movement of freight is a major economic driver and forms an integral part of the local and national transportation network. The promotion of trade is directly correlated to the provision of freight transport infrastructure. As such, it is crucial to improve the efficacy of freight movement within the network, but at the same time, the impact of growing freight volumes on other modes of transport and transportation infrastructure must also be considered.

In South Africa, freight is moved via road, rail, air, seaports, and pipelines with road freight occupying the largest share of the mode. This section describers the status quo of freight transport within the George Municipal Area and delves into problems caused by or inhibiting freight movements, as well as other factors to consider, such as waste management and abnormal loads.

10.1 Key Aspects

This chapter focuses on the Freight Transport Strategy, which is a critical component for economic growth and infrastructure development within the George Municipal Area. Below are some of the key aspects highlighted in this chapter.

- **Road Freight**: Road freight dominates the transport sector in George, as it does across South Africa. The N2 highway and York Street are key routes carrying significant heavy vehicle traffic. The George CBD also experiences a high volume of heavy vehicles, which poses challenges due to the unsuitable geometry of the roads for such traffic.
- **Rail Freight**: Although rail freight is generally more cost-effective and environmentally friendly compared to road freight, the infrastructure in George is currently inadequate. The Outeniqua line is a dead-end, making it less attractive for freight services. Plans are in place for future studies to explore the potential of rail freight, especially in connection with the Garden Route District.
- **Air Freight**: George Airport is primarily a passenger airport, but there are plans to expand its capacity to handle cargo planes, which would enhance the movement of goods to and from the area.
- **Port Freight**: The Port of Mossel Bay, the nearest seaport, has limited cargo capacity but there are plans for upgrades that could improve its role in freight transport between Mossel Bay and George.

- **Problems Inhibiting Freight Movements**: The chapter also discusses various challenges associated with freight transport, including road damage, safety risks, congestion, and environmental concerns such as high fuel consumption and emissions. Shifting some freight from road to rail is suggested as a potential solution to these problems.
- **Waste Management**: Waste is a significant component of freight volumes, and there is a plan to transport waste via rail to alleviate pressure on the road network.
- **Overloading and Abnormal Loads**: Overloading is a common issue, with limited enforcement due to the lack of weighbridges. There are proposals to construct new facilities to address this problem effectively.
- **Future Considerations**: The strategy underlines the importance of continuous improvement in freight transport infrastructure, including potential shifts in transport modes to balance economic needs with sustainability goals.

10.2 Road Freight

Most of the freight in the George Municipality, as in the rest of South Africa, is conveyed via roads. The utilisation of roads in George by freight vehicles for the AM peak hour is shown in **Figure 10-1**. Thicker lines in the figure indicate higher heavy vehicle volumes. It must be noted that 'heavy vehicles' and 'freight vehicles' were assumed to be interchangeable terms for the purposes of identifying freight movements for this Transport Register. The volumes indicated in **Figure 10-1** are based on three sources. The first is SANRAL Comprehensive Traffic Observation (CTO) counts, which consists of electronic 24-hour counts at strategic locations on National Routes. The second and third sources are link traffic counts and cordon traffic counts that were conducted at several key locations in George during 2022 by the Project Team. The AM peak period between 06:00 and 08:00 was selected as the preferred period to compare heavy vehicle traffic on the different routes in George as this period is the most reflective of heavy vehicle movements.

It is clear from **Figure 10-1** that The N2 carries the most heavy vehicle traffic, while significant volumes are also present on York Street to the north of the N2 and Nelson Mandela Boulevard to the South of the N2 in Thembalethu, as well as Knysna Road from the N2 travelling to the CBD.

Heavy vehicles (trucks and buses) volumes in Thembalethu associated with transport of farm workers vary depending on seasonal farm activities. Furthermore, there is a high number of heavy vehicles present on the Knysna Road (N12) between the N2 and the George CBD. The George CBD carries quite a large heavy vehicle presence and the utilisation of roads in the CBD by heavy vehicles is spread quite evenly. This indicates that once heavy vehicles reach the CBD, they do not follow a major heavy vehicle route, but travel on roads mainly design for smaller vehicles. This has lead to conflicts between heavy vehicles and other vulnerable road users that are commonly present in a CBD, such as pedestrians, cyclists and motorcyclist. Furthermore, the geometry of these internal roads in the CBD does not conform to the requirements for heavy vehicles. Bellmouth radii are small, roads are narrow and street furniture and infrastructure are not placed ideally for heavy

vehicle presence. This CBD Road geometry, together with the high number of traffic roundabouts in the George CBD, means that the high volumes of freight traffic could cause significant infrastructure damage.

A road freight route signage guidance plan should be developed to guide freight movement, particularly in George urban area, avoiding unnecessary trips and stops in the CBD.

Truck stops catering to long-haul drivers are relatively limited in George. However, there are a few places where trucks can park overnight, as shown below. These are near freeways and are equipped to handle the needs of heavy vehicle drivers, offering secure parking and essential services.

- **Shell Ultra City George** (along N9, at Park Rd/Kaaimans Blvd Intersection) is approximately 2 km from the N2 and abuts the N9.
- **Caltex Fourway Motor and Truck Stop George** (York St/Discovery St intersection is Approximately 0.5 km from the N2

There is need to provide dedicated truck convenience facilities in George Industrial area for convenience shopping, to reduce unnecessary truck trips to the CBD.

Figure 10-2 shows the percentages of heavy vehicle traffic on the roads in George compared to other transport modes during the AM peak period, the first without labels and the latter with labels. The N2 from Mossel Bay to Thembalethu has a high heavy vehicle percentage of between 17% and 34%. Furthermore, PW Botha Boulevard and Union Street also carry high percentages of heavy vehicle traffic, ranging between 10% and 34%. PW Botha Boulevard is in an industrial area and there are many commercial sites on Union Street, therefore it makes sense that there would be high heavy vehicle percentages on these roads. The heavy vehicle percentage on the rest of George's roads vary between 2% to 5%, which is quite typical for roads in an urban area.

In an attempt to understand why certain routes in George were more utilised by freight vehicles than others, the most used routes were compared to the different land use zones present in George. It was found that the majority of heavy vehicle trips in George originate or terminate in industrial zones. This makes sense, as freight is usually generated by these zones and require large freight volumes to be delivered. However, as George's Industrial Zones are not concentrated and often located between residential areas, this can cause a major safety concern. **Figure 10-3** indicated the locations of the industrial zones in George in relation to the most utilised heavy vehicle routes. From this figure it can be surmised that the three major types of freight traffic in George are:

- Freight destined for / originating from Industrial Zones
- Freight destined for / originating from the George CBD
- Freight traffic travelling through George to another location.

The Heavy Goods Vehicle (HGV) volumes for the 20-Year modelled scenario, along with all the proposed road links from the George Roads Master Plan (as described in **Chapter 7**), is shown in **Figure 10-4**, which indicates larger volumes of HGVs along York Street, the N2 towards Knysna's direction, and the Outeniqua Pass travelling away from George. When looking at the CBD, it does not seem like many HGVs travelling through the CBD, but that instead the CBD is either an attractor and generator of HGVs. It does not appear that there is a great demand for HGVs travelling directly from Mossel

Bay's side to destinations over the Outeniqua Pass, and vice versa. The increase in HGVs may largely be attributed to the growth in industrial areas, for example the Gwayang Development, and increase in HGVs travelling on the N2.

Contrary to popular consensus among planners and planning strategies for George, it seems that there is not a major flow of freight traffic through George to Oudtshoorn via the Outeniqua Pass. From the figures, the majority of heavy vehicle traffic through, from and to George is conveyed via the N2. It seems that a relatively small portion of heavy vehicle traffic (in relation to the traffic on the N2 and inside George City itself) travel through George to reach the Outeniqua Pass. Current data indicates that the Western Bypass will not be required for some years.

The N9 carries low number of Freight vehicles to Uniondale.

10.3 Rail Freight

There are a few rail lines that traverse through the George Municipality. **Figure 10-5** shows the location of all rail stations and rail lines in the vicinity of George. Three main lines run to/from the George CBD, namely George – Mossel Bay, George – Knysna and George – Oudtshoorn.

Transnet's 2022 Freight Rail Report states that the George – Knysna line is no longer active. According to the report, a plan has been advertised for proposal for the development of this line with the participation of the private fruit industry. The re-opening of this line can significantly increase the freight being transport to/from George. The rail freight routes are indicated on **Figure 10-6**.

Currently, the rail network in the George Municipality is only utilised for freight transport and there are no passenger transporting services. Rail transport reduces road transport resulting in lower levels of traffic congestion, vehicle crashes, and lower carbon emissions. Some of the main commodity's transport via rail through George is petroleum, grain, and perishable items, specifically fruits such as berries. Therefore, it is important to protect local freight rail sidings to link with the main system to support the growth and development of industrial business areas.

It is crucial to re-establish rail freight services to Mossel Bay Port, as the current road network and topography present significant challenges to efficient freight delivery. A comprehensive rail freight study for the Garden Route District, with a particular focus on the George and Mossel Bay areas and the surrounding agricultural regions, is necessary. This study should also consider the needs of tourism transport in the region.

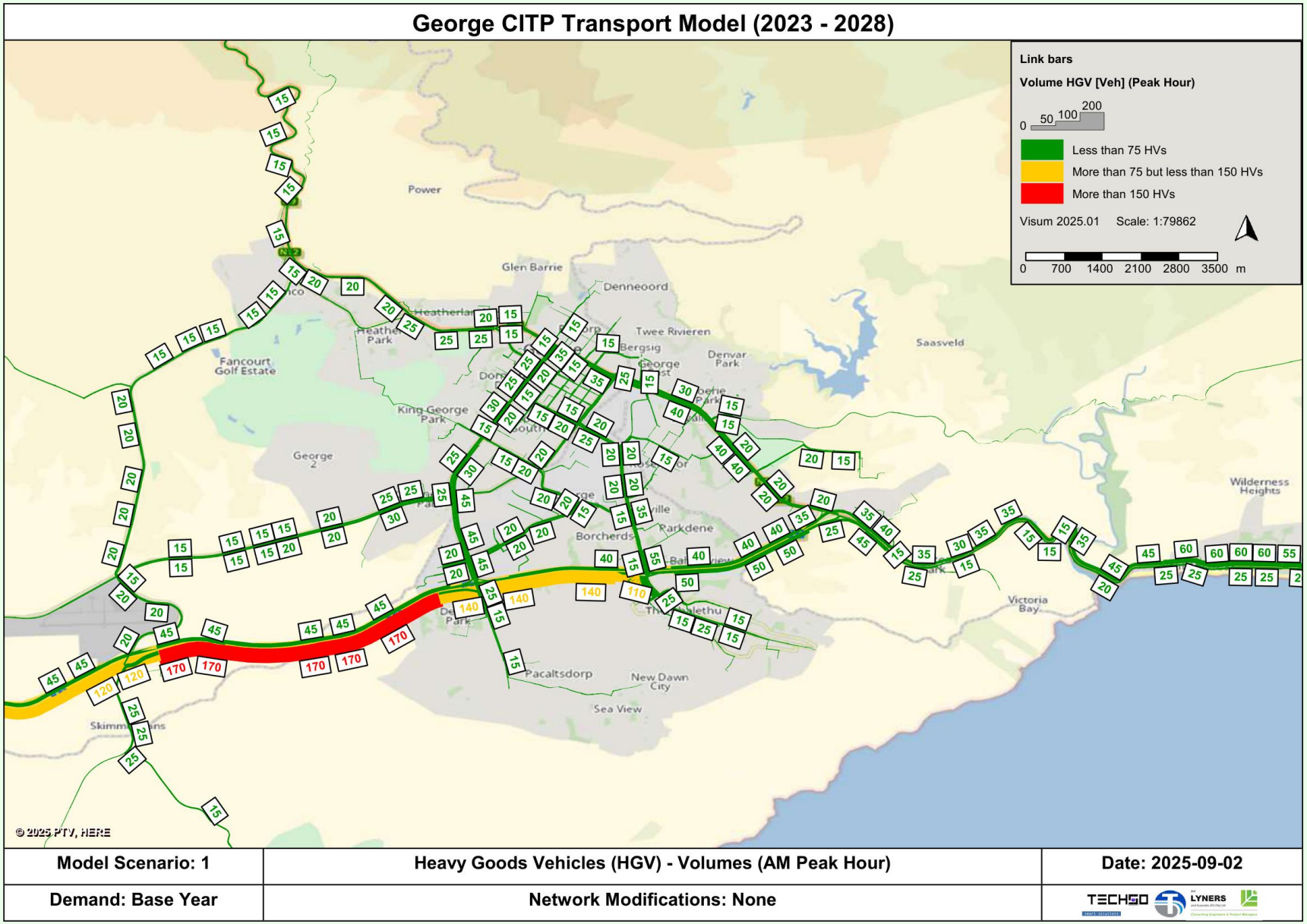


Figure 10-1: Volumes of heavy vehicles in George, during the AM peak hour between 07:00 and 08:00.

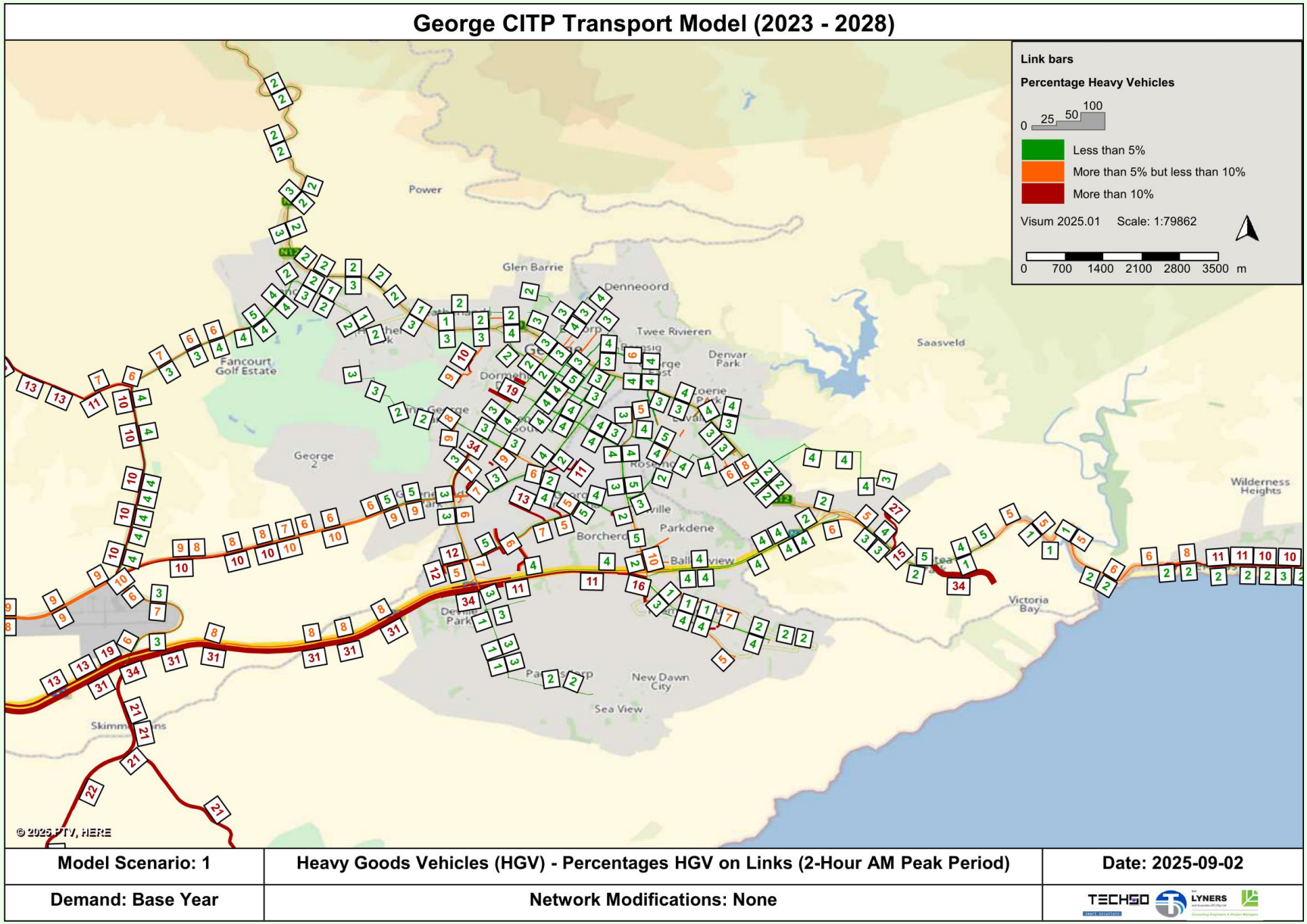


Figure 10-2: Labelled percentages of heavy vehicles in George, during the 2-hour AM peak period between 06:00 and 08:00.

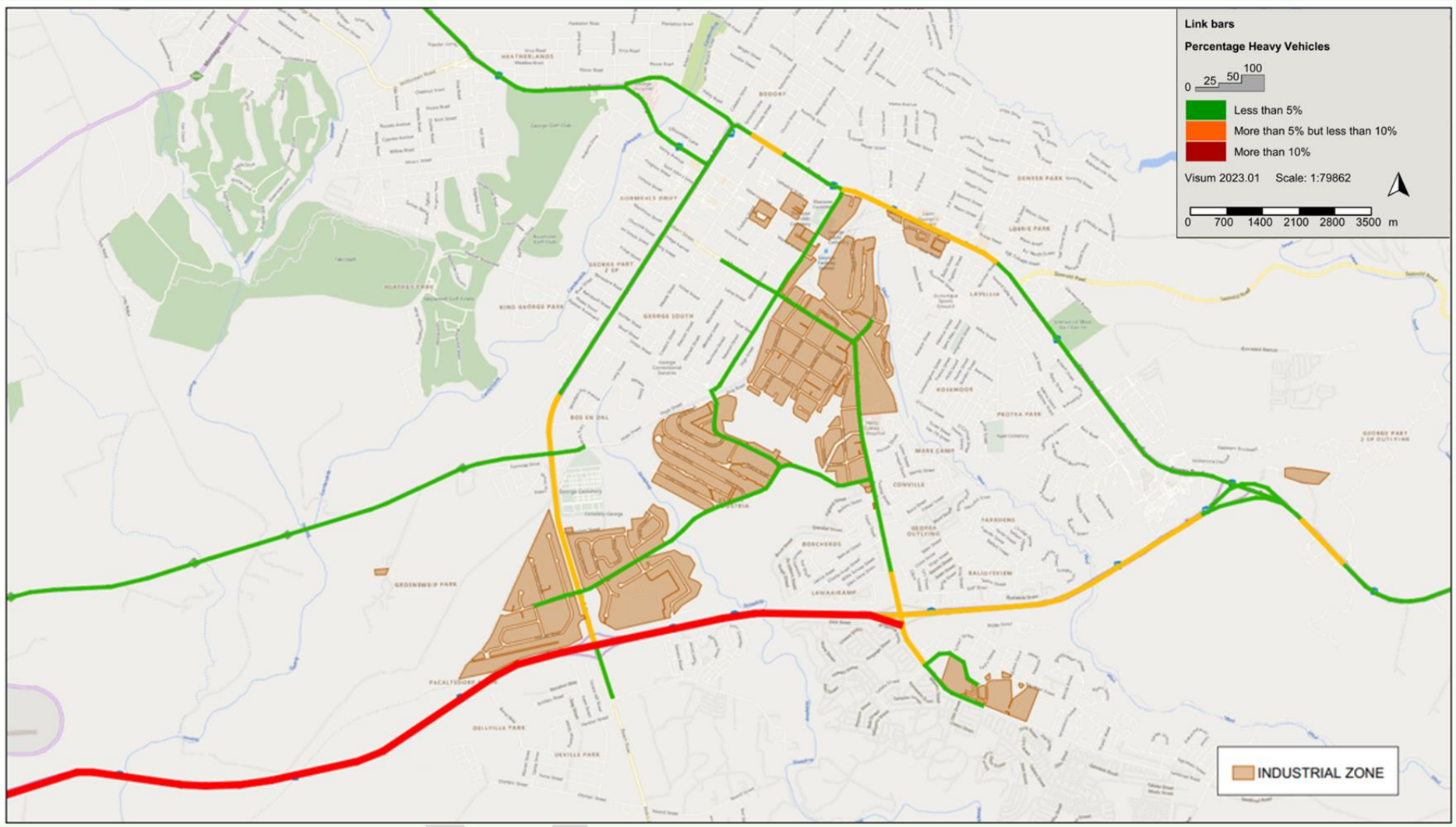
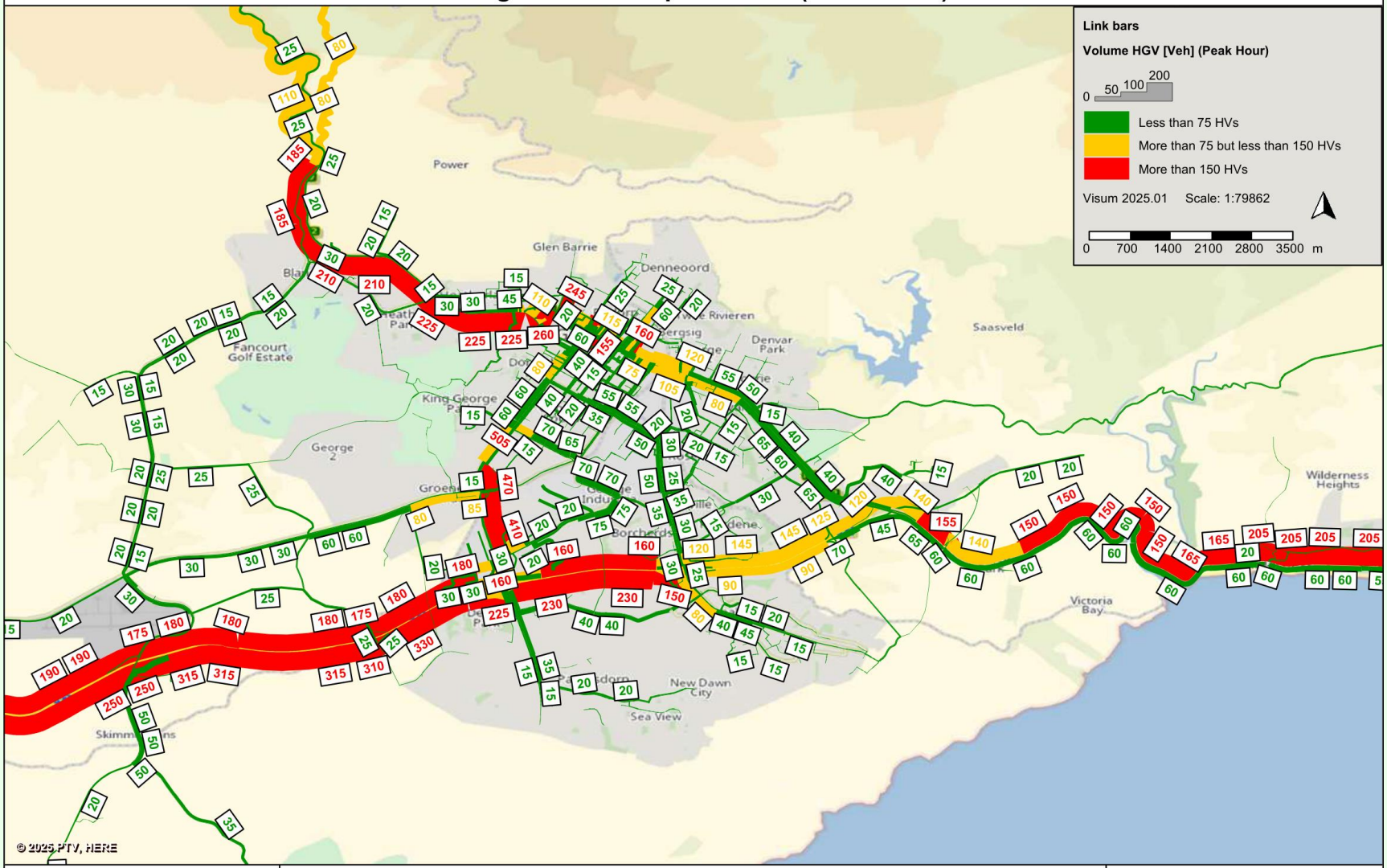


Figure 10-3: Location of Industrial Zones vs. routes with the heaviest vehicle traffic during the 2-hour AM peak period between 06:00 and 08:00 in George.

George CITP Transport Model (2023 - 2028)



Model Scenario: 8	**Heavy Goods Vehicles (HGV) - Volumes (AM Peak Hour)**	**Date: 2025-09-02**
Demand: 20 Year	**Network Modifications: 5-20 Yr Links + GG Phase 4A**	TECHSO LYNERS

Figure 10-4: Volumes of heavy vehicles in George for the 20-Year Scenario, during the AM peak hour between 07:00 and 08:00.

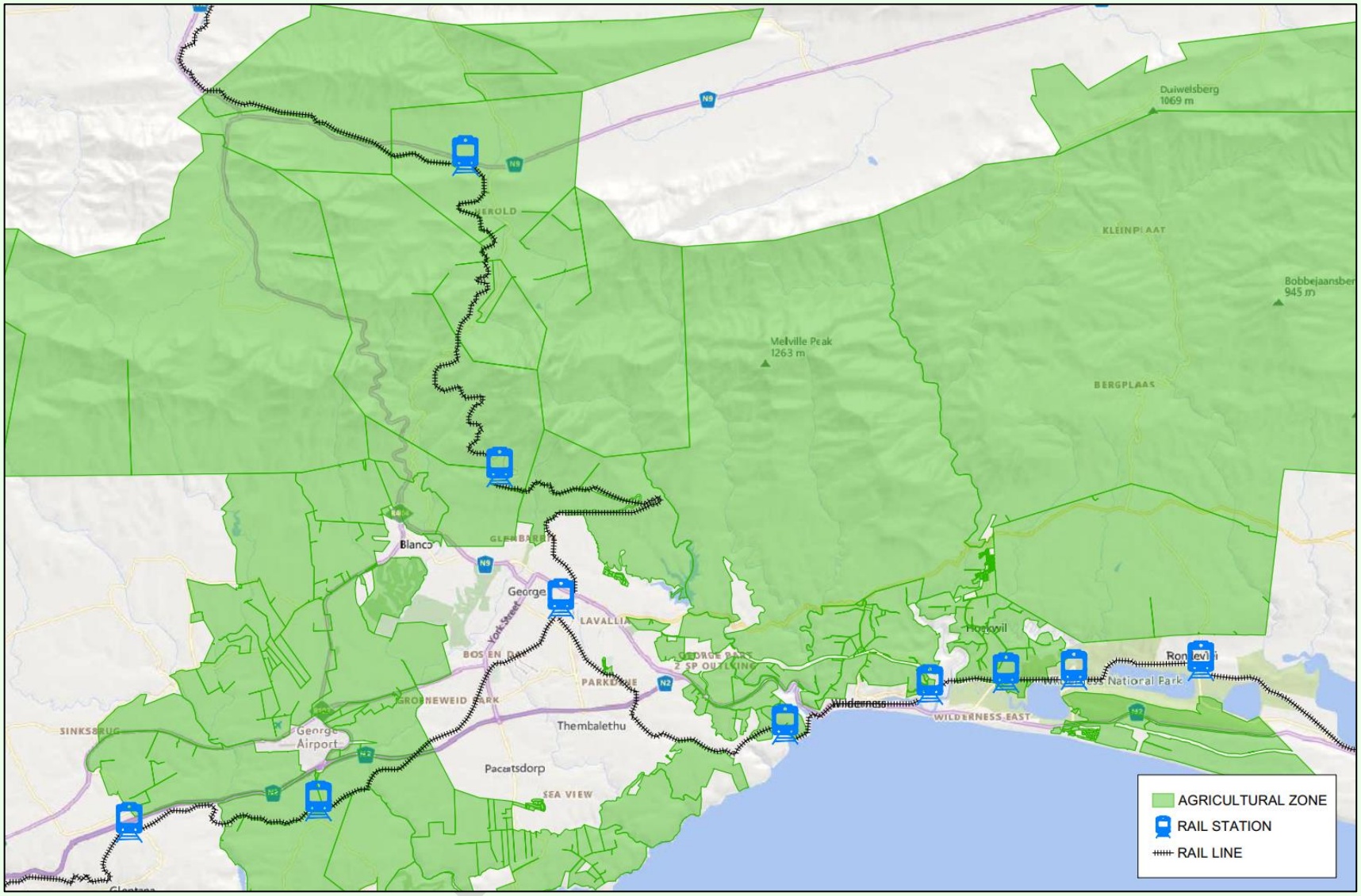


Figure 10-5: Location of rail stations and rail lines in George and surrounds.

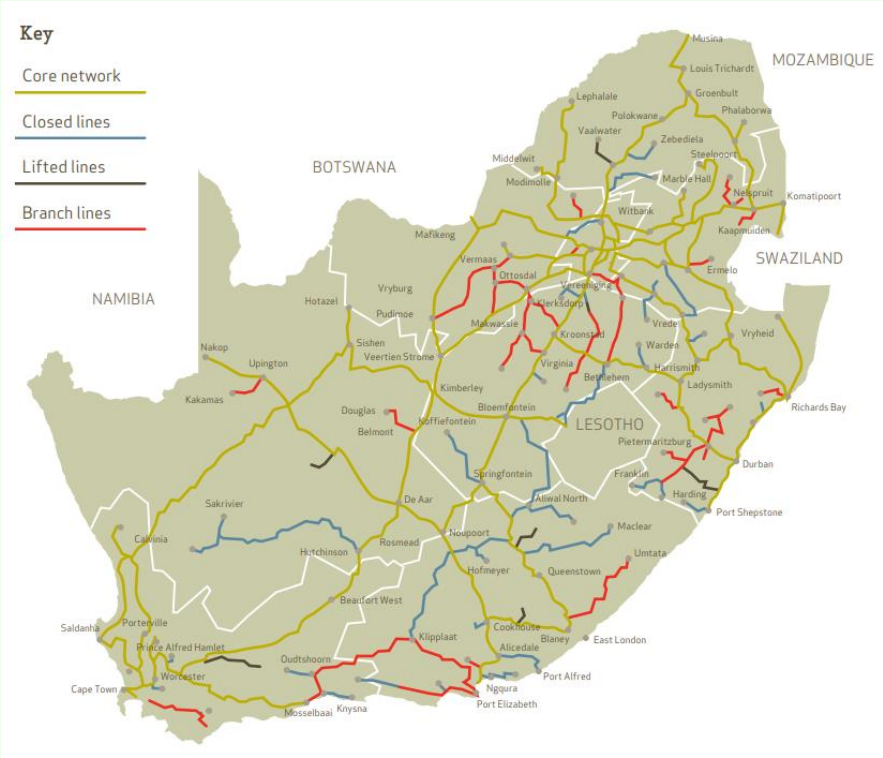


Figure 10-6: Transnet Freight Rail Network (Transnet Freight Rail Report, 2022)

10.4 Air Freight

The George Airport, constructed in 1977, is located approximately 10 km from the George CBD and currently only serves passenger transport with limited cargo being transported in passenger plane bellies. However, ACSA has plans to upgrade the airport in the near future to increase the passenger capacity and further to handle cargo planes, which will increase the movement of freight into and from George.

10.5 Port Freight

The nearest major seaport to George is the Port of Mossel Bay, located approximately 50 km from the George CBD. The Port of Mossel Bay is the third largest in the Western Cape, after the port of Cape Town and the Port of Saldanha. Even so, the cargo capacity of this port is quite limited, with the majority of traffic at this port being fish trawlers and recreational boaters. The main freight product imported through the Port of Mossel Bay is petroleum, which is not destined for George but rather the PetroSA refinery outside Mossel Bay. The current break-bulk capacity of the port is 110 thousand tons per year and the current liquid bulk capacity is 8 million kilolitres per year. There are plans to upgrade the port in the near future which could increase the freight volumes transported between Mossel Bay and George.

10.6 Problems caused by or inhibiting freight movements

Although the movement of freight is very beneficial to economic growth, the inherent nature of freight transportation brings some problems that need to be considered. The problems caused by or inhibiting the transportation of freight is further compounded by the fact that road-based freight volumes are growing significantly annually.

A road condition assessment was performed by SMEC in 2019 and is included in the George Municipality Pavement Management System (PMS). The results of the assessment are shown in **Figure 7-11** with the major heavy vehicle routes overlayed in grey. It can be noted that there is not a significant correlation between heavy vehicle presence and road condition, as there are many links with major heavy vehicle

traffic that have a “good” condition rating and others with no heavy vehicle traffic that were rated as “bad”. It is difficult from this assessment, to determine whether significant damage is being done to road surfaces by heavy vehicles, but the Council for Scientific and Industrial Research (CSIR) has found that 99% of all road damage is caused by heavy vehicles.

As discussed in a previous section, the industrial zones of George is located between residential areas and in the city’s CBD. This means that heavy vehicles need to traverse the tight geometry of the CBD roadways which were not designed for the turning movements or loads of large heavy vehicles. This leads to road damage and in some cases, damage to street furniture and street-side infrastructure. Furthermore, the presence of heavy freight vehicles in these areas of high pedestrian volumes poses significant safety risks.

A simulation was run to determine the effect that the heavy vehicle presence in George has on the environment. **Figure 10-7** shows the total fuel consumption of all heavy vehicles travelling through George for the morning peak period. Fuel consumption is directly related to the total emissions caused by a transportation vehicle. It can be seen that especially heavy vehicles on the N2 have relatively large fuel consumption levels, which in turn relates to high emissions. A shift in freight from road to rail could reduce the emissions caused by freight transportation.

Other problems caused by freight transportation include increased road accidents, congestion of the road network, land use costs for right-of-ways, noise pollution and traffic enforcement. The 2019 Provincial Freight Strategy of the WCG provides estimated costs for the different problems caused by freight transportation for both road and rail, respectively. These estimated costs are contained in **Table 10-1** below.

Table 10-1: Estimated costs of freight problems (WCG Provincial Freight Strategy, 2019).

Externality	Road Cost (c/ton-km)	Rail Cost (c/ton-km)
Accidents	4.08	0.29
Congestion	1.71	-
Emissions	5.21	1.03
Land Use	0.93	0.09
Noise Pollution	1.98	0.02
Enforcement	0.99	-
Total	**14.90**	**1.43**

It can be noted that the cost of rail is estimated to be almost 15 times less than that of road freight, suggesting that the shift from road to rail for freight could be very beneficial. Problems such as congestion and enforcement are not applicable to rail freight, and therefore rail poses less risk to the transportation network than road freight.

There are however challenges in moving freight to rail as shown below:


- Rail is extremely slow in comparison to road transport that is virtually from factory to business doorstep.
- Rail is subject to even more crime problems than road transport.
- The local rail freight handling infrastructure is poor.
- Owing to the problems with the Outeniqua line, George is a dead end for rail freight.

Whilst rail transport is generally preferred for freight transport, particularly for long-distance transport, from a practical perspective rail does not seem to offer a very attractive freight transport option for George. The modelling for commuter rail did indicate that in the 5 to 20 year the uptake was not significant, unless it is linked as a service to grow tourism, which would then provide a daily service. A future rail freight study needs to be conducted for the Garden Route District with a strong focus on George and Mossel Bay area and the surrounding farms.

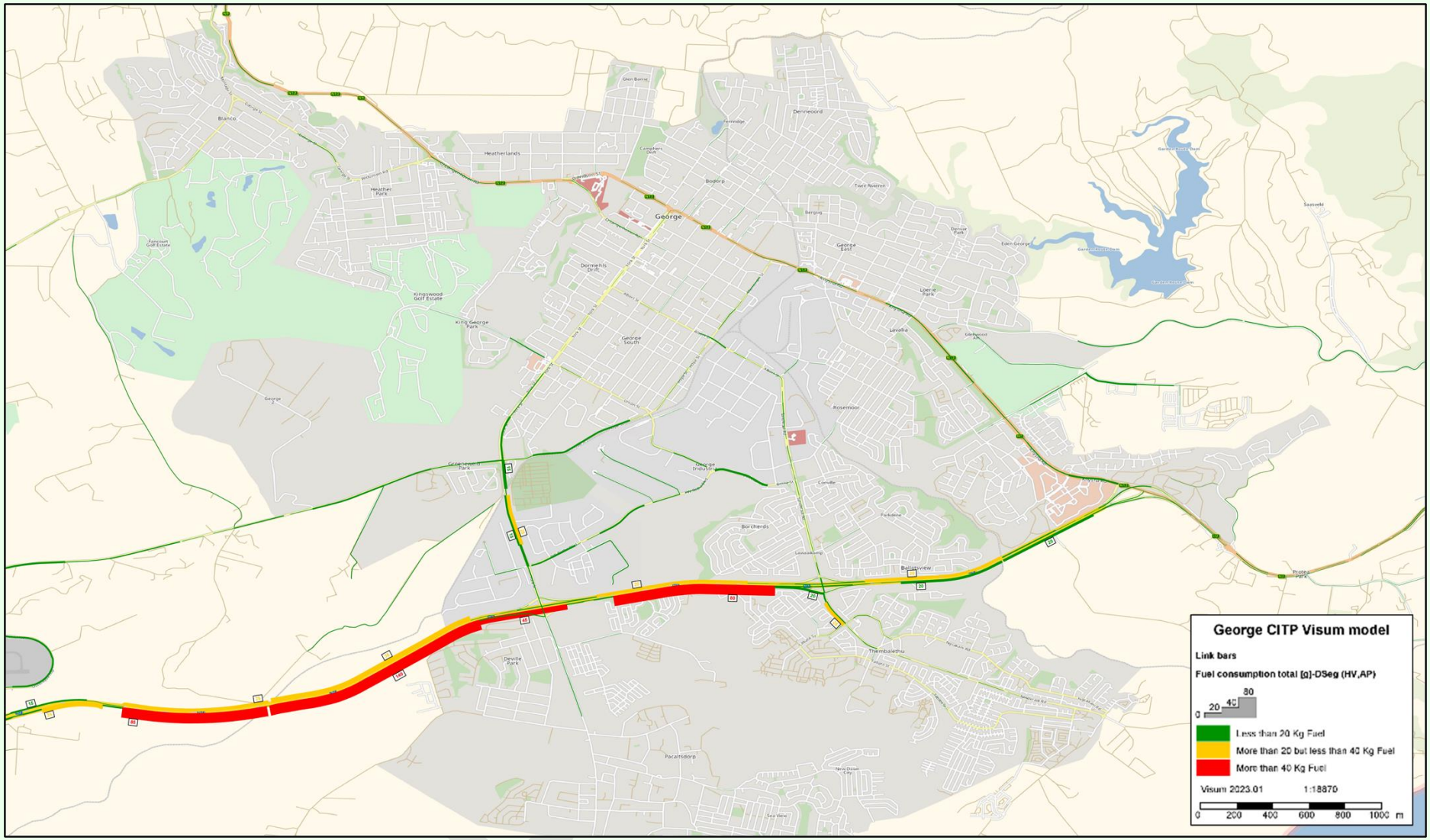



Figure 10-7: Fuel consumption by heavy vehicles in George during the 2-hour AM peak period between 06:00 and 08:00.

10.7 Waste Management

Solid waste is a contributor to the freight volumes in a municipality and is considered.

Table 10-2 provides a summary of waste management facilities in George Local Municipality.

Table 10-2: Summary of waste management facilities in the GLM area (GIBB, 2020).

Status of site	Number of sites
Operational landfill site	2
Closed landfill site	1
George Transfer station (operational)	1
Uniondale Transfer station (completed, not operational)	1
MRF (under construction)	1
Composting facility (in planning/construction	1

Figure 10-8 indicates the locations of waste terminals in the George Municipality and key routes used by refuse transportation vehicles.

Currently, George transport domestic waste to the PetroSA landfill in Mossel Bay. It is planned to transport waste via rail to the landfill site near PetroSA in Mossel Bay. With the road network already experiencing pressure, it would be beneficial to shift waste from road to rail instead, and so alleviate pressure from the road network.

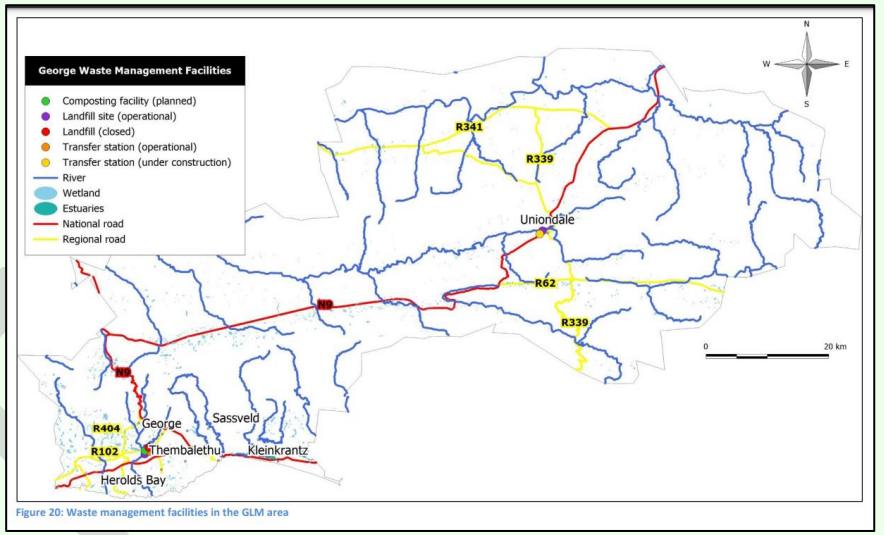


Figure 10-8: Waste management services in the GLM area (GIBB, 2020).

The Garden Route District Municipality (GRDM) is in the process of developing a regional landfill site which will accept waste from George, Mossel Bay, Bitou, Knysna and some areas of Hessequa local municipalities. Oudtshoorn local municipality and Kannaland local municipality (KLM) will not be making use of the site at this time. The regional landfill site was permitted in 2014 (DEA ref: 12/19/11/L1395/9), and this permit was amended in July 2017 to extend the date for commencement of construction. The site is located off the R102, after the Show Grounds, on the way to the airport, as indicated in **Figure 10-9**.

To improve future waste infrastructure planning, George Municipality need to develop and implement a waste infrastructure masterplan to guide the development of waste facilities over the next 10 – 20 years.

Figure 10-9: Location of GM regional landfill site (Google Earth, 2023).

10.8 Abnormal loads and dangerous goods

Abnormal loads consist of vehicles or cargo that exceed the prescribed dimensions or weights as defined by the National Traffic Act, 1996 (Act No. 93 of 1996). As such, the routes that such vehicles can use are limited to roadways that can accommodate such larger dimensions and are usually major roadways such as the N2, N9, R404 in George.

Guidelines for the transportation of abnormal loads are detailed in the **Technical Recommendations for Highways (**TRH 11 - Dimensional and Mass Limitations and Other Requirements for Abnormal Load Vehicles**).** These guidelines ensure that abnormal loads are moved safely, minimising disruption to regular traffic and protecting road infrastructure

To transport an abnormal load on roads in South Africa the following requirements must be met:

- **Application for a Permit:** An application must be submitted to the relevant road traffic authorities (typically the Western Cape Provincial Government for George).
- **Route Assessment:** A thorough assessment of the intended route must be conducted to ensure that the infrastructure (bridges, road widths, etc.) can handle the abnormal load without causing damage.
- **Traffic Management Plan (TMP):** A TMP must be prepared and approved. This plan details the measures that will be taken to manage traffic during the transportation of the abnormal load, including the use of escort vehicles and temporary road closures if necessary.
- **Notification to Authorities:** Relevant authorities, including local municipalities and the South African Police Service (SAPS), must be notified of the intended transport. This is to ensure coordinated efforts in managing any potential disruptions.

There is not sufficient control and regulation in the George Municipality when it comes to the transportation of hazardous goods. Vehicles carrying hazardous goods share the roadway with regular commuter traffic, which poses a safety risk.

10.9 Measures in place to deal with overloading

The overloading of freight vehicles is a major concern, as overloaded vehicles pose great safety risks and according to the CSIR, causes approximately 60% of road damage. Overloaded freight vehicles are directly responsible for the majority of premature road deterioration and pavement damage.

The enforcement of vehicle overloading is a concern, as there are limited weighbridge locations in the Western Cape. Currently, there are only nine weighbridges in the province, and all are located next to major routes. The weighbridges operate only 16 hours a day, five days a week and two weekends a month. The weighbridge in Beaufort West operates 24/7. There is not adequate support for overloading enforcement, which leads to many overloaded vehicles on the road network.

There are currently no weighbridges located in the George Municipality, but there are some dynamic count locations where weigh-in-motion technology is utilised. This information is only collected for informational purposes and not for enforcement. A proposal has been investigated to construct a weighbridge facility adjacent to the N2 between Mossel Bay and George. Four potential sites have been identified, but no plans for construction have been completed. The possible sites for weighbridges are displayed in **Figure 10-10**, **Figure 10-11** and **Figure 10-12**. Consideration should be made to look at other alternative sites which are preferably not on strategic land within the urban edge. There is a proposal for economic development on this weigh bridge site, and other alternatives should be considered for the weigh bridge (preferably at another intersection like R104/Morrison Rd).

Weigh-in-motion technology can be used to supplement the identification of overloaded vehicles, and then sent to the weighbridge for actual weighing. There could be a combined effort between the municipalities to establish this.

Figure 10-10: Possible site for weighbridge near George Airport

Figure 10-11: Possible location for weighbridge abutting N2 between Mossel Bay and George

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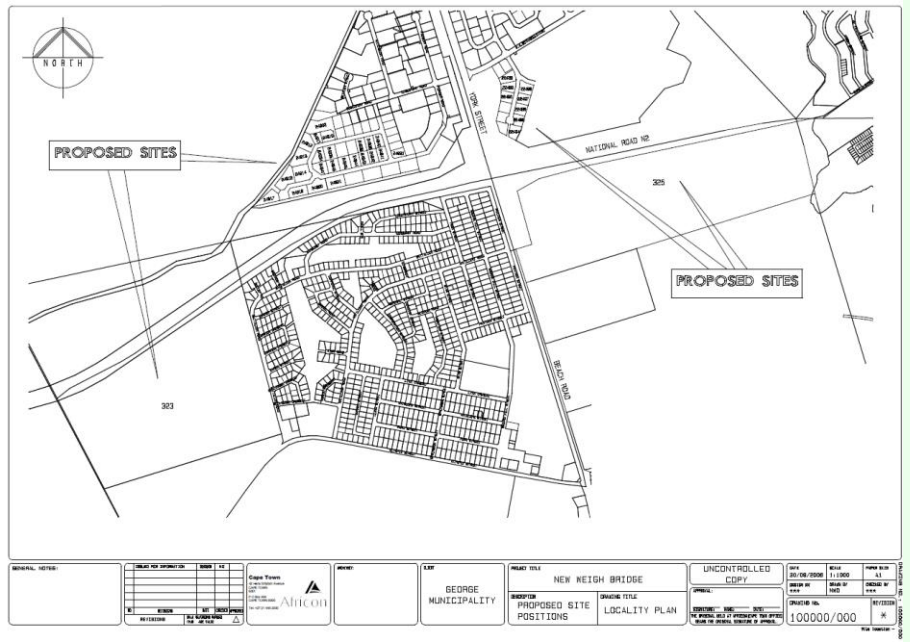

Figure 10-12: Possible 4 sites for weighbridge (Africon Dwg dated 30/09/2008)

10.10 Summary of the Freight Transport Strategy

Road Freight Management

- Improve road infrastructure to accommodate heavy vehicle traffic, particularly along critical routes like the N2 and York Street.

- Implement strategies to manage and mitigate the impacts of heavy vehicle traffic in the George CBD, where road geometry is not well-suited for such vehicles.
- Explore alternative routes or bypasses to reduce heavy vehicle congestion in urban areas.

Rail Freight

- Re-establish rail freight services, particularly the George to Mossel Bay line, to reduce the dependency on road freight and alleviate traffic congestion.
- Conduct a future study focused on the potential of rail freight for the Garden Route District, with a particular emphasis on George and Mossel Bay areas.

Air Freight

- Upgrade George Airport to handle cargo planes, which will increase the movement of freight to and from George.
- Expand the airport's capacity to support the expected growth in freight transport needs.

Port Freight

- Support the upgrade of the Port of Mossel Bay to increase its cargo handling capacity.
- Investigate the potential for using the port more effectively for freight transport between Mossel Bay and George.

Waste Management

- Develop a plan to transport waste via rail to reduce pressure on the road network, particularly for long-distance waste transport.

Overloading and Abnormal Loads

- Construct new weighbridge facilities along strategic routes to enforce vehicle loading regulations effectively.
- Utilise weigh-in-motion technology to identify overloaded vehicles and direct them to weighbridge facilities.

Environmental and Safety Considerations

- Implement measures to reduce the environmental impact of freight transport, such as shifting more freight from road to rail.
- Address safety concerns related to heavy vehicle traffic, particularly in residential and urban areas.

Future Planning and Integration

- Continuously monitor and update the freight transport strategy to align with future infrastructure developments and economic growth projections.
- Promote the integration of different freight transport modes (road, rail, air, and sea) to create a more efficient and sustainable freight transport system.

11 OTHER TRANSPORT RELATED STRATEGIES

This chapter addresses six (6) other transport related strategies that are important to have for George Local Municipality, according to the needs that have been identified, namely a strategy for Intelligent Transportation Systems, Road User Safety, Parking, Law Enforcement, Transport Supporting Tourism and Institutional Arrangements.

The Key Aspects of the Other Transport Related Strategies are listed in **Sections 11.1** – **11.6** as the blue blocks. Thereafter the details are contained in **Sections 11.7** – **11.12** for each strategy, and then finally the summary of each strategy is presented in **Sections 11.13** – **11.18**.

11.1 Key Aspects - Intelligent Transportation Systems Strategy

Objective: Establish an integrated, sustainable transport ecosystem that enhances mobility, accessibility, and safety in George Municipality.

ITS Strategic Framework: Guides the development and implementation of ITS solutions, helping the municipality achieve its smart city goals.

Components of ITS:

- Traffic management systems to optimise flow.
- Public transport systems for real-time information.
- Emergency management, vehicle systems, and environmental monitoring.

11.2 Key Aspects - Road User Safety Strategy

Focus: Reducing road accidents and improving safety for all users, including drivers, pedestrians, and cyclists.

Key Initiatives:

- Emphasis on safety education, infrastructure improvement, and law enforcement.
- Integration of international and national strategies, such as the United Nations Decade of Action for Road Safety.
- Enhanced incident management and road safety audits to identify risks early and improve infrastructure.

11.3 Key Aspects - Parking Strategy

Context: Addressing inefficiencies in parking management that contribute to congestion and suboptimal land use.

Key Points:

- Lowered parking ratios in public transport zones to encourage a shift towards public transport.

- The use of technology for real-time parking information and intelligent parking solutions.

11.4 Key Aspects - Law Enforcement Strategy

Objective: Ensure safety and regulatory compliance through traffic law enforcement, monitoring, and infrastructure protection.

Key Roles:

- Collaboration between traffic services, police, and community organisations.
- Focus on pedestrian safety, enforcement of vehicle compliance, and maintaining public order.

11.5 Key Aspects - Transport Strategy to Support Tourism

Objective: Enhance tourism by improving transport connectivity and infrastructure in George.

Key Focuses:

- Developing multimodal transport systems (roads, air links, potential rail services) to improve access to tourist sites.
- Encouraging public-private partnerships (PPPs) for infrastructure development.
- Providing diverse mobility options for tourists (car rentals, cycling paths, shuttle services).
- Promoting sustainable transport solutions to support eco-tourism and minimise environmental impact.

11.6 Key Aspects - Institutional Arrangements

Goal: Strengthen the institutional framework for transport planning and coordination in George.

Key Focuses:

- Improve capacity building and coordination across municipal departments.
- Establish clear governance structures for accountability and collaboration.
- Foster partnerships across public and private sectors to support transport initiatives and broader municipal goals.

11.7 Intelligent Transportation Systems Strategy

11.7.1 Introduction

As part of its ongoing commitment to becoming a *'city for a sustainable future*,' George Municipality aims to establish an integrated, equitable, and sustainable transportation ecosystem. This vision, outlined in **Chapter 1** and indicated in **Figure 11-1** focuses on enhancing mobility and accessibility, acting as a catalyst for economic development, and benefiting the community at large.

Intelligent Transport Systems (ITS), with their diverse technological applications, play a crucial role in advancing the principles and objectives of the George Municipality Transport Vision. Developing an ITS strategy is a fundamental step in implementing an Intelligent Transport System. The creation of an ITS Strategic Framework is a crucial initial step in guiding the development of a comprehensive

Intelligent Transport System (ITS). This framework is essential for steering the implementation process effectively.

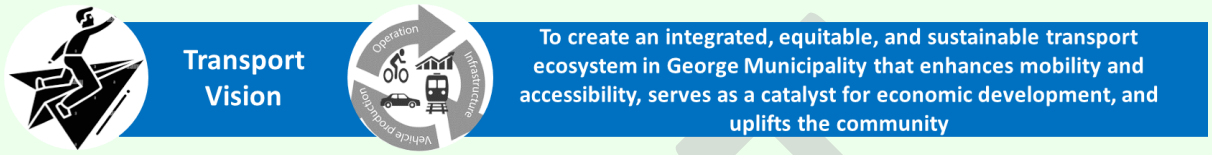

Figure 11-1: Transport Vision for George Local Municipality

11.7.1.1 Context

In many cities and larger towns in Africa and globally, the initial adoption of Intelligent Transport System (ITS) applications typically begins with deploying traffic signals to enhance traffic flow and manage congestion. This adoption extends to the use of CCTV cameras for safety, security, and transportation monitoring, weighbridges to check for overloading, speed enforcement cameras to curb speeding and reduce accidents, as well as radio dispatch systems for ambulances and emergency services. Moreover, it includes the establishment of communication systems and operation centres. These technology applications are often implemented incrementally, driven by specific needs, and their quality and scope depend on available funding, local expertise, and lessons learned from other cities' experiences.

Typically, ITS implementation and the associated technologies occur in isolation, spearheaded by different spheres of government, agencies, and municipal departments without a unifying ITS Strategic Framework. As a result, there can be redundancies and lack of integration across technologies, inconsistent communication infrastructure, and no linkage to various operational centres. Such fragmented implementation can lead to duplicated technologies, uncoordinated and suboptimal usage, and a shortage of trained personnel. The absence of a cohesive framework often results in scepticism towards ITS among municipal leaders, who may view it as an extravagant expenditure rather than an effective solution, especially given their familiarity with traditional methods for addressing urgent challenges within constrained budgets.

In George, there are 57 traffic signals in the urban areas and a total of 112 signals across the broader rural regions. At present, these signals function independently, with the urban signals not yet integrated into a unified Urban Traffic Control (UTC) system that is connected to a centralised operations centre.

The introduction of the GO GEORGE bus system brought with it the GO GEORGE Intelligent Transport Systems (ITS) and Automated Fare Collection (AFC) system. The implementation of the GO GEORGE ITS offers a chance to fully leverage ITS capabilities, enhancing the system's ability to meet user expectations and enabling more effective monitoring by the client to secure the desired safety and mobility advantages. To maximise the benefits from this investment, the current ITS should be enhanced and optimised. This can be achieved by expanding the range of public transport ITS user services

and integrating all relevant ITS applications into a centralised operational centre.

11.7.1.2 Focus

The primary objective of this chapter is to outline an ITS Strategic Framework for the George Municipality. This framework aims to steer the deployment of ITS solutions, thereby facilitating the achievement of George's transport vision and its aspirations to become a smart city in transportation. The document intends to enhance understanding of ITS, elucidating its purpose, and identifying exemplary ITS practices suitable for both emerging and established cities. These practices should be considered within the context of the current system's status, future needs, and the expectations of relevant stakeholders, including commuters and operational demands.

This framework is a critical resource for outlining the necessary system requirements for the imminent George ITS deployment, while also emphasising the significance of its Operations and Maintenance Strategy. It is instrumental in refining current ITS operations and shaping future system enhancements. The document sets out the fundamental ITS principles adapted to the George Municipality setting, with an awareness of the potential for technological advancements. While it is not an exhaustive ITS strategy, it provides a solid groundwork for developing a thorough ITS strategy. This strategy will encompass transformative goals to enhance access, accessibility, and mobility across the entire transport network and from the perspective of commuters. The following section offers deeper insights into what ITS encompasses, detailing its objectives and various applications.

11.7.2 What are Intelligent Transport Systems (ITS)

Intelligent Transport Systems (ITS) refer to advanced applications which aim to provide innovative services relating to different modes of transport and traffic management. These systems enable users to be better informed and make safer, more coordinated, and smarter use of transport networks.

ITS encompass a broad range of applications that process and share information to ease congestion, improve traffic management, minimise environmental impact, and increase the benefits of transportation to commercial users and the public. **Table 11-1** outlines the primary components and characteristics of ITS.

Overall, ITS represents a convergence of information technology and transportation engineering, aiming to improve the safety, efficiency, reliability, and sustainability of transportation networks. By integrating this technology into infrastructure and vehicles, ITS enhance the capacity and performance of transportation systems, benefiting individuals, economies, and society as a whole.

Table 11-1: Primary Components and Characteristics of Intelligent Transport Systems (ITS).

No.		Primary Component	Characteristics
1		**Traffic Management Systems**	These systems optimise the flow of vehicle traffic and manage traffic conditions, using technologies like traffic signal control systems, ramp meters, traffic cameras, and variable message signs.
2		**Public Transport Systems**	ITS technologies in public transportation can include real-time passenger information systems, automatic fare collection, and scheduling and dispatch systems.
3		**Information Systems**	These provide real-time information to motorists and authorities, such as travel information, wayfinding, parking guidance, and weather information, enhancing decision-making and improving the travel experience.
4		**Vehicle Systems**	On-board technologies in vehicles, such as navigation systems, collision avoidance systems, and vehicle-to-infrastructure communication, contribute to safer and more efficient journeys.
5		**Emergency Management Systems**	ITS enhances incident response and management through technologies that support quick detection of incidents, efficient communication with emergency responders, and effective traffic management during emergencies. The capturing and management of accident data can be enhanced through ITS.
6		**Freight and Commercial Vehicle Operations**	ITS can improve the efficiency of freight movements and commercial transport through systems for tracking and managing fleets, ensuring compliance with regulations, and optimising logistics.
7		**Environmental Monitoring Systems**	These systems utilise ITS technologies to monitor and manage the impact of transportation on the environment, such as reducing emissions and noise pollution.
8		**Integration and Connectivity**	A significant aspect of ITS is the integration of these technologies to enable communication and data sharing across different components, facilitating coordinated and efficient transport system management

11.7.3 The purpose of this Intelligent Transport Systems Framework

An Intelligent Transport Systems (ITS) Framework is a structured approach that lays the groundwork for the development and implementation of an effective ITS Strategy. It serves several key purposes:

- **Foundational Structure:** The framework establishes a comprehensive base that outlines the key elements, principles, and standards necessary for the successful planning, deployment, and operation of ITS. It ensures that these elements are systematically addressed within the ITS Strategy.
- **Alignment with Strategic Goals:** The ITS Framework ensures that the deployment and operation of ITS technologies are


aligned with broader transportation objectives and strategic goals, such as enhancing safety, efficiency, and sustainability. This alignment ensures that ITS initiatives contribute meaningfully to overarching transportation priorities.

- **Consistency and Standardisation:** By defining consistent methodologies, standards, and protocols, the framework promotes interoperability among different ITS components and systems. This standardisation is crucial for the integration of various technologies and for enabling seamless communication within the transportation network.
- **Guidance for Stakeholders:** The framework provides clear guidance to all stakeholders involved in ITS initiatives, including government agencies, private sector partners, and the public. It outlines roles, responsibilities, and expectations, facilitating coordinated efforts and collaboration across different entities.
- **Scalability and Flexibility:** A well-designed ITS Framework allows for scalability and flexibility, accommodating the integration of new technologies and the expansion of ITS applications as needs evolve. This adaptability is essential for keeping pace with rapid technological advancements and changing transportation dynamics.
- **Risk Management:** The framework identifies potential risks and challenges associated with ITS deployment and operation, proposing strategies for risk mitigation. This proactive approach to risk management helps to ensure the reliability and resilience of ITS services.
- **Evaluation and Improvement:** An ITS Framework includes mechanisms for ongoing evaluation and performance measurement, enabling continuous improvement of ITS initiatives. By systematically assessing outcomes, the framework supports the refinement of strategies and the optimisation of ITS deployments.
- **Knowledge Sharing and Learning:** The framework promotes the sharing of knowledge and best practices among stakeholders, facilitating learning and innovation in ITS. It can serve as a reference point for benchmarking and for adopting successful strategies and technologies from other regions or sectors.

In summary, an ITS Framework provides the essential structure and guidance for developing and implementing a comprehensive ITS Strategy, ensuring that ITS initiatives are well-planned, effectively managed, and aligned with broader transportation objectives. It lays the foundation for a systematic and integrated approach to leveraging technology for improving transportation systems.

11.7.4 Legislation and Policies

The implementation of Intelligent Transport Systems (ITS) is guided by various legislation and policies at the international, national, and local levels, reflecting the need for a coordinated approach to transportation planning, data privacy, and technology application. While the specifics can vary by jurisdiction, there are some general categories and examples of legislation and policies that typically guide ITS implementation. **Table 11-2** outlines the primary components and characteristics of ITS.

Understanding and complying with these varied legal and policy frameworks is crucial for the successful implementation of ITS, ensuring that systems are not only effective and efficient but also lawful, ethical, and supportive of broader public policy objectives.


Table 11-2: Examples of Legislation and Policies that typically guide ITS implementation.

No.	Category of Influence	Description	Relevant Key Legislation in South African Context
1	**Transportation and Traffic Management Legislation**	Laws that establish frameworks for transportation planning, road usage, traffic management, and traffic regulation enforcement.	• National Road Traffic Act 93 of 1996 • Aarto Act Overview • Road Transportation Act 74 of 1977 • Road Traffic Management Corporation Act 20 of 1999 • National Road Traffic Act, 1996 (ACT 93 OF 1996) • National Land Transport Act (NLTA), Act No. 5 of 2009 • South African National Roads Agency Limited and National Roads Act 7 of 1998 • National Land Transport Strategic Framework (NLTSF) • Cross-Border Road Transport Act 1998 (ACT 4 OF 1998) • Disaster Management Act: Amendment of Public Transport Services Directions, 2002 (ACT 57 OF 2002) • Public Land Transport Facilities (PLTFs) • National Learner Transport Policy, 2015 • Integrated Transport Plans (ITPs) • Municipal Systems Act (MSA • Road Management Plans (RMPs)
2	**Data Privacy and Security Laws**	Regulations ensuring the protection of personal and traffic data collected by ITS, addressing collection, storage, and sharing concerns.	• Protection of Personal Information Act (POPIA) of 2013 • Promotion of Access to Information Act 2000, (ACT 2 of 2000) • General Intelligence Law Amendment Act 66 of 2000 • Prevention of Public Violence and Intimidation Amendment Act 50 of 1992
3	**Telecommunications Legislation**	Rules governing wireless communication, network infrastructure, and cybersecurity crucial for ITS data exchange and operations.	• Telecommunications Amendment Act 2 of 2004 • Telecommunications Act: Policy Direction on Global Mobile Personal Communications by Satellite in the Republic of South Africa
4	**Standards and Best Practices**	Guidelines from international standards and industry best practices on technical specifications, performance, quality and data format standards for ITS components.	• Standards Act 8 of 2008
5	**Public Procurement Laws**	Laws regulating the procurement processes of ITS technologies and services by public entities, ensuring transparency and competitiveness.	• Public Finance Management Amendment Act 29 of 1999 • Preferential Procurement Policy Framework Act 5 of 2000 • South African Revenue Service Act, 1997 (Act 34 OF 1997) • National Payment System Act, 1998 (ACT 78 OF 1998)
6	**Accessibility and Anti-discrimination Legislation**	Legislation ensuring that ITS services and infrastructure accommodate all users, including those with disabilities.	• Constitution of the Republic of South Africa, 1996 • Discriminatory Legislation regarding Public Amenities Repeal (Act 100 of 1990)

No.	Category of Influence	Description	Relevant Key Legislation in South African Context
7	**Environmental Legislation**	Laws influencing ITS implementations to align with environmental sustainability goals, aiming to reduce traffic congestion and emissions.	• National Environmental Laws Amendment, 2009 (ACT 14 OF 2009) • National Environmental Management Laws Amendment Act 2 of 2022 • National Environmental Management Act 107 of 1998
8	**National ITS Policies and Strategies**	Specific national frameworks outlining visions, objectives, priorities, and action plans for ITS deployment in alignment with national transportation goals.	South Africa currently does not have a specific National ITS Policy and generally adopts the United States ITS Architecture. This architecture serves as a strategic framework or structure that guides the deployment of Intelligent Transport Systems in the country.
9	**Local Ordinances and Regulations**	At the local level, city or municipal governments may enact ordinances that affect the deployment of ITS, such as regulations governing the use of public right-of-way, local traffic rules, or initiatives to support smart city developments.	There are a variety of Provincial Acts, Plans, and Policies as well as Municipal By-laws, Policies, Plans, Guidelines, and Ordinances that are applicable.

11.7.5 George ITS Implementation

Intelligent Transport Systems (ITS) integrate information and communication technology with transport infrastructure, vehicles, and users to improve the safety, efficiency, and sustainability of transportation networks. The typical components of ITS include:

11.7.5.1 Current ITS in George

Table 11-3 provides a detailed overview of the current status of Intelligent Transport Systems (ITS) implementation within George, organised according to standard ITS component categories.

Table 11-3: Current Status of Intelligent Transport Systems (ITS) implementation within George.

No.	Typical ITS Components	Description
1	**Traffic Management Systems**	• The greater George area, including its rural towns, currently has 112 operational traffic signals. • Within the urban context, George independently operates 57 traffic signals that have not yet been integrated into a unified, automated Urban Traffic Control (UTC) system.
2	**Traveler Information Systems**	• Currently, GO GEORGE does not provide real-time travel information for passengers through any onboard systems or applications. • However, a mobile application for GO GEORGE has been created to help passengers plan their travel, navigate route transfers, and view estimated times of arrival. The application's operational status is still to be confirmed.

3	**Public Transport Management Systems**	• **Automated Vehicle Location Systems**
		  • GO GEORGE buses are outfitted with Automated Vehicle Location Systems to ensure they adhere to designated routes and schedules.
		  • Additionally, GO GEORGE employs a comprehensive scheduling system to optimise bus operations and efficiency.
		• **Accident Data Collection System**

No.	Typical ITS Components	Description
		• Equip traffic department and police stations with digital technology for efficient and accurate accident data capturing.

4	**Emergency Management Systems**	• **Onboard Systems:**
		  • GO GEORGE buses feature a stop button that passengers can press to signal the driver to halt at the next bus stop.
		  • Additionally, the buses are equipped with a panic button for emergencies.
		• **CCTV Surveillance Cameras:**
		  • The George Road Network is monitored by 91 CCTV cameras, comprising 14 static and 77 PTZ (pan-tilt-zoom) units.
		  • GO GEORGE buses are also fitted with on-vehicle cameras that link to a tracking device, facilitating the monitoring of the bus interior and the road ahead.
		• **Operations Centre (Control Centres):**
		  • The GM Fire Station is responsible for the CCTV monitoring across George.
		  • GO GEORGE's operational activities are coordinated from an office located at 101 York Street.
		  • A Disaster Risk Management Centre is currently being established in Mossel Bay to provide regional support.
		  • The SAPS Control Centre, situated at JOC on Plantasie Street in George, plays a crucial role in regional safety and coordination.

5	**Freight and Commercial Vehicle Operations**	• No specific Intelligent Transport Systems (ITS) applications have been identified for vehicles owned by the George Municipality. • There is an absence of Weigh-in-Motion systems and operational weighbridges managed by either the government or the municipality. • However, weighbridges are utilised at landfill sites within the region for effective waste management.

6	**Vehicle Control Systems**	• **Onboard Systems:**
		  • GO GEORGE buses are equipped with audible signals to indicate door operations.
		  • Wheelchair docking systems are installed to enhance accessibility.
		  • Stop buttons are available for passengers to signal the driver when they wish to alight.
		  • The buses also feature performance indicators that monitor metrics like speeding, harsh braking, acceleration, and emergency call activations.

7	**Electronic Payment Systems**	• **Automated Fare Collection (AFC):**
		  • GO GEORGE buses are equipped with an EMV-compliant AFC system that includes card readers for processing fares.
		  • The system is complemented by the GO GEORGE Smart Card, an integral component of the AFC network.
		  • A new Verifone e285 Mobile Point-of-Sale (POS) device has been introduced to facilitate transactions.
		  • This POS device is equipped with Bluetooth™ and Wi-Fi capabilities, supporting various payment methods, including contactless options for enhanced convenience.

8	**Connected Vehicle Technologies**	• GO GEORGE buses are not yet equipped with connected vehicle technologies.
9	**Data Acquisition and Management Systems**	• A dedicated ITS Data Warehouse has been established for GO GEORGE to enhance data management and analytics. • Permanent monitoring stations should be implemented to collect traffic data. • Additionally, there are seven SANRAL Comprehensive Traffic Observation (CTO) sites along the N2 that collect essential traffic data continuously.


Figure 11-2 illustrates various typical ITS (Intelligent Transport System) components in George, including traffic signals and CCTV surveillance cameras, highlighting their geographical distribution within the Transport Model. The diagram clearly indicates that the majority of these CCTV cameras are strategically positioned along main road networks, key public transport routes, and in densely populated residential areas, as well as the central Business District (CBD). Additionally, the locations of the current CCTV surveillance centre, the Disaster Risk Management Centre (DRMC), and four South African Police Stations are depicted.

11.7.5.2 Towards Future ITS Implementation in George

The majority of Intelligent Transport Systems (ITS) and technologies deployed in George are predominantly linked to the GO GEORGE Bus System. Besides this, the Traffic Signal and CCTV camera surveillance systems stand out as the second most prominent ITS implementations in the region.

Figure 11-3 illustrates key identified strengths, weaknesses, and recommendations for improvement, based on the current ITS deployment in George.


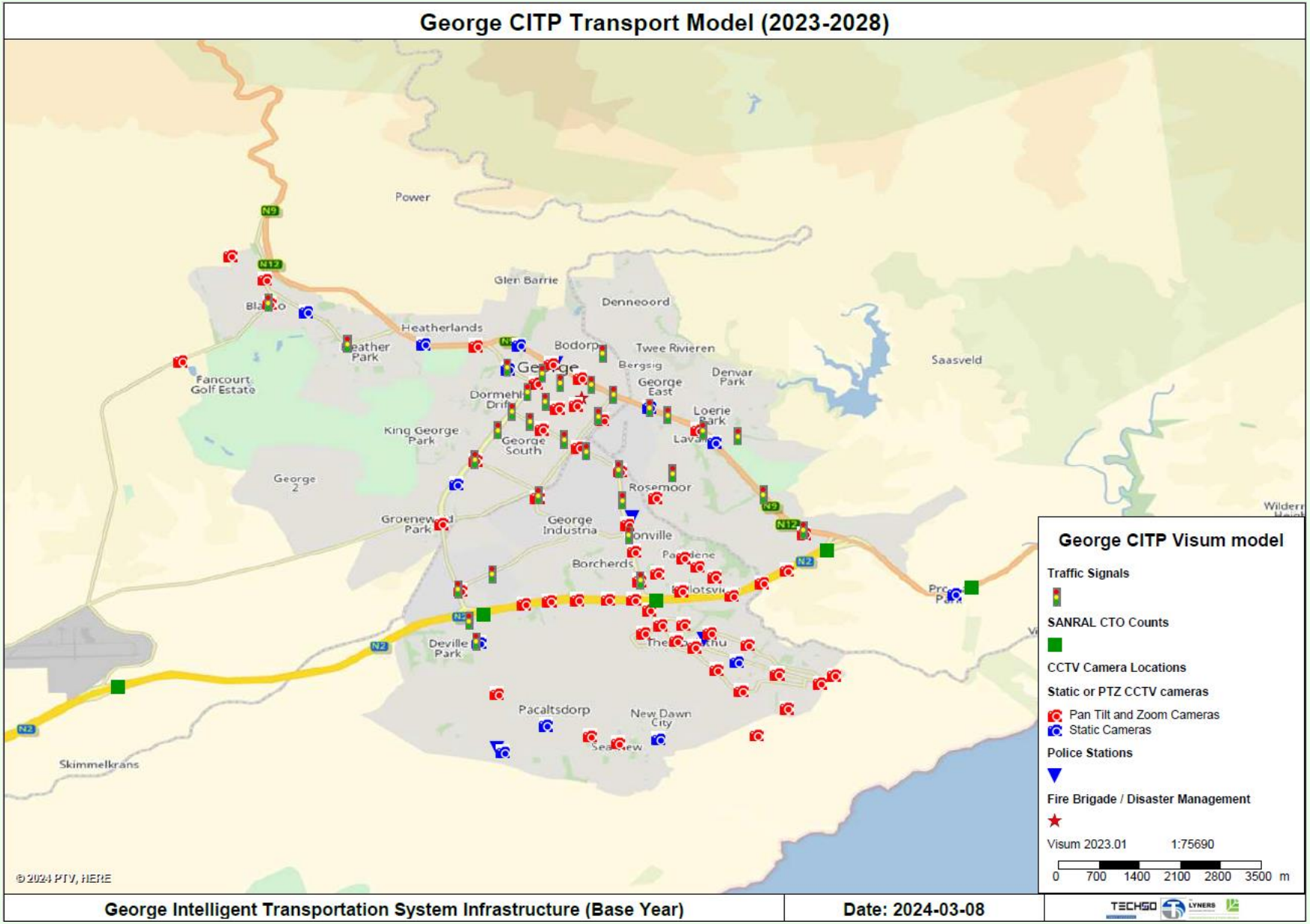

Figure 11-2: Locations of Key ITS Infrastructure in George as of 2022.

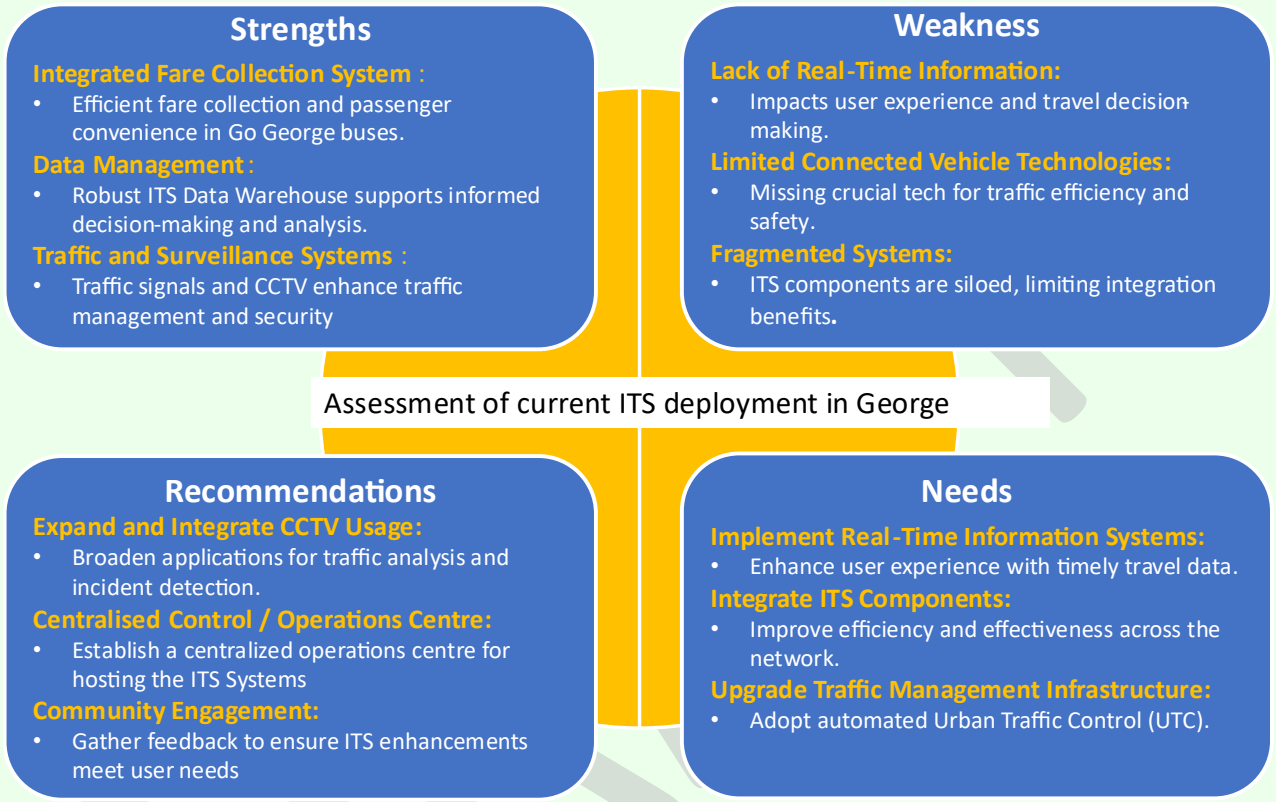

Figure 11-3: Assessment of current ITS deployment in George.

The recommended actions mark a significant initial stride toward the creation of an integrated ITS infrastructure, leveraging low-hanging opportunities for quick gains. Nonetheless, crafting a detailed ITS strategy is imperative to steer the choice and implementation of the most appropriate and effective ITS technologies and infrastructure. By addressing these requirements and enhancing its current strengths, George is poised to substantially upgrade its Intelligent Transport System (ITS) infrastructure, leading to a transportation network that is more streamlined, impactful, and user focused.

A pivotal recommendation is to pinpoint an appropriate facility that can function as a Transport Management Centre (TMC), transcending the existing GO GEORGE Bus System Operations Centre. This expanded TMC would encompass and support all prevailing ITS infrastructure operational demands. Such a move is

crucial for amplifying efficiency and effectiveness across the transportation network, providing a shared platform for technology integration, data exchange, and optimised operational and maintenance practices. **Figure 11-4** illustrates the essential initial ITS operational functions that the newly identified Transport Management Centre (TMC) could facilitate.

Figure 11-4: TMC ITS Operations Functions.

The key design and operational features to consider for a TMC include:

- Multi-Functionality
- Service and Function Integration
- Cohesive Operations
- Focus on Transport Operations
- Centre for Transport Knowledge and Intelligence

These characteristics are crucial in shaping the design process to foster an environment conducive to technology and resource sharing. The goal is to ensure the seamless integration of people movement, information accessibility, fluid information exchange, collaborative decision-making and response, and access to technology and applications. This approach aims to create a unified operation centre where everyone can have a comprehensive overview of the entire system."

Developing an ITS Framework and subsequent ITS Strategy will be instrumental in transitioning from a TMC to a more expansive and integrated Transport Management Centre (TMC). This future centre would be capable of accommodating a broader array of services and functions, thereby serving the Garden Route District and the Province, similar to the TMC in the City of Cape Town more effectively.

Below is a list of specific ITS technologies that are hosted and utilised within an Integrated Transport Management Centre (TMC):

- **Centralised Control Systems:** For unified command and control across various transport and emergency services.
- **Advanced Traffic Management System (ATMS):** To optimise traffic flow and manage congestion.
- **Incident Detection and Management Systems:** For prompt response to incidents and coordination of emergency services.
- **Customer Information Systems:** To provide real-time information to the public and handle inquiries.

- **Emergency Dispatch Software:** For efficient allocation and dispatch of emergency response resources.
- **Video Wall:** For visual monitoring of traffic conditions and incident management using multiple live feeds.
- **Communication Systems:** Ensuring robust, reliable communication between the TMC, field operatives, and emergency services.

The TMC acts as the central hub, amalgamating diverse technologies and functions to boost transportation efficiency, safety, and responsiveness. This integration is pivotal in advancing the city's transformational objectives.

11.7.6 Guiding Principles towards an Intelligent Transport System (ITS) Framework

This section provides guiding principles towards the development of an ITS Framework for George Municipality, based on the CITP Transformation Goals and core components for a Smart City, as well as a proposed structured approach for developing the ITS Framework.

CITP Transformational Goals and Core Components for a Smart City

The ITS Framework for George must be in sync with the goals and strategies detailed in the Comprehensive Integrated Transport Plan (CITP), focusing on advancing Access, Accessibility, and Mobility within the transport system. This system is envisioned as the bedrock of the local infrastructure, aimed at offering equitable, efficient, and eco-friendly transportation choices. The framework should integrate the seven transformative goals shown in **Figure 11-5** and tackle the specific areas mentioned in **Table 1-7** as presented in the first chapter of the CITP.

Figure 11-5: CITP Transformational Goals and Implementation Building Blocks.

Table 11-4 offers a high-level summary illustrating how the George CITP Transformational Goals and Core Components for a Smart City can serve as a guiding framework to pinpoint specific ITS technologies across various ITS components. This approach aids in aligning with George's Transport Vision and objectives.

Table 11-4: Aligning George CITP Transformational Goals with ITS Technologies for Smart City Advancement.

No.	City's Transformational Goals	ITS Components	ITS Framework Elements	Specific Technology Options / Applications
1	**Promote modal change and encourage modal shift**	Public Transportation Systems	• Vision and Objectives Setting	• Automatic Vehicle Location (AVL) • Electronic Fare Collection
			• Stakeholder Engagement	• Passenger Information Display Systems • Mobile Ticketing
		Traveler Information Services	• Technology Assessment and Integration	• Interactive Kiosks • Journey Planner Apps
2	**Reduce congestion and emissions**	Traffic Management Systems	• Policy and Regulatory Framework	• CCTV for Traffic Monitoring • Adaptive Traffic Signal Control
		Freight and Commercial Vehicle Operations	• Implementation Plan	• Fleet Management Systems • Eco-Drive Applications
			• Monitoring and Evaluation	• Air Quality Monitoring Stations
3	**Leverage digitalisation and benefits of 4th and 5th industrial revolutions**	Vehicle Systems	• Vision and Objectives Setting	• Autonomous Vehicle Technologies, Vehicle-to-Infrastructure Communication
			• Technology Assessment and Integration	• Sensors and IoT Devices, Big Data Analytics
4	**Enhance safety, security, and health**	Emergency Management Systems	• Policy and Regulatory Framework	• Emergency Response Drones • Real-time Incident Management Systems
		Vehicle Systems	• Implementation Plan	• Collision Detection Systems • Wearable Devices for Driver Health Monitoring
5	**Develop appropriate road master plans**	Traffic Management Systems	• Monitoring and Evaluation	• Traffic Simulation Software • Digital Twinning
6	**Nurture economic growth**	Freight and Commercial Vehicle Operations	• Stakeholder Engagement	• GPS Tracking • Automated Weigh-In-Motion
		Public Transportation Systems	• Technology Assessment and Integration	• Data Analytics for Service Optimisation

No.	City's Transformational Goals	ITS Components	ITS Framework Elements	Specific Technology Options / Applications
7	**Improve accessibility and mobility for people, goods, and services**	Traveler Information Services	• Policy and Regulatory Framework	• Accessible User Interfaces, Real-time Service Updates
		Public Transportation Systems	• Implementation Plan	• Integrated Multimodal Platforms, On-Demand Transit Services
		Integrated Operational Centre / TMC	• All Framework Elements	• Centralised Control Systems, Video Wall, Communication Systems

A Proposed Structured Approach for Developing the George Local Municipality ITS Framework

This structured approach delineates the essential steps required to establish an ITS Framework for George. An Intelligent Transport Systems (ITS) Framework provides a systematic foundation that supports the development and execution of a robust ITS Strategy.

The ITS Framework fulfils several crucial functions, as detailed below:

1. **Foundational Structure:** The framework establishes a comprehensive base that outlines the key elements, principles, and standards necessary for the successful planning, deployment, and operation of ITS. It ensures that these elements are systematically addressed within the ITS Strategy.
2. **Alignment with Strategic Goals:** The ITS Framework ensures that the deployment and operation of ITS technologies are aligned with broader transportation objectives and strategic goals, such as enhancing safety, efficiency, and sustainability. This alignment ensures that ITS initiatives contribute meaningfully to overarching transportation priorities.
3. **Consistency and Standardisation:** By defining consistent methodologies, standards, and protocols, the framework promotes interoperability among different ITS components and systems. This standardisation is crucial for the integration of various technologies and for enabling seamless communication within the transportation network.
4. **Guidance for Stakeholders:** The framework provides clear guidance to all stakeholders involved in ITS initiatives, including government agencies, private sector partners, and the public. It outlines roles, responsibilities, and expectations, facilitating coordinated efforts and collaboration across different entities.
5. **Scalability and Flexibility:** A well-designed ITS Framework allows for scalability and flexibility, accommodating the integration of new technologies and the expansion of ITS applications as needs evolve. This adaptability is essential for keeping pace with rapid technological advancements and changing transportation dynamics.

6. **Risk Management:** The framework identifies potential risks and challenges associated with ITS deployment and operation, proposing strategies for risk mitigation. This proactive approach to risk management helps to ensure the reliability and resilience of ITS services.
7. **Evaluation and Improvement:** An ITS Framework includes mechanisms for ongoing evaluation and performance measurement, enabling continuous improvement of ITS initiatives. By systematically assessing outcomes, the framework supports the refinement of strategies and the optimisation of ITS deployments.
8. **Knowledge Sharing and Learning:** The framework promotes the sharing of knowledge and best practices among stakeholders, facilitating learning and innovation in ITS. It can serve as a reference point for benchmarking and for adopting successful strategies and technologies from other regions or sectors.

It is clear that there is a significant disparity between the current ITS implementations in George and the anticipated needs and focus for ITS over the next 5-20 years to drive further improvements and deployments. These discrepancies are multifaceted, encompassing institutional capacity, financial resources, the absence of necessary policies and guidelines, and compartmentalised organisational structures, as highlighted in the Transport Needs Assessment Chapter and evaluations aligned with the City's Smart City Transformational Goals.

Particularly, enhancing real-time travel information for public transport emerges as a critical need from the perspective of commuters and passengers. Enhancing this aspect holds considerable promise for boosting the user experience and operational efficiency of the GO GEORGE service, emphasising the critical nature of this enhancement.

Furthermore, the emphasis on training and capacity building for the staff responsible for operating and maintaining these ITS systems is vital. It encompasses continuous training and professional development initiatives to ensure the ITS's long-term viability and effectiveness.

The effective implementation of ITS hinges on robust evaluation and continuous improvement strategies, necessitating intricate methodologies to gauge performance and pinpoint opportunities for advancements. This approach should incorporate specific performance metrics, feedback mechanisms, and routine assessment protocols.

Developing an elaborate stakeholder engagement strategy is also paramount, delineating approaches to include diverse community stakeholders, businesses, and governmental bodies in the ITS evolution process. This inclusion is key to ensuring that the ITS fulfils varied needs and secures extensive endorsement.

Leveraging the Transport Model to elaborate on particular environmental objectives like emission reduction and enhancing energy efficiency, along with delineating how ITS technologies will underpin these goals, will forge a more transparent connection between ITS deployment and environmental advantages. Notably, adherence to compliance requirements and understanding how expanding ITS technologies may reshape future legal and policy frameworks is crucial.


In conclusion, the George Local Municipality's mission into Intelligent Transport Systems (ITS) represents a crucial step toward realising its vision of becoming a smart, sustainable city with an efficient, inclusive transportation network. By establishing a comprehensive ITS framework and strategy, George can leverage advanced technologies to enhance traffic management, public transport, and overall urban mobility. This framework not only aligns with the city's strategic transport goals but also addresses current gaps, ensuring a more connected, resilient, and user-friendly transport ecosystem. Emphasising collaboration across various stakeholders, the framework serves as a cornerstone for future ITS initiatives, fostering innovation and continuous improvement. Ultimately, the successful implementation of ITS in George will not only improve daily commutes but also contribute to the broader objectives of economic growth, environmental sustainability, and enhanced quality of life for its residents.

11.8 Road User Safety Strategy

Transport safety broadly addresses the likelihood of accidental injuries within the realm of traffic, focusing on incidents involving vehicles, pedestrians, cyclists, and the general traffic setting. In contrast, the safety and security measures for public transport are designed to protect passengers from potential dangers at transport hubs and on public transport (PT) vehicles. Transport security, distinctively, deals with preventing deliberate malicious or antisocial behaviours affecting travellers, such as theft, fare evasion, assaults, and vandalism.

The core aim of the Safety and Security Strategy is to put in place robust measures that guarantee the welfare and protection of commuters, both onboard public transport and within its facilities. This strategy transcends individual routes, adopting a holistic perspective that includes targeted initiatives to elevate the safety and security standards in public transit. The Transport Safety and Security Strategy integrates key aspects from Traffic Engineering, Enforcement, and Educational domains, forming a comprehensive plan. Its principal ambition is to lessen the social and economic impacts of transport-related incidents by setting and pursuing priorities that tackle safety issues within both the public and private transport sectors.

This section on road safety covers

- Status quo - provides an overview of international and national road safety strategies.
- Current municipal legislation and guidelines
- Roles and responsibilities within the City’s road safety management.
- Crash data information systems is incorporated, which serves as the basis to identify crash and injury trends.

11.8.1 International and National Road Safety Activities

This section provides reference to international, national and local road safety objectives, guidelines and initiatives.

11.8.1.1 United Nations Decade of Action for Road Safety 2011-2020

In 2010 the governments of the world declared 2011–2020 as the Decade of Action for Road Safety. The goal of the Decade of Action is to stabilise and reduce the increasing trend in road traffic fatalities, saving an estimated 5 million lives over the period. A Global Plan of


Action was developed to practically guide countries so that their actions support the overarching target. Within the legal constructs of national and local governments, countries are encouraged to implement activities according to five pillars shown below.

- Road Safety Management
- Infrastructure
- Safe Vehicles
- Road User Behaviour
- Post –Crash Care.

South Africa, which has one of the highest road traffic fatality rates with 31.9 fatalities per 100 000 population2, is one of the 182 member states that supports United Nations Decade of Action for Road Safety. Within the African region only Nigeria has a higher road fatality rate 33.7 per 100 000 population. It should be taken into consideration that the 14 000 to 15 000 fatalities quoted in SA by the RTMC, are most likely under reported and closer to between 19 500 and 20 000 fatalities per year.

Currently, most road safety action plans are being developed by identifying strengths and weaknesses in relation to the United Nations (UN) Decade requirements to develop a UN Decade compatible strategy. Various initiatives have been established since the advent of the Decade of Action.

11.8.1.2 South African National Road Safety Strategy 2016 – 2030

As a participant in the United Nations Decade of Action for Road Safety 2011-2020 (UNDA), South Africa has pledged to support the global initiative, which aims to save up to 5 million lives and prevent up to 50 million serious injuries by 2020. In line with the UN Decade of Action, the Department of Transport has devised a National Road Safety Strategy (NRSS).

The latest updates regarding South Africa's progress in reducing road fatalities as part of the National Road Safety Strategy (NRSS) 2016-2030 indicate mixed outcomes. South Africa initially pledged to reduce road fatalities by 50% by 2030, aligning with the global goals of the United Nations Decade of Action for Road Safety. However, despite these commitments, the country continues to face significant challenges.

As of 2021, the road fatality rate in South Africa was reported to be approximately 15 deaths per 100,000 people, a decrease from the 23.5 per 100,000 recorded in 2014. This is an improvement, yet it still exceeds the global average and highlights ongoing issues with road safety in the country. The high number of road accidents, particularly fatal ones, remains a significant concern, exacerbated by inconsistent implementation of safety measures and limited enforcement of traffic laws.

This stark toll of road accidents on both the economy and society underscores the urgent need for comprehensive policies and strategies to address this pressing issue.

The inclusion of road safety objectives in the Sustainable Development Goals (SDGs) demonstrates international acknowledgment of the severity of the problem and signifies a collective global commitment to tackling it.

The NRSS represents a culmination of both domestic and international road safety policies. Informed by past strategies and international best practices, it adopts a safe system approach that


recognises human fallibility while emphasising the importance of fostering forgiving road environments.

Over the years, South Africa has witnessed a decline in road traffic fatalities, with the numbers steadily decreasing from 15,419 in 2006 to 12,702 in 2014. However, these reductions in road deaths have not occurred at the necessary pace for South Africa to achieve its ambitious goal of a 50% reduction by 2020 from the baseline set in 2010, as stipulated by the UNDA.

Aligned with South Africa's developmental approach, the National Development Plan 2030 serves as the country's overarching strategic framework, outlining national goals and objectives. Notably, Chapter 10 of the plan identifies road crashes as a health concern and aims to "reduce injury, accidents, and violence by 50% from 2010 levels." Additionally, the NDP 2030 delineates several areas for monitoring and control, including:

- Ensuring the roadworthiness of vehicles
- Addressing vehicle driver behaviour
- Combating alcohol and substance abuse
- Strengthening law enforcement effort

The NDP 2030 aims to reduce road fatalities by 50% from the 2010 baseline.

It is imperative to prioritise interventions that can instigate change in the following areas:

- **Road user behaviour** is recognised locally and internationally as the primary contributor to road crashes. Altering behaviour necessitates ensuring users are educated and aware of road safety, trained to adhere to regulations, and dissuaded from violating laws through rigorous enforcement, including combating corruption.
- **Safeguarding Vulnerable Road Users (VRUs**) is essential, given the substantial proportion of road fatalities involving pedestrians, particular focus should be placed on enhancing infrastructure design aimed at safeguarding Vulnerable Road Users (VRUs).
- **Effective leadership and governance** are essential for the entire strategy's success, ensuring thorough implementation and addressing operational requirements.
- **Enhancing data and knowledge management**, a critical but deficient aspect in the South African context. Rectifying shortcomings in this area will facilitate more efficient resource allocation and better tracking of progress.

11.8.1.3 South African Road Safety Audit Manual (2012)

A Road Safety Audit (RSA) is a proactive measure widely successful internationally. It involves a formal examination of new or upgraded road projects by an independent team to identify potential safety issues and propose mitigative measures. RSA is crucial for accident prevention and proactive road safety management.

Recognising its importance, South Africa developed the South African Road Safety Audit Manual (2012) to assist road authorities in conducting RSAs for new projects and safety appraisals for existing roads.

George LM should undertake RSA for identified high crash locations and for new road projects, to enhance road safety and to avert wasteful expenditure on implementing remedial measures to address road safety issues that could have been averted in the various stages of road design. This is particularly important


considering the new road network links required to support future envisaged spatial development.

11.8.1.4 Road Incident Management System (RIMS)

The Road Incident Management System (RIMS) functions as the national framework and policy governing the management of road incidents. It delineates procedures and arrangements for efficiently coordinating emergency services. Practically, RIMS ensures that emergency services enforce legislation by adhering to prescribed procedures and protocols.

Currently, the City lacks an active incident management system. RIMS is recognised as a critical component of road safety, particularly in post-crash response, where swift and coordinated actions can mitigate the severity of incidents and save lives. By implementing RIMS, the City can enhance its capacity to manage road incidents effectively, minimising their impact and improving overall road safety outcomes.

11.8.2 Current Municipal Legislation and Guidelines

This section lists the current Municipal Legislation and Guidelines.

Traffic Calming Policy and Priority List

The National Guidelines for Traffic Calming (Department of Transport 1998) provides a comprehensive list of measures for traffic calming at locations identified for traffic calming. Traffic calming needs to be considered in a holistic manner, with emphasis on area-wide planning, with community involvement in identifying safety concerns and developing Road Safety Master Plans. Engineering investigations are conducted to align with traffic calming guidelines.

Successful measures, like mini circles and raised pedestrian crossings, aim improve road safety.

George LM needs to develop a Traffic Calming Policy, focussing on locations with high numbers of VRU's (schools, clinics), and on locations identified as high NMT crash sites.

Guidelines for the Development of Road Safety Master Plans

Road Safety Master Plans are crucial to ensure effective implementation of traffic calming measures. These plans serve as comprehensive frameworks for enhancing safety and mobility for both non-motorised transport (NMT) users and motorists. They primarily focus on engineering measures while also incorporating education, safety awareness, law enforcement, and evaluation, necessitating robust partnerships with various stakeholders.

Guidelines from 2009 outline the main goals of Road Safety Master Plans, including reducing injuries and fatalities across all modes of transport, improving personal security on public transportation, and developing contingency plans for transportation emergencies in collaboration with other service sectors. These guidelines offer an overview of the process for developing, implementing, and maintaining Road Safety Master Plans.

11.8.3 Current Roles and Responsibilities

Ideally, road safety management cuts across different functional areas to ensure a holistic approach. This section describes the current involvement of role players in road safety matters.

George Municipality's departments shown below play vital roles in improving road safety:


- **Traffic Services:** Responsible for enforcing traffic laws, managing road infrastructure, and coordinating traffic flow to enhance safety.
- **Emergency Services**: Swiftly responds to road incidents, providing medical aid and firefighting services as needed.
- Engineering Services: Designs, constructs, and maintains roads, sidewalks, and signage to promote safe transportation.
- **Public Health Department**: Educates the public on road safety measures and collaborates with other departments to address health-related issues resulting from road accidents.
- **Community Safety**: Engages communities in road safety awareness campaigns, neighbourhood watch programs, and initiatives to reduce crime associated with roadways.
- **Civil Engineering Services Department**: Manages road maintenance, repairs, and upgrades to ensure infrastructure meets safety standards.
- **Strategic Planning Department**: Develops policies and strategies to improve road safety, including land-use planning to create safer environments for pedestrians and cyclists.

Other entities also playing vital roles in improving road safety:

- **South African Police Services (SAPS)**: Involved in crash investigations at all road crashes where fatalities occurred, however, due to limited personnel capacity, delays in responding to scenes occasionally lead to delays in clearing crash sites.
- **Road Traffic Management Corporation (RTMC)** plays a significant role in crash safety within George. As a national entity responsible for promoting road safety and regulating traffic management, the RTMC collaborates with local authorities like George Municipality to enhance road safety measures.

11.8.4 Road Safety Incident Management

George has an existing Control Centre at the George Police Station connected with the Fire Station that deals with incidents related to road safety incidents. The following indicates the way incidents should be managed to ensure a swift and effective response:

- **Emergency Services Response**: Municipality's emergency services, including police, fire, and medical responders, swiftly mobilise to the scene.
- **Traffic Management**: Traffic officers are dispatched to manage flow, ensure safety, and aid in incident scene clearance.
- **Communication and Coordination**: Clear lines of communication link emergency responders, municipal authorities, and stakeholders to coordinate response efforts.
- **Incident Assessment**: Responders assess incident nature and severity to determine necessary actions.
- **Medical Assistance**: Injuries prompt immediate aid and transport arrangements if needed.
- **Clearance and Cleanup**: Efforts focus on promptly restoring normal traffic flow post-incident control and attendee care.
- **Investigation and Reporting**: Traffic officers investigate incidents to determine causes and gather reporting data.
- **Public Awareness and Education**: Incidents may drive public awareness campaigns on road safety.
- **Data Management**: Location and information of an accident or incident must be captured and recorded and stored on local, provincial and national accident database for access when required. The data collection process should be


improved by utilising technology, enabling responders, traffic police and police stations in this process to be more efficient and sustainable.

- **Continuous Improvement**: Post-incident reviews drive enhancements in response procedures or infrastructure to prevent future incidents.

By following these procedures and maintaining effective communication and coordination among all stakeholders, George Municipality strives to handle traffic incidents efficiently and minimise their impact on road users and the community.

11.8.5 General Challenges in Road Safety

The following general challenges were confirmed during the different road safety stakeholder engagement process.

- **Infrastructure Improvements**: Investments in road infrastructure upgrades, including resurfacing, widening, and installation of safety barriers, have enhanced road conditions and reduced accident risks.
- **Traffic Management Initiatives**: Implementation of traffic calming measures, such as speed humps, roundabouts, and pedestrian crossings, has improved traffic flow and reduced collision rates in key areas.
- **Public Awareness Campaigns**: Engaging educational campaigns on road safety, targeting both motorists and pedestrians, have raised awareness about safe driving practices and pedestrian behaviour, contributing to a reduction in accidents.
- **Enforcement Efforts**: Strengthened enforcement of traffic laws, including speed limits, seatbelt usage, and drunk driving, has resulted in increased compliance and reduced instances of risky driving behaviour.
- **Collaborative Partnerships**: Collaborative efforts between local authorities, law enforcement agencies, community organisations, and stakeholders have facilitated coordinated road safety initiatives and interventions.
- **Data-Driven Approaches**: Improved data collection and analysis capabilities have enabled evidence-based decision-making and targeted interventions to address specific road safety challenges effectively.
- **Investments in Public Transport and Non-Motorised Transport**: Enhancements in public transit services and infrastructure for cyclists and pedestrians have promoted safer alternative modes of transportation, reducing congestion and accident risks.
- **Emergency Response Enhancement**: Streamlined emergency response procedures and improved coordination among emergency services have resulted in faster response times and enhanced support for road accident victims.
- **Commuter and Pedestrian Wayfinding**: No clear signage guidance and markings for wayfinding.

11.8.5.1 Key Road Safety Challenges for George Municipality

In George, road safety challenges are apparent, including:

- **Infrastructure Deficiencies**: Aging or poorly maintained roads, inadequate signage, and insufficient pedestrian facilities pose safety risks for road users.
- **Traffic Congestion**: Growing traffic volumes and urban congestion increase collision risks and impede emergency response times.


- **Driver Behaviour**: Reckless driving, speeding, distracted driving (e.g., mobile phone use), and driving under the influence contribute significantly to road accidents.
- **NMT Safety**: Inadequate crossings, sidewalks, cycle-lanes and NMT awareness campaigns lead to pedestrian and cyclist fatalities and injuries.
- Enforcement Challenges: Limited resources and inconsistent enforcement of traffic laws result in non-compliance and safety regulation violations.
- **Public Transport Deficiencies**: Dependence on informal transport, inadequate public transit options, and insufficient cyclist and pedestrian infrastructure present safety issues.
- **Data Collection and Analysis**: Limited capabilities in collecting and analysing data hinder effective road safety planning and interventions.
- **Limited resources and funding**.

Addressing these challenges necessitates a comprehensive approach involving infrastructure upgrades, stricter enforcement, public education initiatives, and collaborative efforts among local authorities, law enforcement, community organisations, and relevant stakeholders and funding.

11.8.6 George Municipality Road Safety Strategy

George Municipality recognises the critical importance of road safety strategy in ensuring the well-being and security of its residents and visitors. In alignment with the National Land Transport Strategy (NLTS), this Road Safety Strategy aims to address key road safety challenges in George and promote a culture of safe and responsible road use.

Establishing an environment conducive to coordination, proactive response, and technological utilisation is essential for crafting an effective road safety strategy.

11.8.6.1 Road Safety Objectives

The following objectives should form the foundation of a comprehensive approach to road safety:

- Reduce road traffic accidents and fatalities in George.
- Improve infrastructure and road design to enhance safety for all road users.
- Enhance enforcement of traffic laws and regulations to ensure compliance.
- Increase public awareness and education on road safety measures.
- Strengthen collaboration with relevant stakeholders to implement effective road safety interventions.

11.8.6.2 Strategic Approaches:

- **Infrastructure Improvement**:
  - Conduct regular assessments of road infrastructure to identify and address safety deficiencies.
  - Prioritise the installation of safety features such as traffic signals, pedestrian crossings, and speed calming measures in high-risk areas.
  - Implement road design enhancements to accommodate vulnerable road users, including cyclists and pedestrians.
  - Improve pedestrian and commuter wayfinding signage via a Signs & Markings Management System.
- **Enforcement Measures**:


- Increase police presence and patrols on roads to deter reckless driving and enforce traffic laws.
- Implement automated enforcement technologies such as speed cameras and red-light cameras to improve compliance.
- Strengthen collaboration with law enforcement agencies to ensure effective enforcement of road safety regulations.

- **Public Awareness and Education**:
  - Develop and implement comprehensive road safety awareness campaigns targeting motorists, pedestrians, and cyclists.
  - Establish partnerships with schools, community organisations, and businesses to promote road safety education and training programs.
  - Utilise digital platforms and social media channels to disseminate road safety Messages and information to the public.
- **Data-Driven Decision Making**:
  - Enhance data collection and analysis capabilities to monitor road safety trends and evaluate the effectiveness of interventions.
  - Utilise data insights to prioritise resources and target interventions in areas with the highest incidence of road accidents.
- **Collaboration and Stakeholder Engagement**:
  - Foster collaboration with relevant government agencies, non-profit organisations, and private sector stakeholders to implement coordinated road safety initiatives.
  - Establish a multi-sectoral road safety task force to oversee strategy implementation, monitor progress, and coordinate stakeholder efforts.

11.8.6.3 Conclusion:

The Road Safety Strategy for George, aligned with the National Land Transport Strategy (NLTS), outlines a comprehensive approach to addressing road safety challenges and improving safety outcomes in George, by implementing strategic interventions across infrastructure, enforcement, education, data analysis, and collaboration.

11.9 Parking Strategy

11.9.1 Introduction

According to the detailed Transport Needs Assessment, the identified parking issues and needs in George encompass a range of strategic and operational considerations. There is a recognised inefficiency in parking management contributing to congestion and suboptimal land use, highlighting the necessity for structured parking strategies and better utilisation. The correlation between parking availability and economic activity suggests that adequate and well-managed parking facilities are crucial for supporting local businesses and attracting visitors and investors.

The development and enforcement of clear parking policies and regulations are imperative to ensure optimal use of parking


resources, mitigate illegal parking, and support access to businesses. Furthermore, enhancing the linkage between parking facilities and public transport could promote multi-modal transport use, reducing the reliance on private vehicles and alleviating congestion. Investment in parking infrastructure is essential to meet current demands and accommodate future growth, ensuring facilities are safe, accessible, and user-friendly.

Addressing the need for secure parking options for bicycles and other non-motorised transport forms is vital for encouraging sustainable mobility. The integration of technology can significantly improve parking management, offering real-time information on availability, electronic payment systems, and intelligent parking solutions that optimise space utilisation. Lastly, engaging stakeholders, including businesses, residents, and visitors, in developing and implementing parking strategies is crucial to ensure that the solutions cater to the diverse needs and preferences of all user groups, thereby enhancing the overall transport system's efficiency and the urban environment's liveability in George.

11.9.2 Context

As George continues to evolve, addressing parking inefficiencies, enhancing multimodal connectivity, and fostering sustainable urban mobility emerge as pivotal components of the city's spatial and transport development agenda.

This comprehensive perspective sets the stage for an in-depth exploration of the George Municipal Spatial Development Framework (GMSDF) and its implications for parking and land use strategies in the subsequent section 11.4.2. Adopted by the Council in May 2019, the GMSDF delineates a vision for densification along key public transport routes and nodes, advocating for a sustainable public transport network underpinned by judicious land use and parking policies. The designated PT1 and PT2 areas within the framework are instrumental in guiding the allocation of parking resources, aligning with the overarching goal of promoting public transport and reducing reliance on private vehicles.

Furthermore, the GMSDF's nuanced approach to parking requirements, particularly in areas marked for densification and those reliant on public and non-motorised transport, underscores the municipality's commitment to fostering a balanced, accessible, and sustainable urban environment. By articulating specific parking requirements for various public transport zones, the framework aims to encourage a modal shift towards public transport usage, reflecting a strategic alignment with George's broader urban development and mobility objectives.

As the narrative unfolds in the forthcoming sections, the focus will delve into the granular details of the GMSDF's parking strategies, examining their implications for urban form, mobility patterns, and economic vitality. Through this lens, the sections explain the critical role of parking management in facilitating George's transition towards a more integrated, efficient, and sustainable transport paradigm, underscoring the importance of proactive planning and stakeholder engagement in shaping the city's future.

11.9.3 George Municipal Spatial Development Framework (GMSDF)

In May 2019, Council adopted the George Municipal Spatial Development Framework (GMSDF). The GMSDF identified the need for increased and use to densify along the main public transport


routes and main public transport nodes to support a sustainable public transport network. A 1,0km wide corridor is indicated on the GMSDF map (see **Figure 11-6**) along these routes to indicate the areas where public transport usage is to be promoted. The area around the main nodal interchange in Craddock Street was also identified for densification, which aligns with the restructuring areas identified for the purposes of Social Housing developments.

York Street, Beach Drive, Mission Street, Nelson Mandela Boulevard, Wellington Street, Courtenay Street, Knysna Road, CJ Langenhoven Road, Witfontein Road and George Road and feeder (neighbourhood) public transport routes are served by the GIPTN (Go-George public bus transport system). These routes provide an adequate level of public transport and are classified as PT1 Areas.

PT1 is however not automatically applied uniformly to residential areas where feeder routes are operational as some areas still ascribe to a higher percentage of private vehicle usage. PT1 area is therefore applied within 500 m from GO GEORGE routes and in Blanco (as shown in **Figure 11-6**).

George CBD is classified as a PT2 area, since it supports rail (though not in operation), bus, minibus taxi, metered taxi, inter-regional and intra-regional public transport services. The George MSDF promotes far lower parking ratios in the PT2 areas, like George CBD.

In the assessment of the George Mun Parking the following:

The GMSDF shows Thembalethu and Pacaltsdorp Township areas, south of the N2, as PT2 areas in view of low private vehicle ownership with most residents relying on walking, non-motorised transport and public transport. This cut off appears artificial and the PT1 area should rather extend over the N2 to facilitate business activity in close proximity to the interchanges with more appropriate parking ratios and to avoid parking pressure on GO GEORGE transport corridors in close proximity to the public transport interchanges (see **Figure 11-7**).

As GO GEORGE is rolled out into new areas, the parking ratios could be reduced in accordance with the PT provision (PT1 and later PT 2).

PT Area Parking Requirements

To encourage modal shift (lower car ownership and increased reliance on public transport) in accordance with the GMSDF, George LM applies lowered minimum off-street parking ratios along public transport areas, as set out in the George Integrated Zoning Scheme By-law (2023). The minimum required parking ratios are scaled according to public transport availability on the route, as categorised:

- **Normal Transport Area** - refers to the standard parking requirements for a land use where public transport is not promoted or not available.
- **Public Transport (PT)1 Areas** refers to areas where public transport is to be promoted, but where Council considers the provision of public transport services to be inadequate. PT 1 areas are generally served by one mode of public transport.
- **Public Transport (PT)2 Areas** refers to areas where public transport is to be promoted and where sufficient (modes of) public and non-motorised transport is provided to justify the reduction in parking requirements. These areas are generally in areas near or along routes where multiple modes of integrated public and non-motorised transport networks can be found. It is noted that the George Integrated Zoning Scheme mandates on-site parking in PT2 areas, with slightly lower parking ratios compared to PT1 areas for certain land

use categories. Ensuring on-site parking along public transport corridors is particularly crucial to minimise kerbside parking, thereby reducing traffic congestion and promoting public transport mobility.

The PT Areas guide development towards achieving George LM vision and objectives and encourages modal shift towards public transport.

These reduced parking ratios are not applied to areas frequented by tourists, like the coastal suburbs of Victoria Bay, Herold's Bay and Wilderness areas as public parking in these areas are high in demand by tourists, especially during peak seasons.

Arterial Management Plans (AMP) as indicted in **Figure 11-8** were prepared for GM in accordance with the Arterial Management Guidelines (2016) and incorporate GM Public Transport area. The AMP is tested through microsimulation modelling to inform proposed road upgrading, to the benefit of all road users.

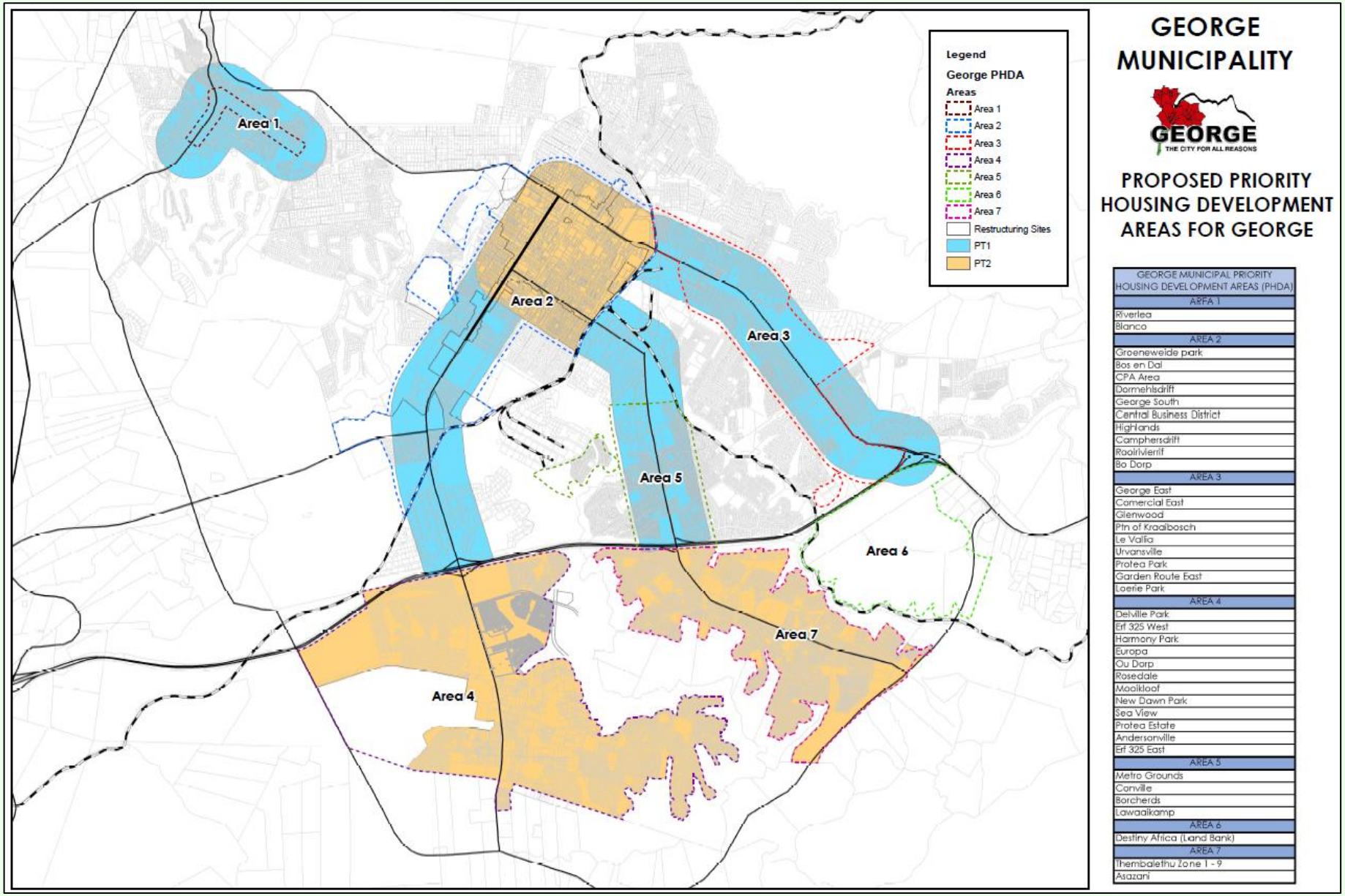

Figure 11-6: GMSDF George LM Parking Areas.

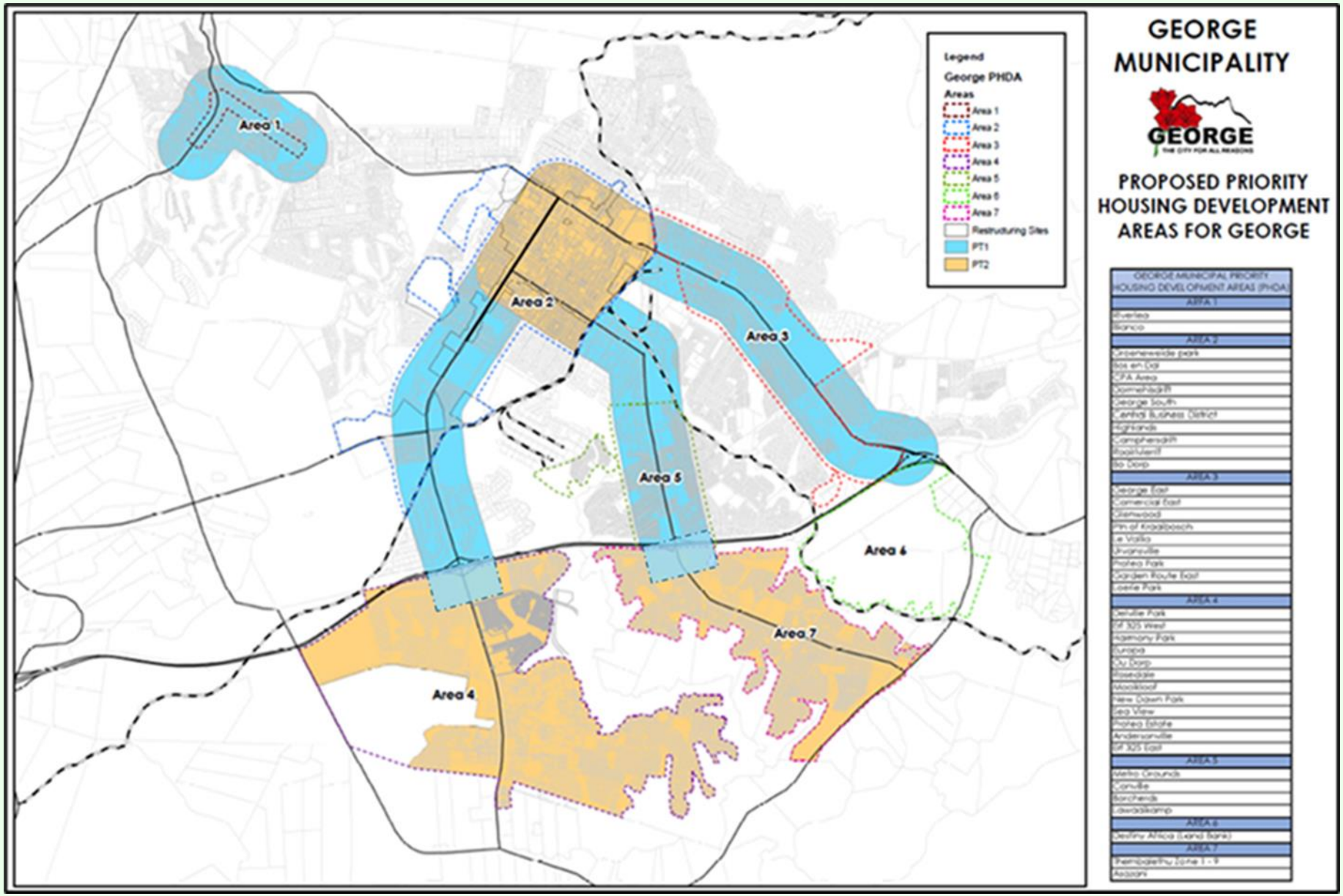

Figure 11-7: GMSDF George LM Parking Areas (with recommended PT1 extended some 600m south of N2).

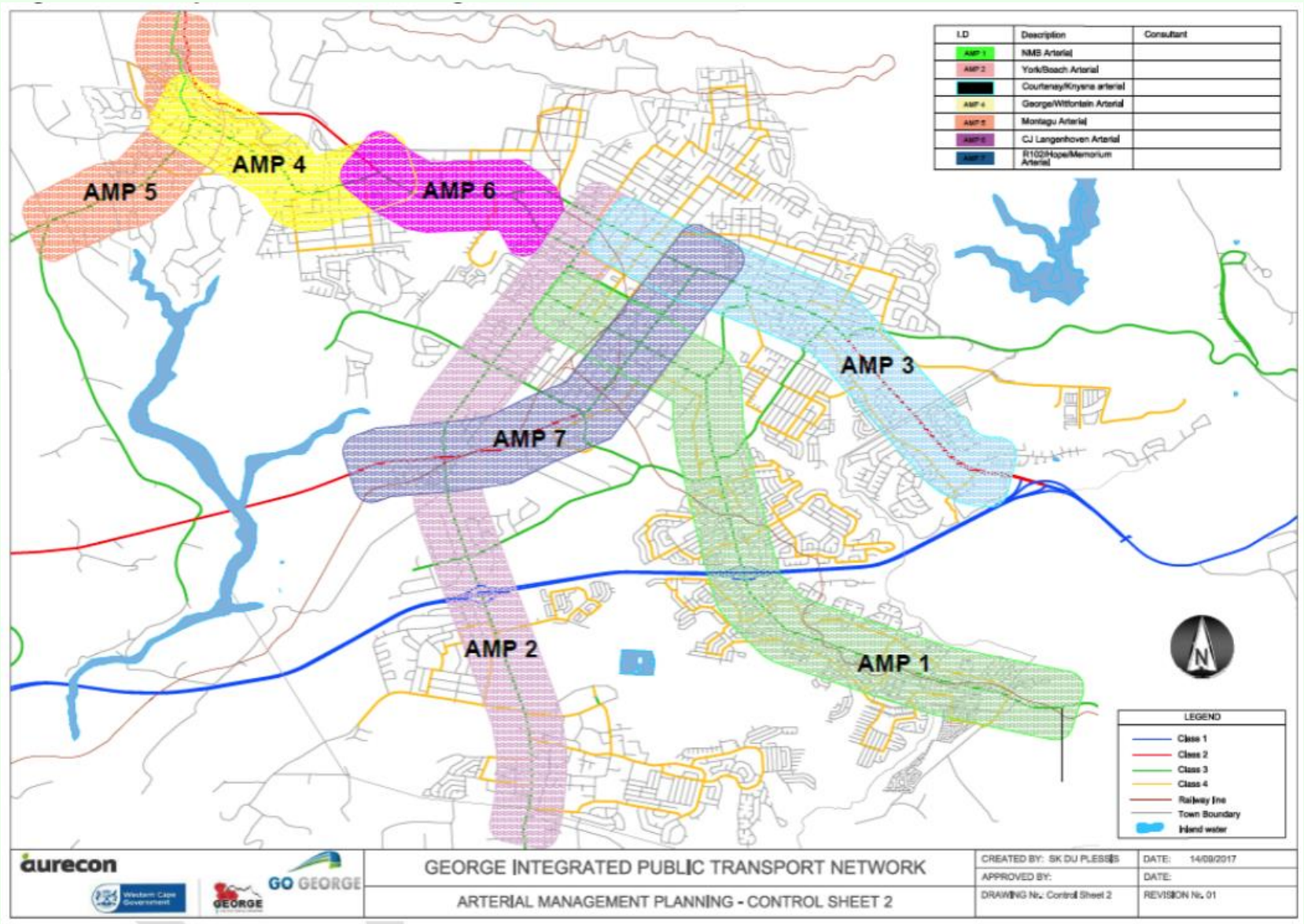

Figure 11-8: Arterial Management Plan in George


Assessment

Transitioning to lower parking ratios along public transport routes, could raise some concern, i.e., where a high-income development is located in a PT2 Area. In this regard two main forces are at play, George LM vision for greater reliance on public transport (lower car ownership / parking ratios) and market forces that dictate to the developer what levels of parking would be required to attract the intended investors. At the other end of this spectrum, social housing could require lower parking ratios than applicable to the public transport area in which it is located. This can be addressed by proper motivation in support of a lower parking ratio.

A single area of concern on the GMSDF is where PT1 areas are truncated at the N2 north of Thembalethu and Pacaltsdorp Township areas. The PT1 areas should rather extend 600 m over the N2 into Thembalethu and Pacaltsdorp, to encourage nodal development with more appropriate parking ratios at intersections, in close proximity to the transport interchanges.

Overall, the MSDF and George Integrated Zoning Scheme By-law 2023 parking ratios exhibits a well-considered and measured approach that facilitates a responsible transition towards public transport. It further creates opportunity to monitor the impact of the reduced parking ratios on the built environment with room to further reduce parking ratios where appropriate.

George LM policies promoting intensification of land use with lowered minimum parking ratios along public transport corridors is a positive contributor towards a developing a more sustainable city.

11.10 Law Enforcement Strategy

Law enforcement policy in George goes beyond mere traffic monitoring, embracing broader aspects of road safety and the safeguarding of roads and transport infrastructure. This involves the enforcement of regulations specified in the National Road Traffic Act (Act No. 93 of 1996) and adherence to the law enforcement standards detailed in the National Land Transport Act (NLTA), specifically within Chapter 7, sections 85 to 91.

The temporary GO GEORGE bus depot and George vehicle pound in York Street is located on Provincial Government property. It is planned to relocate the bus depot to a permanent location in the Borchards area. The Provincial Transport Entity needs to determine the future use of the site, particularly where it could be used to serve public transport needs.

11.10.1 Law Enforcement Vital Role

Law enforcement plays a vital and multifaceted role in George, critical in several keyways as outlined below:

1. **Ensuring Public Safety:** Law enforcement officers play a vital role in maintaining public safety and order within George. They enforce laws and regulations that protect citizens from harm and ensure their well-being.
2. **Traffic Management:** In George Municipality, law enforcement agencies support safe and lawful traffic flow by enforcing regulations and ensuring compliance. However, traffic management extends beyond enforcement, encompassing technology, infrastructure, and operational systems to optimise mobility, reduce congestion, and enhance overall transport efficiency.


3. **Crime Prevention:** By patrolling neighbourhoods and responding to incidents, law enforcement helps deter criminal activity and keep communities safe. Their presence can deter potential offenders and provide reassurance to residents.
4. **Emergency Response:** Law enforcement officers often serve as first responders to emergencies, including medical emergencies, accidents, and natural disasters. Their quick response and effective coordination with other emergency services are critical for saving lives and minimising damage during crises.
5. **Community Engagement:** Law enforcement agencies engage with the community through outreach programs, neighbourhood watch initiatives, and public events. Building positive relationships with residents fosters trust, cooperation, and mutual respect, leading to safer and more cohesive communities.
6. **Enforcing Regulations:** Law enforcement ensures compliance with city ordinances, zoning regulations, and other municipal laws. This helps maintain order, protect property values, and preserve the quality of life for residents.

Traffic law enforcement is critical to reduce traffic accidents and maintain good traffic flow.

11.10.2 Key Aspects of Traffic Law Enforcement

Key Aspects of law enforcement required on the main road-based modes of transport are listed below:

Law enforcement of mini-bus taxis in George involves several key aspects aimed at ensuring safety and compliance within the public transportation sector. This includes:

1. **Monitoring adherence to traffic regulations** and safety standards, such as speed limits, lane discipline, and proper vehicle maintenance.
2. **Verifying compliance with passenger capacity limits** to prevent overcrowding and ensure passenger safety.
3. **Addressing driver behaviour** issues, such as overloading, reckless driving, and illegal operations within the mini-bus taxi sector.
4. **Collaborating with law enforcement** agencies, transport authorities, and taxi associations to promote responsible behaviour among operators and drivers.
5. **Conducting regular patrols, spot checks, and targeted enforcement operations** to maintain law and order and contribute to safer public transportation services in George.

Law enforcement of freight and heavy vehicles in George is paramount to ensuring road safety, protecting infrastructure, and maintaining traffic efficiency. This enforcement encompasses various aspects, including compliance with vehicle regulations, load limits, and driver behaviour, as below:

1. Vehicle Compliance: Law enforcement officers monitor freight and heavy vehicles to ensure compliance with vehicle regulations such as proper vehicle registration, valid permits, and adherence to vehicle safety standards.
2. Load Limits: Enforcement efforts focus on verifying that freight vehicles adhere to load limits prescribed by law to prevent overloading, which can lead to road damage, increased accident risks, and compromised vehicle stability.


3. Driver Behaviour: Enforcement of traffic laws pertaining to heavy vehicle operation, such as speed limits, lane discipline, and adherence to traffic signals, aims to reduce the likelihood of accidents and congestion caused by reckless driving behaviours.
4. Safety Inspections: Routine safety inspections and spot checks are conducted on freight and heavy vehicles to identify and rectify safety defects, ensuring vehicles are roadworthy and pose no risks to other road users.
5. Compliance Checks: Law enforcement agencies conduct compliance checks at weigh stations, checkpoints, and inspection points to verify compliance with regulations and address any violations promptly.
6. Education and Awareness: Educational campaigns and outreach initiatives targeting freight and heavy vehicle operators raise awareness about road safety regulations, proper vehicle maintenance, and responsible driving practices.
7. Collaboration: Collaboration between law enforcement agencies, transport authorities, industry stakeholders, and relevant associations facilitates information sharing, joint enforcement operations, and the development of industry-specific regulations and guidelines.

Law enforcement of general traffic in George is vital for maintaining road safety and ensuring compliance with traffic laws. This encompasses various aspects aimed at promoting safe and orderly traffic flow within the city. Some key points include:

1. Monitoring adherence to speed limits, lane discipline, and traffic signals to prevent accidents and congestion.
2. Enforcing regulations related to vehicle registration, licensing, and roadworthiness to ensure that vehicles meet safety standards.
3. Addressing traffic violations such as reckless driving, driving under the influence of alcohol or drugs, and distracted driving to mitigate risks on the road.
4. Conducting regular patrols and roadblocks to deter traffic offenses and identify non-compliant vehicles or drivers.
5. Collaborating with other**s**, like law enforcement agencies, transport authorities, and community organisations to implement road safety campaigns and initiatives.
6. Providing education and awareness programs to inform motorists about traffic laws, safe driving practices, and the consequences of traffic violations.
7. Law enforcement agencies can enhance monitoring and enforcement by equipping policing vehicles with specialised tools and providing officers with smart handheld devices linked to enforcement intelligence databases. These efforts can be further supported by integrating existing Intelligent Transport Systems (ITS), such as CCTV cameras and automated enforcement systems, to strengthen real-time monitoring and regulatory compliance within the transport network.

Law Enforcement Agencies in George can leverage existing ITS technology within the transport system, even if not directly managing these systems. While not custodians of the infrastructure, they have access to its data and capabilities, enabling enhanced enforcement and coordination. Integration within a Traffic


Management Centre (TMC) alongside other key stakeholders further strengthens their ability to ensure compliance and support safe and efficient traffic operations.

By rigorously enforcing regulations and promoting responsible behaviour among freight and heavy vehicle operators, law enforcement efforts contribute to safer roads, reduced traffic congestion, and enhanced overall transport efficiency in George.

Law enforcement of Non-Motorised Transport (NMT) in George encompasses ensuring the safety and rights of pedestrians and cyclists while promoting their efficient movement within the city, as outlined below:

1. Pedestrian Safety: Law enforcement agencies in George need to prioritise pedestrian safety by enforcing traffic laws related to pedestrian crossings, traffic signals, and right-of-way at intersections. This includes monitoring for violations such as jaywalking and unsafe crossing behaviour.
2. Cyclist Regulations: Law enforcement personnel need to ensure that cyclists adhere to traffic regulations, including obeying traffic signals, riding in designated bike lanes where available, and using appropriate safety equipment such as helmets and lights.
3. Infrastructure Protection: Law enforcement agencies work to protect NMT infrastructure, such as sidewalks, bike lanes, and pedestrian crossings, from obstructions, encroachments, and damage. They address issues such as illegal parking on sidewalks or blocking bike lanes.
4. Education and Awareness: Law enforcement efforts extend to educating both pedestrians and cyclists on safe practices and road rules. This may involve public awareness campaigns, distribution of educational materials, and community engagement initiatives to promote responsible behaviour among NMT users.
5. Enforcement of Vulnerable Road User Rights: Law enforcement agencies advocate for the rights of vulnerable road users, including pedestrians and cyclists, by ensuring that motorists respect their space and provide them with the necessary priority and consideration on the road.
6. Collaboration with **GM** Planning: Law enforcement should actively collaborate with city planners and transportation authorities to incorporate NMT-friendly infrastructure designs, such as wider sidewalks, dedicated bike lanes, and pedestrian-friendly streetscapes, into urban development projects.
7. Crash Investigation and Prevention: In the event of accidents involving NMT users, law enforcement agencies conduct thorough investigations to determine the causes and prevent similar incidents in the future. They may also analyse crash data to identify trends and areas for improvement in NMT safety.

By actively enforcing regulations, promoting awareness, and collaborating with relevant stakeholders, law enforcement agencies in George strive to create a safe and conducive environment for non-motorised transport users, fostering sustainable and healthy mobility options within the city.

11.10.3 Law Enforcement Role-players

Role players involved in law enforcement and the control of traffic law enforcement in George include:

1. **George Municipal Traffic Department**: Responsible for enforcing traffic laws and regulations within the jurisdiction of George Municipality.
2. **South African Police Service (SAPS)**: Collaborates with municipal traffic authorities to enforce traffic laws, investigate accidents, and address criminal activities related to traffic violations.
3. **Western Cape Provincial Traffic Department**: Provides support and assistance to municipal traffic departments in enforcing traffic laws and regulations on provincial roads and highways.
4. **Road Traffic Management Corporation (RTMC)**: Oversees and coordinates traffic law enforcement initiatives at a national level, providing support and resources to local and provincial authorities.
5. **Traffic Officers**: Law enforcement officers dedicated to patrolling roads, issuing fines for traffic violations, and ensuring compliance with road safety regulations.
6. **Traffic Wardens**: Assist traffic officers in managing traffic flow, conducting traffic control at intersections, and providing assistance to motorists and pedestrians.
7. **Community Policing Forums (CPFs)**: Engage with local communities to address safety and security concerns, including traffic-related issues, through collaboration with law enforcement agencies.
8. **Municipal Bylaw Enforcement Officers**: Responsible for enforcing municipal bylaws related to parking, traffic signage, and other local regulations affecting road users.
9. **Vehicle Testing Stations**: Conduct roadworthy tests and vehicle inspections to ensure compliance with safety standards and regulations.
10. **Department of Transport**: Provides policy direction, regulations, and guidelines for traffic management and law enforcement at a national and provincial level.

These stakeholders collaborate to enforce traffic laws, enhance road safety, and ensure regulatory compliance, thereby enhancing overall traffic management and safety in George. Coordination among these authorities is crucial to prevent redundancy and optimise law enforcement efforts, particularly on critical public transport routes and heavily trafficked roads.

11.10.4 Law Enforcement Needs in George

In the context of George's Comprehensive Integrated Transport Plan (CITP), law enforcement plays a pivotal role in ensuring the safety, security, and efficiency of the municipality's transport system. As George evolves towards a more integrated and smart transport framework, the necessity for a robust law enforcement strategy becomes increasingly apparent. This strategy is integral not only for maintaining public order and safety but also for upholding the structural and operational integrity of the transport network.

The following specific law enforcement needs have been identified as critical components in the pursuit of a safer, more reliable, and user-centric transport system in George. These needs span various

aspects of law enforcement, from regulatory compliance and traffic management to crime prevention and emergency response.

Addressing these needs is essential for fostering a transport environment that aligns with the overarching goals of the CITP, enhancing the quality of life for George's residents and ensuring a sustainable and prosperous future for the municipality as listed below.

1. Enhanced Traffic Regulation Compliance: Ensuring that all vehicles, especially public transport and freight, adhere to the National Road Traffic Act and local transport laws to maintain road safety and infrastructure integrity.
2. Robust Traffic Law Enforcement Management: Implementing targeted strategies to enhance traffic flow, particularly in high-congestion areas, while ensuring compliance with traffic laws to reduce incidents and improve overall mobility.
3. Crime Prevention and Community Safety: Strengthening the role of law enforcement in crime deterrence and community engagement to foster a secure environment for residents and commuters.
4. Emergency Response Efficiency: Improving the capacity and coordination of law enforcement agencies to respond swiftly to emergencies and traffic incidents, minimising impact and enhancing public trust.
5. Infrastructure Protection: Implementing measures to safeguard critical transport infrastructure against vandalism, theft, and other forms of damage.
6. Regulatory and Compliance Enforcement: Establishing mechanisms for the rigorous enforcement of transport regulations, including vehicle compliance checks, driver licensing, and route adherence.
7. Stakeholder Engagement: Enhancing collaboration between law enforcement, transport authorities, and the community to ensure alignment of efforts and community support for enforcement initiatives.

Transitioning from the broad law enforcement needs within George to the specific roles of law enforcement agencies within the integrated transport system, it's clear that these agencies are cornerstone elements in realising the vision of a cohesive, efficient, and secure transport network. Their responsibilities range from managing traffic and ensuring the operational compliance of transport services to safeguarding infrastructure and enhancing public safety.

In the ensuing sections, the focus will shift towards outlining the multifaceted roles these agencies undertake within the integrated transport system. Their contributions are integral across various domains such as traffic management, operational compliance, infrastructure protection, and the broader spectrum of safety and security. Each of these roles is critical in fortifying the foundation of a reliable and robust transport system, underpinning the seamless and secure travel experience for all individuals in George. This comprehensive approach, detailed in the subsequent sections, will elucidate how law enforcement agencies are instrumental in effectuating the strategic objectives of George's CITP, thereby catalysing the advancement towards a more integrated and smart transport framework.


11.10.5 Law Enforcement Agencies Roles in Integrated Transport System

Within a Comprehensive Integrated Transport System (CITP), law enforcement agencies are pivotal in ensuring efficiency, safety, and reliability. Their multifaceted roles encompass various domains, including traffic and transport management, operations and maintenance, and enhancing road safety and security for all users, as elaborated on below:

1. **Traffic and Transport Management**:
   - Collaborate with transport authorities and other departments to enforce traffic laws and regulations, ensuring orderly flow and minimising congestion.
   - Assist in implementing traffic management strategies, such as enforcing access restrictions and managing peak-hour traffic.
   - Coordinate with transport entities during events or emergencies to manage traffic diversions and maintain order.

2. **Traffic and Transport Operations:**
   - Ensure operational compliance of public transport providers with regulatory standards, including vehicle fitness and service adherence.
   - Play a crucial role in incident detection and response, addressing accidents or disruptions swiftly.
   - Combat illegal transport activities, maintaining a level playing field for legitimate providers.

3. **Maintenance and Infrastructure Protection:**
   - Enforce weight and size limits on commercial vehicles to protect transport infrastructure from undue wear and damage.
   - Secure infrastructure against vandalism, theft, or sabotage, collaborating with relevant authorities.

4. **Road Safety and Security:**
   - Enforce speed limits, alcohol and drug regulations, and other rules to reduce accidents and fatalities.
   - Conduct public awareness campaigns to educate citizens on safe travel practices and emergency procedures.
   - Ensure the security of travellers by addressing crimes within the transport system.

5. **Collaboration and Integration:**
   - Facilitate effective collaboration between law enforcement, transport agencies, and stakeholders through joint planning and shared communication platforms.
   - Contribute data and insights from operations to support transport planning and policy development, fostering a data-driven approach to system improvement.

Through these roles, law enforcement agencies contribute significantly to the functionality and safety of the CITP, ensuring a seamless and secure transport experience for all people in George.

11.10.6 Components for Law Enforcement Strategy:

The following elements are commonly found within law enforcement strategies in various cities' Comprehensive Integrated Transport Plans (CITPs) and are equally relevant for George.


1. **Policy Framework**: Develop a clear policy framework that outlines the objectives, principles, and strategies guiding law enforcement efforts in public transportation safety and security.
2. **Risk Assessment**: Conduct thorough risk assessments to identify and prioritise safety and security risks within the public transportation system, including potential threats such as vandalism, theft, assaults, and terrorism.
3. **Stakeholder Engagement**: Collaborate with relevant stakeholders, including law enforcement agencies, public transport operators, regulatory bodies, and community organisations, to establish effective partnerships and enhance coordination in addressing safety and security challenges.
4. **Capacity Building**: Provide training and capacity-building programs for law enforcement personnel, public transport staff, and other relevant stakeholders to equip them with the necessary skills and knowledge to effectively enforce safety and security measures.
5. **Deployment Strategies**: Develop deployment strategies for law enforcement resources, including police officers, transit security personnel, and surveillance technologies, to ensure optimal coverage and response to safety and security incidents in public transportation.
6. **Technology Integration**: Utilise advanced technologies, such as CCTV cameras, facial recognition systems, and real-time monitoring platforms, to enhance surveillance, deterrence, and response capabilities in public transportation settings.
7. **Community Policing**: Implement community policing initiatives to foster trust and collaboration between law enforcement agencies and the public, encouraging community members to actively participate in crime prevention and reporting efforts.
8. **Regulatory Enforcement**: Enforce compliance with regulatory requirements, such as fare payment regulations, vehicle safety standards, and passenger conduct rules, to maintain order and safety in public transportation operations.
9. **Data Analysis and Performance Evaluation**: Collect and analyse data on safety and security incidents in public transportation to identify trends, assess the effectiveness of law enforcement interventions, and inform evidence-based decision-making for continuous improvement.
10. **Public Awareness and Education**: Launch public awareness campaigns and educational initiatives to inform passengers about safety and security measures, emergency procedures, and reporting mechanisms, empowering them to contribute to their own safety and that of others while using public transportation.

By incorporating these components into the Law Enforcement Strategy as part of the Comprehensive Integrated Transport Plan (CITP), George Municipality can effectively address safety and security challenges in public transportation, enhancing the overall quality and reliability of the transportation system for its residents and visitors.

11.10.7 ITS Tools in PuT Law enforcement

Intelligent Transportation Systems (ITS) technologies provide advanced tools for enhancing traffic and public transport law enforcement. Law enforcement officers and agencies commonly utilise the following types of ITS technologies:

1. **Automatic Number Plate Recognition (ANPR) Systems**: Capture and analyse vehicle license plates to identify registration details, aiding in tracking stolen vehicles and traffic violations.
2. **Closed-Circuit Television (CCTV) Cameras**: Monitor traffic conditions, detect incidents, and provide real-time data for enforcement actions against violations or unauthorised transport operations.
3. **Speed Detection Devices**: Radar and laser guns measure vehicle speeds, assisting in enforcing speed limits and identifying speeding violations.
4. **Red Light Cameras**: Detect vehicles running red lights at intersections, facilitating automated ticketing for red-light violations.
5. **Electronic Ticketing Systems:** Handheld devices allow officers to issue electronic citations on the spot, improving penalty enforcement efficiency.
6. **GPS Tracking:** Leverage real-time location data from the GO GEORGE bus system, a formalised scheduled public transport service, to monitor route adherence and facilitate rapid emergency response. As minibus taxis integrate into scheduled services with tracking technology, apply the same real-time data for enhanced monitoring and operational efficiency.
7. **Weigh-in-Motion Systems:** Measure vehicle weights to identify those exceeding limits and potentially damaging infrastructure or posing safety risks.
8. **Incident Detection Systems:** Quickly identify accidents or breakdowns to enable swift law enforcement and emergency response.
9. **Vehicle-to-Everything (V2X) Communication:** Allows vehicles to communicate with each other and roadside infrastructure, providing data on traffic conditions and incidents.
10. **Data Analytics and Management Software:** Analyse data from various ITS technologies to offer insights into traffic patterns, violations, and enforcement strategies' effectiveness.

Intelligent Transport Systems (ITS) technologies enable law enforcement agencies to enhance regulation enforcement, improve road safety, and reduce congestion. By leveraging ITS infrastructure provided by other entities, law enforcement can access critical data, utilise technology within a Transport Management Centre (TMC), and integrate these tools with existing enforcement systems for more effective operations.

11.10.8 Aspects for Public Transport Law Enforcement Strategy

11.10.9 Traffic Law Enforcement Strategies

The strategies, targets and institutional framework as below are aimed at facilitating a well-managed and efficient transport system.

1. **Compliance Checks:**

- Conduct regular inspections to ensure transport operators adhere to operating license terms, including vehicle safety standards and driver qualifications.
- Monitoring and Surveillance: Utilise technology and personnel to monitor transport activities, identify violations, and gather evidence for enforcement.
- Enforcement Actions: Implement penalties for non-compliance, including fines, license suspensions, or criminal prosecution.
- Public Awareness Campaigns: Educate operators and the public about regulations to foster compliance and cooperation.

2. **Targets:**

- Unlicensed Operators: Identify and penalise operators without valid licenses or operating outside licensed parameters.
- Vehicle Fitness: Ensure public transport vehicles meet safety and environmental standards through routine maintenance checks.
- Driver Conduct: Monitor drivers for adherence to traffic laws, professional conduct, and proper licensing.
- Route Adherence: Verify transport services operate within designated routes and schedules to maintain system integrity.

3. **Institutional Requirements:**

- Regulatory Body: Establish or enhance an authority to oversee transportation laws enforcement, such as the OLS.
- Coordination Mechanism: Develop collaborative frameworks for agencies to coordinate enforcement efforts effectively.
- Training and Capacity Building: Provide ongoing training for law enforcement personnel on regulations, techniques, and technologies.
- Data Collection and Analysis: Implement systems to collect and analyse enforcement-related data for decision-making.
- Performance Evaluation: Establish metrics to evaluate enforcement effectiveness, including compliance rates and reduction in violations.

By implementing the above strategies, targets, and institutional frameworks, municipalities can enhance the efficacy of their Operating License Strategy, ensuring safe, reliable, and compliant transport services.

11.10.10 Conclusion

In conclusion, the Law Enforcement Strategy outlined for George's Comprehensive Integrated Transport Plan (CITP) is a demonstration to the municipality's commitment to creating a safer, more efficient, and responsive transport system. The strategy's multifaceted approach spans various critical aspects, including public safety, traffic management, crime prevention, emergency response, and community engagement, all aimed at fostering a secure and orderly transport environment.

The detailed articulation of law enforcement's vital roles and specific needs within the George CITP underscores the indispensable function of law enforcement agencies in safeguarding the municipality's transport infrastructure and users. Through rigorous enforcement of traffic regulations, proactive crime prevention measures, and effective emergency response protocols, these agencies are pivotal in reducing incidents, enhancing public trust, and promoting a culture of safety and compliance.


With the delineation of roles of law enforcement agencies within the integrated transport system, it is clear that their contributions are crucial across various domains, from ensuring operational compliance of transport services to protecting infrastructure and improving road safety. Their collaborative efforts with transport authorities, community stakeholders, and other law enforcement bodies are essential for the cohesive execution of the CITP's objectives, illustrating a comprehensive approach to transport system management and safety.

11.11 Transport Strategy to Support Tourism

11.11.1 Context

George Municipality, nestled at the heart of the Garden Route, holds a unique position in South Africa's Western Cape Province. George is known for its breathtaking landscapes, diverse ecosystems, and rich cultural heritage. The region's strategic location, with its proximity to major transport routes, including the N2 highway and George Airport, presents a substantial opportunity to leverage tourism as a catalyst for sustainable economic development and social cohesion. In recent years, tourism has emerged as a vital component of the local economy, attracting visitors from across the globe to its renowned golf courses, pristine beaches, and adventure tourism activities. However, the global shift towards sustainable and responsible tourism, accentuated by the recent challenges posed by the COVID-19 pandemic, necessitates a re-evaluation of tourism and transport strategies to ensure resilience, inclusivity, and sustainability.

The Western Cape, including George Municipality, has experienced significant growth in international and domestic tourism, as evidenced by recent data from Cape Town International Airport (CTIA) and George Airport. Between January and July 2023, CTIA reported a 69% increase in international two-way passengers, reaching 1.6 million, surpassing pre-pandemic levels by 106%. The two-way passengers for George Airport, being only a domestic airport at this moment, reached 449 837 between January and July 2023. Compared with the same period in 2022, a 3% year-on-year increase was realised. This growth in both airports underscores the Western Cape's recovery and expansion in the tourism sector, setting a positive outlook for George's local tourism and hospitality industry (Western Cape Government, 2023).

Tourism continues to be a cornerstone of the Western Cape's economy, with substantial contributions to both GDP and job creation. In 2022, the arrival of 605,000 foreign passengers injected R24.3 billion into the regional economy, supporting over 10,600 jobs. This financial injection equates to R2.1 million in direct tourism spend per 100 international visitors, alongside supporting the movement of R1.4 million worth of air cargo for the province. Such statistics highlight the critical role of tourism in economic development, job creation, and the broader objective of achieving a jobs-rich and inclusive provincial economy (Western Cape Government, 2023).

Recognising the transformative impact of tourism, strategic initiatives aim to attract an increasing number of both domestic and international visitors to the Western Cape. Efforts are focused on marketing the region's diverse attractions, from natural beauty and adventure tourism to cultural experiences, ensuring there's


something for every visitor. This mission aligns with the Western Cape Government's 'Growth for Jobs' economic action plan, striving for a R1 trillion provincial economy by 2035 and promoting prosperity for all (Western Cape Government, 2023).

Figure 11-9 depicts the Western Cape Province's Landscape and Scenic Assets, where the main attractive areas around George may be seen, indicative of where typical tourism would take place.

11.11.2 Focus

The focus of the George Local Municipality Tourism Strategy is to harness the region's unique attributes and transport infrastructure in fostering a sustainable, inclusive, and innovative tourism sector. Key objectives include enhancing the visitor experience through improved accessibility and mobility, promoting George as a premier eco-tourism and adventure tourism destination, and integrating local communities and businesses into the broader tourism economy. The strategy seeks to not only augment the economic benefits of tourism but also to preserve the environmental integrity and cultural heritage of the region, ensuring a balanced approach that benefits residents and visitors alike.

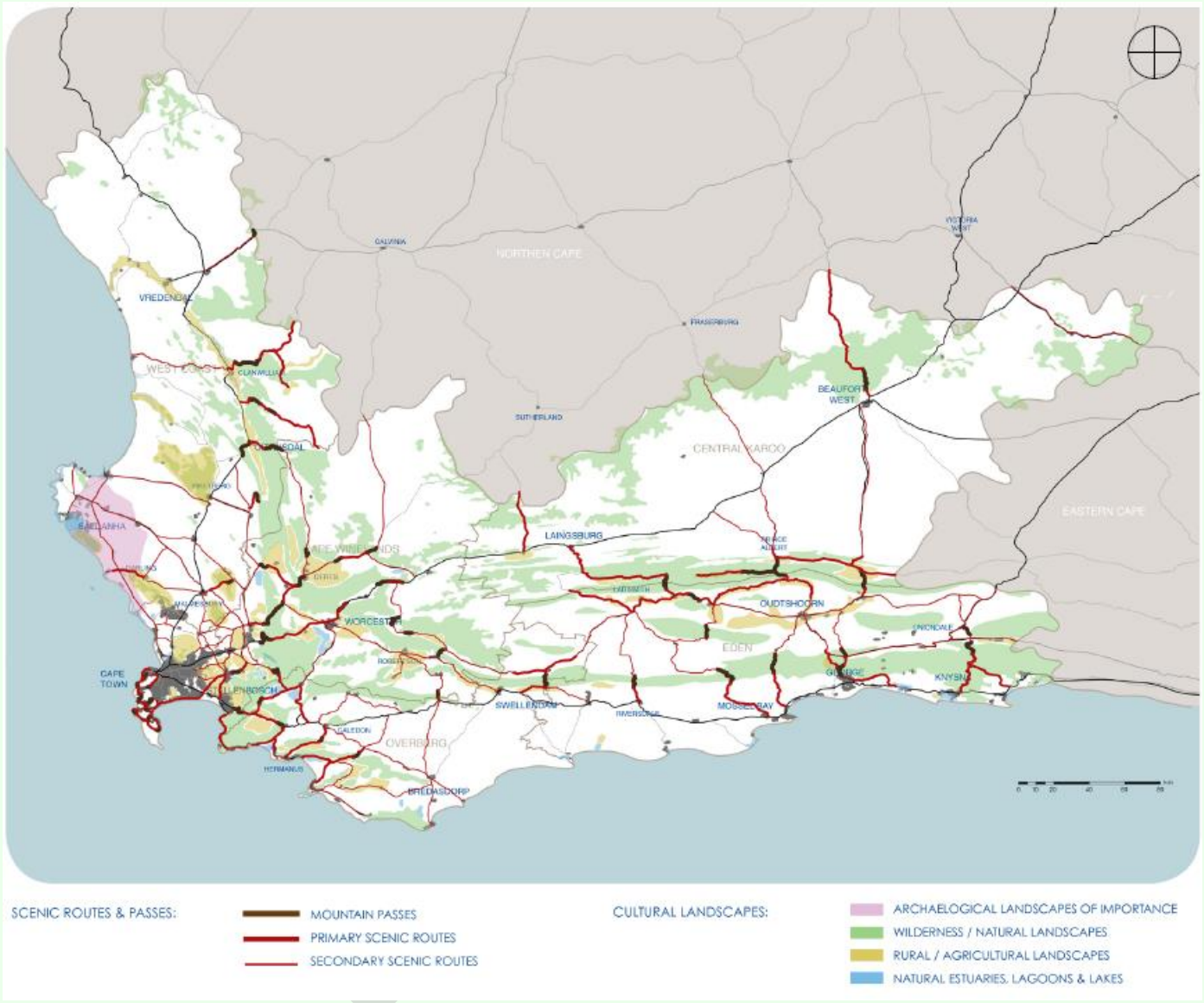

Figure 11-9: Western Cape Province - Landscape and Scenic Assets as Informed by Geological Features and GIS Database compiled by Oberholzer and Winter for Specialist Study (2013) as referenced in the WCG SDF (Western Cape Government, 2014).

11.11.3 Purpose of Tourism

The purpose of developing tourism within George Municipality is multi-dimensional, aiming to achieve a balance between driving economic prosperity, fostering social inclusivity, preserving cultural heritage, and ensuring environmental sustainability. This strategy is built upon the following core objectives:

- **Economic Development**: To stimulate sustainable economic growth and diversification by leveraging the tourism sector as a key economic driver. This includes creating employment opportunities, supporting local enterprises, and enhancing the competitiveness of the tourism sector at both national and international levels.
- **Social Inclusion and Equity**: To ensure that the benefits of tourism development are broadly shared across all segments of the community, including marginalised and disadvantaged groups. This involves promoting equitable access to tourism-related opportunities and fostering a sense of ownership and pride within local communities.
- **Cultural Preservation**: To celebrate and safeguard the rich cultural heritage of George Municipality by integrating cultural tourism into the broader tourism offering. This includes supporting traditional arts and crafts, showcasing local history and heritage sites, and providing platforms for cultural exchange and understanding.
- **Environmental Stewardship**: To champion responsible and sustainable tourism practices that protect and enhance the natural environment. This encompasses promoting eco-tourism, minimising the carbon footprint of tourism activities, conserving biodiversity, and ensuring the sustainable use of natural resources.
- **Innovation and Adaptability**: To embrace innovation in tourism management and marketing, ensuring that George Municipality remains adaptable and resilient in the face of changing tourism trends and global challenges, including health pandemics and climate change.

The Key Performance Indicators (KPIs) identified in measuring the success of the tourism strategy in achieving these objectives, including:

- Increase in tourism-related employment.
- Growth in the number of local businesses benefiting from tourism.
- Visitor satisfaction rates.
- Levels of community engagement and participation in tourism activities.
- Improvements in the conservation status of key natural and cultural heritage sites.
- Reduction in the environmental impact of tourism activities.

11.11.4 Legislation and Policies

The tourism strategy for George Municipality is anchored in a comprehensive legal and policy framework that encompasses local, national, and international directives. This framework ensures that tourism development is sustainable, responsible, and aligned with broader societal goals. Key legislation and policies include:

- **National Development Plan 2030 (NDP)**: Aligns with the NDP's vision for promoting inclusive economic growth and employment through tourism. Also, the NDP recognises tourism as one of the main drivers of South Africa’s economy and of employment.


- **National Tourism Sector Strategy (NTSS) 2016-2026**: Guides the sustainable growth of tourism at a national level, emphasising environmental integrity, social responsibility, and economic inclusivity.
- **Integrated Urban Development Framework 2016 (IUDF)**: Encourages cohesive urban development that supports tourism and enhances connectivity between tourism sites and transport infrastructure.
- **George Municipality Integrated Development Plan (IDP)**: Includes tourism as a key component of local economic development, emphasising community benefits and sustainable practices.
- **Garden Route and Klein Karoo Regional Tourism Strategy**: Focuses on regional collaboration to promote tourism within the broader geographical area, leveraging the unique selling points of each municipality.

The strategy also considers legislation related to transport, environmental management, and cultural heritage protection, ensuring a holistic approach to tourism development. These include:

- **National Land Transport Act (NLTA)**: Regulates the provision of integrated, efficient, and sustainable transport services, which are crucial for tourism.
- **National Environmental Management Act (NEMA)**: Ensures that tourism development is environmentally responsible and supports biodiversity conservation.
- **Heritage Resources Management**: Complies with national and provincial legislation protecting cultural and heritage sites, integrating them into tourism offerings while ensuring their preservation.

This legal and policy framework provides the structure within which the George Local Municipality Tourism Strategy operates. It ensures that tourism development is not only aligned with broader economic and social goals but also contributes positively to the community, the environment, and the overall visitor experience.

11.11.5 Current Tourism in George

George Municipality, a key player in the Garden Route's tourism landscape, boasts a diverse array of attractions, ranging from natural beauty and outdoor activities to cultural and heritage sites. The municipality's strategic location, mild climate, and developed infrastructure position it as an appealing destination for both domestic and international tourists.

11.11.5.1 Tourism Offerings and Infrastructure

- **Natural Attractions**: Includes the Outeniqua Mountains, pristine beaches, and the Wilderness National Park, catering to nature lovers, hikers, and adventure seekers.
- **Golf Courses**: George is renowned for its world-class golf courses, including Fancourt and Oubaai, attracting golf enthusiasts from around the globe.
- **Cultural and Heritage Sites**: Features a rich tapestry of cultural experiences, from the George Museum showcasing local history to historical landmarks like the Montagu Pass.
- **Transport Infrastructure**: Benefiting from comprehensive transport links, including the George Airport, national highways, and local public transport services, facilitating ease of access for visitors.


11.11.5.2 Visitor Profiles

A mix of domestic and international tourists, with a notable increase in family and adventure tourism segments.

A growing interest in eco-tourism and sustainable travel experiences among visitors.

11.11.5.3 Economic Impact

Tourism is a significant contributor to the local economy, generating revenue and creating employment opportunities in various sectors, including hospitality, retail, and transport.

The sector's resilience is challenged by external factors such as economic fluctuations and environmental concerns.

11.11.5.4 Tourism Needs

Some of the tourism needs, as identified in **Chapter 4**, are listed in this section:

- There is no tourism rail service operational, and needs to be expanded between Mossel Bay, George and Knysna.
- Limited public transport options and integration, impacting accessibility and mobility. PuT services should be expanded and integrated and consideration given to rail network, as well as enhancing the GO GEORGE service.
- Need for integrated planning across the Eden District Municipal level. Strategies should be developed for integrated transport planning incorporating the Port, Airport, Agriculture, and Tourism sectors.
- Ensure that drivers represent GM positively and act as tourism ambassadors, and a list of these competency requirements are included in the Metered Taxi Strategy in **Section 6.5.4.3**.

SWOT Analysis

- **Strengths**: Diverse tourism offerings, strong transport infrastructure, established reputation as a golfing destination, and natural beauty.
- **Weaknesses**: Seasonality of tourism flows, underdeveloped rural tourism offerings, reliance on traditional markets.
- **Opportunities**: Expansion into new tourism markets (e.g., health and wellness, cultural tourism), leveraging technology for enhanced visitor experiences, and development of sustainable tourism practices. Also, expansion of PuT services to better cater for tourists.
- **Threats**: Environmental sustainability challenges, global economic uncertainty impacting tourist arrivals, and competition from other destinations.

This analysis underscores the need for a strategic approach to harness George's existing tourism assets while addressing areas of weakness and capitalising on emerging opportunities. The aim is to foster a resilient, sustainable, and inclusive tourism sector that contributes to the municipality's economic development and environmental conservation efforts.

11.11.6 Guiding Principles

The George Local Municipality Tourism Strategy is underpinned by a set of core guiding principles that ensure the alignment of tourism development with the municipality's vision for a sustainable, inclusive, and prosperous future. These principles serve as the compass for decision-making and strategic action within the tourism sector:

- **Sustainability**: Commitment to environmentally responsible tourism practices that preserve George's natural and cultural heritage for future generations. This includes promoting eco-tourism, reducing the carbon footprint of tourism activities, and ensuring the sustainable management of resources.
- **Inclusivity**: Ensuring that the benefits of tourism are equitably distributed across all communities within George Municipality. This involves enhancing access to tourism-related opportunities for historically marginalised groups, fostering community participation in tourism planning and development, and creating inclusive experiences for all visitors, including those with disabilities.
- **Innovation**: Embracing technological advancements and innovative approaches to tourism marketing, management, and service delivery. This principle encourages the adoption of digital solutions to enhance visitor experiences, improve operational efficiency, and foster a culture of continuous improvement and adaptability in the face of changing market dynamics.
- **Collaboration**: Fostering strong partnerships among all tourism stakeholders, including government, the private sector, local communities, and non-profit organisations. Through collaborative efforts, the strategy aims to leverage collective expertise and resources to achieve shared objectives, enhance the quality of tourism offerings, and address common challenges.
- **Quality and Excellence**: Striving for the highest standards in all aspects of tourism services and experiences. This principle underscores the importance of maintaining exceptional quality in accommodations, attractions, and customer service to enhance George's competitiveness as a tourism destination.
- **Education and Awareness**: Promoting education and awareness about the value of tourism and its impact on economic, social, and environmental well-being. Initiatives under this principle aim to build local capacity, encourage responsible travel behaviours among visitors, and foster a deeper appreciation for George's unique tourism assets.

By adhering to these guiding principles, the George Local Municipality Tourism Strategy aims to create a vibrant, competitive, and sustainable tourism sector that contributes to the overall well-being of the municipality and its residents.

11.11.7 Strategy

The George Local Municipality Tourism Strategy outlines a comprehensive approach to strengthen and expand the tourism sector. It is structured around four strategic pillars: Destination Development, Marketing and Promotion, Sustainable Tourism Practices, and Stakeholder Collaboration. Each pillar comprises specific goals and initiatives aimed at enhancing George's appeal as a premier tourism destination. The strategy in terms of objectives, initiatives and key actions is presented in **Table 11-5**.

Table 11-5: George Local Municipality Tourism Strategy within the CITP context.

No	Strategic Pillar	Objective	Initiatives	Key Actions
1	**Destination Development**	Enhance and diversify George's tourism offerings and improve infrastructure and visitor experiences.	- Develop and upgrade tourism infrastructure. - Promote new attractions focusing on cultural, adventure, and eco-tourism. - Support local businesses in creating unique tourism products.	- Signage, visitor information centres, and public amenities upgrade. - Encourage local entrepreneurship in tourism. - Identify and develop new attractions and activities.
2	**Marketing and Promotion**	Market George as a dynamic and attractive destination to both domestic and international audiences.	- Implement a digital marketing strategy. - Participate in tourism fairs and expos. - Collaborate with travel influencers and media.	- Develop social media campaigns and online advertising. - Showcase George at national and international events. - Engage influencers for destination promotion.
3	**Sustainable Tourism Practices**	Ensure the tourism sector's sustainability, balancing economic growth with environmental conservation and community well-being.	- Promote green practices among tourism businesses. - Educate visitors on responsible tourism. - Manage visitor impacts on natural and cultural sites.	- Training for businesses on sustainability practices. - Visitor education programs. - Monitoring and management plans for key sites.
4	**Stakeholder Collaboration**	Foster collaboration among all tourism stakeholders for enhanced coordination and leveraging synergies.	- Establish a Tourism Advisory Board. - Facilitate stakeholder forums and workshops. - Partner with educational institutions for tourism education.	- Formation of the advisory board. - Regular forums for sharing insights and challenges. - Develop partnerships with local educational institutions for workforce development.
	Enabling Environment	Leverage transport as a catalyst for tourism growth and broader economic opportunities.	- Enhance transport connectivity to key tourist destinations. - Develop multimodal transport options for tourists. - Foster partnerships with transport providers for integrated tourism experiences.	- Assess and improve road, air, and public transport links to tourist sites. - Promote car rental, cycling, and shuttle services. - Collaborate with transport providers on tourist packages and discounts.


Part of the aforementioned strategy included in **Table 11-5**, is creating an Enabling Environment which includes the provision of transport that is accessible for tourists, as well as providing mobility for them, and giving access to various tourist locations. Getting a commuter rail operational between Mossel Bay, George, Wilderness and Knysna can be very beneficial for the tourism industry. This will not only assist in serving daily commuters by rail, but also create a sustainable way of transport for tourists.

One of the challenges and trade-offs that should be considered is that travel times might be longer for rail, yet more cost-effective, while travelling by road to certain destinations might have lower travel times yet be less cost effective. None-the-less, mixing commuter and with tourist rail can be a sustainable option that should be considered, and the addition of freight will also be beneficial, thereby creating multifunctional station infrastructure. This will most likely need to be realised via Public-Private Partnerships (PPPs).

Part of this strategy to ensure and accessible rail network within the Garden Route District Municipality is that stations that have become dilapidated should be upgraded, as some have even been used for other purposes after the commuter rail has stopped to operate. Also, new train stations should be identified as to ensure accessibility for tourists and access to the tourist attractions. From a tourist perspective, rail sidings also need to be identified. The rail transport strategy should include consideration for tourist.

Parking is also a key consideration for tourists, as many tourists may require parking at various locations, and finding that balance between PrT and PuT remains a key consideration. This becomes especially important in light of peak-seasons as well as large events like expos, sports events, and any other special events. Even creating space for park-and-ride facilities can be helpful, thereby promoting PuT and NMT, but it is important that these locations should be safe, and also give access to the GIPTN. Alternatives to PrT should be provided at the key tourist destinations.

Additionally, accessibility to and from the airport is also a key consideration and PuT links in terms of rail and the GIPTN, as the airport might play a larger role in the future in terms of tourism if this becomes an international airport, and even local visitors wanting to visit the Garden Route District for a few days.

An ideal future would have an integrated transport system to such a level that tourists would be able to reach all the tourist destinations without the need for PrT or hiring a vehicle. Even having a link to the rail from the Mossel Bay Port would enable visitors travelling via sea transport to gain access to the larger integrated transport system.

Implementation and Monitoring

The Tourism Strategy should be supported by a detailed action plan, outlining specific projects, responsible parties, timelines, and performance indicators.

A monitoring and evaluation framework should be established to regularly assess progress against strategic objectives, allowing for adjustments and improvements to ensure the strategy's effectiveness.


11.12 Institutional Arrangements

11.12.1 Introduction

Covering an area of 5,191 square kilometres, the municipal district stretches across the Southern Cape and Little Karoo in the Western Cape Province. Located midway between Cape Town and Port Elizabeth, the region overseen by the George Municipality is a constituent of the broader Garden Route District Municipality. The city of George serves as the main urban hub within the Municipality, accommodating 84% of the area's residents. The towns of Wilderness, Uniondale, and Haarlem are home to the majority of the remaining urban populace. In contrast, the rural community constitutes 9% of the municipal area's population.

The city of George has a population density of 43 people per square kilometre. As of 2021, the population stood at 221,637, with the Western Cape Government estimating a slight increase to 225,971 in 2025. However, the latest figures as of February 2022 suggest a population of 294,929 across 85,931 households, which was initially unexpected but is now accepted as a more accurate count.

George has emerged as the largest municipality in the Western Cape, excluding Cape Town, according to recent census data. Since 2011, the population has been growing at an annual rate of 4.1%, which is reportedly the highest among South Africa's 19 intermediate cities. This growth has allowed George to surpass Drakenstein, becoming the largest intermediate city in the Western Cape and the most populous area in the Garden Route District. The number of households has seen a significant increase from 53,549 to 85,931. With this trend, George's population is expected to continue growing at an annual rate of 4.1%.

In response to these growth trends, a municipality must adapt by establishing the right institutional frameworks. In the context of the CITP, these structures are essential for managing, implementing, and operating the necessary integrated transport systems to meet increasing demands.

11.12.1.1 Context

Integrating transportation planning and structuring within a municipality or city is critical for several interrelated reasons that touch upon the development of transport networks, efficiency of transport systems, funding, stakeholder collaboration, and overall institutional efficacy. It is crucial for effective urban mobility. It ensures the development of comprehensive transport networks that support economic activities and meet residents' needs. An integrated approach optimises multimodal transport, improving system efficiency and resource allocation.

Adequate funding is vital, and integrated planning allows for targeted investment in sustainable projects. This strategic use of funds draws on a mix of financing avenues, ensuring long-term infrastructure viability. Collaboration with stakeholders is imperative to align transport initiatives with broader urban objectives. It ensures community needs and economic development plans are considered in transport strategies.

At the institutional level, clarity in structure and operation is non-negotiable. Clear institutional structures provide accountability and streamline operations across transport-related departments. This is necessary to adapt to rapid changes in technology, policy, and public demands, ensuring responsive and flexible transportation systems. In essence, the integration of transportation planning is not just a


technical necessity; it is a strategic approach that positions the city to serve its constituents with an eye on the future, leveraging the full potential of its transport network to enhance economic vitality, environmental sustainability, and the overall quality of urban living.

Central to the philosophy of integrated transport is the principle of efficiency. It's not just about the swiftness of travel but about optimising the entire spectrum of the city's transport infrastructure. This approach promises judicious use of resources, marrying transport services with user demand to forge a network that is not only efficient but also cost-effective. It's a method that encourages a shift towards sustainable and high-capacity options, particularly in dense urban thoroughfares where the pulse of city life beats the strongest.

This includes detailing the communication and liaison mechanisms that coordinate the planning efforts with the municipality's other responsibilities and those of other involved stakeholders.

11.12.1.2 The Department of Transport's Comprehensive Integrated Transport Plan (CITP) Minimum Requirements.

The Department of Transport's Comprehensive Integrated Transport Plan (CITP) Minimum Requirements outline necessary institutional aspects as follows:

- There should be a clear description of the institutional and organisational structures that influence the functioning of the planning authority. This includes the communication and liaison mechanisms that coordinate the planning efforts with the municipality's other responsibilities and those of other involved stakeholders.
- An outline of the public transport industry's organisational setup is required, including detailed information on the composition of the bus, minibus-taxi, and metered taxi industries. This detail should encompass:
- The names of companies or associations.
- The fleet sizes and types they manage.
- The specific areas or corridors where they provide services.
- The plan should also establish a "network authority" responsible for managing and regulating both contracted and non-contracted public transport networks and their fare systems.
- As part of the Operating License Strategy (OLS), it is essential to describe law enforcement strategies. This should cover institutional arrangements, how they integrate with traffic law enforcement, and the methodology for setting targets and evaluating performance.

In large organisations like the City's, there's a risk of departments and divisions operating in isolation, commonly referred to as working "in silos," with minimal interaction among them. However, the Minimum ITP Requirements mandate that the George should develop an Integrated Public Transport Network (IPTN) to ensure all public transport modes and services work together seamlessly.

Furthermore, Section 17 of the National Land Transport Act (NLTA) stipulates that if the George should take on the operating licensing function, becoming a Municipal Regulatory Entity (MRE), it must create a dedicated division within its administration to handle this role. The Act also requires the George to restructure its administration, if necessary, to combine the management and funding of transport matters and land use planning with the other related functions it outlines, ensuring a cohesive approach.


11.12.2 Institutional Framework

The primary objective of this chapter is to outline an appropriate regulatory framework based on the minimum requirements as indicated in the National Land Transport Strategic Framework (NLTSF) (2023 - 2028) for the intuitional components that supports urban and transport planning responsibilities for George Municipality.

11.12.2.1 Collaborative Intergovernmental Relations

Chapter 3 of the Constitution mandates cooperative governance, ensuring that the three tiers of government collaborate effectively in delivering public transport solutions within the city's jurisdiction. Such cooperation is grounded in mutual trust and good faith, aiming to pre-empt disputes whenever possible, as outlined in the Intergovernmental Relations Framework Act 13 of 2005 (IGRFA). Section 41 of the Constitution and Section 45 of the IGRFA emphasise that legal actions between government entities should be a last resort, pursued only after specific procedures are adhered to. The IGRFA further provides guidelines for resolving intergovernmental disputes and for drafting agreements or protocols among different government levels, including a standard agreement template.

According to Section 19 of the National Land Transport Act (NLTA), regions experiencing significant transport exchanges across municipal boundaries are encouraged to form an inter-municipality forum as per the IGRFA or establish a multi-jurisdictional service utility under the Municipal Systems Act. Additionally, Section 12(2) of the NLTA allows neighbouring municipalities to collaborate on joint function execution or to create a municipal entity for this purpose under the Municipal Systems Act.

Furthermore, Section 16 of the NLTA provides the foundation for establishing an intermodal planning committee, which includes the designated technical officials and representatives from rail operators, other public transport modes, users, and organised business. The committee's primary function is to coordinate public transport across different modes and facilitate the achievement of key objectives identified in the Chapter 8 Transport Demand Management (TDM) strategy.

In the context of the Western Cape Government, and particularly within the jurisdictions of George Municipality and the Garden Route District Municipality, such collaborative structures should typically be established to address shared transportation, environmental, or developmental challenges, enhancing regional coordination and service delivery.

11.12.2.2 Delegation and Distribution of Governmental Responsibilities

The Constitution and the National Land Transport Act (NLTA) clearly define how responsibilities related to transportation are distributed among various levels of government. These legal frameworks enable the shifting of certain national tasks to the provincial or municipal tiers and allow for the transition of duties from provincial to municipal authorities. The essence of the NLTA and Constitution is to ensure land transport obligations are shared across all governmental spheres, fostering a collaborative approach. The national level typically manages operating licenses and serves as the contracting authority for a range of transport service contracts. Meanwhile, local governments, including municipalities, have the autonomy to establish new contractual agreements within this arena.

Under the guidance of the NLTA and the Local Government: Municipal Systems Act of 2000, the Minister is empowered to assign specific responsibilities to provinces or municipalities. This mechanism is designed to consolidate transport-related functions at the municipal level, thereby reducing the existing functional dispersion.

In instances where a province has been performing a specific transport function since the enactment of the NLTA on December 8, 2009, it will maintain that role unless the Minister decides to transfer the responsibility to a municipality. Upon such reassignment, the municipality gains complete and lasting accountability for that function, a process distinct from devolution where the delegating authority may revoke the function.

11.12.2.3 Minimum requirements in terms of the National Land Transport Strategic Framework (NLTSF)

An Institutional framework emphasises the need for professionalisation, coordination, and data-driven decision-making across all levels of government to foster a comprehensive integrated transport system. It advocates for integrated planning, collaboration, capacity building, information system enhancement, and sustainable funding to support the transport infrastructure and services essential for economic and social development.

Table 11-6 offers a detailed overview of the institutional components, outlining their respective purposes and requirements within the context of the Comprehensive Integrated Transport Plan (CITP) framework for George Municipality.

Table 11-6: Institutional Components of the Institutional Framework

No.	Institutional Components	Responsibility/ Purpose	Requirements
1	**Institutional Management**	Focuses on enhancing capacity building, intergovernmental relations, and transport information systems to develop and manage an integrated transport system with skilled professionals.	A professional organisation is necessary, with expertise in transportation's diverse aspects. Clear roles and coordination, along with continual training and development, ensure staff remain current with industry standards.
2	**Institutional Arrangements**	Stresses the importance of coherent policies and unified planning to address the fragmentation of planning responsibilities and prevent service supplier bias.	A framework that aligns strategies across government levels is essential. It must integrate planning with development and provide flexible regulations adaptable to new trends.
3	**Capacity Building**	Aims to increase the number of professionally registered personnel and professionalise entities like the National Public Transport Regulator.	Increasing the quality and quantity of transport professionals through certification and development, while sharing resources across regions, addresses capacity constraints.
4	**Intergovernmental Relations**	Requires coordination across all government levels for effective policy and legislation implementation, facilitated by acts like the Intergovernmental Relations Framework Act.	Frameworks that provide mechanisms for cooperation ensure alignment with government objectives and coherent decision-making for transport systems.
5	**Transport Information Systems**	The development of a land transport information system is critical for planning and operations, aiming for a well-informed transport authority.	Functional information systems are needed for analysing transport-related data, with investments in technology and data management for informed decision-making.
6	**Funding**	Advocates for funding mechanisms aligned with strategic priorities and a life-cycle cost approach for sustainable infrastructure.	Innovative funding through public-private partnerships and user charges, considering the total cost of transport infrastructure over its lifespan for sustainable decision-making.

To leverage the delegation of powers effectively, George Municipality could undertake several steps to bolster its future Comprehensive Integrated Transport Plan (CITP) initiatives:

1. **Assessment and Identification**

   Conduct a thorough review of transport-related functions currently under provincial control that could be more effectively managed at the municipal level.

2. **Stakeholder Engagement**

   Engage in discussions with provincial authorities, community stakeholders, and transport operators to gauge the potential impacts and opportunities of assuming new functions.

3. **Capacity Building**

   Invest in building the necessary administrative, technical, and operational capacity to manage additional functions effectively.

4. **Strategic Planning**

   Integrate the new functions into the municipality's CITP, ensuring they align with broader transport and urban development goals.

5. **Policy Development**

   Develop robust policies and frameworks to guide the execution of newly assumed functions, ensuring transparency, efficiency, and accountability.

6. **Monitoring and Evaluation**

   Establish mechanisms to monitor the performance and outcomes of the delegated functions, facilitating continuous improvement and alignment with the municipality's strategic objectives.

11.12.3 Current Institutional Structure for George Municipality

The institutional structures within George Municipality are currently undergoing a review, and the information presented reflects the existing configurations in place.

11.12.3.1 Political

The Council of George Local Municipality undertakes both legislative and executive roles, focusing on legislation, oversight, and public participation. Executive responsibilities have been transferred to the Executive Mayor and the Mayoral Committee, enabling the Council to concentrate on public debates and political discussions. Beyond their policymaking duties, Councillors engage in community service and various social initiatives within the municipality. The Council consists of 55 members, with 28 directly elected as ward councillors and the remainder appointed based on each political party's vote share.

The political structure of the Council is detailed as follows:

- Political Leadership
  - Executive Mayor
  - Deputy Mayor
  - Speaker of Council
  - Chief Whip
- Mayoral Committee
- Section 80 Committees

  Section 80 committees, also known as Portfolio Committees, are established as enduring parts of the municipality, with each one dedicated to a specific area of municipal operations. These committees are empowered to make decisions on

matters related to their domain and serve an essential advisory function. They provide policy advice and forward recommendations on a range of issues to the Executive Mayor, Portfolios as detailed below:

- Mayoral Committee (Executive Mayor)
- Human Settlements
- Civil Engineering Services (Projects and Budget Facility for Infrastructure (BFI))
- Civil Engineering Services (Operating Aspects)
- Electro-technical Services
- Corporate Services and Human Resources
- Protection Services
- Community Services (Refuse, Environmental and Parks)
- Community Services (Social Development, Sport and Libraries)
- Planning and Development
- Financial and Strategic Services

- Section 79 Committees

Section 79 of the Act specifies that a municipal council has the authority to create one or more committees as needed to enhance the performance of its functions or the execution of its powers effectively and efficiently. Additionally, the council has the discretion to select committee members from among its own ranks.

A Section 79 committee provides reports directly to the council, whereas a Section 80 committee submits its reports to the executive mayor, following the procedures established by the executive committee or the executive mayor.

11.12.3.2 Administrative

Figure 11-10 depicts the administrative framework of George Local Municipality as it stood in 2021.

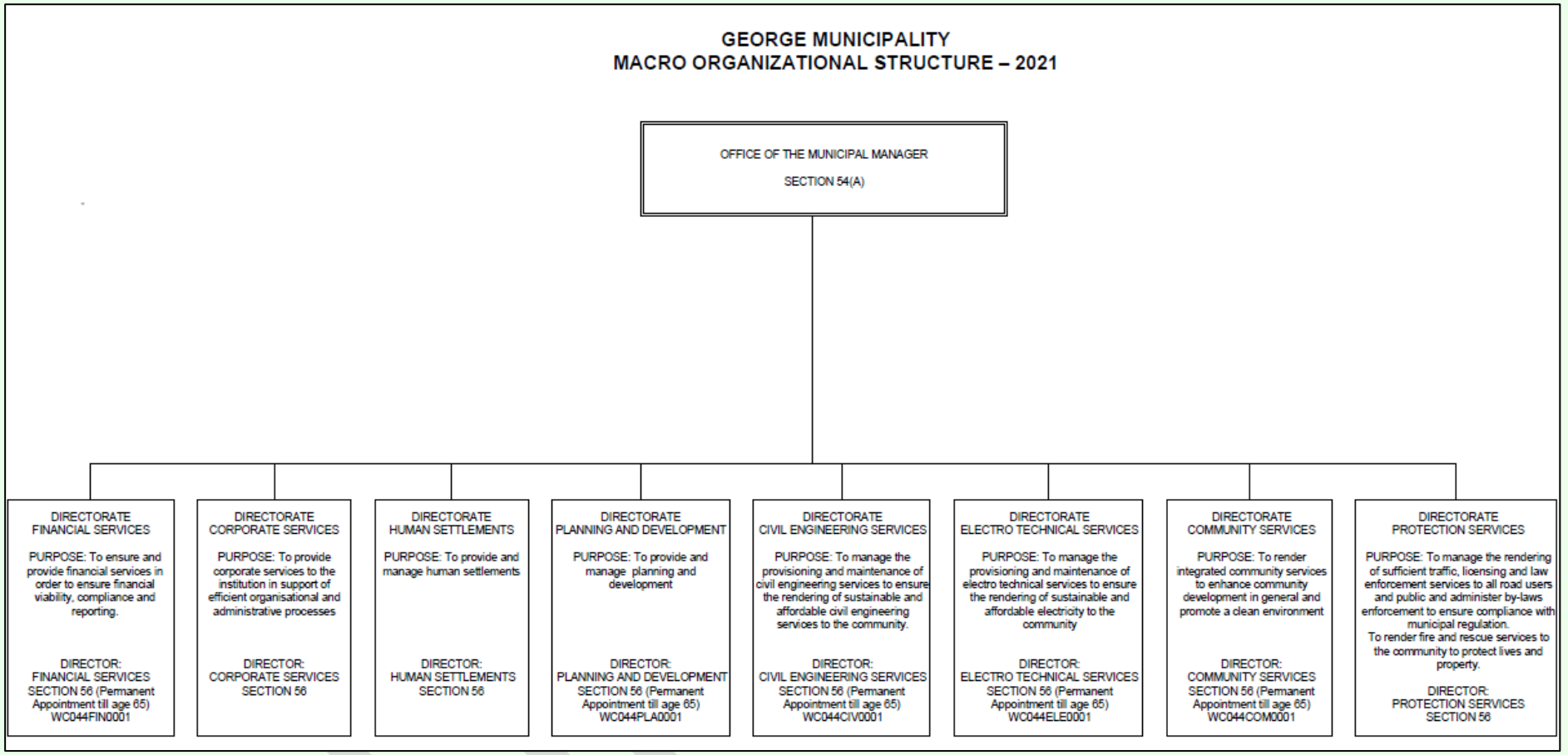

Figure 11-10: George Macro Organisation Structure - 2021.

Table 11-7 illustrates the present administrative framework responsible for overseeing George Local Municipality. The Directorates of Human Settlements and Planning and Development have merged, and the functions of the Directorate Corporate Services have been transferred to the Community Services Directorate.


Table 11-7: GLM Council Administrative Functions and Responsibilities.

No.	Function	Responsibility
1	**Municipal Manager**	Heads the Administration arm of the municipality. The office incorporates the departments Audit, Risk, Communications, and IGR.
2	**Director Financial Services**	Administrates all finance-related services and the Information Technology department.
3	**Director Community Services**	Oversees services pertaining to Parks and Recreation, Environmental Health, Refuse Removal and Waste Management as well as managing Fire and Rescue, Disaster Management, Law Enforcement, Traffic and the Land Invasion Unit.
4	**Director Human Settlements, Planning and Development**	Oversees Town Planning, Spatial Planning and Building Control, Geographic Information Systems (GIS), Environmental Management, Municipal Buildings, the Integrated Development Plan (IDP), Local Economic Development and Tourism. Human Settlements manages housing-related matters including administration surrounding the provincial housing list, subsidy housing and housing projects, and emergency housing.
5	**Director Civil Engineering Services**	Oversees the infrastructure and workings of water, sewerage, roads and storm water as well as GO GEORGE.
6	**Director Electrotechnical Services**	Manages municipal services related to infrastructure and distribution of electricity including high voltage, low voltage, transformers and substations, new infrastructure, street and traffic lights as well as Fleet Management.
7	**Director Corporate Services**	Oversees most of the administrative functions of the municipality including Human Resources, Halls, Registration and administrative support to Council as well as overseeing services including Legal Services, Libraries, Sport Development and Community Development.

A clear observation from the above is that the 'transport' functions are currently not a prominent focus and are only partially addressed through the integration of the GO GEORGE Bus System within the Directorate of Civil Engineering Services.

11.12.4 Institutional Reform for George Local Municipality.

The reform is aimed at enhancing the institutional capacity and arrangements essential for realising the transport vision and objectives outlined in George's Comprehensive Integrated Transport Plan (CITP).


11.12.4.1 General Overview

The "National Land Transport Strategic Framework (2023 - 2028)" provides detailed insights into institutional arrangements necessary for developing a comprehensive and integrated transport system. These arrangements cover various facets essential for coherent planning, implementation, and management of transport systems.

Table 11-8 presents National Land Transport Strategic Framework 2023 -2028 (NLTSF) key performance indicators (KPIs) and specifies the primary areas of implementation for various actions, denoted by the following abbreviations: N (national), P (provincial and metros), Me (metropolitan areas), Mu (municipal), O (other), including organisations like PRASA, SANRAL, and CBRTA.

Table 11-8: NLTSF KPIs along with the primary areas of implementation for various actions, denoted by the following abbreviations: N (national), P (provincial and Metros), Me (metropolitan areas), Mu (municipal), O (other), including organisations like PRASA, SANRAL, and CBRTA. Where more than one government sphere is involved, the "✓✓" mark indicates which sphere has the lead coordinating and monitoring role (National Department of Transport, 2023).

Strategic Element	KPI	Responsibility Matrix				
		N	P	Me	Mu	O
Integrated Land Use and Transport Planning	All Planning Authorities to maintain and update a database of traffic and pedestrian counts	✓✓				
	Update Minimum Requirements for the preparation of PLTFs and ITPs	✓✓				
	All Provinces to update PLTFs to be relevant in this planning period (2023 to 2028)	✓	✓✓			
	All Municipalities to prepare and/or update Comprehensive, District, and Local Municipal ITPs incorporating Public Transport Plans comprising of IPTN, Rationalisation plan, Operating Licence Strategy and any Land Use Plans	✓	✓	✓✓	✓✓	
	Improve Public Transport efficiencies in accordance with the objectives of the Public Transport Strategy through Integrated Rapid Public Transport Networks (IPTN)	✓	✓	✓✓	✓	
Urban Transport	Improved service quality and safety of public transport	✓	✓	✓✓		
	Improve access to main public transport nodes by improved walking links (20min or 1,5km), cycle networks and full cycle implementation programmes (within a radius of 5km) and prioritising NMT		✓✓	✓✓	✓	✓

Strategic Element	KPI	Responsibility Matrix				
		N	P	Me	Mu	O
	Undertake Household Travel Surveys every five years	✓✓	✓			
Universal Accessibility	Improved universal accessibility of public transport networks across all modes of transport, in line with minimum standards and requirements; measured against indicators	✓✓	✓			
	Compliance with minimum standards, the researched development of them and the publication of universal access regulations; for planning, design, construction, and operation	✓✓	✓	✓	✓	✓
	Undertake focused research with universal access passengers every year in order to report on implementation progress, and remedy complaints, as required by the NLTA	✓✓	✓	✓	✓	✓
Rural Transport	Develop actions and measure impact of rural transport interventions on safety and travel time	✓✓				
	Develop a strategic rural road network upgrade and maintenance plan with budgets for rural road network infrastructure upgrades and maintenance	✓	✓✓			
	Establish the rural transport forum at district level	✓	✓✓			
Public Transport	Increase commuting to work trips by public transport and walking.	✓	✓	✓✓	✓	✓
	Implementation of universal design and universal access throughout the IPTN incrementally through an Up-to-Date UDAP, and annual reports	✓	✓✓		✓	
	Increase the proportion of households in rural areas within 1km of an hourly (weekday) public transport service.	✓	✓	✓✓	✓ ✓	✓
	Improve Public Transport efficiencies in accordance with the objectives of the Public Transport Strategy through Integrated Rapid Public Transport Networks (IPTN)	✓	✓	✓✓	✓ ✓	✓
	Quality of Service	✓✓	✓	✓	✓	✓
	Promotion of Public Transport	✓	✓	✓	✓	✓
	Accessibility	✓	✓✓	✓✓		
	Regulation and Control of Public Transport			✓✓		

Strategic Element	KPI	Responsibility Matrix				
		N	P	Me	Mu	O
	Reliability of scheduled services		✓✓	✓		
Non-Motorised Transport	Development of National guidelines and standards for non-motorised transport (pedestrians and cyclists) as a sub-sector of the transport system to ensure consistent planning and designs that receive the necessary funding	✓✓	✓			
	Investment in safe NMT facilities for learners at schools and surrounding areas		✓	✓✓	✓	
	Number of bicycles distributed through the Shova Kalula program		✓	✓✓	✓	
	Increase NMT modal share (walking and cycling) for educational and commuting trips	✓✓	✓	✓	✓	
Learner Transport	Improve access to learner transport services	✓✓	✓			
	Registration and licensing of learner transport operators and demarcation of learner transport vehicles.		✓✓	✓	✓	✓
	Increase funding for learner transport Universal Accessibility: Physically challenged/ Special needs	✓ ✓	✓✓ ✓✓			
Freight transport	Improve heavy goods vehicle safety performance; roadworthiness; and self-regulation (RTMS certification and compliance)	✓✓				✓
	Reduction in overloading by enforcing limits on axle limits and gross vehicle mass	✓✓				
	Provision of alternative routes for the transport of hazardous materials		✓✓	✓	✓	
	Optimise road, rail, and pipeline freight balance	✓	✓✓			
	Separation of freight and commuter rail infrastructure to improve efficiencies in both sectors	✓✓	✓	✓	✓	✓
	Separation of freight and commuter rail infrastructure to improve efficiencies in both sectors	✓✓	✓			
Road infrastructure	Asset Management System		✓✓			
	Infrastructure Spend	✓	✓	✓	✓	✓

Strategic Element	KPI	Responsibility Matrix				
		N	P	Me	Mu	O
	S'Hambe Sonke Road Maintenance Program	✓	✓✓			
	Improve the condition of classified road network	✓	✓	✓	✓	✓
	Eradicate potholes in Urban Areas and Provincial Road Networks	✓✓	✓	✓	✓	✓
	Social Investment	✓	✓✓			✓✓
	NMT		✓	✓	✓	
	ITS	✓	✓	✓	✓	✓
Cross-border Transport	Consistent pricing for road infrastructure for each category of road		✓	✓		✓
	Operational efficiency at border posts	✓✓	✓	✓	✓	✓
	Investment in infrastructure upgrades and maintenance	✓✓	✓✓	✓	✓	✓
	Harmonised Regional Transport regulation, guidelines, and standards	✓✓	✓	✓	✓	✓
Rail infrastructure	Asset Management System	✓				✓✓
	Infrastructure Spend	✓				✓✓
	Social Investment	✓	✓			✓
Transport safety and security	The integrated strategy on Road Safety must be addressed in the respective Transport Plans, and implemented through multi-sectorial effort with private and public sectors, focusing on the highest risk factors through	✓✓	✓	✓	✓	✓
Institutional Management: **Capacity to Deliver** **Inter-Government**	Number of professionally registered personnel in Civil Engineering, Traffic Engineering, Transport Economics, Town Planning, Urban Design, and Transport Planning, Universal Access Auditors, other unregistered professionals in areas such as Network operations management, Taxi industry negotiations	✓✓	✓	✓	✓	

Strategic Element	KPI	Responsibility Matrix				
		N	P	Me	Mu	O
Relations	Establishment and professional operation of the National Public Transport Regulator, Public Regulatory Entities, Transport Economic Regulator, and Transport Appeals Tribunal	✓✓	✓	✓	✓	
Transport Information Systems	Technology is a necessary tool to enhance transport planning and management. The integrated transport system is dependent on updated data systems such as Natis, Operating Licence Administration System, RAMS, Transport Modelling, etc. Therefore, the three spheres of government will ensure a fully functional and updated GIS based Land Transport Information System	✓	✓	✓	✓	
	Fully functional and updated GIS based Land Transport Information System	✓✓	✓	✓	✓	
Funding	A life-cycle cost approach for management and preservation of assets, and proposed transport projects	✓	✓	✓	✓	✓

Table 11-9: CITP Functional Gaps in the current George Institutional Arrangements.

Directorate Financial Services	Directorate Corporate Services	Directorate Human Settlements, Planning and Development	Directorate Civil Engineering Services	Directorate Electro Technical Services	Directorate Community Services	Directorate Protection Services	GO GEORGE	Provincial Regulating Authority (PRE)
Purpose								
Administrates all finance-related services and the Information Technology department	Manages municipal administrative functions, including Human Resources, Halls, Registration, and Council support, as well as Legal Services, Libraries, Sport, and Community Development	Manages Town and Spatial Planning, Building Control, Environmental Management, Municipal Buildings, Economic Development, and Tourism. Oversees housing matters, including provincial housing list administration, subsidy and project housing, and emergency housing	Oversees the infrastructure and workings of water, sewerage, roads, and storm water as well as GO GEORGE	Oversees municipal infrastructure and electricity services, covering high and low voltage, transformers, substations, new infrastructure, street and traffic lights, and Fleet Management	Manages Parks and Recreation, Environmental Health, Waste Management, Fire and Rescue, Disaster Management, Law Enforcement, Traffic, and the Land Invasion Unit	**Functions assigned to Directorate Corporate Services**	**Functions assigned to Directorate Civil Engineering Services**	The Provincial Regulatory Entity ensures a safe and dignified environment for public transport users
Potential Functional Gaps								
Transport Planning	Transport Planning and Policy Development, Project Planning, Universal Access and NMT, Transport Modelling, System Analysis, Transport Impact Assessments and Development Control, etc.							
Parking	Parking Policy, Parking Strategy, Parking Management, Parking Guidelines, Parking Systems, etc.							
Integrated Public Transport	Public Transport Infrastructure Design, Public Transport Infrastructure Management, Public Transport Operating and Passenger Services, Public Transport Regulation and Surveys							
Network Infrastructure Development	Project Planning, Conceptual Design, Transport Programme Implementation, Tenders and Contracts							
Transport Network Operations	Integrated Operations, Transport Management Operations Strategy, Integrated Transport Management Centre, Integrated Transport System (ITS) Strategy, Traffic Engineering, Active Road Network Management, ITS Tools, Transport Information, Road Safety and Traffic Law Enforcement, Incident Management, Events Management							

It is evident that 'transport' functions are not currently a central focus and are only minimally integrated through the GO GEORGE Bus System within the Directorate of Civil Engineering Services. To support the George CITP effectively, it is necessary to fully

incorporate all essential transport functions during the institutional transition.

11.12.4.2 In Principle Functional Design input to accommodate the identified Gaps.

This proposal highlights the need for cross-departmental collaboration and potential allocations of functions within George Municipality, crucial for addressing the town's growth since the GIPTN strategy's inception. The final distribution of these functions will hinge on available resources and GM Leadership decisions, focusing on bridging critical organisational and resource allocation gaps. As the town expands, embracing these functions as a funded mandate becomes vital, seeking provincial and national funding support. It is essential to uphold commitment to existing responsibilities like traffic and law enforcement while negotiating with provincial authorities on transferring specific functions, such as tariff setting and budget management. A strategic Transfer Plan should be devised for remaining functions, considering factors like skill scarcity and the need for specialised oversight, ensuring efficiency and focus on municipal operations.

Table 11-10, **Table 11-11**, and **Table 11-12** lists the functions addressing the identified gaps to meet CITP requirements at the Strategic, Tactical, and Operational levels, respectively. The responsibility for tactical and operational functions lies clearly with George Municipality, whereas strategic functions might be assigned to district or provincial levels depending on funding and resources. Nonetheless, George Local Municipality is ultimately accountable for ensuring the execution of all these functions, as specified in the George CITP and in accordance with National Land Transport Act (NLTA), with Section 11(1)(c) outlining the specific responsibilities of local governments requirements.

Table 11-10: Strategic-Level CITP Functional Design to address identified Gaps.

Strategic Level					
Spatial Planning	**Transport Planning**	**Public Transport Planning**	**Transport Network Operations**	**GO GEORGE Public Transport Planning**	**Provincial Regulating Entity**
(With their other functions) • Land-use Model input • Parking Requirements	• Policy Development • Project Planning • Transport Model Input • Universal Access and NMT • Road Master Plan • Parking Policy/ Strategy • Access Management Plans • Road Systems Analysis • Development Control	• Public Transport Policy • Public Transport Infrastructure Design • Public Transport Network Design • Fare Policy	• Transport Management Operations Strategy /Plan • Incident Management Strategy / Plan • Events Management Strategy / Plan • Intelligent Transport Systems (ITS) Strategy • Data Management Strategy • Traffic Calming Policy	**Functions assigned to Directorate Civil Engineering Services**	• The Provincial Regulatory Entity ensures a safe and dignified environment for public transport users

Strategic Level					
Spatial Planning	**Transport Planning**	**Public Transport Planning**	**Transport Network Operations**	**GO GEORGE Public Transport Planning**	**Provincial Regulating Entity**
	• Transport Programme Implementation • Tenders and Contracts				

Table 11-11: Tactical-Level CITP Functional Design to address identified Gaps.

Tactical Level					
Parking	**Parking**	**Public Transport Planning**	**Transport Network Operations**	**GO GEORGE Public Transport Planning**	**Provincial Regulating Entity**
• Parking Requirements	• Parking Guidelines / Standards • Tariffs (in association with Finance) • CCTV Surveillance - Ops Facility • Systems Information	• Public Transport Regulation and Surveys • System Information • Transport Information Services • Operations Centre	• Integrated Transport Management Centre • Network Performance Monitoring • Area Traffic Control Systems (ATC) • Control Centre Operations"	• Current Functions for a formalised scheduled public transport service. • Note: Unscheduled public transport services i.e. taxis and others proposed functions are indicated to the left. "	• Current Functions for the PRE but proposed functions within the GM are indicated to the left

Table 11-12: Operational-Level CITP Functional Design to address identified Gaps.

Operational Level					
Parking	Parking	Public Transport Planning	Transport Network Operations	GO GEORGE Public Transport Planning	Provincial Regulating Entity
• Parking Requirements	• Parking Management Parking Signage Parking Facility Maintenance	• Public Transport Infrastructure Management • Public Transport Operating and Passenger Services • PT Facility Maintenance • Safety and Security	• Incident Management • Active Road Network Management • Events Management • Traffic Signals • ITS Tools (cameras, detection, dynamic signage, etc.) • Parking Enforcement • By-law Enforcement	• Current Functions for a formalised scheduled public transport service. • Note: Unscheduled public transport services i.e. taxis and others proposed functions are indicated to the left.	• Current Functions for the PRE but proposed functions within the GM are indicated to the left

Operational Level					
Parking	Parking	Public Transport Planning	Transport Network Operations	GO GEORGE Public Transport Planning	Provincial Regulating Entity
			• Public Transport Enforcement		

11.12.4.3 Priority on Establishing Institutional Arrangements for Public Transport".

The 28 responsibilities outlined in the NLTA, when considered alongside the 2017 Draft Revised White Paper on National Transport Policy by the National Department of Transport, offer a valuable framework for implementing and executing transport functions. **Figure 11-11** categorises these functions as follows:

Figure 11-11: Overview of Land Transport Functions.

Following the directives of the Comprehensive Integrated Transport Plan (CITP), each municipality needs to build capacity to facilitate the successful implementation of its transport system. For George Municipality, this involves understanding and integrating various

transport systems within the scope of the George Local Municipality Access and Mobility Framework, as depicted in **Figure 11-12**:

- Public Transport
- Private Transport
- Non-Motorised Transport
- Freight Transport.

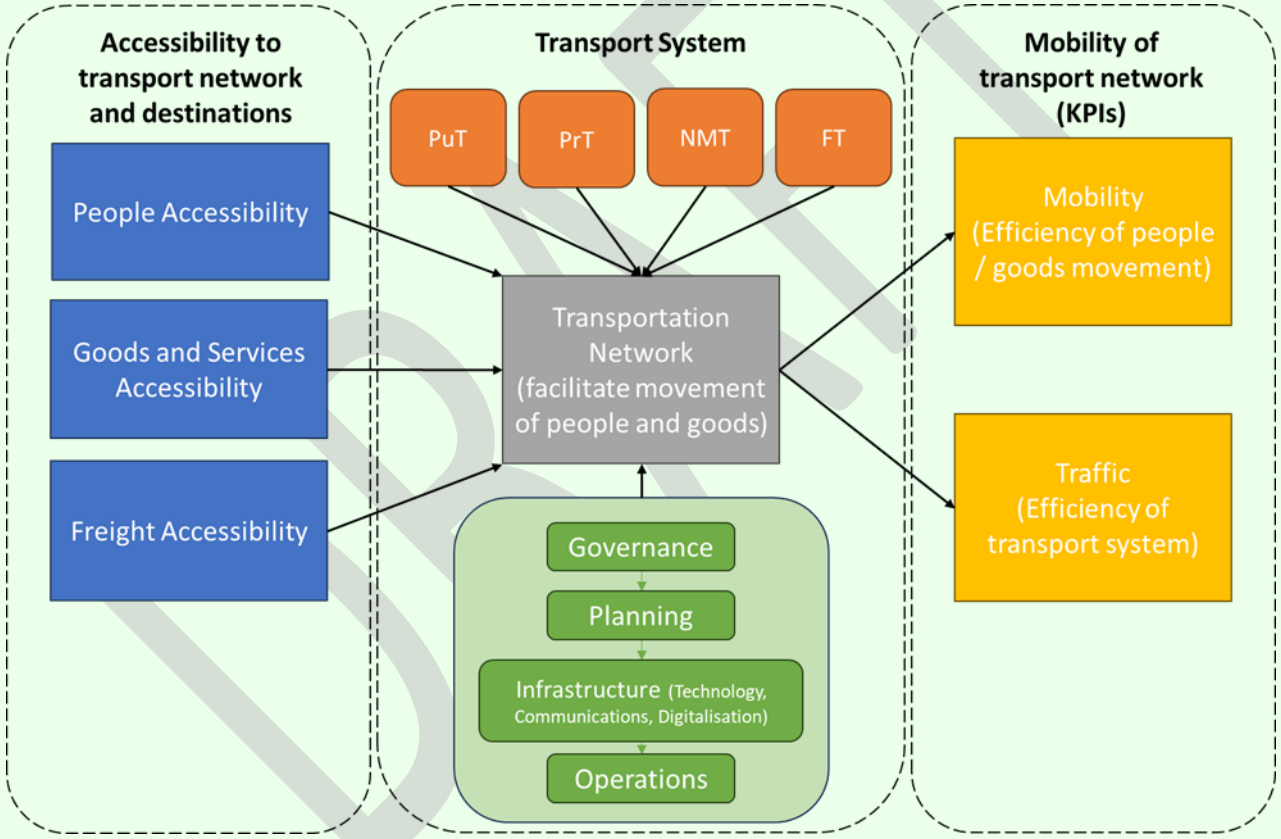

Figure 11-12: Components of the Integrated Transport for George.

To build upon the solid foundation provided by the extensive GO GEORGE initiatives and the associated successful transport network and infrastructure in George Local Municipality, leveraging public transport as an integrator is essential. This approach fosters institutional collaboration, partnerships, and transformation, enabling departments to grow and adapt their structures to encompass all necessary functions.

The GO GEORGE initiative has been instrumental in promoting interdepartmental collaboration, introducing new technologies, and embedding principles and objectives for a scheduled public transport system. It has initiated a shift in the municipal planning and engineering departments, advocating for a comprehensive Transport Vision that emphasises access and mobility from the perspectives of public users, commuters, and passengers, rather than solely focusing on road and infrastructure development. The development of the George Local Municipality CITP and a dynamic Transport Model has been crucial for enhancing interdepartmental cooperation, upskilling staff, and facilitating the exchange of innovative ideas and concepts, thus supporting George's transformation into a smart city. This highlights the significance of establishing an institutional structure that aligns with and supports George's Transport Vision.

Figure 11-13 presents a Framework Process driven by Public Transport Oversight, emphasising its crucial role as both an integrator and a catalyst in transforming the city and establishing an efficient transport system.

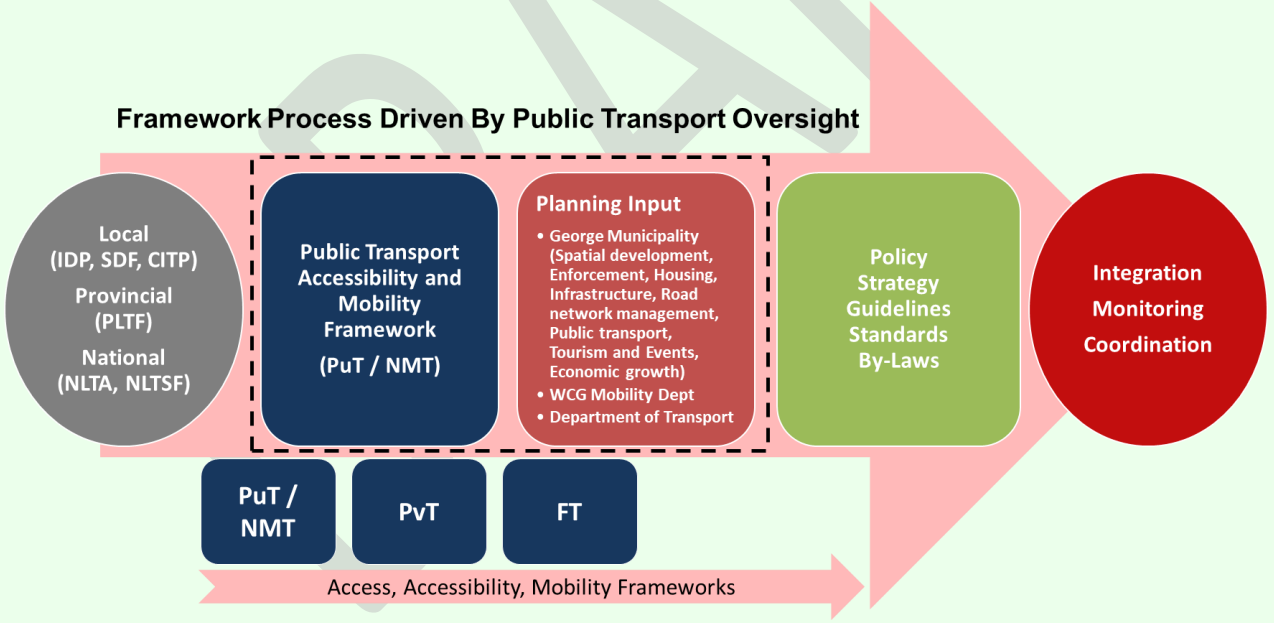

Figure 11-13: Framework Process Driven By Public Transport Oversight.

This underscores the initial steps towards formulating an effective institutional framework and structure for George, guided by the principles of the NLTA and NLTSF. This endeavour is part of a broader strategy to build on the strong foundations laid by the comprehensive GO GEORGE initiatives and its resultant robust transport network and infrastructure within the George Local Municipality. Central to this strategy is the utilisation of public transport as a unifying element that promotes institutional cooperation, forges partnerships, and drives transformation, thereby enabling various departments to evolve and refine their structures to incorporate all essential functions comprehensively.

The GO GEORGE initiative has played a pivotal role in enhancing interdepartmental collaboration, embracing technological advancements, and ingraining key principles and objectives for an organised public transport system. The formulation of the George Local Municipality CITP and the development of a dynamic Transport Model have been instrumental in bolstering interdepartmental collaboration, staff development, and the sharing of innovative ideas and practices, thereby aiding George's evolution into a smart city. This process accentuates the importance of developing an institutional framework that resonates with and bolsters George's Transport Vision.

11.12.4.4 National Land Transport Strategic Framework Insights (2023 - 2028).

The "National Land Transport Strategic Framework (2023 - 2028)" provides detailed insights into institutional arrangements necessary or developing a comprehensive and integrated transport system. These arrangements cover various facets essential for coherent planning, implementation, and management of transport systems:

- Governance and Organisational Structures
  - Establishing clear governance structures involves defining the roles, responsibilities, and accountability mechanisms of various entities involved in transport planning and implementation.
  - This might include creating dedicated transport authorities or departments at different government levels with defined mandates for transport planning, infrastructure development, operations, and maintenance.
  - These structures should ensure a strategic alignment of transport initiatives with broader economic and social goals, promoting integrated and multimodal transport solutions.
- Inter-agency Collaboration
  - Collaboration across different agencies can break down silos, ensuring a holistic approach to transport planning that considers various factors like land use, economic development, environmental sustainability, and social equity.
  - Mechanisms such as inter-agency committees, task forces, or working groups can facilitate regular dialogue, joint planning, and coordinated action.
  - Sharing data and resources among agencies can improve decision-making, optimise investments, and enhance the efficiency and effectiveness of transport systems.

- Capacity Building and Professional Development
  - Institutions need to focus on attracting, retaining, and developing skilled professionals in areas such as urban and transport planning, engineering, project management, and data analysis.
  - Ongoing training programs, workshops, and conferences can keep staff updated on the latest industry trends, technologies, and best practices.
  - Establishing partnerships with academic institutions, industry associations, and international organisations can provide additional avenues for knowledge exchange and capacity building.
- Regulatory Frameworks and Compliance
  - A strong regulatory framework should be comprehensive, clear, and enforceable, covering aspects such as service standards, safety, environmental protection, and consumer rights.
  - Regulatory agencies should have the authority and resources to monitor compliance, enforce regulations, and impose penalties for non-compliance.
  - These frameworks should be adaptable to accommodate new technologies, business models, and evolving societal needs.
- Public-Private Partnerships (PPPs)
  - PPPs can mobilise additional financing, enhance operational efficiencies, and foster innovation in the transport sector.
  - Establishing clear guidelines for PPPs can ensure transparency, define risk-sharing mechanisms, and set performance benchmarks.
  - Engaging with private sector partners through competitive and transparent processes can encourage investment and ensure that public-private ventures deliver value for money and serve the public interest.
- Community Engagement and Participation
  - Institutional arrangements should prioritise meaningful engagement with communities to gather input, build consensus, and address concerns related to transport projects.
  - This can include public consultations, advisory committees, stakeholder workshops, and other participatory mechanisms.
  - Engaging diverse groups, including marginalised and vulnerable populations, can ensure that transport systems are inclusive and address the needs of all users.
- Monitoring, Evaluation, and Feedback Mechanisms
  - Establishing robust monitoring and evaluation frameworks can track the performance of transport initiatives against set goals and objectives.
  - Regular reporting, audits, and impact assessments can provide accountability and inform evidence-based decision-making.
  - Feedback mechanisms should enable stakeholders, including the public, to provide input on their experiences and suggest improvements, fostering a culture of continuous learning and adaptation.

These detailed aspects of institutional arrangements underscore the need for strategic, coordinated, and inclusive approaches to transport planning and implementation, ensuring that transport systems are sustainable, efficient, and responsive to users' needs.

11.12.5 Transport Institutional Organisation and Capacity

11.12.5.1 Building towards the George ITP Institutional Capacity

The pressing issue of an under integrated transport institutional framework, along with insufficient organisational structure and capacity, is of significant concern. The current municipal organisational model, which operates in silos, particularly in the realms of transport infrastructure planning and implementation, lacks the necessary capacity to fulfil all its essential roles and functions effectively.

The Comprehensive Integrated Transport Plan (CITP) cannot dictate a final organisational structure. Instead, it must adapt based on the municipal administrative structure, which is tasked with providing the requisite capacity to meet its obligations under various pertinent legislative frameworks, including:

- Constitution of the Republic of South Africa, 1996
- White Paper on Transforming Public Service Delivery, 1997
- Local Government: White Paper on Local Government, 1998
- Local Government: Municipal Structures Act, No. 117 of 1998
- Local Government: Municipal Systems Act, No. 32 of 2000
- Local Government: Municipal Planning and Performance Management Regulations, 2001
- Local Government: Municipal Finance Management Act, No. 56 of 2003
- Local Government: Municipal Property Rates Act, No. 6 of 2004
- Local Government: George Municipality Public Transport By-Law, 2023
- Intergovernmental Relations Framework Act, No. 13 of 2005

Table 11-13 delineates the relevant acts as listed above, incorporating specific principles/aims outlined in these acts and their significance concerning the National Land Transport Strategic Framework (NLTSF), 2023 - 2028.

Table 11-13: Relevant Acts applicable to Institutional Arrangements, incorporating specific principles/aims outlined in these acts and their significance concerning the NLTSF 2023 – 2028.

No.	Section	Summary	Specific Principles /Aims	Relevance to NLTSF (2023 - 2028)
1	Constitution of the Republic of South Africa, 1996	Establishes DLG with objectives for democratic governance, service sustainability, and community involvement.	• Democratic and accountable government • Sustainable service provision • Social and economic development • Safe and healthy environment • Community participation in governance	High relevance: foundational governance principles support NLTSF's aim for integrated and community-focused transport systems.

No.	Section	Summary	Specific Principles /Aims	Relevance to NLTSF (2023 - 2028)
2	White Paper on Transforming Public Service Delivery, 1997	Outlines principles to enhance public service delivery, emphasising citizen engagement and service standards.	• Consultation with citizens • Service standards • Access equality • Courtesy and respect • Full and accurate information • Openness and transparency • Redress and responsive feedback • Economic and efficient services	Medium relevance: principles align with NLTSF's goals for service quality and community engagement in transport planning.
3	Local Government: White Paper on Local Government, 1998	Promotes developmental governance through integrated planning and community partnerships.	• Integrated development planning • Performance management • Civic engagement and partnerships	High relevance: emphasises integrated planning and community involvement, key for transport strategies under NLTSF.
4	Local Government: Municipal Structures Act, No. 117 of 1998	Focuses on developmental planning responsibilities, ensuring participatory governance.	• Coordinated development planning • Community participation in governance structures	Medium relevance: underscores coordinated planning and community involvement, supporting NLTSF's transport integration efforts.
5	1.9 Local Government: Municipal Systems Act, No. 32 of 2000	Advocates for community participation in municipal planning, key for IDP development.	• Community participation in planning • Transparent communication in governance	High relevance: community participation in planning fosters responsive and inclusive transport systems, aligning with NLTSF.
6	Local Government: Municipal Planning and Performance Management Regulations, 2001	Outlines detailed performance management for municipalities, emphasising community involvement in IDPs.	• Detailed IDP requirements • Community participation in performance management	Medium relevance: ensures accountability and community feedback in transport planning and performance, relevant for NLTSF objectives.
7	Local Government: Municipal Finance Management Act, No. 56 of 2003	Links financial management to IDPs, endorsing transparent budgeting and public participation.	• Integrated financial and development planning • Public participation in budgeting	High relevance: financial planning and transparency are crucial for implementing and maintaining transport strategies under NLTSF.
8	Local Government: Municipal Property Rates Act, No. 6 of 2004	Allows municipalities to levy rates for funding developmental goals, highlighting financial autonomy.	• Sustainable municipal funding	Low relevance: indirect impact on transport funding but essential for financial autonomy in supporting NLTSF-related projects.
9	Intergovernmental Relations Framework Act, No. 13 of 2005	Encourages coordinated governance across government tiers, vital for unified service delivery.	• Policy and planning coordination • Inter-governmental collaboration	High relevance: essential for cohesive transport planning and policy alignment across government levels, supporting NLTSF.

The transition toward a "capacitated, effective, and efficient" institutional framework is critical for adeptly steering the development of the George Comprehensive Integrated Transport Plan (CITP). This shift requires transitioning from a fragmented municipal organisational structure to an integrated one. The strategy includes merging functions currently performed by disparate stakeholders into a cohesive, transitional structure, destined to mature into a dedicated Transport Entity (TE) and/or Transport Planning Authority (TPA). These bodies will play pivotal roles in district master planning at the Garden Route District Municipal level. The proposed George Municipal Transport Entity (GMTE) aims to oversee local transport planning, management, and operations, thereby establishing a model for other municipalities. The GMTE's objective is to concentrate on localised planning while ensuring alignment with broader provincial and district transport master planning initiatives.

For George to develop a Municipal Transport Entity (MTE) that fulfils the NLTSF principles effectively, a detailed and methodical strategy is imperative. This strategy should guide the MTE in managing transport-related planning, implementation, and operations efficiently. The proposed approach and its critical components are elaborated in **Table 11-14**, delineating the necessary steps and factors to consider while establishing the Municipal Transport Entity.

Table 11-14: Strategy to develop a Municipal Transport Entity.

No.	Strategy Component	Action
1	**Assessment of Current Capabilities**	• Conduct an organisational review to assess the current capabilities, resources, and structures within the existing transport-related departments. • Identify gaps in skills, processes, and communication that hinder effective delivery of transport functions.
2	**Stakeholder Mapping**	• Map out all internal and external stakeholders involved in the transport sector to understand their roles, influence, and interests. • Use this mapping to identify opportunities for better collaboration and integration.
3	**Vision and Objectives Alignment**	• Align the transition strategy with the overarching vision and objectives for the transport system. • Ensure that all stakeholders understand and buy into the vision and the need for organisational change.
4	**Integrated Planning Framework**	• Develop an integrated planning framework that breaks down silos and encourages cross-departmental collaboration. • Establish joint planning committees or working groups that include representatives from all relevant departments.
5	**Resource Reallocation and Capacity Building**	• Reallocate resources to areas that are under-capacitated and critical for the delivery of transport functions. • Implement a capacity-building programme to upskill existing staff and recruit new talent where necessary.
6	**Process Re-engineering**	• Review and re-engineer processes to ensure they are efficient, streamlined, and conducive to an integrated approach. • Adopt best practices in project management and operations to improve delivery.
7	**Communication and Change Management**	• Develop a communication plan that keeps all stakeholders informed about the transition and its benefits. • Implement a change management strategy to address resistance and to manage the transition smoothly.

No.	Strategy Component	Action
8	**Pilot Projects**	• Identify and initiate pilot projects that can demonstrate the benefits of the new integrated approach. • Use the success of these pilots to build momentum and support for the broader organisational change.
9	**Performance Metrics and Incentives**	• Establish clear performance metrics that encourage collaboration and the achievement of shared objectives. • Introduce incentive schemes that reward departments and individuals for working together effectively.
10	**Governance and Oversight**	• Set up a temporary oversight body to guide the transition and to ensure that the strategy is being implemented as planned. • This body can later evolve into the permanent Transport Authority.
11	**Feedback Loops and Continuous Improvement**	• Create mechanisms for regular feedback from staff and stakeholders on the transition process. • Use this feedback for continuous improvement and to adjust the strategy as needed.

The typically transport functions, staffing and activity focus to fulfil the transport entity roles and responsibilities for a Transport Authority (TA) are shown in **Table 11-15**.

Table 11-15: Typical transport functions, staffing and activity focusses to fulfil the Transport Entity roles for a Transport Authority.

No.	Function	Staffing	Activity
1	**Strategic Planning and Policy Development**	**Transport Policy Analysts**	• Develop and review transport policies. • Analyse the impact of existing and proposed policies on transport systems
		Urban Planners	• Integrate land use with transport planning. • Design urban spaces to support the transport system
		Sustainability Coordinators	• Ensure transport initiatives align with environmental sustainability goals. • Promote green transport options
2	**Data Analysis and Technology Integration**	**Transport Data Scientists**	• Collect and analyse transport data for planning and operational improvements. • Forecast transport demand and model traffic flows.
		ITS (Intelligent Transport Systems) Specialists	• Develop and manage smart transport technologies. • Integrate ITS into existing transport infrastructure.
3	**Infrastructure Development and Maintenance**	**Civil Engineers**	• Design and oversee the construction of transport infrastructure. • Ensure infrastructure is maintained and upgraded as needed.
		Project Managers	• Lead transport infrastructure projects. • Manage timelines, budgets, and resources
4	**Operations and Service Delivery:**	**Transport Operations Managers**	• Oversee day-to-day transport operations. • Ensure services are delivered efficiently and meet user needs.
		Customer Service Managers	• Manage customer feedback and complaints.

No.	Function	Staffing	Activity
			• Improve service delivery based on user input.
5	**Safety and Security**	**Transport Safety Officers**	• Develop and enforce safety standards for all transport modes. • Conduct safety audits and risk assessments.
		Security Coordinators	• Oversee the security of transport systems and infrastructure. • Coordinate with law enforcement as needed.
6	**Financial Planning and Management**	**Transport Economists**	• Conduct economic analyses of transport projects. • Develop funding and investment strategies.
		Financial Planners	• Identify and apply for funding opportunities. • Engage with donors and investors.
7	**Community Engagement and Inclusion:**	**Public Engagement Specialists**	• Facilitate community involvement in transport planning. • Organise public consultations and workshops.
		Accessibility Coordinators	• Ensure transport systems are accessible to all, including those with disabilities. • Advocate for inclusive design in transport projects.
8	**Regulatory Compliance and Legal Affairs**	**Transport Regulation Lawyers**	• Ensure compliance with transport laws and regulations. • Provide legal advice on transport-related matters.
		Policy Compliance Officers	• Monitor adherence to transport policies and guidelines. • Report on compliance issues and recommend corrective actions.
9	**Innovation and Research:**	**Research and Development Specialists**	• Stay abreast of emerging trends and technologies in transport. • Pilot innovative transport solutions.
		Partnership Managers	• Develop partnerships with academic institutions, industry, and other cities. • Facilitate knowledge exchange and collaborative research.

Each of these roles and functions plays a vital part in creating a cohesive and integrated transport system. They must work in concert, guided by a clear vision and strong leadership, to ensure the transport system serves the needs of the city and its residents effectively.

11.12.5.2 Summary

The chapter on Institutional Arrangements details the organisational and structural shifts required for the George Municipality to adeptly handle the escalating demands of its growing population and the consequent transport needs. It underscores the transition from a fragmented to an integrated municipal structure, crucial for the successful implementation of the George Comprehensive Integrated Transport Plan (CITP). The establishment of a George Municipal

Transport Entity (GMTE) is central to this strategy, aimed at enhancing local transport planning and serving as a blueprint for other municipalities.

Key points discussed include the urgent need for a strategic overhaul to address the municipality's current inability to efficiently plan, implement, and manage transport infrastructure and services. The CITP's alignment with various legislative frameworks emphasises the necessity for coherent, integrated transport planning and the establishment of clear, accountable institutional structures.

It further delineates collaborative intergovernmental relations and the delegation and distribution of responsibilities across government levels, ensuring that transport planning and management are effective, inclusive, and aligned with broader urban development objectives. Additionally, it outlines minimum requirements for establishing an institutional framework as per the National Land Transport Strategic Framework (NLTSF) (2023 - 2028), emphasising the need for professionalisation, coordination, and sustainable funding.

Ultimately, the chapter advocates for the George Municipality to evolve its institutional structure and enhance its capacity, ensuring the transport system's efficiency, responsiveness, and sustainability. This involves a detailed strategy for developing the Municipal Transport Entity, including assessing capabilities, engaging stakeholders, aligning visions, reallocating resources, and fostering cross-departmental collaboration to fill identified functional gaps and meet the burgeoning transport demands efficiently.

11.13 Summary of Intelligent Transportation Systems Strategy

Enhance Mobility and Safety

- Optimise traffic flow using adaptive signals and traffic cameras.
- Improve public transport with real-time passenger information and automated fare collection.
- Implement quick incident detection and emergency response systems.

Build Infrastructure

- Expand existing ITS systems, including the GO GEORGE bus system, overload control monitoring (weigh-in-motion), and CCTV cameras.
- Develop a Concept of Operations for an Integrated Transport Management Centre (TMC) for George Municipality.
- Establish a centralised integrated TMC for real-time management (First phase is linking current operations centres and second phase is to implement the new centralised TMC).

Promote Sustainability

- Implement environmental monitoring systems to reduce emissions and noise pollution.

Ensure Consistency and Scalability

- Standardise methodologies and ensure interoperability across ITS components.
- Design ITS to be scalable for future technological upgrades.
- Create Data Management Plan to support interoperability between ITS components.
- Implement a centralised transport database using cloud technologies for seamless data integration between various authorities (sharing of information).

Foster Partnerships

- Collaborate with private sector partners for ITS deployment and maintenance.
- Engage stakeholders regularly to ensure the ITS meets community needs.

11.14 Summary of Road User Safety Strategy

Reduce Accidents

- Conduct regular road safety audits to identify and mitigate risks.
- Implement traffic calming measures in high-risk areas, such as speed humps and pedestrian crossings.
- Improve infrastructure for vulnerable road users, including NMT-friendly sidewalks and cycle lanes.

Enhance Law Enforcement

- Increase traffic law enforcement presence to deter reckless driving and speeding.
- Use automated enforcement technologies, such as speed and red-light cameras.

Promote Public Awareness

- Launch road safety education campaigns targeting drivers, pedestrians, and cyclists.
- Collaborate with schools and community organisations to promote safe road behaviours.

Improve Incident Management

- Develop a robust Road Incident Management System (RIMS) for coordinated emergency response.
- Enhance data collection and analysis to better monitor road safety trends and allocate resources effectively.

Strengthen Collaboration

- Make use of the intermodal planning committee to encourage coordination of law enforcement agencies, public health, and emergency services to ensure a coordinated approach to road safety.
- Engage with community stakeholders to address specific safety concerns.

11.15 Summary of Parking Strategy

Optimise Parking Management

- Implement lowered parking ratios in public transport zones to encourage the use of public transport.
- Develop and enforce clear parking policies to reduce congestion and optimise land use.

Integrate Technology

- Use technology for real-time parking information (guidance signage) and electronic payment systems.
- Implement intelligent parking solutions to optimise space utilisation.

Improve Parking Infrastructure

- Invest in parking infrastructure to meet current and future demand.
- Establish park-and-ride facilities at strategic transport hub locations to encourage modal shift and reduction of PrT trips.
- Ensure parking facilities are safe, accessible, and user-friendly.

Support Sustainable Mobility

- Provide secure parking options for bicycles and other non-motorised transport to encourage sustainable travel.

Stakeholder Engagement

- Involve businesses, residents, and visitors in the development and implementation of parking strategies to ensure they meet diverse needs.

11.16 Summary of Law Enforcement Strategy

Strengthen Traffic Law Enforcement

- Increase patrols and enforcement to ensure compliance with traffic laws, particularly in high-risk areas.
- Implement automated enforcement technologies like speed and red-light cameras.

Enhance Safety for All Road Users

- Monitor and enforce safety regulations for mini-bus taxis, freight vehicles, and general traffic.
- Prioritise pedestrian and cyclist safety through targeted enforcement and infrastructure protection.

Improve Coordination and Response

- Collaborate with SAPS, Provincial Traffic, and other agencies to ensure effective law enforcement across all transport modes.
- Establish a coordinated approach for traffic incident management and emergency response.


Promote Compliance and Awareness

- Conduct public awareness campaigns on traffic laws and safe driving practices.
- Engage with community policing forums and other local organisations to support law enforcement efforts.

Utilise Technology

- Deploy Intelligent Transport Systems (ITS) technologies like CCTV cameras for enhanced monitoring and enforcement.
- Employ weigh-in-motion overload control monitoring and enforcement.

11.17 Summary of Transport Strategy to Support Tourism

Enhance Connectivity

- Develop and improve multimodal transport links, including roads, air, and potential rail services, to key tourist destinations.
- Ensure seamless connections between transport hubs and tourist attractions.

Collaborate with Private Sector

- Foster public-private partnerships (PPPs) to enhance transport infrastructure and services for tourism.
- Develop a commuter rail strategy for George incorporating tourism as one of the major drivers for re-establishing the commuter rail service.

Improve Tourist Mobility

- Offer diverse transport options for tourists, such as car rentals, shuttle services, and cycling paths.
- Focus on improving access and convenience in high-traffic tourist areas, especially around airports.

Promote Sustainable Tourism

- Develop eco-friendly transport solutions that support sustainable tourism and minimise environmental impact.

Leverage Technology

- Use technology to provide real-time travel information and enhance the overall tourist experience.

11.18 Summary of Institutional Arrangements

Strengthen Coordination

- Improve coordination between municipal departments to create an integrated transport system.
- Establish clear roles and responsibilities for all stakeholders involved in transport planning and management.

Enhance Capacity Building

- Invest in training and development to build the capacity of municipal staff involved in transport planning and enforcement.
- Ensure that departments have the necessary resources and expertise to effectively implement transport strategies.


Promote Collaborative Governance

- Foster collaboration between local, provincial, and national government entities to ensure alignment and efficiency in transport initiatives.
- Encourage partnerships with the private sector, educational institutions, and community organisations to support transport planning.

Ensure Accountability

- Implement governance structures that ensure accountability in transport decision-making and project execution.
- Regularly review and refine institutional processes to improve transparency and efficiency.

Support Strategic Partnerships

- Engage with public and private sector partners to support the implementation of transport initiatives and ensure sustainable development.

12 SUMMARY OF EDEN DISTRICT ITP

12.1 Key Aspects

The Summary of the Eden District Integrated Transport Plan (ITP) focuses on aligning the George Comprehensive Integrated Transport Plan (CITP) with the broader district-wide transport strategy. The key aspects of this summary include:

- **Regional Coordination**: Ensuring that the transport strategies of George Municipality are aligned with the broader goals of the Eden District Municipality, promoting a cohesive and integrated transport network across the district.
- **Intermodal Integration**: Highlighting the need for seamless integration between different modes of transport, such as road, rail, and non-motorised transport, to improve overall connectivity within the district.
- **Sustainable Transport Solutions**: Emphasising the importance of sustainable transport solutions that reduce environmental impact and promote economic development within the Eden District.
- **Infrastructure Development**: Outlining the key infrastructure projects that are necessary to support the district's transport needs, including road upgrades, public transport facilities, and non-motorised transport infrastructure.
- **Public Transport Enhancement**: Focusing on improving the quality and availability of public transport services across the district to ensure equitable access for all residents.
- **Safety and Security**: Addressing safety and security concerns within the transport system, with a focus on reducing accidents and improving the overall safety of public and private transport modes.
- **Economic Development and Tourism**: Recognising the role of transport in supporting economic activities and tourism, particularly in connecting key economic hubs and tourist destinations within the district.

12.2 Background on Eden District ITP

The Eden District Municipality (now called Garden Route District Municipality) consists of seven local municipalities, namely Hessequa, Mossel Bay, Kannaland, George, Oudtshoorn, Knysna, and Bitou. The Eden District Integrated Transportation Plan (DITP) for 2016 – 2021 covers six of the seven local municipalities, excluding George. The reason for this is that George Local Municipality applied

for "City" status some years ago and has chosen to prepare a CITP independently of the IPTN plan.

The District Integrated Transport Plan (DITP) emphasises the ongoing expansion of towns in the Eden district, underscored by the regular introduction of low-density residential housing on the outskirts of these towns. The existing minibus and bus services require sustained support, maintenance, and improvements to ensure they provide essential connectivity between towns and communities across the district. The DITP also identifies an ongoing challenge: the trend of planning and developing low-density housing weakens the effectiveness of public transport services, leading to poorer service levels typically seen in rural areas. This creates a strong demand for subsidies. The DITP proposes that this issue can only be tackled in the long run by implementing integrated settlement planning, favouring higher density and mixed-use land, which would decrease travel distances and increase the number of passengers per vehicle (Ace Consulting, 2016).

Despite the Human Development Index equalling both the provincial and national averages, the degree of poverty remains exceedingly high. Considering around 80% of households either cannot or should not prioritise buying a car over other outgoings, transport planning should put non-motorised and public transport first. The substantial growth rate of the area dictates that special consideration must be given to the planning of service delivery, and particularly to the provision of appropriate transport infrastructure and services (Ace Consulting, 2016).

12.3 Vision and Objectives

Eden Vision:

"Eden, a future empowered through excellence"

Eden Mission:

The Eden District Municipality (Category C Municipality) strives to deliver on their mandate through:

- Providing strategic leadership and coordination to Category B municipalities in the district within their available resources.
- Executing integrated development planning in collaboration with sector departments and service organisations
- Upholding the principle of good governance in pursuit of excellence as a regional leader in local government.

Eden Objectives:

A few Strategic Objectives were derived in the DITP that relates to transport planning in the region, focussing specifically on the reduction of the need for fossil fuels, improving access to jobs, improving community wellbeing, and providing bulk public transport and NMT infrastructure. The following objectives resulted from the relevant informant documents, including the Eden IDP, indicated in **Table 12-1**.

Table 12-1: Eden District Objectives.

No.	Objective Description
1	Provide Integrated Public Transport Networks (IPTN) in rural regions
2	Prioritise the provision of public transport services among higher density settlements to improve viability of public transport subsidies

No.	Objective Description
3	Provide public transport and non-motorised transport (NMT) infrastructure, particularly in larger urban centres
4	Ensure a safe public transport service
5	Ensure a well-maintained road network
6	Shift contestable freight from road to rail and prioritise general freight over bulk freight
7	Create the institutional capacity and administrative environment to perform the functions required of the municipality by the NLTA

12.4 Eden DITP Focus Areas for Projects

The Eden District Integrated Transport Plan (DITP) outlines several focus areas, projects and strategies that could influence the Comprehensive Integrated Transport Plan (CITP) for George Local Municipality. Here are some of the key focus areas to be considered in projects:

12.4.1 Transport Infrastructure

The DITP underlines that, despite a majority of movement within the district being dependent on roads, a portion of freight is transported by rail. The district boasts a considerable rail network, alongside the Port at Mossel Bay and two commercial airports situated in George and Plettenberg Bay. Major east-west corridors through Eden are the N2 and R62, serving as the primary routes for the distribution of people, goods, and services from Eden to other regions in the Western and Eastern Cape and beyond. Routes leading from Eden to the country's north include the N9 and N12.

12.4.2 Transport Modes and Demand

The DITP accentuates the prominence of walking as a mode of transport to work within Eden. Any interventions should strive to make walking easier, while also introducing and promoting the wider use of bicycles for commuting. According to the DITP, private transport makes up less than a third of the district's movement, while non-motorised transport (NMT) is the only practical option for at least half the population. Commercial buses are integral for long-distance journeys traversing the district, though there's a notable lack of passenger rail services in the region.

12.4.3 Rank Operations

The DITP sheds light on the functioning of the minibus taxi (MBT) industry, which operates based on ranks. However, it has been observed that many operations take place outside the ranks, particularly by illegal operators without the necessary permits or operating licenses to enter ranks. The DITP acknowledges a complex relationship between legal and illegal operators, as these illegal entities are often recognised as playing a critical role during peak demand periods when legal operators are unable to meet demand.

12.5 Relevant Geographic or Transportation related data for George CITP

The Eden District Integrated Transport Plan (DITP) presents a comprehensive set of geographic and transport data that could be pertinent to the Comprehensive Integrated Transport Plan (CITP) for George Local Municipality.

12.5.1 Population Growth

The DITP supplies data on population growth in local municipalities within the Eden District. George has experienced substantial growth, with the population rising from 135,405 in 2001 to 206,751 in 2013, making it the district's largest municipality. This growth outpaces the percentage-wise increase of the Eden District Municipality, which expanded from 440,332 in 2001 to 607,160 in 2013.

12.5.2 Transport Infrastructure

The DITP provides an overview of transport infrastructure in the Eden District, encompassing the provincial road network and railway system. The N2 and R62 form the major east-west corridors through Eden, serving as the principal routes for movement. Despite the district's significant rail network, there's no passenger rail service in the region.

12.5.3 Public Transport

The DITP offers data on the public transport modal split in the Eden District, with walking playing a substantial role in commuting to work. The DITP also states that private transport accounts for less than one-third of movement within the District, while non-motorised transport (NMT) remains the only feasible option for at least half of the population. Commercial buses are vital for long-distance journeys across the district.

12.5.4 Transport Projects

The DITP mentions various transport initiatives within the Eden District, such as the remediation of the TR75/2 (R328) cutting between Oudtshoorn and the Cango Caves, the resealing of TR07502 between Oudtshoorn and Cango Caves, and the erection of new culverts on various routes. These projects, however, do not have a significant impact on the transport infrastructure and services within George Local Municipality.

12.5.5 Transport Policies and Documents

The DITP reviews several policies and documents relevant to the Eden Integrated Transport Plan (ITP), such as the National Land Transport Strategic Framework (National Department of Transport, 2023), Rural Transport Strategy (National Department of Transport, 2007), and Western Cape Provincial Land Transport Framework (Western Cape Province: Department of Transport & Public Works, 2011). These policies and documents may serve as valuable reference points for developing the George CITP.

The data derived from the DITP speaks somewhat to George Local Municipality, but since the DITP focuses mainly on the other Local Municipalities, the data contained in the DITP would not have a significant impact in preparation of the George CITP.

12.6 Local Municipality Observations in Eden

12.6.1 High-level Observations

The Eden District Integrated Transport Plan (DITP) presents a comprehensive review of the transport infrastructure and services throughout the local municipalities within the Eden District. The following sections highlight key observations.


12.6.1.1 Transport Infrastructure

The total length of national and provincial roads in the Eden District approximates to around 7,200 km. The road system within the Eden District Municipality comprises the N2 National Road, various significant Provincial roads, and District roads which connect different towns. The primary concern of the district municipality is the upkeep of gravel roads, to which the largest share of the available budget is allocated. The Provincial Road Network is approximately 26% surfaced and 74% made up of gravel roads, while Provincial Minor Roads make up roughly 33% of the road network.

12.6.1.2 Public Transport Corridors

The N2, which runs through 5 of the 7 local municipalities, serves as the principal public transport corridor in the District. This road facilitates a high frequency of scheduled long-distance bus services running between Cape Town, Port Elizabeth, and Durban. The region is also a renowned tourist hub in the country, with a large number of chartered tourist coaches using this route. Furthermore, daily long-distance minibus taxi services link all the major towns along the N2, particularly east of George, to Port Elizabeth.

12.6.1.3 Rail Network

While regular freight services operate between Cape Town and Mossel Bay, there are currently no passenger services. Passenger services stopped when the rail line was damaged between George and Knysna. Numerous attempts to secure funding for the repair of the rail line have proven unsuccessful in recent years.

12.6.1.4 Public Transport Services

The operations of the minibus taxi (MBT) industry are primarily rank based, meaning vehicle journeys are licensed to start or finish in ranks. However, a significant number of operations take place outside the ranks, particularly by illegal operators who lack the permits or operating licenses required to enter ranks. The greatest demand for minibus taxi (MBT) services occurs on Friday afternoons and Saturdays, particularly on the last weekend of the month which coincides with the time people receive their monthly salaries.

12.6.1.5 Learner Transport

The Eden DITP highlights the main modes of travel by learners in the Eden district. An informative table is displayed, as reproduced in **Table 12-2** .

Table 12-2: Main Mode of Travel by Learners in Eden with percentage of trips per mode as presented in the 2013 Eden DITP with NHTS data (STATS SA, 2013).

Municipality	Percentage of Trips							Approx. Number of Trips
	Train	Bus	Taxi	Car / Bakkie Driver	Car / Bakkie Passenger	Walk	Other	
Bitou	*	15.4	15.4	*	7.7	61.5	*	13 000
George	*	7.5	7.5	*	15.1	67.9	3.8	53 000
Hessequa	*	9.1	*	*	*	81.8	*	11 000
Kannaland	*	16.7	*	*	*	83.3	*	6 000
Knysna	*	15.8	10.5	*	10.5	63.2	*	19 000
Mossel Bay	*	20.0	6.7	*	16.7	53.3	*	30 000
Oudtshoorn	*	6.1	6.1	*	9.1	78.8	*	33 000


Municipality	Percentage of Trips							Approx. Number of Trips
	Train	Bus	Taxi	Car / Bakkie Driver	Car / Bakkie Passenger	Walk	Other	
Eden	*	**10.9**	**7.3**	*	**12.1**	**67.9**	**1.8**	**156 000**

* Numbers too small to provide reliable estimates

12.6.1.6 Work Related Transport

The Eden DITP highlights the main modes of travel by learners in the Eden district. An informative table is displayed, as reproduced in **Table 12-2** .

Table 12-3: Main Mode of Travel to Work in Eden with percentage of trips per mode as presented in the 2013 Eden DITP with NHTS data (STATS SA, 2013).

Municipality	Percentage of Trips							Approx. Number of Trips
	Train	Bus	Taxi	Car / Bakkie Driver	Car / Bakkie Passenger	Walk	Other	
Bitou	*	*	28.8	33.1	15.4	21.2	*	13 000
George	*	*	18.3	22.0	19.2	32.6	7.3	61 000
Hessequa	*	10.6	13.9	4.4	24.7	42.4	4.0	15 000
Kannaland	*	*	*	15.0	12.1	60.9	*	4 000
Knysna	*	*	18.4	37.1	16.4	27.3	*	27 000
Mossel Bay	*	*	39.1	15.1	25.3	19.9	*	34 000
Oudtshoorn	*	*	22.5	19.5	10.3	42.0	4.7	29 000
Eden	*	**1.5**	**23.0**	**21.8**	**18.5**	**31.6**	**3.6**	**183 000**

* Numbers too small to provide reliable estimates

12.6.1.7 Integrated Development Plan

The relevant policies and strategic documents obtained and reviewed for the update of the Eden DITP are detailed in the first table of the report. The thirty documents listed, in conjunction with a review of the existing conditions in the Eden District Municipality, have shaped the transport vision and objectives for the region.

12.6.1.8 Operating License Strategy (OLS)

The policy framework for the OLS considers the kinds of public transport services that necessitate operating licenses, the types of vehicles that may be utilised for public transport services, the conversion of permits to operating licenses, the validity period for operating licenses, cancellation of unused operating licenses, and the revocation of an operating license or permit in the rationalisation of public transport services.

12.7 Eden DITP Conclusion

The Eden District has a diverse and extensive transport infrastructure that caters to a variety of transport needs. The local municipalities within the district each have their unique strengths and challenges when it comes to transport, and the DITP provides a comprehensive overview of these aspects. The comparison of these municipalities can help in identifying areas of improvement and potential opportunities for enhancing transport services and infrastructure in the region.

12.8 Summary of Key Elements from the Eden DITP

The Summary of the Eden DITP provides an overview of the district-wide transport strategies and how they align with the objectives of the George CITP. The key elements of the plan include:

Alignment with District Goals

- Ensure that George Municipality's transport plans are consistent with the broader objectives of the Eden District ITP, promoting a unified regional transport strategy.
- Coordinate infrastructure projects to ensure they support both local and district-wide transport needs.

Enhancement of Regional Connectivity

- Improve intermodal connections across the district to facilitate easier movement between different transport modes.
- Develop strategic transport corridors that connect key urban centres and rural areas within the district.

Promotion of Sustainable Transport

- Advocate for the adoption of green transport solutions, such as electric vehicles, improved public transport, and cycling infrastructure.
- Support policies that reduce carbon emissions and promote environmental sustainability in the district's transport sector.

Investment in Key Infrastructure Projects

- Prioritise infrastructure investments that support the district's long-term transport needs, including road maintenance, public transport facilities, and non-motorised transport networks.
- Secure funding for critical projects that will enhance the district's transport capacity and resilience.

Public Transport Improvement

- Focus on expanding and enhancing public transport services to ensure that all residents have access to reliable and affordable transport options.
- Implement measures to improve the safety, efficiency, and coverage of public transport across the district.

Economic and Tourism Development

- Recognise the importance of transport in supporting the district's economic activities and tourism sector, particularly by improving access to key economic zones and tourist attractions.
- Develop transport strategies that facilitate the movement of goods and people, supporting the district's economic growth and development.

13 FUNDING STRATEGY AND SUMMARY OF PROPOSALS AND PROGRAMMES

13.1 Key Aspects

The key aspects considered in this chapter are:

- **Capital Expenditure Framework (CEF)**: The CEF is central to aligning investments with spatial and transportation planning. It ensures that funds are strategically allocated to projects that enhance transport efficiency and accessibility within George Municipality.
- **Municipal Budget Adjustments**: The chapter details adjustments in municipal budgets, particularly within George Municipality, to reflect evolving priorities and ensure effective resource allocation towards transport initiatives. This includes a review of the George Municipal Budget for 2022/2023 and its implications for the Medium-Term Revenue and Expenditure Framework (MTREF).
- **Funding for Key Projects**: A significant focus is placed on the George Integrated Public Transport Network (GIPTN) and the Roads Master Plan. The funding strategy for these projects demonstrates a commitment to enhancing public transport and road infrastructure, both of which are critical for economic growth and safety.
- **Institutional Funding**: The chapter emphasises the need for robust institutional funding to support the implementation of transport policies and programmes. This includes building capacity within institutions to manage, oversee, and deliver transport projects effectively.
- **Issues and Concerns**: Potential challenges related to funding strategies are addressed, such as the adequacy of budgets, reliance on grants, and the necessity for diversified funding sources. The importance of proactive financial management and strategic planning is highlighted as key to overcoming these challenges.
- **Long-Term Financial Planning**: The importance of aligning funding with strategic transport and spatial outcomes is emphasised, particularly in ensuring that investments are well-planned and fiscally responsible. The chapter


underscores the need for a sustainable transport system supported by appropriate funding mechanisms.

13.2 Introduction

The National Land Transport Strategic Framework (NLTSF) presents a thorough funding strategy, alongside a summary of proposals and programs, designed to support national policy objectives and strategic priorities for a cohesive land transport system. This framework aims to secure sufficient funding for both the infrastructure and operations of the transport system, divided across various investment categories:

- Annualised funds for maintaining the existing transport system and facilitating essential enhancements.
- Investments to gradually eliminate the current backlogs in capital and operational areas.
- Financial allocations for the advanced upgrading and broadening of the transport network.
- A specific ring-fenced funding approach dedicated to transport sectors.

The framework underscores a detailed assessment and evaluation process for significant projects, incorporating whole life costs, extensive costing methods, and the evaluation of broader economic and societal impacts through rigorous analysis. Each project, underpinned by comprehensive business plans, details funding sources including subsidies, expected cash flows, debt financing, and pricing strategies, aligning financial streams with strategic outcomes like infrastructure quality, expert knowledge, air quality enhancements, and congestion alleviation.

Furthermore, the "*Funding Strategy and Summary of Proposals and Programmes*" chapter integrates these financial strategies within the broader NLTSF context, underscoring the financial foundation vital for the framework's success. This chapter delineates several critical financial mechanisms:

- The Capital Expenditure Framework (CEF) aligns investment with spatial and transportation planning, ensuring strategic allocation of funds to pivotal projects aimed at transport efficiency and accessibility improvement.
- Adjustments in municipal budgets, particularly within George Municipality, adapt to evolving priorities and ensure effective resource allocation towards transport initiatives.
- Funding for the George Integrated Public Transport Network (GIPTN) and the Roads Master Plan demonstrates the commitment to enhancing public transport and road infrastructure, crucial for economic growth and safety.
- Institutional funding and strategic financial management address potential challenges, emphasising the necessity for robust financial planning and diverse funding sources.

Section 21(n) of the Spatial Planning and Land Use Management Act (SPLUMA) reinforces the alignment between spatial development frameworks and financial planning, mandating a capital expenditure framework that resonates with the municipality's development agenda. This alignment ensures that investments are not only well-planned and fiscally responsible but also resonate with the municipality's spatial strategy, enhancing overall development coherence and financial stability. The integrated approach outlined provides a solid foundation for sustainable transport development, ensuring that South Africa's transport infrastructure evolves efficiently and effectively in line with strategic national objectives.

- **Budget Allocations and Adjustments**: Detailed reviews and adjustments of municipal budgets, as reflected in the George Municipal Budget review, are crucial for responsive and flexible financial planning. These adjustments ensure that resources are allocated efficiently and effectively to transport projects, reflecting changes in priorities or circumstances.
- **George Integrated Public Transport Network (GIPTN) Funding**: The GIPTN is a focal point for transforming public transport in the George area. The funding strategy detailed in this chapter outlines the financial support for GIPTN, highlighting the blend of national grants, municipal funds, and potentially provincial contributions to develop a reliable and efficient public transport network.
- **Roads Master Plan Budget**: The strategic investment in road infrastructure is critical for supporting economic activities, reducing travel time, and improving safety. The Roads Master Plan Budget outlines the financial commitments for developing and maintaining road networks in alignment with the broader transport and spatial development goals.
- **Institutional Funding**: Recognising the significance of institutional structures in implementing transport policies and programs, this chapter also emphasises the need for dedicated funding to build and strengthen these institutions. This ensures they have the capacity to manage, oversee, and deliver transport projects effectively.
- **Issues and Concerns**: The chapter candidly addresses potential challenges and concerns related to funding strategies, such as the adequacy of budgets, dependency on grants, and the need for diversified funding sources. It underscores the importance of proactive financial management and strategic planning to address these concerns.

The alignment of funding with strategic transport and spatial outcomes is pivotal for the successful realisation of the NLTSF's vision for an integrated, efficient, and sustainable transport system. The proposed infrastructure investments should be rooted in and reflective of the spatial strategies, development propositions, and development objectives stipulated in the MSDF, as demonstrated in **Figure 13-7**.

13.3 Capital Expenditure Framework (CEF)

The high-level projects that have been identified while updating the George CITP are listed in **Table 13-1**.

Table 13-1: High-level project identifications emanating from the George CITP.

No	Key Functional Areas	Policy / Framework Plans	Planning / Guidelines / Standards	Structure Organisational	Systems	Operational	Infrastructure	Projects
1	**Institutional & Regulatory**	• Development of a Transport Department accommodating the Transport Planning and Management Function to be executed • To promote and integrate land use and public transport corridors • To promote and plan for universal access in IPTN, including walking and cycling	• Guidelines / Standards to be developed, i.e.; • Parking • Traffic Calming • Urban Design • NMT • Safety & Security • ITS	Organisational Structure for TPT Planning Function to be established	Find a "home"/ departmental oversight for the development, maintenance and management of the George Transport Model (TM)	Complete Staffing Structure to align with Judicial, Institutional and Operational Requirements	Facilities to accommodate various role-players executing the Transport Department (Planning and Operational) Functions and Duties.	• Determine office requirements to accommodate new organisational structure • Find suitable office space/ premixes
2	**Financial Strategy**	• Ensure the acquisition of funds and its effective expenditure on all transport infrastructure • Invest in public transport and non-motorised transport (NMT) infrastructure						

No	Key Functional Areas	Policy / Framework Plans	Planning / Guidelines / Standards	Structure Organisational	Systems	Operational	Infrastructure	Projects
3	**Transport Planning**	• Development of a Transport Department accommodating the Transport Planning and Management Function to be executed • To promote and integrate land use and public transport corridors • To ensure continuous short-term and long-term planning of all public transport aspects • To promote and plan for the role of appropriate non-motorised forms of transport such as walking and cycling • To promote travel demand management measures to encourage less car usage, to improve the environment and to improve road safety • A travel demand management (TDM) strategy for the George CBD • Create a high-level strategy for rural transport • Develop a Non-Motorised Transport Master Plan • Develop a Parking strategy and plan for the town centre and other key nodes.	• Guidelines / Standards to be developed, i.e.; • Parking • Traffic Calming • Urban Design • NMT • Safety & Security • ITS • Provide non-motorised transport requirements in traffic impact studies • To incorporate self-enforcing traffic calming measures in the design of new residential areas and to apply the traffic calming policy for existing areas • Promote and integrate land use and public transport corridors • Promote denser settlement patterns to support the transition to public transport, and mixed land use patterns to reduce the need for travel and create walkable neighbourhoods	• Develop a Transport Authority (TA) to manage Transport related infrastructure and operational contracts	• interdepartmental coordination and integration	• Operational Integrated Service delivery plans	• implementation, maintenance of projects	• Initiate feasibility studies to access appropriate projects in line of policy and funding mechanisms • Identification, prioritisation, and implementation (approval and funding) of transport projects • To coordinate and integrate all transport modes and services
4	**Infrastructure Management**	• Incorporate self-enforcing traffic calming measures in the design of new residential areas and to apply the traffic calming policy for existing areas				• To provide, maintain and operate efficient public transport infrastructure	• Provide additional capacity using various mechanisms • Prioritisation of the missing links	• To ensure the acquisition of funds and its effective expenditure on all transport infrastructure

No	Key Functional Areas	Policy / Framework Plans	Planning / Guidelines / Standards	Structure Organisational	Systems	Operational	Infrastructure	Projects
5	**Operations Procedures**	• A robust Operational Plan • To maximise empowerment opportunities for people using public transport • Promote travel demand management measures to encourage less car usage, to improve the environment and to improve road safety • Develop Strategy to shift freight from road to rail • Promote and facilitate a modal shift to NMT • Address parking problems that exist all year, rather than only during holiday seasons. • Coordinate planning of freight overnight facilities to minimise the impact of freight on noise and congestion in towns.	• To improve the general levels of service of public transport			• Improve public transport services between towns through coordination, information, and selective subsidies.		
6	**Data & Technology Application**	• The regulation and enablement of technology-driven changes in the transport environment.	Business planning and negotiation to include existing operators in the IPTN					
7	**Environmental Impact**	• To minimise adverse impacts on the environment						
8	**Safety & Security Measures**	• To ensure safety for all users of public transport	• Integrated Disaster Risk Management Plan					

Table 13-2: A Consolidated Database of Capital Investment Needs for George Municipality.

Municipal Functional Area	George Functional Areas	Sector	Project Name	Project Description	Basic Service (Yes/No)	Is this project linked to informal settlement upgrading	In IDP Capital 3 Year Budget (2020/21 to 2023	19/20	3-Year 2020/2021 to 22/24	5-Year	10-Year 2
Municipal Wide/Various		Energy/Electricity	11KV Switchgear	ReplacementObsolete and Overloaded 11KV Switchgear	Yes	No	Yes	1,650,000	6,000,000	10,650,000	
Municipal Wide/Various		Energy/Electricity	Reticulation Schemes - Informal	Reticulation Schemes - Informal	Yes	No	Yes	1,032,000	1,600,000	2,632,000	
FA1: George	4. George CBD	Energy/Electricity	George Inner City	Upgrading and Extention of 11KV Network: George Inner City	Yes	No	Yes	1,000,000	3,400,000	5,400,000	
FA1: George	8. Thembalethu	Energy/Electricity	Thembalethu (R/O)	Upgrading and Extention of 11KV Network: Thembalethu (R/O)	Yes	No	Yes	1,000,000	3,900,000	6,400,000	
Municipal Wide/Various		Energy/Electricity	Formal Areas Underground Connections	Formal Areas Underground Connections - USIP - CRR	Yes	No	Yes	817,915	19,760,848	20,578,763	
FA1: George	6. Ballotsview	Energy/Electricity	Lawaaikamp	Upgrading and Extention of 11KV Network: Lawaaikamp	Yes	No	Yes	800,000	1,000,000	1,800,000	
Municipal Wide/Various		Energy/Electricity	L/T Lines-George	Upgrading of Obsolete Low Voltage Network Cables: L/T Lines-George	Yes	No	Yes	800,000	2,800,000	4,600,000	
FA2: Uniondale		Energy/Electricity	Uniondale	Upgrading and Extention of 11KV Network: Uniondale	Yes	No	Yes	500,000	1,500,000	2,500,000	
Municipal Wide/Various		Energy/Electricity	High Mast Lighting	High Mast Lighting	Yes	No	Yes	500,000	1,500,000	2,500,000	
Municipal Wide/Various		Energy/Electricity	Upgrading of Obsolete Streetlights	Upgrading of Obsolete Streetlight Networks (Replace 45w CFL Lights)	Yes	No	Yes	500,000	5,500,000	9,000,000	
Municipal Wide/Various		Energy/Electricity	Streetlights	Streetlights: Uniondale, Haarlem and Herold (Complete Haarlem Main Road)	Yes	No	Yes	440,000	1,400,000	2,340,000	
FA1: George	7. Pacaltsdorp	Energy/Electricity	L/T Lines-Pacalsdorp	Upgrading of Obsolete Low Voltage Network Cables: L/T Lines-Pacalsdorp	Yes	No	Yes	400,000	1,200,000	2,000,000	
FA4: Rural		Energy/Electricity	Streetlightning: Greater George	Streetlightning: Greater George	Yes	No	Yes	400,000	1,300,000	2,200,000	
Municipal Wide/Various		Energy/Electricity	Festive Lights	Festive Lights	No	No	Yes	400,000	900,000	1,600,000	
FA3: Willdemess		Energy/Electricity	Wildemess	Upgrading and Extention of 11KV Network: Wildemess	Yes	No	Yes	300,000	1,500,000	2,300,000	
FA2: Uniondale		Energy/Electricity	L/T Lines-Uniondale	Upgrading of Obsolete Low Voltage Network Cables: L/T Lines-Uniondale	Yes	No	Yes	300,000	900,000	1,500,000	
FA3: Willdemess		Energy/Electricity	L/T Lines-Wildernis	Upgrading of Obsolete Low Voltage Network Cables: L/T Lines-Wildernis	Yes	No	Yes	300,000	900,000	1,500,000	
FA2: Uniondale		Energy/Electricity	Uniondale Eletrification	Uniondale Eletrification	Yes	No	Yes	200,000	400,000	700,000	
FA1: George	7. Pacaltsdorp	Energy/Electricity	Reticulation Schemes - Pacaltsdorp	Reticulation Schemes - Pacaltsdorp (Erf 325 East) - CRR	Yes	No	Yes	180,000	156,000,000	156,180,000	
Municipal Wide/Various		Energy/Electricity	Reticulation Schemes Bulk Services	Reticulation Schemes Bulk Services	Yes	No	Yes	160,000	1,500,000	3,160,000	
Municipal Wide/Various		Energy/Electricity	Reticulation Fill in Schemes - AD HOC	Reticulation Fill in Schemes - AD HOC	Yes	No	Yes	150,000	1,235,000	1,885,000	
FA1: George	1. Blanco	Energy/Electricity	PRT Golden Valley	PRT Golden Valley	Yes	No	Yes	135,000	-	135,000	
FA1: George	8. Thembalethu	Energy/Electricity	Lighting in Informal Areas	Lighting in Informal Areas	Yes	Yes	Yes	135,000	541,000	776,000	
Municipal Wide/Various		Energy/Electricity	Lighting Requests (Ad Hoc Request)	Lighting Requests (Ad Hoc Request)	Yes	No	Yes	90,000	394,000	584,000	
FA1: George	8. Thembalethu	Energy/Electricity	Reticulation Schemes - Thembalethu N1	Reticulation Schemes - Thembalethu N2	Yes	No	Yes	-	2,550,000	5,100,000	
FA1: George	7. Pacaltsdorp	Energy/Electricity	Pacaltsdorp - Erf 325 East	Upgrading and Extention of 11KV Network: Pacaltsdorp - Erf 325 East	Yes	No	Yes	-	2,416,312	2,416,312	
FA1: George	7. Pacaltsdorp	Energy/Electricity	Pacaltsdorp - Erf 325 West	Upgrading and Extention of 11KV Network: Pacaltsdorp - Erf 325 West	Yes	No	Yes	-	10,184,021	20,368,042	
FA1: George	6. Ballotsview	Energy/Electricity	PRT Protea Park	PRT Protea Park	Yes	No	Yes	-	576,000	576,000	
FA1: George	7. Pacaltsdorp	Energy/Electricity	Reticulation Schemes - Pacaltsdorp	Reticulation Schemes - Pacaltsdorp (Erf 325 East) - SOA	Yes	No	Yes	-	20,000,000	20,000,000	
Municipal Wide/Various		Energy/Electricity	Reticulation Schemes	Reticulation Schemes - Pacaltsdorp (Erf 325 East)	Yes	No	Yes	-	10,375,000	30,562,500	
FA1: George	7. Pacaltsdorp	Energy/Electricity	Reticulation of Europe	Reticulation of Europe	Yes	No	Yes	-	3,915,000	7,830,000	
FA1: George	5. George Industria	Energy/Electricity	Reticulation of Metro Grounds	Reticulation of Metro Grounds	Yes	No	Yes	-	4,905,000	9,810,000	
FA1: George	8. Thembalethu	Energy/Electricity	Reticulation Schemes - Thembalethu N2	Reticulation Schemes - Thembalethu N2	Yes	No	Yes	-	2,550,000	5,100,000	

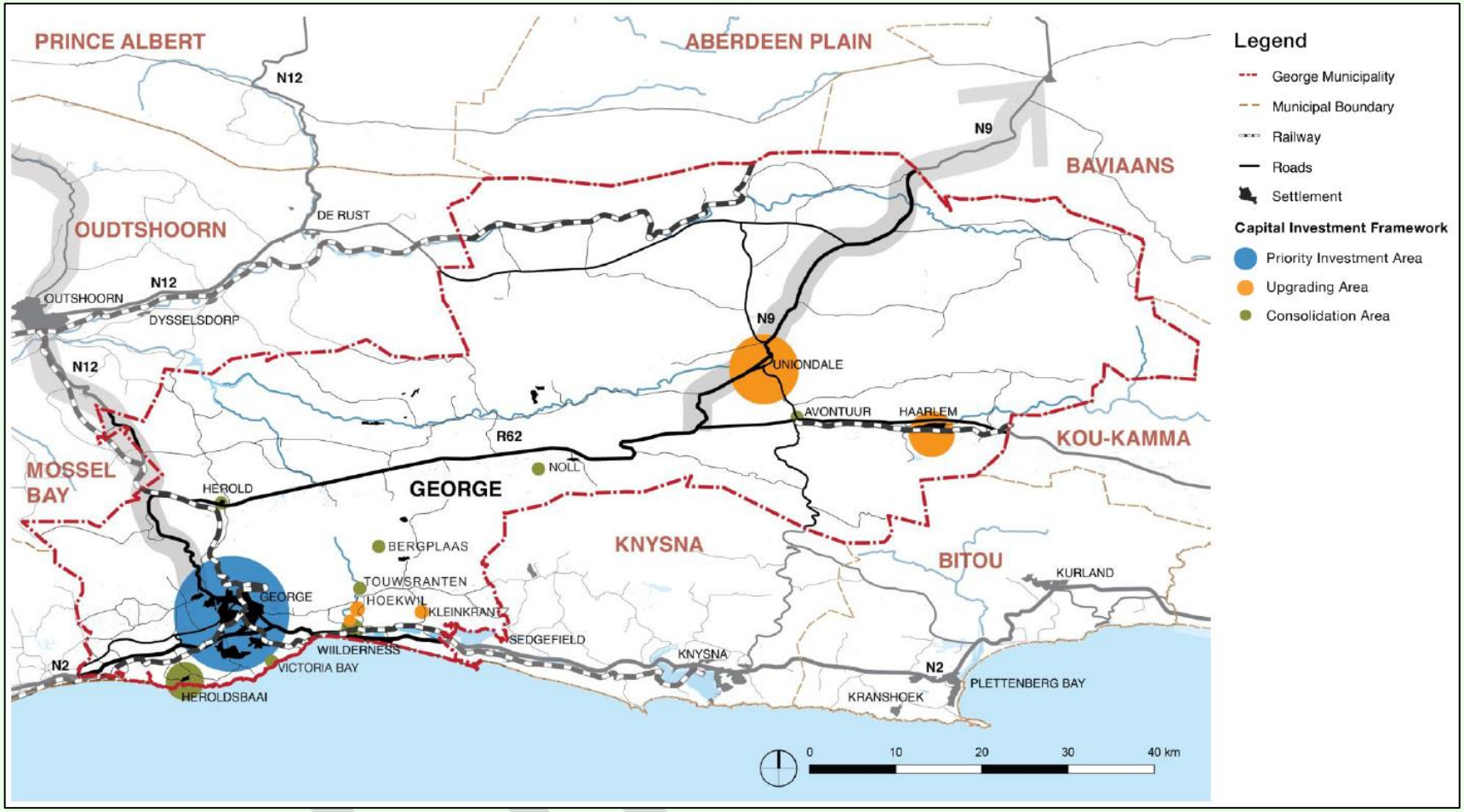

Figure 13-1: A Capital Expenditure Framework for the Greater George Area.

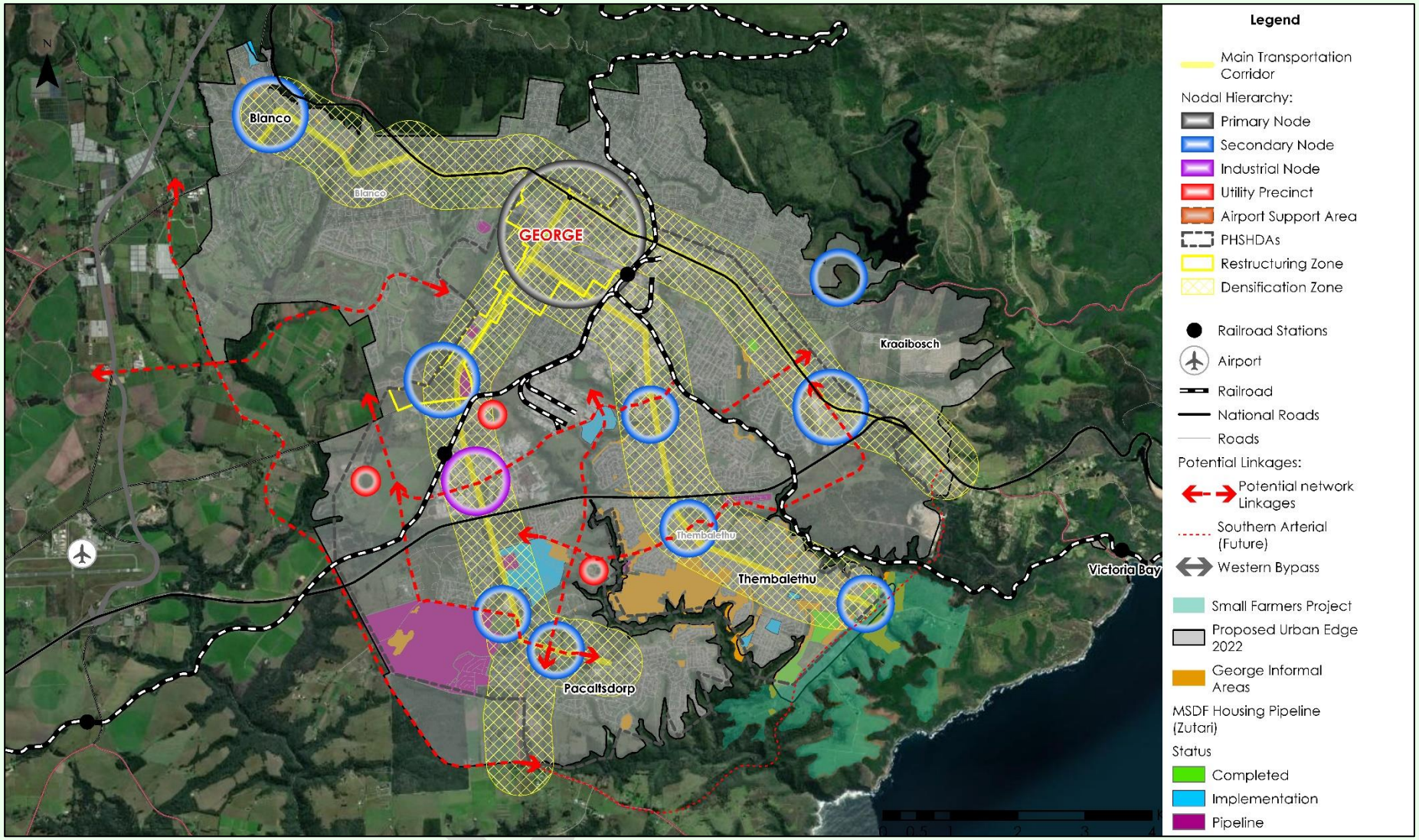

Figure 13-2: A Capital Expenditure Framework for the George City Area.

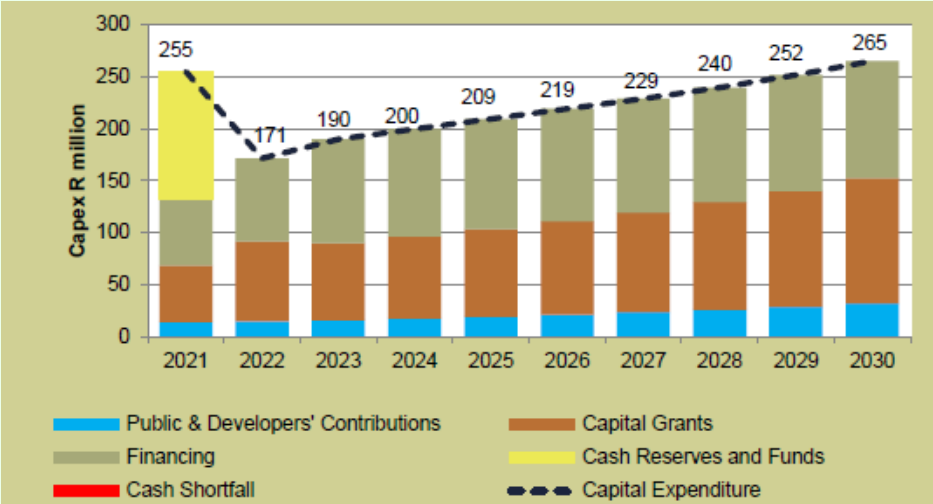

Figure 13-3: The projected 10-year CAPEX affordability envelop between 2021 and 2030 (Long Term Financial Plan, 2021).

GM Long Term Financial Plan 2023 provides some good graphs and figures. The figure above is a bit outdated.

Also, the document called: GM Draft Budget 2021-22 to 2023-24 Medium Term Revenue and Expenditure Framework - March 2021 could be helpful.

Figure 13-4, **Figure 13-5** and **Figure 13-6** indicates base case financial modelling for George Local Municipality (GLM) in terms of the analysis of surplus, bank balance in relation to minimum required liquidity level and the funding mix, respectively, as reported by the Long Term Financial Plan 2022/23 – 2031/32 (INCA Portfolio Managers, 2023).

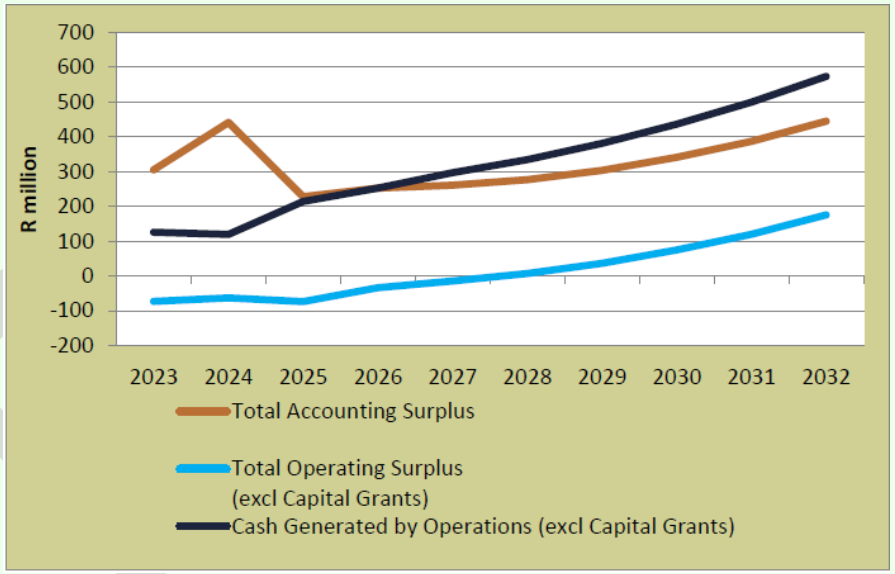

Figure 13-4: Base case: Analysis of surplus (INCA Portfolio Managers, 2023).

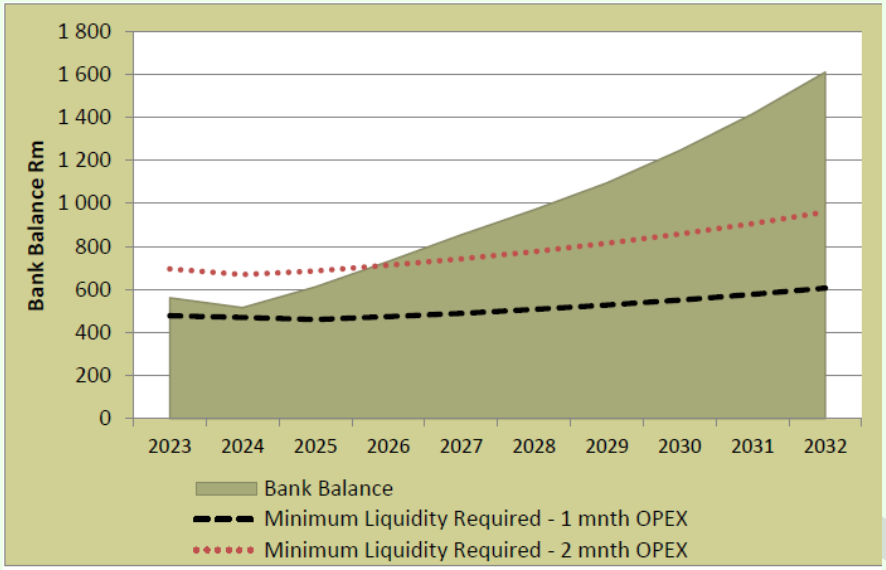

Figure 13-5: Base case: Bank balance in relation to minimum required liquidity level for GLM (INCA Portfolio Managers, 2023).

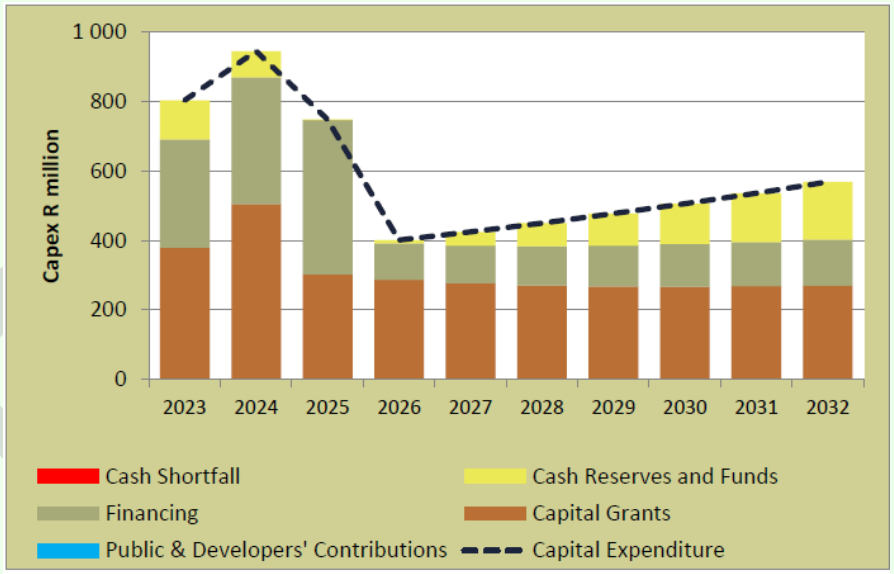

Figure 13-6: Base Case Funding Mix for GLM (INCA Portfolio Managers, 2023).

This financial plan provides an overview of potential sources of funding, projected expenses and provides comments on the financial viability of the plan.

As part of its ongoing commitment to becoming a *'city for a sustainable future*,' George Municipality aims to establish an integrated, equitable, and sustainable transportation ecosystem.

George LM objective to realise sustainable development cannot be attained unless it is supported by a sustainable transport system, along with requisite funding.

The purpose of this chapter is to inform on the revenues and expenditures Budget of George LM, and with particular focus on the George Integrated Public Transport Network (GIPTN) and on the

George Roads Masterplan that was developed in response to current and future envisaged spatial development for George.

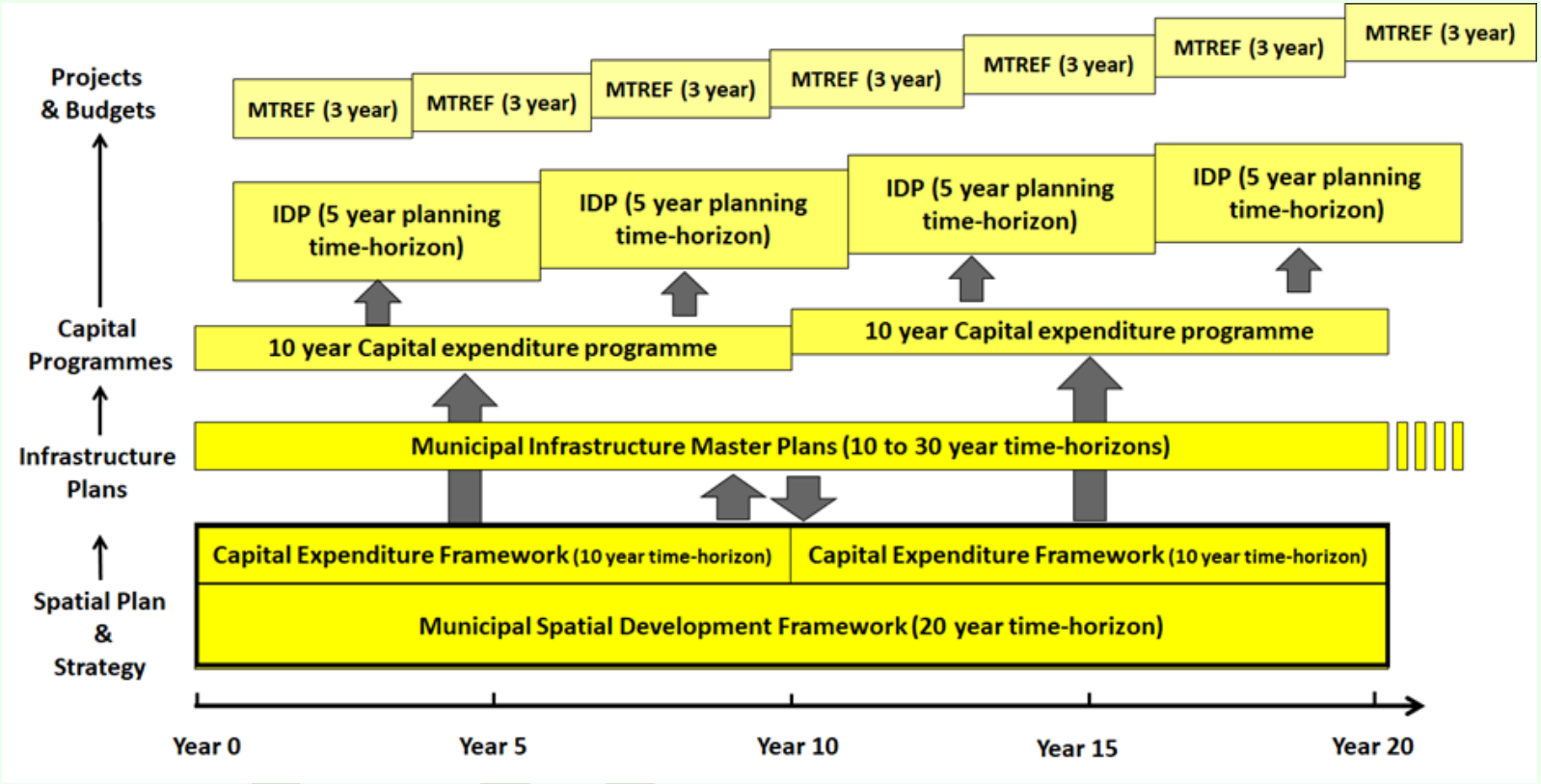

Figure 13-7: Articulating the ideal relationship between municipal planning tools (the MSDF, Infrastructure Master Plans, the IDP, and municipal budgets) from a built environment planning, budgeting, and implementation perspective.

13.4 George Municipal Budget 2022/2023 Mid-year Review and Adjustment Budget

The adjustments budget for the 2022/23 fiscal year, approved on February 23, 2023, played a crucial role in formulating the 2023/24 Medium-Term Revenue and Expenditure Framework (MTREF) (George Municipality, 2023) shown in **Table 13-3**. Setting a realistic capital budget is essential, considering both the capacity to execute projects and the funding availability.

Table 13-4 shows the original and adjustments budget for 2022/23.

Table 13-3: Consolidated Overview of the 2023/24 MTREF.

Budget Item	Adjustments Budget 2022/23 R	Budget Year 2023/24 R	Budget Year 2024/25 R	Budget Year 2025/26 R
Total revenue	3 708 517 991	3 579 939 251	3 758 732 961	3 752 974 631
Total expenditure	3 006 201 970	3 065 058 376	3 355 857 900	3 573 193 640
Total Capital Expenditure	1 147 027 440	1 023 042 577	884 598 952	453 298 615

Table 13-4: GM Adjusted 2022/23 Budget (George Municipality, 2023).

Budget Item	Original Budget 2022/23 R'000	Adjusted Budget 2022/23 R'000	Difference R'000
Capital	787 983	1 147 027	359 044
Operating Income	3 248 303	3 477 634	229 331
Operating Expenditure	2 868 024	2 959 823	91 799

13.4.1 George Municipal Capital Budget Funding

Over the three-years Medium Term Revenue and Expenditure Framework (MTREF) the total **capital** budget is R2 361m (George Municipality, 2023).

The funding sources for the MTREF Capital Budget funding (2023/24 to 2025/26) is shown in **Table 13-7**.

Table 13-5: Capital Budget Funding Sources 2023/2024 to 2025/2026.

CAPITAL FUNDING	2023/24	2024/25	2025/26
Capital Replacement Reserve	248 779 611	222 633 052	188 678 289
External Financing Fund	374 135 001	344 645 000	204 307 500
Grants and Subsidies	397 577 965	287 565 900	50 347 826
Separate Operating Account	2 550 000	29 755 000	9 965 000
Total	**1 023 042 577**	**884 598 952**	**453 298 615**

A total of R1023m Capital Budget funding for 2023/24 will be obtained from the following sources as shown in **Table 13-7** and in **Figure 13-8**.

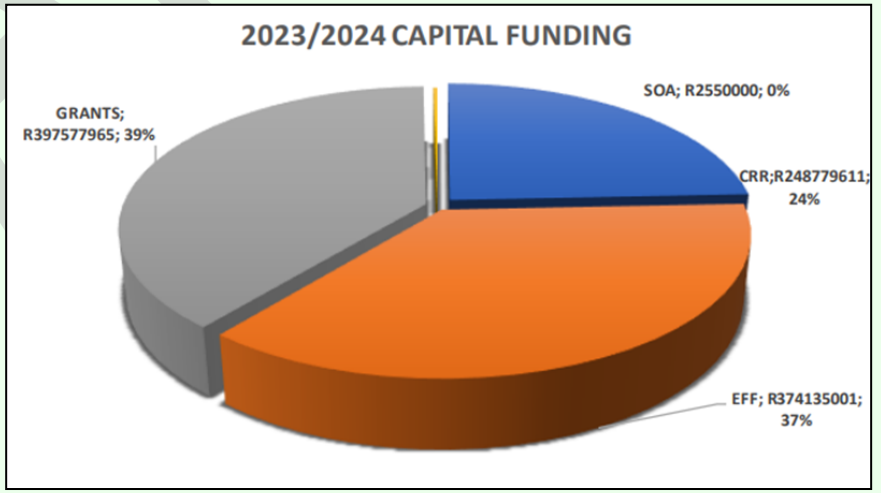

Figure 13-8: George Capital Budget Funding Sources (George Municipality, 2023).

13.4.2 George Municipality Capital Budget Departmental Allocation

George LM Capital Budget per department, is shown in **Table 13-6**.

Table 13-6: Capital Budget per Department.

DIRECTORATE	2023/24	2024/25	2025/26
Municipal Manager	110 000	140 000	25000
Financial Services	2 987 000	2 490 500	2 425 000
Corporate Services	16 978 000	6 473 000	3 545 000
Human Settlements, Planning & Development & Property Management	27 890 500	39 984 000	8 845 000
Civil Engineering Services	636 472 033	549102 816	282 903 289
Electro-Technical Services	260 705 761	225 469 826	115 225 326
Community Services	77 899 282	60 938 810	40 330 000
TOTAL	**1023042 577**	**884 598 952**	**453 298 615**

Figure 13-9 indicates the proposed Capital Budget allocation per department.

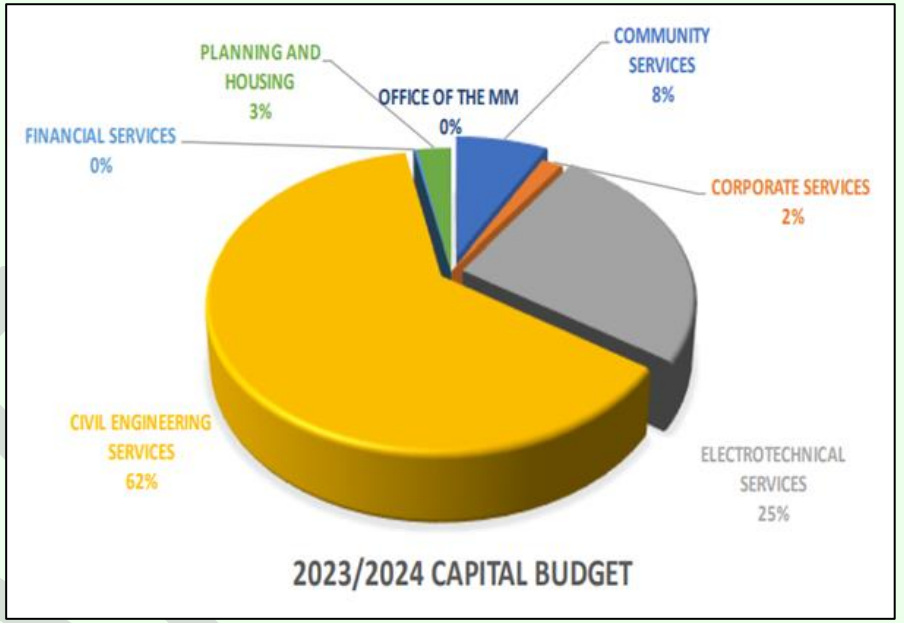

Figure 13-9: 2023/2024 Capital Budget per Department.

13.4.3 George LM Operations Budget Funding

Property rates and service charges play a significant role in the municipality's revenue. The table depicts the year-on-year shifts in revenue sources. Operating revenue increases from R3.708 billion in the 2022/2023 adjustments budget to R3.6579 billion in the 2023/2024 draft budget. **Table 13-7** below shows the MTEF Revenue for 2023/2024 to 2025/26 by Revenue Category.

The expenditure framework for the 2023/24 MTREF is informed by the guidelines of National Treasury. **Table 13-8** summarises the 2023/24 MTREF, classified by main expenditure type.

Table 13-7: MTEF Revenue for 2023/2024 to 2025/26.

Description	2023/24 Medium Term Revenue & Expenditure Framework			
R thousand	**Adjusted Budget**	**Budget Year 2023/24**	**Budget Year +1 2024/25**	**Budget Year +2 2025/26**
Revenue				
Exchange Revenue	-	-	-	-
Service charges - Electricity	861 493 700	916 428 899	1 032 815 379	1 215 623 693
Service charges - Water	202 245 000	218 057 871	239 863 657	263 850 019
Service charges - Waste Water Management	152 012 000	163 193 080	176 348 526	188 774 923
Service charges - Waste Management	147 194 000	156 469 520	167 497 386	177 603 230
Sale of Goods and Rendering of Services	83 326 072	113 635 974	129 688 576	145 334 287
Agency services	18 617 000	19 734 020	20 918 061	22 173 145
Interest earned from Receivables	11 060 560	11 724 200	12 427 650	12 173 300
Interest earned from Current and Non-Current Assets	43 892 153	42 414 834	43 687 285	44 997 904
Rental from Fixed Assets	4 935 368	5 231 360	5 545 249	5 877 962
Licence and permits	587 000	677 448	717 491	759 947
Operational Revenue	41 293 095	44 874 035	47 567 216	50 420 881
None-Exchange Revenue	-	-	-	-
Property rates	378 642 000	441 577 886	472 488 338	500 837 638
Fines, penalties, and forfeits	83 896 202	89 083 270	94 426 670	100 079 470
Licences or permits	3 276 334	4 160 669	4 411 000	4 676 903
Transfer and subsidies - Operational	635 163 725	635 102 098	706 654 094	678 094 810
Transfer and subsidies - Capital (monetary allocations)	809 999 892	462 093 890	339 498 474	67 257 050
Operational Revenue	-	17 669 790	19 233 190	21 146 409


Description	2023/24 Medium Term Revenue & Expenditure Framework			
R thousand	Adjusted Budget	Budget Year 2023/24	Budget Year +1 2024/25	Budget Year +2 2025/26
Other Gains	230 883 890	237 810 407	244 944 719	252 293 060
Total Revenue	**3 708 517 991**	**3 579 939 251**	**3 758 732 961**	**3 752 974 631**

Table 13-8: Summary of operating expenditure by type 2023/24 to 2025/26 (George Municipality, 2023).

Description	2023/24 Medium Term Revenue & Expenditure Framework			
R thousand	Adjusted Budget	Budget Year 2023/24	Budget Year +1 2024/25	Budget Year +2 2025/26
Expenditure				
Employee related costs	**695 131 299**	708 327 172	739 385 165	779 495 960
Remuneration of councillors	**27 926 470**	30 568 078	32 709 091	34 995 022
Bulk purchases - electricity	**628 680 564**	707 250 400	796 990 351	910 937 032
Inventory consumed	**323 707 589**	321 453 777	343 861 581	371 319 781
Debt impairment	**-**	95 146 000	99 903 001	104 898 001
Depreciation and amortisation	**182 333 777**	187 803 795	206 584 064	227 242 395
Interest	**35 120 003**	40 388 003	63 409 165	68 481 899
Contracted services	**727 225 105**	694 478 057	771 155 929	750 099 088
Transfers and subsidies	**45 402 741**	40 657 687	35 329 225	35 355 563
Irrecoverable debts written off	**122 257 000**	8 772 450	11 289 742	15 190 161
Operational costs	**172 026 795**	182 432 677	204 115 676	219 963 838
Losses on disposal of Assets	**728 627**	750 480	803 020	867 260
Other Losses	**45 660 000**	47 029 800	50 321 890	54 347 640
Total Expenditure	**3 006 201 970**	**3 065 058 376**	**3 355 857 900**	**3 573 193 640**


13.5 George Municipal Local Budget Allocations 2023/24 to 2025/26

Table 13-9 is a summary of the Local Government Allocations Medium Term Estimates for the financial periods 2023/24 – 2024/2026. The PTNG and GIPTN (Operations) and ITP Grants are highlighted in blue text in **Table 13-9** (George Municipality, 2023).

Table 13-9: Local Government Grant Allocations 2023/2024 – 2025/2026 (George Municipality, 2023).

Local Government Allocations 2023/24 - 2025/26			
	Medium Term Estimates		
National Grants	2023/2024	2024/2025	2025/2026
Direct Grant			
Equitable Share	214 691 000	235 747 000	260 334 000
Infrastructure Skills Development Grant	6 500 000	6 000 000	6 500 000
LG Financial Management Grant	1 771 000	1 771 000	1 909 000
Expanded Public Works Programme	4 420 000		
Municipal Infrastructure Grant			
Energy Efficiency and Demand Side Grant			
Integrated National Electrification Grant	6 346 000	5 000 000	5 000 000
Regional Bulk Infrastructure Grant	375 138 000	274 626 000	
Neighbourhood Development Partnership grant	5 000 000	5 000 000	5 000 000
Water Services Infrastructure Grant	3 820 000		
Integrated Urban Development Grant	67 450 000	49 500 000	51 645 000
Public Transport Network Grant	144 823 000	148 446 000	145 807 000
TOTAL: Direct Transfers	**829 959 000**	**726 090 000**	**476 195 000**

Local Government Allocations 2023/24 - 2025/26			
	Medium Term Estimates		
National Grants	2023/2024	2024/2025	2025/2026
In-kind Grant (Not Included in budget)			
Integrated National Electrification Programme (ESKOM)			1 546 000
Neighbourhood Development Partnership Grant (Technical Assistance)	1 300 000	500 000	500 000
TOTAL: Indirect Transfers	**1 300 000**	**500 000**	**2 046 000**
Total	**831 259 000**	**726 590 000**	**478 241 000**
Provincial Grants	**2022/2023**	**2023/2024**	**2025/2026**
Direct Grant			
Human Settlements Development Grant (Beneficiaries)	-	46 100 000	15 800 000
Municipal Accreditation and Capacity Building Grant	491 000	497 000	497 000
Title Deeds Restoration Grant	1 708 000		
Informal Settlements Upgrading Partnership Grant: Provinces	12 000 000	39 000 000	10 000 000
Western Cape Financial Management Capability Grant	1 000 000	-	-
Financial Assistance to Municipalities for Maintenance and Construction of Transport Infrastructure	1 245 000	450 000	500 000

Local Government Allocations 2023/24 - 2025/26			
	Medium Term Estimates		
National Grants	2023/2024	2024/2025	2025/2026
George Integrated Public Transport Network - Operations	228 868 000	211 822 000	219 072 000
Integrated Transport Planning	-	628 000	656 000
Community Library Services Grant	11 288 000	11 728 000	12 255 000
Development of Sport and Recreation Facilities	750 000		
Thuong Services Centres Grant	150 000	150 000	104 000
Community Development Workers (CDW) Operational Support Grant	94 000	94 000	94 000
TOTAL: Direct Transfers	**257 594 000**	**310 469 000**	**258 978 000**
Total Allocations Excluding Indirect Grants	**1 087 553 000**	**1 036 559 000**	**735 173 000**

13.6 GIPTN

George Municipality continues to implement a phased roll-out of the GO GEORGE public transport service Phase 4A serving Thembalethu was rolled out in the 2023, with the remaining phases, namely Phase 4B, Phase 5 and Phase 6 to follow. GIPTN is heavily reliant of external (GRANT) funding to ensure provision of a low cost, good quality, reliable public transport service to serve the people of George.

13.6.1 GIPTN Capital and Operations Funding

The George Integrated Public Transport Network funding for 2023/24 will comprise of a National Grant for network improvements of R145m and Provincial Grant for Operations of R229m, a total of R374m and R44m from Municipal funds.

National Grant: Public Transport Network Grant (PTNG) – Capital

An application was made to the National Treasury, through the National Department of Transport, seeking additional funding for the 2022/23 financial year. This funding is intended to support further upgrades to Tabata Street Sections 3-5, Ngcakani Street Sections 2-4, Golf Street, and the construction of the Garden Route Mall Transfer Location.

Infrastructure development is crucial and relies heavily on grant funding from the Department of Transport. George LM also

contributes a certain percentage towards road rehabilitation; however, it is anticipated that there will be a significant shortfall in funding, estimated to be around R180 million per year in 2023/24, with this shortfall expected to increase in subsequent years.

The Division of Revenue Act (DORA) of 2023 resulted in the discretionary incentive component being distributed equally among receiving cities. As a consequence, George's allocation from the Provincial Treasury and National Government (PTNG) decreased from R191.4 million to R144.8 million.

Provincial Grant: George Integrated Transport Network Grant - Operations

During the 2022/23 financial year, the municipality received in-year funding amounting to R60 million from their partner, the Western Cape Department of Transport and Public Works (DTPW). Additionally, the Provincial baseline allocation to GIPTN increased by R74 million for the 2023/24 financial period, indicating further commitment from DTPW towards the project's ongoing success.

It's important to highlight that according to Financial Agreement between the authorities, the allocation of the Municipal GIPTN Infrastructure financing shortfall after the sixth year of operation should be agreed upon by the involved parties. Currently, such an agreement is not in place, but it should be prioritised to ensure the sustainability of the infrastructure program moving forward.

Municipal Funding: GIPTN Capital and Operations

George LM also contributes funding for GIPTN Capital and Operational expenses. Critically, expanding GIPTN will require additional funding in future years.

Since its inception in 2014, the GIPTN has undergone notable growth, serving over 4.9 million passengers in 2022 and reaching 70% of households in George. The revenue generated from annual tariffs is crucial for maintaining the continued operation of the GO GEORGE service, necessitating the incorporation of fare structures in the tariff list. Municipal tariffs are a critical source of income and needs to be increased annually to align with increased costs of the service and to ensure financial sustainability of GIPTN.

Additional revenue sources should however also be explored, i.e., advertising should be investigated to further supplement GIPTN revenue.

Grant Allocations

Table 13-10 below shows a breakdown of grant income for the George Municipality. The grants are split between national and provincial grants. The table shows that the amounts received from Provincial government are 61% more than received from National government.

The gazetted National 2023/24 three-year budget for GIPTN is as follows:

Table 13-10: Gazetted national 2023/24 three-year budget for public transport.

Description	2023/24 (R '000)	2024/25 (R '000)	2025/26 (R '000)
National Grant:			
Operations	144 823	148 446	145 807
Infrastructure			
Provincial Grant:			
Operations	228 868	211 822	219 072

Description	2023/24 (R '000)	2024/25 (R '000)	2025/26 (R '000)
Total - Grants	**373 691**	**360 268**	**364 879**

13.6.2 Municipal Financial Management

Municipal financial management focuses on four key legislative frameworks, as below:

- Municipal Finance Management Act (MFMA),
- Municipal Systems Act (MSA),
- Municipal Property Rates Act, and
- Division of Revenue Act.

These acts govern various aspects of municipal finance, including budgeting, fund management, procurement, and financial reporting, aiming to enhance transparency, accountability, and effective service delivery.

This section details various grants, including the Community Based Public Works Grant (CBPWG), the Municipal Infrastructure Grant (MIG), and others, aimed at supporting municipal infrastructure and service provision, particularly in under-resourced areas. These grants should be explored, especially considering the rapidly expanding areas in George.

This section addresses potential local and external funding sources for transport infrastructure projects, highlighting the challenges and opportunities in securing adequate financing. This includes exploring innovative funding mechanisms and the potential role of development banks, banking institutions, and specific taxes or levies to support substantial capital expenditures required for infrastructure development.

Table 13-11 provides a strategic planning outline that should be followed to meet public transport objectives.

Table 13-11: Strategic Planning Outline.

Strategic Planning to meet Objectives		
No.	**Component**	**Strategy Activity**
1	**Transport Network Analysis**	Conducting a thorough analysis of the current transport network to identify gaps in accessibility and mobility.
2	**Stakeholder Engagement**	Engaging with the community to understand their needs and to ensure that the transport system is designed with the user at the centre.
3	**Policy Development**	Policy Development: Crafting policies that support the development of 30-Minute Towns and a 60-Minute City, including zoning laws, transport tariffs, and incentives for sustainable travel.
4	**Infrastructure Investment**	Identifying key areas for investment in infrastructure that will improve travel times and safety, such as dedicated bus lanes, cycle paths, and pedestrian zones.
5	**Technology Integration**	Leveraging technology to improve transport services, such as real-time travel information, mobile ticketing, and smart traffic management systems.

Table 13-12 provides an organised overview of various grants and funding sources and highlights their purposes and access mechanisms within the context of municipal financial management for infrastructure and service provision. The categorisation also highlights whether the funds can be utilised for capital or operational projects or both.

Table 13-12: GRANTS and Funding Sources.

No.	Key Legislative Frameworks	Grant Source/Funding Source	External / Internal	Purpose of the Grant/Funding	Mechanism to Access	Capital / Operational
1.	MFMA, MSA, Municipal Property Rates Act, Division of Revenue Act	Local Government Equitable Share (LES)	Internal	Redistribution based on population to support municipalities with weaker fiscal conditions.	Based on LES formula, considering population, needs, and fiscal capacity.	Operational
2.	Division of Revenue Act	Community Based Public Works Grant (CBPWG)	Internal	Alleviate poverty, create jobs, and support infrastructure projects in rural areas.	Project proposals to the Department of Public Works, meeting specific conditions.	Capital
3.	Division of Revenue Act	Municipal Infrastructure Grant (MIG)	Internal	Support capital projects to eradicate infrastructure backlogs and provide basic services.	Compliance with MIG guidelines and focus on priority areas.	Capital
4.	-	Neighbourhood Development Partnership Grant	Internal	Support property development in townships and attract private investments.	Alignment with neighbourhood development objectives and securing capital subsidies.	Capital
5.	-	Public Transport Infrastructure and Systems Grant	Internal	Funding for public and non-motorised transport infrastructure and systems.	Focus on improving public transport according to national guidelines.	Capital
6.	-	Extended Public Works Programme Incentive Grant for Municipalities	Internal	Encourage labour-intensive projects maximising job creation and skills development.	Adherence to Extended Public Works Programme guidelines.	Operational
7.	-	Municipal Systems Improvement Grant (MSIG)	Internal	Build capacities and stabilise institutional and governance systems, indirectly supporting transport projects.	Aimed at skill development, potentially applicable for transport systems planning.	Operational
8.	-	Private Off-Street Parking	Local	Generate funds through a levy on private parking, mainly in urban settings.	Implementation of parking levy systems.	Capital / Operational

No.	Key Legislative Frameworks	Grant Source/Funding Source	External / Internal	Purpose of the Grant/Funding	Mechanism to Access	Capital / Operational
9.	-	Office Rentals	Local	Generate funds through levies related to office space rentals.	Levy imposition based on parking space allocations.	Capital / Operational
10.	-	Traffic Fines & Electronic Enforcement	Local	Support road safety plans and maintenance through enforcement fines.	Enforcement of traffic regulations and fine collection.	Operational
11.	-	Funding Agencies & Development Banks (e.g., World Bank, African Development Bank)	External	Finance large-scale transport infrastructure projects.	Compliance with institutional funding criteria focusing on economic, social, and environmental impacts.	Capital
12.	-	Banking Institutions	External	Offer project financing against municipal balance sheets or through PPPs.	Approval of projects and establishment of funding agreements based on project feasibility.	Capital
13.	-	Specific Taxes and Levies (e.g., fuel levy)	Local / External	Generate funds for road and infrastructure spending.	Implementation of tax/levy collection mechanisms.	Capital / Operational

Funding Agencies, Development Banks:

The following are institutions amongst others, who target transport infrastructure projects:

- Development Bank of South Africa
- African Development Bank
- UK Overseas Development Association
- Australian Agency for International Development
- Canadian International Development Agency
- European Investment Bank
- World Bank

Typically, accessing funds involves navigating a detailed process governed by specific rules and standards aligned with eligibility criteria. These criteria are stringent, evaluating projects based on their economic, social, and environmental impact. Initiatives focused on enhancing accessibility, alleviating poverty, and promoting economic development tend to receive greater priority. However, it's important to note that these funds primarily consist of "soft" loans, which require careful financial structuring to avoid impacting the overall funding pool for other projects.

13.6.3 GIPTN Capital Budget

The current GIPTN Capital Budget is R43 900 959.

13.6.4 GIPTN Capital Budget Milestones

The following key milestones of the GIPTN Capital Projects have been set for the 2023/24 financial period:

Capital Budget Key Milestones

- The continued construction of Tabata Street (Stage 2),
- Commencing construction of Ngcakani Street and
- Continued maintenance and repair of vandalised shelters.
- (The above Capital projects will be funded by the municipal "Skin in the Game" (SiTG) contribution of 2% of the total municipal property rates.)
- Safety and Security - To ensure the ongoing safety and security of the project, budget will be made available toward the procurement of an additional Rapid Response Vehicle, a Breakdown Vehicle, In Vehicle Technology (IVT), and Body Camera's (George Municipality, 2023).

13.6.5 GIPTN Operations Budget

Funding for the George Integrated Public Transport **Network (GIPTN) operations will** comprise of a National Grant for Operations of R145m for 2023/24 and a Provincial Grant for Operations of R229m, a total of approximately R374m.

13.6.6 GIPTN 2023/2024 Operations Milestones

The following key milestones of the GIPTN Operations have been set for the 2023/24 financial period:

Operations Budget Key Milestones

- Vehicle maintenance
- Intelligent Transport System (ITS), Automated Fare Collection (AFC) System and implementation support costs
- Field monitoring services
- Facilities management services
- Marketing and communications services
- Transfer of Sprinter vehicles to the Vehicle Operating Company (as per Operator Contract)

13.7 George Roads Master Plan Budget

The George Roads Masterplan was modelled to determine the road network required to provide access and mobility to support the envisaged spatial development for 5 to 10 Years, 10 to 20 Years and > 20 Years and > 20 years.

The high-level costing for road infrastructure, as determined for the various horison years scenarios, is shown in the following Tables. It is pointed out that the hilly terrain and ravines will require extensive and expensive bridge structures that adds substantially to the expected roads infrastructure costs. The details of the George Roads Master Plan are contained in **Chapter 7**.

Table 13-13: Road network improvements (5-10 years Horizon).

Route No	Description	Num Lanes	Speed Limit [km/h]	Road Class	Length [km]	Cost (Rmil)	Comments
1	Kraaibos to Conville Link	2	50	Class 4	1.175	158	bridge over gorge
3	Thembalethu to George Mall Link	2	60	Class 3	0.738	15	
5	Thembalethu to George Mall Link	2	60	Class 3	2.314	46	
6	New West Development Link	2	80	Class 2	6.304	189	(N2 interchange separate)
11	Conville - Industrial link	2	50	Class 4	0.591	4	
20	N2 Interchange 1	2	60	Class 1	0.233	69	interchange on N2
21	N2 Interchange 2	2	60	Class 1	0.235	69	interchange on N2
22	N2 Interchange 3	2	60	Class 1	0.220	69	interchange on N2
23	N2 Interchange 4	2	60	Class 1	0.243	70	interchange on N2
24	Platner Blvd link to West	2	60	Class 3	4.443	189	short bridge
31	New West Development Link - Delville Park link	2	60	Class 3	2.415	48	
33	R102 - Plattner Blvd link South of R102	2	60	Class 3	1.310	176	Bridge over N2
34	Discovery St - West link	2	50	Class 4	1.176	8	
35	Beach Rd - Nelson Mandela Blvd link	2	60	Class 3	3.070	161	Bridge over rail
39	PW Botha Blvd - Tabata St linkvia George Industria	2	60	Class 3	1.907	38	
56	R404 link with New North-South link	2	60	Class 3	1.858	137	Bridge over gorge
57	R102 link to New East-West link	2	50	Class 4	0.765	5	
60	N2 Interchange 1 Off-ramp EB	2	60	Class 1	0.126	65	0
63	N2 Interchange 4 On-ramp WB	2	60	Class 1	0.135	65	
71	Pacaltsdorp Link Upgrade	2	60	Class 3	1.053	121	Bridge over ravine
85	Rand Street Extension	2	60	Class 3	0.819	16	
100	New Kraaibosch Link to Welgelegen	1	50	Class 4	1.201	4	
101	New Kraaibosch Link to Groenkloof Link	1	50	Class 4	0.185	1	
102	Glenwood to Kaaimans Road	1	50	Class 4	1.131	4	
103	Knysna Street to Saasveld Road	1	50	Class 4	0.418	1	
TOTAL					**34**	**1 732**	


Table 13-14: Road network improvements (10-20 years Horizon).

Route No	Description	Num Lanes	Speed Limit [km/h]	Road Class	Length [km]	Cost (Rmil)	Comments
2	Kraaibos to Conville Link to Pienaar Street Link	2	50	Class 4	0.888	16	along river
4	Southern Bypass to N2 Sasol Garage Link	2	80	Class 2	2.500	675	Ravines and rivers
7	Pacaltsdorp - Thembalethu Link 1	1	60	Class 3	1.637	216	Bridge over ravine
8	New West Development Link	2	80	Class 2	2.268	68	
9	New West Development Link	2	80	Class 2	2.678	80	
12	Mall - Southern bypass link	2	80	Class 2	1.908	157	Bridge over ravine
14	Forest - N2 Sasol Garage	2	60	Class 3	1.557	51	Forest area
15	Pacaltsdorp - Thembalethu link 2	1	60	Class 3	2.728	47	ravine area
32	Delville park - R102 link	2	60	Class 3	1.515	180	structure over N2
36	Pacaltsdorp - George Industria link	1	60	Class 3	0.823	18	edge of ravine
52	N2 Extension towards Wilderness	2	120	Freeway	3.242	96	Bridge over river
58	Kraaibosch to N2 Sasol Garage	2	60	Class 3	1.290	86	Crossing small gorge
59	Western Bypass South Upgrade	2	100	Class 2	8.456	254	
80	Kraaibosch - New N2 Connection	1	60	Class 3	1.148	11	
82	Sandkraal Road Extension	1	60	Class 3	2.145	21	
104	Kraaibosch to Victoria Bay	2	60	Class 3	1.184	24	
105	Welgelegen to Kraaibosch Small Link	2	60	Class 3	0.140	3	
TOTAL					**36**	**2 005**	

Table 13-15: Road network improvements (Beyond 20 years Horizon).

Route No	Description	Num Lanes	Speed Limit [km/h]	Road Class	Length [km]	Cost (Rmil)	Comments
16	Southern Bypass	2	80	Class 2	6.742	202	
38	Pacaltsdorp - Westbound link	4	60	Class 3	3.484	219	bridge over river
50	Western Bypass	2	80	Class 2	5.909	457	Crossing river and gorge
51	Western Bypass Link to R404 extension	2	80	Class 2	0.842	25	
70	Western Bypass Expressway	2	80	Class 2	2.301	299	Crossing small gorge and minor structiure
86	R102 - Plattner Blvd link North of R102	1	60	Class 3	1.799	18	
TOTAL					**21**	**1 221**	

13.8 George Institutional Funding (for GIPTN)

George is currently updating their Institutional funding and this section will be updated during the review process.

13.9 Issues and Concerns

The following concerns have been identified within the George Local Municipality (LM) regarding its budgets and funding mechanisms:

- The capital budget is notably smaller than the operating budget. To effectively enhance infrastructure and services, local governments need to identify new income sources.
- A significant part of the municipality's funding relies on grants and subsidies. It is essential for George LM to cultivate internal revenue streams to sustain both its daily operations and long-term investment plans.
- Financial contributions from higher governmental levels often overlook the critical areas of road infrastructure and transportation services. George LM must champion the importance of transportation, advocating for a realignment of funding allocation formulas to prioritise these sectors.
- George Municipality is encouraged to proactively seek conditional grants and explore other revenue-generating avenues. Accessing detailed information on available grants and understanding their application processes is challenging. It is advisable for financial officials to engage with grant administrators across various government strata to fully leverage potential funding sources.
- George Municipality acknowledges the smart city and transport mobility vision and goals and, within its financial capacity and available resources, strategically allocates capital and operational funding to support their achievement.

13.10 List of Projects

This section includes the list of projects to be implemented, as well as first order cost estimates and a proposed implementation strategy in terms of budget allocations.

The George Mun Adjusted Budget 2023 (Extract) is presented in **Table 13-16** and **Table 13-17**. Additionally, the George Local Municipality Civil Engineering Services (CES) Public Transport Budget proposal for Institutional - Staff and policies are presented in **Table 13-18**, and for the Capital Projects presented in **Table 13-19**.

13.11 Summary of The Funding Strategy and Proposals

The plan emanating from Chapter 13, "Funding Strategy and Summary of Proposal," in the George CITP focuses on securing and managing financial resources effectively to support the transportation infrastructure and services in George Municipality. Here are the key elements of the plan:

Capital Expenditure Framework (CEF)

- Aligning investments with spatial and transportation planning is crucial. The CEF ensures that funds are allocated strategically to enhance transport efficiency and accessibility.
- High-level project identifications have been outlined, which include institutional and regulatory adjustments, financial strategies, and transport planning initiatives.

Municipal Budget Adjustments

- The George Municipal Budget for the 2022/2023 mid-year review and subsequent adjustments are integral to forming the 2023/24 Medium-Term Revenue and Expenditure Framework (MTREF). The capital budget for the three years is set at R2 361 million, with funding sourced from capital replacement reserves, external financing, grants, and separate operating accounts.

Funding for Key Projects

- Specific focus is placed on the George Integrated Public Transport Network (GIPTN) and the Roads Master Plan, which are critical for improving public transport and road infrastructure. A mix of national grants, municipal funds, and potentially provincial contributions are planned to support these initiatives.

Institutional Funding and Capacity Building

- A strong emphasis is placed on the importance of institutional funding to ensure that George Municipality has the capacity to manage and deliver transport projects effectively. This involves building robust financial planning and management structures.

Grant Allocation and Revenue Generation

- The strategy includes securing grants from both national and provincial sources to fund operations and infrastructure. It also encourages exploring additional revenue streams, such as advertising, to supplement income for transport projects like the GIPTN.

Long-Term Financial Planning

- The plan underscores the importance of integrating financial planning with the overall strategic objectives of the municipality. This includes maintaining a sustainable transport system that is financially viable in the long term.

Strategic Planning Outline

- The plan incorporates a strategic outline for public transport, focusing on network analysis, stakeholder engagement, policy development, infrastructure investment, and technology integration. These components are critical to achieving the transport objectives set out in the CITP.

Table 13-16: Extract from George Municipality Capital Budget (1/2).

EXTRACT FROM GEORGE MUNICIPALITY - CAPITAL BUDGET 2022/2023 - 2027/2028		2022/23
DESCRIPTION	**FUNDING**	**AMENDEDBUDGET**
CIVIL ENGINEERING SERVICES		
STONE PITCHING (LANG AND DU PREEZ STREETS)	CRR	75 000
PAVING OF STREETS	CRR	1 500 000
UPGRADE OF SIDEWALKS - LONG STREET (UNIONDALE)	CRR	250 000
Sub-total		**1 850 000**
GIPTN UNIT		
GIPTN ROADS REHABILITATION - PTNG GRANTS	GRANTS	40 446 959
GIPTN ROADS REHABILITATION - EFF	EFF	0
UPGRADING OF FACILITIES (PTNG)	GRANTS	400 000
Sub-total		**43 900 959**
STREETS AND STORMWATER		
BUILDING OF CONCRETE CANALS & DRAINS - AD HOC	CRR	300 000
GIPTN ROADS REHABILITATION - CRR	CRR	10 160 000
MARKET STREET UPGRADING	CRR	551 317
RESEAL OF STREETS	EFF	10 000 000
UPGRADING OF STREETS HAARLEM	CRR	3 000 000
PROPERTY DEVELOPMENT - SWEATPEA STREET RESIDENTIAL		
ERVEN PROJECT -ROADS FROM	CRR	200 000
RAND STREET EXTENTION	CRR	350 000
UPGRADING STREETS UNIONDALE	CRR	0
UPGRADING OF EXISTING STORMWATER INFRASTRUCTURE	EFF	4 906 629
UPGRADING OF EXISTING STORMWATER INFRASTRUCTURE (GEORGE		
SOUTH)	EFF	500 000
UPGRADING OF EXISTING STORMWATER INFRASTRUCTURE (GEORGE		
SOUTH)	GRANTS	43 043 478
NEW DAWN PARK (PHASE 4):STORM WATER UPGRADE (MIG)	GRANTS	4 808 867
NEW DAWN PARK (PHASE 4):STORM WATER UPGRADE (CRR)	CRR	450 000
UPGRADE MBEWU STREET (THEMBALETHU) STORMWATER (MIG)	GRANTS	599 006
UPGRADE MBEWU STREET (THEMBALETHU) STORMWATER (CRR)	CRR	178 000
UPGRADE DICK STREET (THEMBALETHU) STORMWATER (MIG)	GRANTS	7 539 629
UPGRADE DICK STREET (THEMBALETHU) STORMWATER (CRR)	CRR	718 860
UPGRADE SPETOSE STREET (THEMBALETHU) STORMWATER (MIG)	GRANTS	2 291 844
UPGRADE SPETOSE STREET (THEMBALETHU) STORMWATER (CRR)	CRR	250 000
THEMBALETHU ROADS - MIG	GRANTS	2 735 762
TABATA STREET SECTION 3-5	GRANTS	14 297 500
TABATA STREET SECTION 3-5	CRR	752 500
NGCANI STREET SECTION 2-4	GRANTS	19 807 500
NGCANI STREET SECTION 2-4	CRR	1 042 500
GOLF STREET	GRANTS	6 935 000
GOLF STREET	CRR	365 000
GOLF STREET (additional)	GRANTS	1 150 000

Table 13-17: Extract from George Municipality Capital Budget (2/2).

GARDEN ROUTE TRANSFER STATION	GRANTS	3 500 000
STREETS AND STORMWATER (cont.)		0
THEMBALETHU ROADS - CRR	CRR	0
UPGRADE MQWEMESHA STREET (THEMBALETHU) STORMWATER		
(MIG)	GRANTS	2 347 826
UPGRADE MQWEMESHA STREET (THEMBALETHU) STORMWATER		
(CRR)	CRR	173 913
UPGRADIN G OF SAAGMEUL STREET	CRR	2 500 000
ROOIDRAAI ROAD: REPAIRS TO SLIP FAILURE	EFF	0
ROOIDRAAI ROAD: REPAIRS TO SLIP FAILURE	GRANTS	11 521 826
STREETS AND STORMWATER (GENERAL)	GRANTS	11 333 374
STREETS AND STORMWATER (SPECIFIC PROJECTS)	GRANTS	81 572 640
PETERS ROAD: REPAIRS TO SLIP FAILURE AND ASSOCIATED		
STORMWATER	EFF	0
PETERS ROAD: REPAIRS TO SLIP FAILURE AND ASSOCIATED		
STORMWATER	GRANTS	16 521 739
UPGRADING OF WHITES ROAD	EFF	1 000 000
UPGRADING OF BINNE & BUITE STREET INTERSECTION		0
UPGRADING OF SAAGMEUL STREET	EFF	8 500 000
UPGRADING OF RUBY STREET	CRR	0
STABILIZATION OF EMBANKMENT: BORCHARDS		0
STABILIZATION OF EMBANKMENT: MOLEN CLOSE	CRR	1 000 000
STABILIZATION OF EMBANKMENT: MOLEN CLOSE	GRANTS	1 043 478
CONSTRUCTION OF SIDEWALKS: GEORGE AREA	CRR	2 000 000
TOOLS AND EQUIPMENT	CRR	191 925
2X 3TON TRUCKS - STREETS & STORMWATER		0
REBUILDING OF STREETS: GREATER GEORGE	CRR	0
REBUILDING OF STREETS: GREATER GEORGE	EFF	7 800 000
UPGRADING OF EXISTING STORMWATER INFRASTRUCTURE		0
UPGRADING OF EXISTING ROADS DELVILLE PARK	EFF	7 500 000
UPGRADING OF HANSMOESKRAAL ROAD	EFF	0
UPGRADE LAWAAIKAMP STORMWATER	CRR	517 836
UPGRADE BORCHERDS STORMWATER	CRR	374 795
VEHICLES AND MACHINERY		0
1TON SC 4X4 LDV	EFF	0
1TON SC 4X4 LDV - Replaced hired vehicle (SH Mtwazi)	EFF	450 000
1TON SC 4X4 LDV - Replaced hired vehicle (L Mata)	EFF	450 000
1TON SC 4X4 LDV - Replaced hired vehicle (D Arendse)	EFF	450 000
GRADER	EFF	0
TRAILERS	CRR	100 000
JETTING MACHINE	EFF	610 000
MECHANIC BROOM (ROAD RESERVE MAINTENANCE)	EFF	0
Sub-total		**298 392 744**

Table 13-18: George Local Municipality CES Public Transport Budget proposal: Institutional - Staff and policies.

Institutional - Staff and policies			2024/2025	2025/2026	2026/2027	>2027	
Item	**Qty**	**Costs per unit -R**	**Total Cost -R**	**Total Cost -R**	**Total Cost -R**	**Total Cost - R**	**COMMENTS**
Transport Model Software Acquisition + Training/skills development				-	-		Accommodates purchase of PTV software, but this aspect needs to be discussed and finalised. Licence fee if PTV is purchased is R200 000 per year. Other option to be investigated is outsourcing model maintenance and updating and assisting George LM on annual basis.
Transport Institutional Organisation and Capacity (additional staff (posts) / resources)							The lack of an integrated transport institutional structure, organisation and capacity is of major concern. Moving towards a "capacitated, effective and efficient" intuitional organisational structure that can manage and facilitate the development of the George CITP.
Transportation Modellers	1	25000		300 000	318 000		Modeller post
Active Mobility (NMT) Staff	2	25000		600 000	636 000		2 Post for NMT branch
Traffic Signal Analyst	1	25000		300 000	318 000		1 Post for traffic engineer
Transport Management Centre (TMC) (Needs assessment and Functional Design (Concept of Operations)			500 000				Identify facility to host current ITS technology and serve as operations centre.
New policies/guidelines/ regulations Development							Develop policies and guidelines for George LM
Parking Guidelines			200 000				Develop guidelines and parking standards for George LM
Mapping PT1 and PT2 Zones (Areas)			100 000				Advertise for public approval and promote lowered parking ratios
TOTALS			**800 000**	**1 200 000**	**1 272 000**	-	

Table 13-19: George Local Municipality CES Public Transport Budget proposal: Capital Projects.

Capital Projects			2024/2025	2025/2026	2026/2027	>2027	
Item	**Qty**	**Costs per unit -R**	**Total Cost -R**	**Total Cost -R**	**Total Cost -R**	**Total Cost -R**	**COMMENTS**
Traffic Management Systems (TMS) Improvements							
Traffic Management Centre (TMC)							Establish a TMC to accommodate all ITS technology (traffic signals, co-ordination, CCTV camera surveillance, etc) and function as a traffic and transport operations centre
Rationalise existing Facilities and Technology			100 000	100 000			Identify facility to host current ITS technology and serve as operations centre.
Planning, Design, Build , Operate (DBOM) new TMC					350 000	30 000 000	Identify future site for TMC facility. Plan, design, build and operate
Urban Traffic Control (UTC)							Create an integrated urban traffic control system for George LM
Traffic Signal System Synchronisation (i.e. SCOOT, etc.)	55	100000			1 500 000	4 000 000	Identify routes for optimisation and synchronisation, investigate adaptive signal system, implement
New Traffic Signal Implementation (mostly part of development applications)				500 000			Ensure new development signals are incorporated in the UTC where appropriate.
Upgrade Existing Traffic Signals			200 000	200 000	200 000	2 500 000	SARTSM compliance and improve signal infrastructure and signal optimisation
Intelligent Transport Systems (ITS) Technologies							
Surveillance, Detection and Data Collection Technologies (CCTV, ANPR's, Vehicle Counting)				100 000	100 000	500 000	Investigate and install appropriate technologies according to legislation, functional requirements and operational needs in accordance with policies and plans.
Overload Control Systems (Weigh-in motion equipment, sites, weighbridges, etc.)	1	1000000			1 000 000	1 000 000	Investigate and install appropriate technologies according to legislation, functional requirements and operational needs in accordance with policies and plans.

Capital Projects			2024/2025	2025/2026	2026/2027	>2027	
Item	**Qty**	**Costs per unit -R**	**Total Cost -R**	**Total Cost -R**	**Total Cost -R**	**Total Cost -R**	**COMMENTS**
Electronic Signage (VMS's, Way finding, etc.)					150 000	1 000 000	Investigate and install appropriate technologies according to legislation, functional requirements and operational needs in accordance with policies and plans.
Road Network Improvements							
Active Mobility - NMT (Walking & Cycling) - Pedestrian Crossings, cycle paths, walkways							Invest in NMT as a key component to support the public transport system in George LM
Rehabilitation and Maintenance of current facilities (i.e. road markings, signage, universal access improvements, etc.)			100 000	100 000	100 000	600 000	Create a safer more efficient Active Mobility Network.
Improvement of current facilities adding new missing links, etc.			100 000	100 000	100 000	600 000	Create a safer more efficient Active Mobility Network.
New NMT facilities				250 000	250 000	2 000 000	Create a safer more efficient Active Mobility Network.
Parking Facilities							Encourage modal shift by implementing PT1 and PT2 parking requirements and providing appropriately located park and ride facilities. Also promote the reduction of carbon gas emissions by providing changing stations for EV's
Park and Rides (near Public Transport Facilities) (i.e. George Station, St Marx Square, etc.)				250 000	500 000	1 500 000	Identify and provide safe park and ride facilities
Upgrade and Maintenance of existing parking							
Off-Street Parking (areas)			100 000	100 000	100 000	600 000	
On-Street Parking			100 000	100 000	100 000	600 000	
Bus Embayment's (Chartered services, i.e. Africa Express)	15	80000	400 000	400 000	400 000	1 500 000	Investigate to implement bus embayment's for chartered bus services.
Road Traffic Safety Improvements							Improve road safety for all road users (vehicles, and NMT) including management of heavy vehicle movements in the CBD.

Capital Projects			2024/2025	2025/2026	2026/2027	>2027	
Item	**Qty**	**Costs per unit -R**	**Total Cost -R**	**Total Cost -R**	**Total Cost -R**	**Total Cost -R**	**COMMENTS**
Traffic Calming Measures (Schools, parks, public facilities, old age homes, hospitals, clinics, etc.)			100 000	100 000	100 000	600 000	Improve safety for all road users and create liveable community environment.
Street Lighting				300 000	300 000	2 000 000	Reduce crashes by improving visibility.
Road Network Infrastructure (Upgrades and New Links)							Road links and improvements identified in the Transport Model. Multi source funding (i.e. national, provincial, local, developers)
0-10 yrs						1 732 000 000	High level indicative costing
10-20 yrs						2 006 000 000	High level indicative costing
20 yrs and beyond						1 221 000 000	High level indicative costing
TOTALS			**1 200 000**	**2 600 000**	**5 250 000**	**5 008 000 000**	

14 STAKEHOLDER CONSULTATION

In the process of formulating the GLM CITP, a significant number of stakeholder and public participation meetings were conducted. These were done to synchronise planning efforts, gather valuable input to steer the planning process, and provide updates on the progress of the CITP. This chapter aims to give an account of the stakeholder consultation process followed for the CITP.

14.1 Stakeholder Engagements

All of the Stakeholder Engagements that the Project Team undertook for the CITP are listed in **Table 14-1**, containing the fields: Date, Time, Location, Description / Purpose, Organiser / Meeting Lead, Organisation and Consortium Representative(s).

Table 14-1: Project Team Meeting Register containing only the Stakeholder Engagements.

Date	Time	Location	Description / Purpose	Organiser / Meeting Lead	Organisation
2021/05/13	14:30	Zutari Cape Town	Data Collection Coordination Meeting	James Robb	George Municipality
2021/08/30	14:30	Loerie Guest House, George	GO GEORGE Manager Meeting	James Robb	George Municipality
2021/08/31	10:30	Loerie Guest House, George	GO GEORGE Team Meeting	James Robb	George Municipality
2021/08/31	12:00	Loerie Guest House, George	George Municipality Planning Meeting	Lynette Groenewald	George Municipality
2021/09/01	13:00	MS Teams	Provincial Government Regulating Entity (PRE) Meeting	Patrick Davids	WCG PRE Dept.
2021/09/02	11:00	MS Teams	George Municipality Engineering Meeting	Lindsay Mooiman	George Municipality
2021/09/02	13:00	George Airport	ACSA Meeting	James Robb	George Municipality
2021/09/02	14:30	Garden Route Disaster Management Centre	District Disaster Management Centre Meeting	Gerhard Otto	Garden Route District Disaster Management Centre
2021/09/20	09:30	MS Teams	Meeting with Project Director	Wim Ferreira	George Municipality
2021/10/19	09:00	MS Teams	MSDF Review - Project Committee Meeting #2	Lynette Groenewald	George Municipality
2021/11/17	13:00	MS Teams	George CITP Project: MSDF input	Wim Ferreira	Province: GO GEORGE / Zutari
2021/11/26	10:00	MS Teams	George CITP Project: Model Discussion	Wim Ferreira	Province: GO GEORGE / Zutari
2022/02/17	10:30	MS Teams	ITP - application - Thembalethu linkages	Lynette Groenewald	George Municipality
2022/02/23	08:30	MS Teams	CITP Model & Road Linkage prioritisation	Lynette Groenewald	George Municipality
2022/02/28	10:00	MS Teams	Review of The Immovable Property Management Policy Monday	Lynette Groenewald	George Municipality
2022/03/01	16:00	CCTV Operations	CCTV Camera Access	Wim Ferreira	George Municipality
2022/03/03	08:00	Meeting - Garden Route DM Disaster Management	Access to GIS information and Model discussion	Wim Ferreira	George Municipality
2022/04/14	12:15	MS Teams	Discussion regarding Stakeholder Engagement the GCF	James Rob and Ricardo Collins	George Municipality and Province

Date	Time	Location	Description / Purpose	Organiser / Meeting Lead	Organisation
2022/04/20	14:00	Meeting and MS Teams	Engagement with the George Traffic Management Department	Wim Ferreira	George Municipality
2022/04/20	18:00	Meeting	Stakeholder Engagement Meeting with the George Community Forum (GCF)	Wim Ferreira	George Community Forum (GCF)
2022/04/21	15:00	Meeting and MS Teams	Stakeholder Engagement with ACSA	Wim Ferreira	ACSA
2022/04/22	12:30	Meeting	Stakeholder Engagement with Harriers Running Club Representative	James Robb	Harriers Running Club
2022/05/06	12:00	MS Teams	PM Discussion and planning of meetings	James Robb	George Municipality
2022/05/12	07:00	MS Teams	Stakeholder Engagement with Chief Director: Transport Operations at Transport and Public Works	James Robb	Western Cape Government
2022/05/12	11:00	Meeting	Project feedback	James Robb	Zutari and GO GEORGE
2022/05/12	12:00	Meeting and MS Teams	UA coverage in the current CITP update	James Robb	Zutari, GO GEORGE Universal Access Inclusive Design and MDA Project Consultants
2022/06/07	16:00	Meeting, 5th floor Boardroom, 71 York Street, Planning & Development Department, GM	Thembalethu UISP - Area 5 Layout Discussion with Zutari	Joubert Theart	Zutari and GM Planning & Development Department
2022/05/08	12:00	Municipal Manager (MM) Boardroom, 3rd Floor Boardroom, 71 York Street	Feedback to MM on CITP Project and Transport Model Development	James Robb	George Municipality
2022/05/08	14:00	Meeting with the Public Transport Operators: GHV and GTOF	Follow-up and clarification of PT route descriptions and location of start and end points of routes.	Wim Ferreira	TTL Consortium
2022/06/09	09:30	Meeting, 5th floor Boardroom, 71 York Street, Planning & Development Department, GM	Roads Master Plan Workshop Planning and Development Boardroom - 5th floor 71 York street	Lynette Groenewald, GM	George Municipality


Date	Time	Location	Description / Purpose	Organiser / Meeting Lead	Organisation
2022/06/09	12:00	Meeting, 5th floor Boardroom, 71 York Street, Planning & Development Department, GM	Meeting with Lee-Anne Meiring CBD Renewal Study and CITP Update	Lee-Anne Meiring	George Municipality
2022/07/12	10:30	MS Teams + Meeting at Zutari Offices, Canal Walk	George CITP Project and TPT Discussion with Robby Robertson, Peter Sole, Wayne-Duff Riddell, and James Robb	James Robb	George Municipality
2022/07/12	15:15	Meeting at Zutari Offices, Canal Walk	George CITP Project Discussion with Lee van den Berg	James Robb	George Municipality
2022/07/13	11::00	MS Teams	Project Management Discussion and Future Meetings	James Robb	George Municipality
2022/08/10	14::00	MS Teams	MSDF Review Discussion: Engineering Facilities & Layers	Lynette Grenewald	George Municipality
2022/08/26	11::00	MS Teams	Project Management Discussion and Future Meetings	James Robb	George Municipality
2022/10/19	11:00	MS Teams	CITP Project: Workshop/PMT	James Robb	George Municipality
2022/11/17	14:00	MS Teams	Discussion CITP/MSDF and Road Master Plan Requirements	Lynette Groenewald	George Municipality
2022/11/23	12:30	MS Teams + Meeting at Zutari Offices, Canal Walk	George CITP Project and TPT Discussion with Robby Robertson, and Peter Sole	Wim Ferreira	George Municipality
2022/11/25	13:30	MS Teams	Modelling Scenarios Discussion	Wim Ferreira and Lynette Groenewald	George Municipality
2022/11/30	11:00	MS Teams	Discussion GO GEORGE Routes and Fares Structure	Wim Ferreira	GO GEORGE Staff
2022/12/01	09:30	MS Teams	MSDF Project Committee: Final CEF Report workshop	Alan Rhodes	Western Cape Government
2022/12/01	16:00	MS Teams	Discussion George Future Capital Projects (Infrastructure Proposals	Alan Rhodes	Western Cape Government
2022/12/06	11:00	MS Teams	Discussion Transport Register and GM OLP	Lauren Strauss and Wim Ferreira	GO GEORGE Staff


Date	Time	Location	Description / Purpose	Organiser / Meeting Lead	Organisation
2022/12/06	14:00	MS Teams	Discussion Gwayang Access Points and the Classification of the R102 Airport Road	(Rudolf Schröder, Frans van Aardt)	Urban Engineering
2022/12/08	14:00	MS Teams	Discussion Ilisolethu Gateway Node - NMB Design	Reinier Minnie	Cadre Plan


15 CONCLUSIONS AND RECOMMENDATIONS

The George Comprehensive Integrated Transport Plan (CITP) 2023-2028 serves as a strategic blueprint for the sustainable development of transportation infrastructure and services within the George Municipality. This document is a product of extensive research, stakeholder engagement, and alignment with national and provincial transport policies. It encompasses a multi-faceted approach to address the transportation needs of a rapidly growing region while ensuring that future developments are both sustainable and inclusive. This section contains the final conclusions and high-level recommendations.

Chapter 1: Transport Vision & Objectives

The first chapter sets the foundation by outlining the transport vision and objectives of George Municipality. The vision emphasises creating an integrated, accessible, safe, and sustainable transport system that caters to all citizens. This chapter aligns the municipality's goals with broader national and provincial strategies, ensuring coherence in planning and execution.

Recommendation: Continuously align the transport vision and objectives with evolving national and provincial transport policies. Regularly update the vision to reflect emerging trends and technologies in transportation, ensuring that George Municipality remains at the forefront of sustainable urban transport planning.

Chapter 2: Summary of the Transport Register

This chapter provides a detailed summary of the current transport infrastructure, services, and conditions within George. It highlights key statistics and trends, including the modes of transport used by residents and the state of existing transport networks. The data-driven approach ensures that the CITP is grounded in reality, offering an accurate assessment of current challenges and opportunities.

Recommendation: Maintain and regularly update the transport register to ensure that it accurately reflects the current state of transportation infrastructure and services. This should include the integration of new data sources, such as real-time traffic monitoring and public transport usage statistics, to support dynamic and informed decision-making.

Chapter 3: Spatial Development Framework

The Spatial Development Framework (SDF) discussed in this chapter underscores the critical relationship between land use and transport planning. It maps out the municipality's spatial vision, ensuring that transport developments are strategically aligned with land use objectives. The integration of the SDF within the CITP reflects a commitment to creating a well-planned urban environment that supports economic growth and improves quality of life.

Recommendation: Ensure that the transport planning initiatives are tightly integrated with the Spatial Development Framework (SDF) to promote balanced urban growth. Emphasise the development of transport corridors that support mixed-use developments and enhance connectivity between residential, commercial, and industrial areas.


Chapter 4: Transport Needs Assessment

This chapter identifies the transport needs of the community, taking into account demographic changes, economic trends, and environmental considerations. By assessing current and future needs, the CITP prioritises investments and interventions that will have the most significant impact on mobility, accessibility, and sustainability.

Recommendation: Prioritise transport interventions that address the most critical needs identified in the assessment, particularly those that improve accessibility for underserved communities. This includes enhancing public transport options and developing non-motorised transport (NMT) infrastructure in areas with limited access to existing services.

Chapter 5: Transport Model Strategy

The Transport Model Strategy introduces a sophisticated tool for forecasting and analysing future transport scenarios. It provides a comprehensive view of how different interventions and developments might impact the transport system over time. This model is critical for long-term planning, helping to anticipate challenges and optimise resources.

Recommendation: Continue to refine and expand the transport model to include additional variables such as environmental impact, social equity, and economic development indicators. Use the model to test various scenarios and guide long-term infrastructure investments that are resilient and adaptable to future challenges.

Chapter 6: Public Transport Plan

In this chapter, the focus is on enhancing and expanding public transport services to meet the growing demand. The plan outlines strategies for improving the efficiency, coverage, and accessibility of public transport, with a particular emphasis on integrating various modes of transport. The goal is to reduce reliance on private vehicles, thereby alleviating congestion and reducing environmental impact.

Recommendation: Expand the coverage and frequency of the GO GEORGE public transport network, with a focus on improving service to outlying areas and integrating different modes of transport. Implement an accessible and user-friendly fare system that encourages greater use of public transport, particularly among low-income residents.

Chapter 7: Transport Infrastructure Strategy

The Transport Infrastructure Strategy provides a roadmap for developing and maintaining critical transport infrastructure. It prioritises projects based on their potential to enhance connectivity, support economic activities, and improve safety. The strategy also addresses the need for resilient infrastructure that can withstand environmental challenges and adapt to future growth.

Recommendation: Focus on the development of key infrastructure projects that enhance regional connectivity and support the economic growth of George. Prioritise the maintenance and upgrading of existing infrastructure to ensure long-term sustainability. Additionally, incorporate smart technology solutions to improve traffic management and safety.


Chapter 8: Transport Demand Management (TDM) Strategy

The TDM strategy in this chapter focuses on managing and reducing the demand for road transport, particularly private car usage. It proposes measures such as promoting public transport, cycling, walking, and implementing congestion pricing. These strategies are essential for managing traffic flow, reducing emissions, and creating a more sustainable urban environment.

Recommendation: Implement robust TDM measures, including congestion pricing, carpooling incentives, and increased investment in public transport and cycling infrastructure. These measures should be complemented by public awareness campaigns that promote the benefits of reducing private car use and encourage more sustainable travel behaviours.

Chapter 9: Non-Motorised Transport Plan (NMT)

This chapter highlights the importance of non-motorised transport modes, such as walking and cycling, within the overall transport strategy. The NMT plan proposes the development of infrastructure and policies that encourage these modes, ensuring that they become a viable and safe option for residents. The plan supports broader health, environmental, and accessibility goals.

Recommendation: Develop a comprehensive network of safe and accessible pedestrian and cycling paths throughout George Municipality. Focus on creating continuous routes that connect residential areas with key destinations such as schools, workplaces, and public transport hubs. Consider the needs of all users, including those with disabilities, in the design of NMT infrastructure.

Chapter 10: Freight Transport Strategy

Freight transport is a vital component of the municipality's economy. This chapter outlines strategies for improving the efficiency of freight movement within and through George. It emphasises the need for infrastructure that can accommodate heavy vehicles while minimising their impact on urban areas. The strategy also explores opportunities for shifting freight from road to rail, where feasible.

Recommendation: Enhance the efficiency and safety of freight transport by developing dedicated freight corridors that minimise the interaction between heavy vehicles and urban traffic. Explore opportunities for shifting freight from road to rail, and ensure that the necessary infrastructure is in place to support this transition.

Chapter 11: Other Transport-Related Strategies

This chapter consolidates various other transport-related strategies, including those focused on intelligent transport systems (ITS), tourism, and institutional arrangements. It ensures that all aspects of the transport ecosystem are considered, creating a holistic approach to transport planning.

Recommendation: Continue to integrate intelligent transport systems (ITS) into the broader transport network, focusing on technologies that improve traffic flow, enhance safety, and provide real-time information to users. Additionally, ensure that tourism-related transport strategies are aligned with the broader CITP goals, promoting sustainable and accessible tourism in George.


Chapter 12: Summary of Eden District ITP

Here, the CITP aligns its objectives with the broader Eden District Integrated Transport Plan, ensuring coherence across the district. This alignment is crucial for regional connectivity and coordinated development efforts.

Recommendation: Collaborate closely with the Eden District Municipality and other neighbouring municipalities to ensure that transport planning is coordinated across the region. This will enhance regional connectivity and support the efficient movement of people and goods throughout the district.

Chapter 13: Funding Strategy and Summary of Proposals and Programmes

The final strategic chapter addresses the financial aspects of implementing the CITP. It provides a detailed funding strategy, identifying potential sources of revenue and investment. The chapter also summarises key proposals and programmes that will drive the implementation of the CITP, ensuring that the plan is both actionable and financially sustainable.

Recommendation: Secure diverse and sustainable funding sources to support the implementation of the CITP. Explore public-private partnerships, government grants, and innovative financing mechanisms such as green bonds. Ensure that funding is prioritised for projects that offer the greatest social, economic, and environmental benefits.

Chapter 14: Stakeholder Consultation

This chapter emphasises the importance of stakeholder engagement in the planning process. By incorporating feedback from a wide range of stakeholders, the CITP reflects the needs and priorities of the community. This inclusive approach is essential for ensuring that the transport system serves everyone effectively.

Recommendation: Maintain an open and inclusive stakeholder engagement process throughout the implementation of the CITP. Regularly consult with community members, businesses, and other stakeholders to gather feedback and make necessary adjustments to the plan. This will ensure that the CITP remains responsive to the needs of all residents and continues to enjoy broad support.

Final Reflections

The George CITP 2023-2028 emphasizes integrated and sustainable development, aligning transport strategies with broader urban planning objectives. The plan seeks to establish a transport system that is not only efficient but also equitable and environmentally responsible. By providing a clear path forward, the CITP equips George Municipality to tackle current transport challenges while preparing for future growth. The Transport Model serves as a valuable planning tool, guiding decision-making and testing future scenarios. With a strong focus on sustainability, inclusivity, and resilience, the CITP is set to play a pivotal role in shaping George's future as a well-connected, vibrant, and sustainable city for generations to come.

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ANNEXURE A CONCEPT OF ACCESS, ACCESSIBILITY AND MOBILITY

A.1 Concepts of Access, Accessibility and Mobility

A.1.1 Definitions

Effective transport planning requires balancing both concepts. High mobility does not always mean good access, and vice versa. For instance, a city with extensive highways (high mobility) might still have poor access if these highways do not connect people to key destinations. Other components of the overall transport system such as the road network, road network functional classification, connectivity, different modes, etc. is all important. Clarifying these concepts, providing definitions is crucial in terms of this framework.

It is important to have a good understanding of the different terminology utilised to describe the different components of a smart integrated transport plan. **Table A-1** summarise the definition and key characteristics for some of the key terminology in the context of transportation and urban planning and specifically through the lens of access, accessibility, and mobility.

Table A-1: Definitions and Key Characteristics for terminology.

No.	Item	Definition	Key Characteristics
1	**Access**	• Road: Any public or private road, ramp, driveway, intersection, or path which crosses or is connected to a public road. • Physical connection: Access that allows traffic to enter or cross a public road. • Reachability of Destinations: Access is about how easily individuals can reach various places they need or want to go, such as workplaces, schools, healthcare facilities, shopping areas, and leisure destinations.	• Physical and Economic Factors: Access is determined by both physical factors (like distance and connectivity) and economic factors (like cost and affordability of transportation). • Quality of Infrastructure: The quality of transportation infrastructure, including roads, footpaths, and public transit facilities, plays a crucial role in determining access.

No.	Item	Definition	Key Characteristics
		• Inclusivity and Equity: It involves ensuring that all segments of the population, regardless of age, ability, or socio-economic status, have the means to reach essential services and opportunities. • Integration with Land Use and Transportation: Access is influenced by the way land use and transportation systems are planned and integrated. Better connectivity and efficient transport networks improve access. • Provision of Transportation Options: It includes providing a range of transportation options, such as public transit, walking, cycling, and driving, to cater to different needs and preferences. • Barrier-Free and Universal Design: Ensuring that infrastructure is designed to be free of barriers for people with disabilities and is usable by all, regardless of age or ability.	• Safety and Comfort: Safe and comfortable travel conditions, including well-maintained infrastructure and secure environments, are essential for good access. • Policy and Planning: Urban and transport policies and planning decisions significantly impact access, influencing where people live, work, and how they travel.
2	**Access Management**	• Control of Access Points: It involves the control and regulation of access points to roadways, such as driveways, junctions, and intersections. The goal is to manage where and how vehicles enter and exit the road network. • Balancing Accessibility and Traffic Flow: Access Management seeks to balance the need for access to properties and land developments with the goal of maintaining smooth and safe traffic flow on the main roadways. • Design and Planning Strategies: This includes the design and placement of intersections, driveways, median openings, and turning lanes, as well as the implementation of traffic signals and signage. • Safety Improvement: By reducing conflict points (places where paths of vehicles and pedestrians intersect), Access Management aims to enhance safety for all road users. • Efficiency and Capacity Maximisation: Proper Access Management can increase the capacity of roadways, reduce delays, and improve travel times by minimising disruptions in traffic flow.	• Spacing of Access Points: Increasing the distance between intersections and driveways to reduce the frequency of vehicles slowing down or stopping. • Hierarchical Roadway Network: Implementing a hierarchy of roads (e.g., local streets, collectors, arterials) with different levels of access control. • Land Use Planning: Coordinating with land use planning to ensure that developments are designed with optimal access and minimal impact on traffic flow and that network planning facilitate the development of targeted areas by providing appropriate access arrangements. • Multimodal Considerations: Considering the needs of all modes of transport, including pedestrians, cyclists, and public transport, in access design.
3	**Accessibility**	• Ease of Reaching Destinations: Accessibility is primarily about how easily people can get to various places they need or want to go, such as work, school, healthcare facilities, shopping centres, and recreational areas. • Inclusivity of All Population Groups: It includes ensuring that everyone, regardless of age, ability, or socio-economic status, has access to essential services and opportunities. • Integration of Land Use and Transportation: Accessibility is influenced by how land use and transportation systems are planned and integrated. Closer proximity of destinations and efficient transport networks improve accessibility. • Multimodal Transportation Options: It involves providing a range of transportation options, such as public transit, walking, cycling, and driving, to cater to different needs and preferences. • Barrier-Free Design: Ensuring that infrastructure is designed to be free of barriers for people with disabilities, such as providing ramps, tactile paving, and audible signals at crossings.	• Proximity of Facilities and Services: The physical distance to various destinations and the time it takes to reach them are crucial aspects of accessibility. • Quality and Availability of Transport Options: The availability, frequency, reliability, and quality of different modes of transport significantly affect accessibility. • Affordability: The cost of transportation, whether public transit fares or the cost of owning and operating a private vehicle, is a key factor in accessibility. • Safety and Comfort: Safe and comfortable travel conditions, including well-maintained infrastructure and secure environments, are essential for good accessibility

No.	Item	Definition	Key Characteristics
4	**Connectivity**	• Network Linkage: Connectivity is about how well different parts of a transportation network, such as roads, paths, and transit routes, are connected to one another. It's a measure of the directness and availability of routes between different places. • Ease of Movement: High connectivity implies that there are multiple, direct routes available, making it easier and more efficient for people to move from one place to another. • Integration of Different Modes: It also involves the integration of various modes of transportation, such as walking, cycling, public transit, and private vehicles, ensuring seamless transitions between them. • Reduction of Travel Time and Distance: Good connectivity typically reduces travel times and distances, making trips more direct and convenient.	• Density of Network: This includes the density of roadways, footpaths, and transit routes. A denser network usually indicates better connectivity and provides integration of land use components and communities. • Intermodal Facilities: The presence of facilities like bus stops, train stations, bike-share stations, and parking areas that support different modes of transport. • Quality of Infrastructure: The quality and maintenance of infrastructure, including roads, sidewalks, bike lanes, and transit facilities, affect connectivity. • Urban Design: The layout of streets, urban blocks, and the overall urban form significantly influence connectivity. Grid-like Street patterns typically offer higher connectivity compared to cul-de-sac or looped street patterns.
5	**Egress**	• Exit Routes and Facilities: Egress pertains to the pathways, routes, and facilities provided for safe and efficient exit from buildings, vehicles, or other structures. This includes exits from rooms, buildings, vehicles, or even urban areas. • Safety and Emergency Planning: In safety and emergency planning, egress is crucial for designing evacuation routes and procedures. It ensures that people can quickly and safely leave a place in case of emergencies like fires, earthquakes, or other hazards. • Compliance with Standards: Egress routes and facilities must comply with specific standards and regulations to ensure they are accessible, clearly marked, and unobstructed. • Capacity and Accessibility: The capacity of egress routes is designed to accommodate the number of people who might need to use them in an emergency, and they must be accessible to all, including individuals with disabilities.	• Clear Signage: Egress routes are typically marked with clear signage, indicating the direction to the nearest exit. • Unobstructed Pathways: These routes must be always kept clear of obstructions to allow for unimpeded movement. • Adequate Width and Height: The width and height of egress pathways must be sufficient to accommodate the flow of people expected to use them. • Lighting and Visibility: Proper lighting is essential to ensure visibility, especially in situations where power may be lost. • Regular Maintenance and Inspection: Egress routes and facilities require regular maintenance and inspection to ensure they remain functional and safe. • Disaster risk Management: road planning to facilitate safety and emergency planning.
6	**Functional Classification of the Road Network**	• Hierarchy of Roads: Roads are classified into different categories based on their primary function in the transportation network. This hierarchy typically includes arterials, collectors, and local roads. • Categorisation Based on Function: Roads are classified into categories such as arterials, collectors, and local roads, each serving a distinct function in the transportation network. • Arterial Roads: These are major roads designed for high traffic volumes and long-distance travel. They connect major urban centres, have higher speed limits, and prioritise through traffic with limited access points.	• Traffic Volume and Speed: Arterial roads accommodate high traffic volumes at higher speeds, while local roads have lower traffic volumes and speeds. • Traffic Volume and Speed: Arterial roads handle high traffic volumes at higher speeds, while local roads cater to lower volumes and speeds. • Access Control: Arterials have more controlled access, reducing interruptions in traffic flow, whereas local roads have numerous access points.

No.	Item	Definition	Key Characteristics
		• Collector Roads: Serving as intermediaries, collector roads collect traffic from local roads and funnel it to arterial roads. They balance the need for access to local destinations with the need to move traffic efficiently. • Local Roads: These roads primarily provide direct access to residential, commercial, and other local areas. They are characterised by lower traffic volumes and speeds, with a focus on providing access rather than facilitating through traffic.	• Connectivity and Integration: The system ensures that each road type is well-connected and integrated with others, facilitating efficient movement across the network. • Land Use Correlation: The classification often aligns with land use patterns, with arterials in denser, commercial areas and local roads in residential zones. • Road Classification: All roads in urban development boundary (current and future in MSDF) to be denoted as "urban roads" to facilitate development. Classification to align. This should not hinder development; instead, it ought to guide the network planning process to facilitate organised and focused development.
7	**Ingress**	• Entry Point: Ingress specifically refers to the entry point or process of entering a space, such as a road, parking lot, or building. • Design and Planning: In the design of roads, buildings, and urban spaces, careful planning of ingress points is crucial to ensure smooth and safe entry. • Traffic Flow and Safety: Ingress is closely linked to traffic flow and safety, as poorly designed entry points can lead to congestion, accidents, or inefficient movement. An access which is in only (to a property from a public road).	• Accessibility: Ingress points must be accessible to all users, including pedestrians, cyclists, and motorists, and should accommodate people with disabilities. • Integration with Transportation Network: Ingress should be designed considering its integration with the surrounding transportation network, ensuring that it does not disrupt traffic flow or safety. • Regulation and Control: Ingress points often involve regulatory elements like signage, traffic signals, or access control mechanisms to manage entry.
8	**Intersection**	• Point of Convergence: An intersection is a point where two or more roadways meet or cross. This can include crossroads, T-junctions, multi-road junctions, and various complex configurations. • Traffic Flow Management: Intersections are key points for managing traffic flow, including the movement of vehicles, bicycles, and pedestrians. • Control Mechanisms: They often include traffic control mechanisms such as traffic lights, stop signs, roundabouts, or yield signs to regulate and coordinate the movement of traffic. • Safety Considerations: Intersections are focal points for safety considerations, as the crossing paths of traffic increase the potential for accidents.	• Design and Layout: The design of an intersection can vary widely, from simple crossroads to complex multi-level interchanges with flyovers and underpasses. • Signalisation: Many intersections have traffic signals to control the flow of traffic, while others may rely on signage or be uncontrolled. • Pedestrian and Cyclist Facilities: Good intersection design includes safe and convenient facilities for pedestrians and cyclists, such as crosswalks, bike lanes, and pedestrian signals. • Accessibility: Intersections should be designed to be accessible to all users, including those with disabilities.
9	**Link**	• Segment of a Network: A link is essentially a segment or portion of a transportation network, such as a stretch of road, railway, or path between two intersections or other significant points. • Conduit for Movement: Links serve as conduits for the movement of vehicles, pedestrians, or cyclists, facilitating travel from one point to another within the network.	• Capacity and Function: The capacity of a link (how much traffic it can handle) and its function (e.g. activity corridor, arterial, collector, local road) are crucial aspects of its design and role in the network. • Traffic Flow: Links are designed to accommodate specific types and volumes of traffic, with considerations for speed limits, lane markings, and signage.

No.	Item	Definition	Key Characteristics
		• Characteristics of Links: The characteristics of a link can include its length, width, number of lanes, type of surface, roadside environment, and any control features like traffic lights or signs.	• Safety Features: Safety features on links can include pedestrian crossings, barriers, lighting, and signage to ensure the safe movement of all users. • Integration with Other Network Elements: Links are integrated with other elements of the transportation network, such as nodes (intersections, transit stops) and other links, to create a cohesive system.
10	**Mobility**	• Movement of People and Goods: Mobility involves the movement of people and goods from one location to another using various modes of transportation, including walking, cycling, driving, and public transit. • Ease and Efficiency of Movement: It's not just about the ability to move, but also how easily and efficiently this movement can be accomplished. • Access to Transportation Options: Mobility includes access to different transportation options and the integration of these modes to facilitate seamless travel. • The ability to reach a destination: With a minimum of delay and fundamental requirement for accessibility	• Multimodal Transportation: Effective mobility involves a range of transportation options that are well-integrated, allowing for easy transfers and cohesive travel experiences. • Accessibility: A key aspect of mobility is accessibility, ensuring that all individuals, including those with disabilities, have access to transportation. • Sustainability: Sustainable mobility focuses on reducing environmental impacts, often emphasising public transit, walking, cycling, and other eco-friendly modes. • Resilience and Adaptability: Mobility systems should be resilient to disruptions and adaptable to changing needs and technologies.
11	**Mobility Road**	• Multimodal Integration: A mobility road is designed to accommodate multiple modes of transportation, ensuring safe and efficient travel for cars, buses, bicycles, and pedestrians. • Focus on Movement: The primary focus of a mobility road is to facilitate movement across the network, often prioritising smoother traffic flow and connectivity. • Inclusive Design: Such roads are planned with inclusivity in mind, catering to the needs of all users, including those with disabilities. • Promote Vehicle Movement: A road specifically designed and protected to promote vehicle movement. • Priority: Priority is given to through traffic movements. Most of the activities allowed on access/activity streets are not permitted on mobility roads. (Highway or freeway)	• Diverse Transportation Infrastructure: This includes features like dedicated bus lanes, bike lanes, wide sidewalks, and safe pedestrian crossings. • Traffic Management: Mobility roads often incorporate advanced traffic management systems to optimise flow and reduce congestion. • Safety Measures: Safety is a key concern, with design elements that reduce conflict points and enhance visibility and protection for all users. • Environmental Considerations: These roads may also incorporate green infrastructure, such as trees or rain gardens, to improve environmental sustainability.
12	**Mobility Route**	• Integrated Transportation Pathway: A mobility route is a pathway, or a series of connected pathways designed for transportation, whether it's for walking, cycling, driving, or public transit. • Multimodal Connectivity: These routes often integrate different modes of transportation, providing seamless connections between walking paths, bike lanes, roads, and public transit systems. • Focus on Efficient Movement: The primary aim is to facilitate efficient and convenient movement across different areas, reducing travel times and improving accessibility.	• Accessibility: Mobility routes are designed to be accessible to all users, including those with disabilities, ensuring that everyone can navigate them easily. • Safety Features: They incorporate safety features like well-marked pedestrian crossings, protected bike lanes, and adequate lighting. • User-Friendly Design: The design of mobility routes often prioritises user experience, with clear signage, well-maintained paths, and amenities like benches or shelters. • Environmental Considerations: These routes may also include elements that promote environmental sustainability, such as green spaces or facilities for electric vehicles.


No.	Item	Definition	Key Characteristics
13	**Movement Network**	• Integration of Transportation Modes: A movement network includes roads, sidewalks, bike lanes, public transit routes, railways, and sometimes waterways. It integrates these different modes of transportation to provide a cohesive system for moving people and goods. • Facilitation of Movement: The primary purpose of a movement network is to facilitate efficient and safe movement across different areas, whether it's within a city, between cities, or across regions. • Connectivity and Accessibility: Key aspects of a movement network are connectivity (how well different parts of the network are linked) and accessibility (how easily people can reach their destinations). • Adaptation to Land Use Patterns: The design and development of a movement network are closely linked to land use patterns. It needs to adapt to residential, commercial, industrial, and recreational areas, providing appropriate transportation options for each.	• Diverse Transportation Options: A well-designed movement network offers various transportation options, including walking, cycling, driving, and public transit, to cater to different needs and preferences. • Safety and Efficiency: Safety for all users (pedestrians, cyclists, motorists) is a priority, along with the efficiency of the network in terms of reducing travel times and congestion. • Sustainability: Modern movement networks increasingly focus on sustainability, encouraging the use of environmentally friendly modes of transportation. • Resilience and Adaptability: The ability to adapt to changing needs, such as population growth or shifts in land use, and resilience to challenges like climate change or natural disasters.
14	**Parking**	• Vehicle Storage Space: Parking refers to the space where vehicles, such as cars, motorcycles, or bicycles, are parked or stored temporarily. • Types of Parking: This can include on-street parking (along the sides of streets), off-street parking (in parking lots or garages), and private parking (like driveways or private lots). • Design and Management: Effective parking involves not just the creation of spaces but also their design, management, and regulation to ensure efficient use and accessibility.	• Capacity and Layout: The capacity (number of vehicles it can accommodate) and layout (arrangement of parking spaces) are crucial for functionality. • Accessibility: Parking areas should be accessible to all users, including adequate provision for disabled parking. • Integration with Urban Environment: Ideally, parking should be integrated with the urban environment in a way that supports the overall urban design and land use objectives. • Regulation and Pricing: Parking is often regulated by local authorities, which can include time limits, fees, and permits to manage demand and availability.
15	**Road Network**	• System of Roads: A road network consists of all types of roads within a given area, ranging from small local streets to major highways and motorways. • Connectivity and Coverage: It provides connectivity across urban, suburban, and rural areas, facilitating the movement of vehicles, cyclists, and pedestrians. • Components: This network includes various elements such as lanes, junctions, intersections, roundabouts, signage, pedestrian crossings, and traffic control systems. • Purpose: The primary purpose of a road network is to enable efficient, safe, and convenient travel by road within and between different areas.	• Hierarchy of Roads: Road networks typically have a hierarchical structure, with different types of roads serving different functions, like major arterial roads for fast, long-distance travel and local streets for access to properties. • Design and Maintenance: The design and maintenance of the road network are crucial for safety and efficiency, involving aspects like road surface quality, lighting, and traffic management. • Integration with Other Modes: In modern urban planning, road networks are increasingly integrated with other modes of transport, such as public transit, cycling paths, and pedestrian walkways
16	**Sustainability (general and Integrated Transport Plan)**	• Balancing Act: At its core, sustainability is about meeting the needs of the present without compromising the ability of future generations to meet their own needs. It's a balancing act between resource use, environmental protection, and societal well-being.	• Long-Term Perspective: Sustainability requires a long-term outlook, considering the impacts of today's actions on future generations. To accommodate the anticipated growth in George, reaching 4% per annum, the Transport Plan (TP) must ensure timely adaptation. This entails strategic planning and allocation of


No.	Item	Definition	Key Characteristics
		• Three Pillars: Often described in terms of three pillars - environmental, economic, and social sustainability. • Environmental Sustainability: Involves managing natural resources prudently to maintain ecosystem health and resilience, preventing environmental degradation, and mitigating climate change. • Economic Sustainability: Ensures that economic activities and development are viable in the long term, without depleting natural resources or harming the environment. • Social Sustainability: Focuses on maintaining and improving social quality, including aspects like equity, social justice, community resilience, and cultural competence. • Long-Term Perspective: Sustainability requires a long-term outlook, considering the impacts of today's actions on future generations. • Holistic Approach: It involves a holistic approach, integrating and balancing various environmental, economic, and social factors. • Adaptability and Resilience: Sustainable systems are adaptable to changing conditions and resilient to environmental, economic, and social shocks. • Inclusivity: Sustainability emphasises inclusive decision-making, ensuring that all voices, particularly those of marginalised communities, are heard and considered.	resources for transport infrastructure, scheduled precisely to manage both population and economic expansion effectively. • Holistic Approach: It involves a holistic approach, integrating and balancing various environmental, economic, and social factors. The anticipated growth pattern and strategic spatial planning intent should be considered. • Adaptability and Resilience: Sustainable systems are adaptable to changing conditions and resilient to environmental, economic, and social shocks. • Inclusivity: Sustainability emphasises inclusive decision-making, ensuring that all voices, particularly those of marginalised communities, are heard and considered. • Reduced Dependency on Private Vehicles: Encouraging public transport, cycling, and walking to reduce congestion and environmental impact. • Smart Urban Planning: Integrating transport planning with urban development to create compact, walkable communities with good access to public transport. • Use of Technology: Implementing smart technologies for traffic management, real-time information systems, and efficient resource use. • Promotion of Clean Energy: Transitioning towards renewable energy sources for public transport and supporting infrastructure for electric vehicles. These initiatives should support economic development.
17	**Transit Oriented Development**	• High-Quality Public Transport as a Focal Point: TOD is designed around a well-functioning public transport hub, such as a train station, metro station, or bus depot. The idea is to make public transport the most convenient and preferred choice for residents. • Compact and Walkable Design: These developments are characterised by a compact design that promotes walkability. They typically have pedestrian-friendly streets, reduced reliance on cars, and easy access to daily needs within walking distances. • Mixed-Use Development: TODs integrate residential, commercial, and recreational spaces. This means that housing, offices, retail spaces, and amenities like parks and schools are all close to the transport hub. • Increased Density: By increasing density near transit hubs, TOD aims to maximise the number of people who can easily access public transport, thereby reducing the need for extensive road networks and parking spaces. • Sustainable and Efficient Land Use: The approach promotes more efficient land use, reducing urban sprawl and preserving open spaces and natural resources outside urban centres.	• Reduced Car Dependency: TOD reduces the need for car travel by providing convenient access to public transport and by having amenities and services within walking or cycling distance, whilst also supporting access requires for socio-economic development. • Enhanced Quality of Life: The design of TODs aims to enhance the quality of life by providing vibrant, safe, and inclusive communities with a variety of housing options and public spaces. • Economic Benefits: These developments can stimulate local economies by attracting businesses and increasing property values due to their desirable location. • Environmental Sustainability: TOD contributes to environmental sustainability by reducing greenhouse gas emissions from cars, encouraging the use of public transport, and promoting energy-efficient urban design.

No.	Item	Definition	Key Characteristics
18	**Transport Network**	• Integrated System: A transport network is an integrated system of pathways and nodes that facilitate the movement of people and goods from one location to another. • Components: It includes various components such as roads, railways, airways, waterways, and pathways for walking and cycling. The nodes in this network are points like bus stops, train stations, airports, and ports. • Connectivity: The network's primary function is to provide connectivity between different areas within a city, region, or country, enabling efficient and accessible transportation. • Multimodal Nature: A comprehensive transport network often encompasses multiple modes of transportation, allowing for seamless transitions between them, such as from buses to trains or from cars to ferries. • Support Infrastructure: It also includes the necessary support infrastructure like traffic signals, signage, parking facilities, and maintenance depots.	• Accessibility: The network should provide easy access to various destinations, catering to the needs of all users, including those with disabilities. • Efficiency: It aims to facilitate efficient movement, reducing travel times and improving the reliability of transport services. • Safety: Ensuring the safety of users is a critical aspect, involving proper design, maintenance, and regulation of the network. • Sustainability: Modern transport networks increasingly focus on sustainability, promoting environmentally friendly modes of transport and reducing the carbon footprint.

A.2 Networks and Connectivity

South Africa has the 10th Longest Total (750 000km Road Length) and 18th longest paved road network in the World with a replacement cost is R2 Trillion. About 60% of the damage to roads is attributed to overloaded heavy vehicles, overloading is estimated to cost the country over R600 million a year in damage to roads. (Source: https://www.transport.gov.za/roads)

The total proclaimed road length for George is 1774.7 km of which 460.7 km is surfaced (26%).

(Source: Western Cape Government) and breakdown of the different road types is shown **Table A-2**.

Divisional and Minor Roads combined road length are approximately 1030km, which represents 58% of the total proclaimed road network in George. Only 8% of this road coverage is surfaced. Whereas Main and Trunk Roads combined road length are approximately 690km, which represents 39% of the total proclaimed road network in George with a combined average of 57% being surfaced. This confirms that 58% of the road network serves the rural areas with a low surfaced coverage. The condition of these roads will affect many components of the transportation system, especially the agriculture industry as well as communities in these areas.

The conditions of the road will affect the quality of accessibility and mobility to communities, which confirms that the functional classification and the mobility purpose of the roads are important in the transport system ecosystem.

Table A-2: George Local Municipality Road Length Summary as of December 2022 (Western Cape Government).

Road Type	Total proclaimed road length (km's)	Effective (Physical Road length) (km's)	Surfaced (km's)	Surfaced (%)
National Roads (NR)	54.4	54.4	46.9	86.2%
Trunk Roads (TR)	445.1	396.5	272.7	61.3%
Main Roads (MR)	245.1	205.3	96.5	39.4%
Divisional Roads (DR)	625.4	606	37.1	5.9%
Minor Roads (MR)	404.7	403.7	7.5	1.9%
Total	1774.7	1665.9	460.7	26.0%

A.2.1 Revised Classification of the Road and Street System

The traditional approach to classifying roads and streets, which relied on a five-level hierarchy, has been largely phased out. This change stems from the recognition that the previous system overly focused on the vehicular movement aspect, neglecting other critical functions of the street network. The hierarchical model also inadvertently implied a ranking within the network, suggesting that some parts were more significant than others.

However, our understanding has evolved to view the network as an interconnected web of streets, each fulfilling diverse roles and catering to different needs. Overemphasising the importance of one link over another not only leads to suboptimal design but can also compromise the integrity and functionality of the entire network. Every component of the network deserves equal attention and consideration.

Table A-3 provides a clearer understanding of this evolved perspective. This table offers a comparative analysis between the former five-tier system, the Urban Transport Guideline (UTG) series, and the current classification approach.

It's important to note, however, that the relationships between the current classification and its predecessors are not directly equivalent. The older systems, including both the five-tier and *UTG classifications, primarily focused on a spectrum of accessibility versus mobility*. In contrast, the current classification system adopts a more holistic approach, addressing the full range of functions that roads and streets perform. (CSIR Building and Construction Technology, 2005)


Table A-3: Comparative analysis between the former five-tier system, the Urban Transport Guideline (UTG) series (CSIR Building and Construction Technology, 2005).

Movement Network	Five-Tier System	Urban Transport Guidelines (UTG Series)
Vehicle-only route	1 Regional distributor	(Freeways not included)
	2 Primary distributor	Major arterial (UTG1)
Mixed Pedestrian and Vehicle Route Trunk Roads (TR)	3 District distributor	Minor arterial (UTG1)
	4 Local distributor	Collector (UTH15)
	5 Access Street	Local street (UTG7 & 10)
Pedestrian-only route		(not applicable)

For a detailed understanding of the classification system within movement networks, refer to Chapter 5.1: Movement Networks. (CSIR Building and Construction Technology, 2005). This chapter provides an in-depth description of the system. Within the framework of the "movement network" classification, routes are categorised into three distinct tiers: higher-order, middle-order, and lower-order.

- **Higher-Order Routes**: These are designed to handle larger volumes of traffic and support significant levels of economic activity. They are the main arteries of the network, facilitating efficient movement across longer distances and often connecting major urban and economic centres.
- **Middle-Order Routes**: Serving as the connectors within the network, middle-order routes primarily function as links between the higher-order and lower-order routes. They balance the demands of through traffic with access to local destinations.
- **Lower-Order Routes**: These routes are focused on local traffic and access needs. They typically accommodate lower traffic volumes and are more oriented towards serving residential areas and recreational activities. Their design prioritises local accessibility and community integration.

It is crucial to understand that the designation of a route as "higher-order" should not be misconstrued as a default preference for the most extensive or highest-capacity solutions, such as those outlined in UTG 5. The classification is a guide to understanding the function and role of different routes within the network, rather than a hierarchy of importance or a one-size-fits-all solution. Each route type plays a vital role in the overall functionality and efficiency of the transport network, and their design should be contextually appropriate, considering the specific needs and characteristics of the areas they serve (CSIR Building and Construction Technology, 2005).

A.2.2 Network Connectivity Options

This section provides and introduction to understanding Transportation Network Configurations through Connectivity and Cost Considerations. These connectivity options do play a role in the level off accessibility and mobility for a transport network and system.

The design of a transportation network fundamentally revolves around decisions on how to connect various locations. To illustrate this, let's consider a simple scenario involving four locations and explore three general approaches to network connectivity:

Maximum Connectivity Network (Least Cost to Use): This design aims for the highest level of direct connectivity between all locations. For instance, if each location is 10 km apart, the network's total


length would be 60 km. This configuration offers the utmost convenience for users, allowing the shortest possible travel between any two points. However, it represents the most substantial investment in terms of construction and operational costs. Due to its high expense and potential redundancy, such networks are often impractical to implement.

Minimal Connectivity Network (Least Cost to Build): This approach focuses on minimising construction costs by providing the bare minimum connectivity. It connects all locations but may require significant detours for certain routes. For example, the least cost to build a network would span 20 km, which is three times less than the maximum connectivity network. While economical to construct, this network type imposes higher travel time and energy costs on users, especially for less direct routes.

Hybrid Network: Most real-world networks are a compromise between maximum connectivity and minimal construction costs. In the given example, a hybrid network might cover a total length of 30 km, offering moderate connectivity. For instance, an air transportation network optimised for cost might adopt a hub-and-spoke structure, but it's often supplemented with direct flights between major destinations to balance efficiency and user convenience.

The level of economic development significantly influences network connectivity. As economic activity density increases, there's a stronger incentive to enhance connectivity. A regional network might start as a minimal connectivity network due to cost constraints but could evolve into a maximum connectivity network as demand grows and justifies the investment. **Figure A-1** shows the Network Connectivity Options. (Rodrigue, 2020).

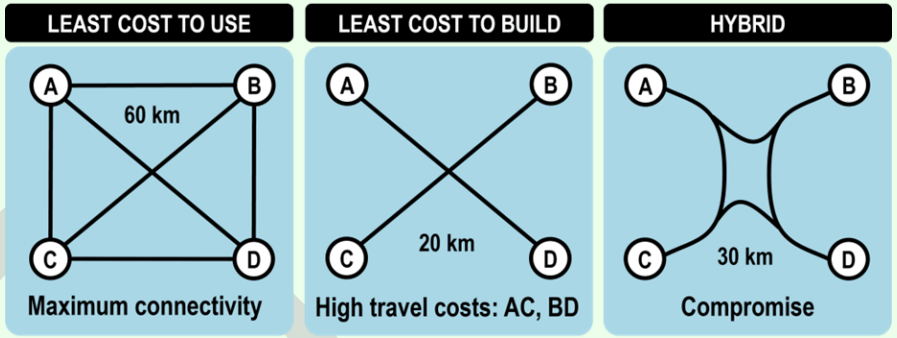

Figure A-1: Network Connectivity Options adapted from (Blum & Dudley, 2001).

A.2.3 The Geography of Transportation Networks

Transportation networks are a framework of routes linking locations. The structure of any region corresponds to networks of economic and social interactions. Transportation networks are intricately designed to provide varying levels of service, closely linked to their structural configurations.

When connecting the same set of locations, three fundamental network structures can be conceptualised, each with its unique characteristics and implications:

1. Centralised Network Structure: In this model, there is a single, highly accessible central hub that dominates the network. This hub becomes the primary focus of the network's spatial structure. A typical example of this is the hub-and-spoke network, commonly seen in airline and freight distribution systems. The centralised structure efficiently consolidates traffic through a main hub, facilitating streamlined

management and operations. However, it can also lead to congestion and over-reliance on the central hub.

2. **Decentralised Network Structure**: While maintaining a central point with the highest accessibility, this structure diversifies accessibility by developing significant sub-centres. These sub-centres are strategically positioned to distribute traffic and services more evenly across the network. This approach reduces the pressure on a single central hub and offers more direct routes for certain journeys, enhancing overall network efficiency and resilience.

3. **Distributed Network Structure**: In a distributed network, no single centre is markedly more accessible than the others. This results in a high level of connectivity and redundancy throughout the network. Such a structure is characterised by multiple paths and connections between locations, ensuring that the network remains functional even if one part is disrupted. While this can lead to increased construction and maintenance costs, it offers a robust and flexible system that can adapt to varying traffic demands and conditions. **Figure A-2** shows the Network Structures Options.

George GIPTN is an example of combination of a centralised and decentralised network and should in future roll outs transform to a more distributed network structure.

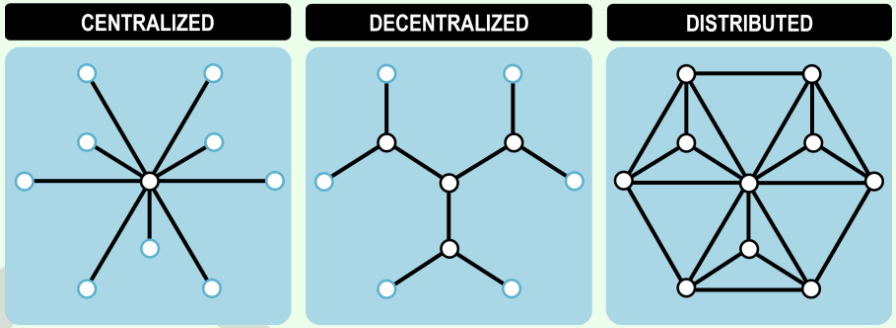

Figure A-2: Network Structures Options adapted from (Blum & Dudley, 2001).

A.2.4 Transport Networks

It is important understand the dynamics of Transport Networks in view of accessibility and mobility.

A transport network can be defined as a system comprising either permanent pathways, such as roads, railways, and canals, or scheduled services like airlines, public transit, and trains. This network extends beyond mere physical connections, encompassing various links between points that facilitate mobility.

The significance of a transport network lies in its connectivity. According to *Metcalfe's law*, the utility of a network increases exponentially with the number of its interconnected nodes. This principle implies that complex networks, with their myriad of connection options, are exponentially more valuable than simpler ones. The reason is straightforward: more connections provide more routes and options for movement, thereby enhancing the network's overall utility and efficiency.

In the context of economic development, this principle holds particular relevance. As economies grow and diversify, the demand

for more intricate and efficient transport networks increases. These networks not only facilitate the movement of goods and people but also become a catalyst for further economic growth and development. The complexity of a transport network is often directly correlated with the level of economic activity in a region. More developed areas tend to have more complex networks, reflecting and supporting the diverse needs of their economies.

Therefore, the evolution of transport networks is not just a matter of infrastructure development; it's also a reflection of economic progress. As regions develop, their transport networks become more intricate, supporting, and stimulating further growth. *This symbiotic relationship between network complexity and economic development underscores the critical role of transport networks in local, regional, provincial, and national development strategies*.

A.2.4.1 Structural Components of Transport Networks

In the realm of transport geography, transportation networks are often characterised by a variety of structures, each defined by key elements such as nodes, links, flows, hubs, and corridors. These structures vary in their spatial orientation and the level of accessibility they provide to different locations.

Centripetal vs. Centrifugal Networks: The network structure can be centripetal, focusing on a limited number of locations, thereby granting them significant locational advantages. In contrast, a centrifugal network is more evenly distributed, offering no specific locational benefits. Centripetal networks often revolve around major hubs, concentrating activity and connectivity, while centrifugal networks disperse these elements more uniformly across the landscape.

Direct vs. Indirect Connectivity: Another dimension of network structure is the nature of connectivity, ranging from direct to indirect. The most straightforward example of direct connectivity is the point-to-point network, where a service directly connects two locations without intermediate stops. This structure is efficient for long-distance travel where stops are not necessary or desirable.

Route Networks: On the more complex end of the spectrum are route networks. These involve services that connect multiple locations in a linear sequence, servicing intermediary points along the way. This structure is common in public transit systems, where multiple stops are necessary to service different areas along a route.

Each of these network structures has its unique characteristics and implications for transport geography. *They influence how people and goods move within and between regions, impacting everything from daily commutes to global trade patterns*. **Figure A-3** shows the Structural Components of Transport Networks.

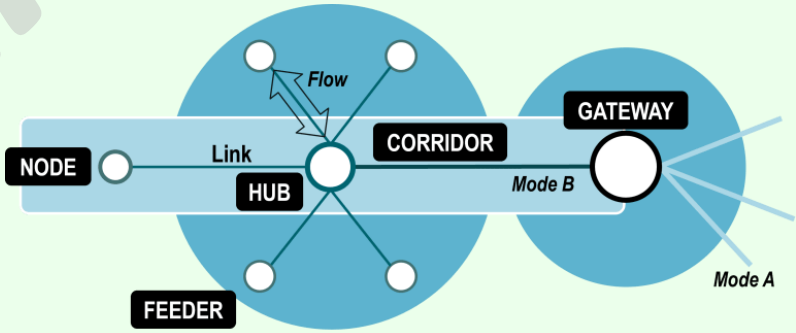

Figure A-3:Structural Components of Transport Networks


The main structural components of transport networks are:

- **Node**. Any location that has access to a transportation network.
- **Link**. Physical transport infrastructures enabling two nodes to be connected.
- **Flow**. The amount of traffic that circulates on a link between two nodes and the amount of traffic going through a node. Flows can thus be modal, intermodal (between modes) and trans modal (between components of the same mode).
- **Gateway**. A node that is connecting two different systems of circulation that are usually separate networks (modes) and which acts as a compulsory passage for various flows. An intermodal function is performed so that passengers or freight are transferred from one network to the other.
- **Hub.** A node that is handling a substantial amount of traffic and connects elements of the same transport network, or different scales of the network (e.g. local, regional, and international).
- **Feeder.** A node that is linked to a hub. It organises the direction of flows along a corridor and can be considered as a consolidation and distribution point.
- **Corridor.** A sequence of nodes and links supporting modal flows of passengers or freight. They are generally concentrated along a communication axis, have a linear orientation, and connected to a gateway.

A.2.4.2 Centripetal and Centrifugal Networks

Transport networks exert two primary spatial effects on flows: *centrifugal and centripetal*. These effects are shaped by the network's structure and its interplay with the distribution of origins and destinations.

1. Centrifugal Networks: Characterised by a lack of specific centrality, centrifugal networks exhibit a more uniform connectivity across all nodes. Typically, these networks display a grid-like pattern, where no single node is significantly more connected than others. This structure facilitates even distribution of flows across the network.

2. Centripetal Networks: In contrast, centripetal networks demonstrate strong centrality, with one or several nodes being substantially more connected than the rest. These networks often follow a radial pattern, converging on central, highly connected nodes. This structure channels flows towards these central nodes, creating focal points of activity.

3. Mixed Network Structures: It's rare for a network to exhibit a purely centrifugal or centripetal structure. Most networks display characteristics of both, with varying degrees of centrality and uniformity. The extent to which a network is centrifugal or centripetal depends on its design and the spatial distribution of its users.

4. Structural Components of Transport Networks: Understanding these spatial dynamics is crucial for comprehending the structural components of transport networks. This includes recognising the differences between centripetal and centrifugal networks, as well as the implications of point-to-point versus hub-and-spoke network designs.

5. Detour Levels in Hub-and-Spoke Networks: In hub-and-spoke networks, the detour level – the extent to which routes deviate


from a direct path – is an important consideration. This factor impacts travel times, network efficiency, and user experience.

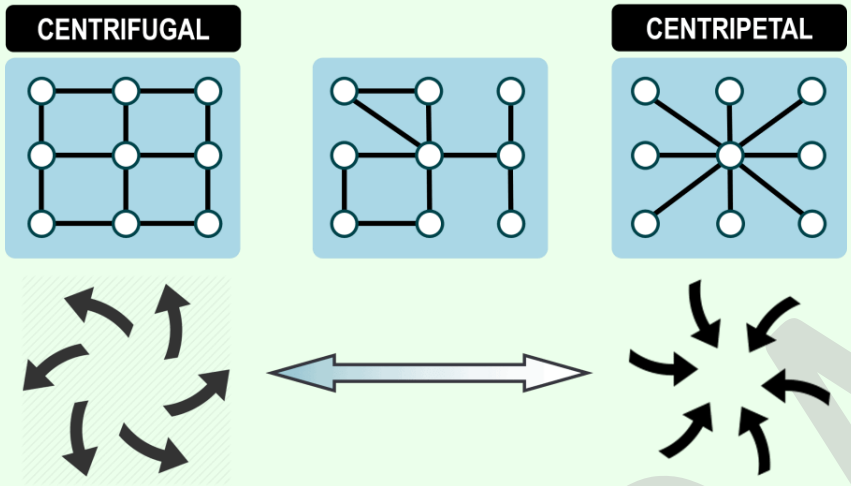

Figure A-4: Centripetal and Centrifugal Networks adapted from (Blum & Dudley, 2001).

Figure A-4 shows the Centripetal and Centrifugal Networks. The structure a Central and Centrifugal Network can have a significant impact on Accessibility and Mobility on the Network. **Table A-4** highlights some key impacts of a Central and Centrifugal Network in terms of Accessibility and Mobility.

Table A-4: Comparative analysis between the former five-tier system, the Urban Transport Guideline (UTG) series (CSIR Building and Construction Technology, 2005).

No.	Network Option	Impact on Accessibility	Impact on Mobility
1	**Centrifugal Networks**	• In a centrifugal network, accessibility is generally more evenly distributed due to the grid-like pattern. This structure allows for multiple routes to reach a destination, reducing potential congestion points and enhancing accessibility for a wider area. However, the lack of	• The grid-like structure of centrifugal networks can facilitate smoother traffic flow across different parts of the network, enhancing overall mobility. However, the absence of direct routes to central locations can sometimes result in longer travel times


No.	Network Option	Impact on Accessibility	Impact on Mobility
		a centralised hub can sometimes mean longer travel times for certain journeys.	
2	**Centripetal Networks**	• These networks, with their radial pattern, often provide high accessibility to central areas or hubs. This can be advantageous for densely populated or commercial areas where high traffic volume is expected. However, the focus on central nodes can lead to reduced accessibility in peripheral areas.	• These networks can streamline mobility towards and from central hubs, making them efficient for high-volume traffic. However, the reliance on central nodes can lead to congestion and mobility issues if these nodes are overwhelmed or experience disruptions
3	**Mixed Networks**	• Networks that blend centrifugal and centripetal elements can offer a balance, providing good accessibility to central areas while also maintaining reasonable access to outlying regions.	• While efficient for managing traffic through central hubs, they can be vulnerable to delays and disruptions at these hubs, impacting overall mobility. Direct connections in these networks can significantly enhance mobility by providing faster, more reliable routes.
4	**Point-to-Point Networks**		• This structure is typically the most efficient in terms of mobility, as it allows for direct travel without unnecessary stops or detours. It's particularly effective for long-distance travel where direct routes are preferred.

A.2.4.3 Point-to-Point versus Hub-and-Spoke Networks

Point-to-point and hub-and-spoke networks represent two distinct approaches in transport network connectivity.

Point-to-Point Networks establishes direct connections between locations, facilitating uninterrupted services. For example, in a network connecting 16 locations, a point-to-point system would require 16 separate connections, each supported by its own set of conveyances and infrastructure. This directness is advantageous for efficiency and simplicity but may lack the economies of scale found in more centralised networks. In contrast, a hub-and-spoke network centralises connections through a single intermediary, the hub. This structure reduces the number of necessary connections – in the same 16-location network, only 8 connections might be needed.

The hub-and-spoke model offers several advantages:

- **Economies of Scale**: Concentrating connections at hubs allows for more frequent services and potentially lower costs per trip.
- **Efficient Distribution**: Hubs can handle larger volumes of traffic, making them efficient points for distribution and transshipment.
- **Shared Facilities**: The use of shared transshipment facilities at hubs can lead to cost savings and higher quality infrastructure.
- **Adaptation in Transportation Services**: Many transport services, particularly in air passenger and freight sectors, have adopted hub-and-spoke models. This is evident in the development of global, national, and regional hubs by major parcel carriers like DHL.

While hub-and-spoke networks offer efficiencies, they can also introduce challenges such as potential delays and congestion at hubs, and the need for additional transshipment. As demand grows, the network may evolve to support more point-to-point connections,


indicating that hub-and-spoke structures often represent an intermediate stage in network development. Transport networks are more accurately understood by considering usage levels (e.g., passenger numbers, freight tonnage) rather than solely by their topology. Connectivity and traffic levels often correlate with economic opportunities, leading to disparities in accessibility among different locations.

Economic integration processes can significantly alter the structure and flows within transportation networks, particularly at the transnational level. These changes often reflect broader economic and commercial shifts, influencing network configurations and connectivity. **Figure A-5** shows the Point-to-Point versus Hub-and-Spoke Networks.

A.2.5 Influence of Economic Integration on Transport Networks and Flows

Transport networks are significantly shaped by the political and economic contexts in which they operate, particularly in terms of trade capacity and economic integration. Economies with a high level of economic integration tend to have well-connected networks, while economies with a low level of economic integration tend to have poor connectivity.

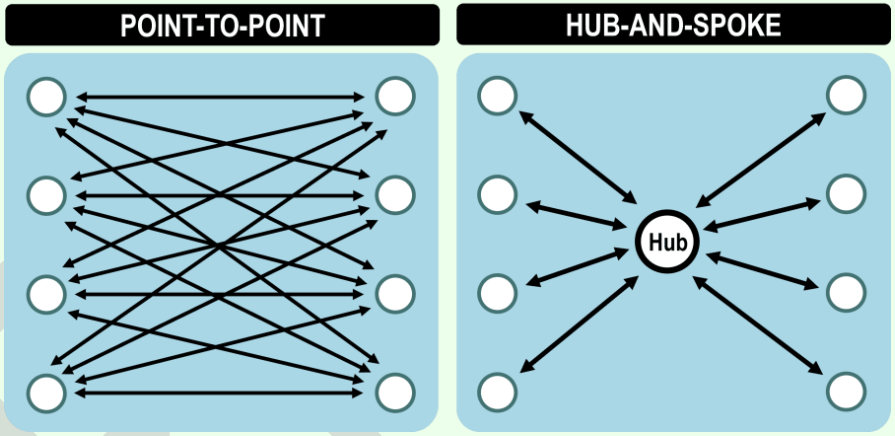

Figure A-5: Point to Point and Hub and Spoke Networks adapted from (Blum & Dudley, 2001).

With economic integration, the structure of transportation networks is modified with new cross-border linkages. Flows can also be modified and see their reorientation. In some cases, there could be a relative decline in national flows and a comparative growth of cross-border flows.

The efficiency of a network represents its ability to support flows while operating conditions meet performance criteria such as speed, capacity, and safety. It can be measured through graph theory and network analysis. These methods rest on the principle that the efficiency of a network depends partially on its topology, which is the layout of nodes and links. Some network structures have a higher efficiency level than others, but careful consideration must be given to the basic relationship between the revenue and costs of specific transport networks. Rates thus tend to be influenced by the structure of transportation networks since the hub-and-spoke

structure, particularly, had a notable impact on transport costs, namely through economies of scale.

The efficiency of transportation networks is also related to their resilience, which is the ability to support disruptions while maintaining a level of service and connectivity. A resilient network remains connected after facing disruptions such as severed nodes or links. A network could be efficient but not very resilient, or the other way around. For instance, a hub-and-spoke network enables a high level of efficiency for air transportation through the consolidation of flows and better usage of airplane assets. Still, such a network is not very resilient, particularly if a hub is disrupted. Thus, depending on the location of the same disruption in a transportation network, its impact could differ widely if it concerns a hub or another node. **Figure A-6** shows the Impacts of Integration Processes on Networks and Flows.

A.2.6 Transportation Network Efficiency and Resilience

The efficiency of transport networks is a critical aspect, defined by their ability to support flows while adhering to performance criteria like speed, capacity, and safety. Tools such as graph theory and network analysis are employed to measure this efficiency, focusing on the network's topology – the arrangement of nodes and links. Different network structures offer varying levels of efficiency. However, it's important to balance the revenue and costs associated with different transport network structures. For instance, the hub-and-spoke structure has significantly impacted transport costs through economies of scale, influencing the rates within these networks.

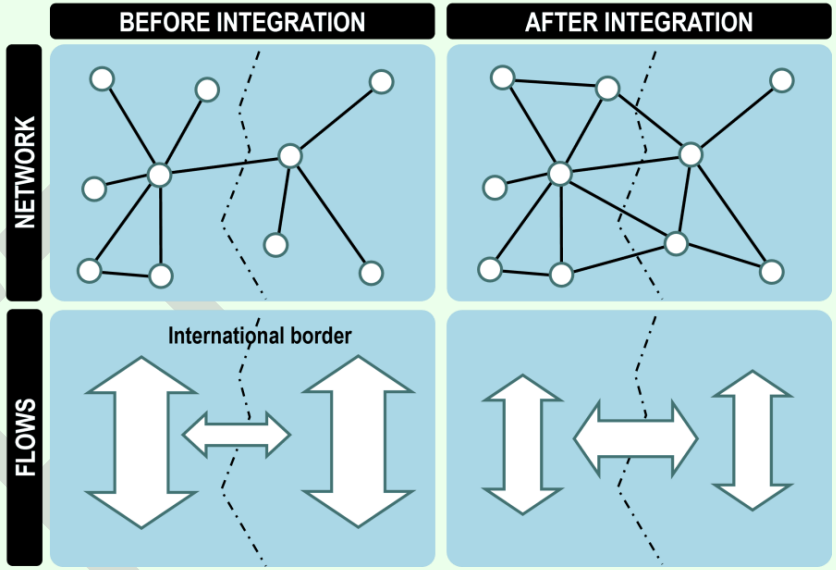

Figure A-6: Impacts of Integration Processes on Networks and Flows adapted from (Blum & Dudley, 2001).

Another crucial aspect of transport networks is their resilience, which is their ability to withstand disruptions while maintaining service levels and connectivity. A resilient network can remain functional even when faced with challenges like severed nodes or links. It's important to note that a network can be efficient without being resilient, and vice versa. For example, hub-and-spoke networks, commonly used in air transportation, offer high efficiency through flow consolidation and optimal asset utilisation. However, these networks can be vulnerable to disruptions, especially if a hub is affected. The impact of a disruption in a transport network can vary greatly depending on whether it affects a hub or a different node. **Figure A-7** shows the Impacts of Integration Processes on Networks and Flows.

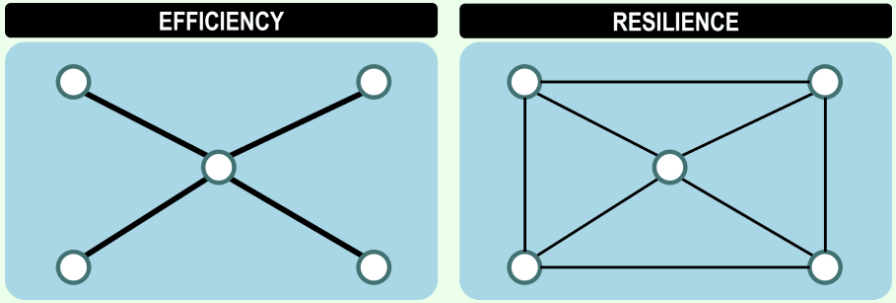

Figure A-7: Transportation Network Efficiency and Resilience adapted from (Blum & Dudley, 2001).

A transportation network connecting five locations can be developed and structured differently if efficiency or resilience is the goal. On an **efficient network**, the priority is to develop capacity, which commonly leads to selecting main corridors that will be the focus of investments. On a **resilient network**, the priority is the number of links to offer alternative routes if one or more segments are disrupted. With a higher level of planning and investment, networks can be developed to be at the same time efficient and resilient.

The above section provides background and context to the potential impact of which a *Networks and Connectivity* consideration have on planning, design, implementation and operations of an integrated transport network and system providing a sustainable solution in terms of access, accessibility, and mobility. The principles highlighted needs to be considered in all the transport components in the CITP.

A.2.7 Values, Principles, Primary Objectives, Parameters, and Influencing Measures of AAMF

To provide further context and specific guidelines for the other chapters in the CITP a more detail breakdown of the Values, Principles, Primary Objectives, Parameters, and Influencing Measures are provided in **Table A-5** to serve as guidance and input for the CITP in terms of these three (3) areas.

Table A-5: Values, Principles, Primary Objectives, Parameters, and Influencing Measures pertaining to the concepts of Accessibility, Mobility, Traffic and Transportation.

NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
1	Core Values	1.1	**Safety** Prioritising the safety of all road users (passengers, pedestrians, and drivers)	**Safety** Prioritising the safety of all road users.	**Safety** Prioritising the safety of all road users, from motorists to pedestrians and cyclists.	**Safety** Ensuring the safety of all users of the transportation system, from drivers to pedestrians.
		1.2	**Inclusivity and Accessibility** Ensuring that all residents, including those with disabilities and other vulnerable groups, have equal access to transportation options for all citizens,	**Mobility for All** Ensuring that all residents, regardless of age, ability, or socio-economic status, have access to efficient transportation options.	**Equity** Ensuring that all residents, regardless of socio-economic status, have equal access to efficient transportation options.	**Inclusivity** Providing transportation options that cater to all segments of the population, including vulnerable groups.

NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
			regardless of age, income, or ability.			
2	Principles	2.1	**Integrated Planning** Combining urban planning, transportation planning, and accessibility considerations to ensure they complement each other. Coordinating different modes of transport to provide seamless travel.	**Integrated Planning** Merging urban planning, transportation planning, and mobility considerations to ensure they complement each other.	**Integrated Planning** Merging urban planning, transportation planning, and traffic management to ensure they complement each other.	**Integrated Planning** Merging urban planning with transportation planning to ensure that transportation networks support urban growth and vice versa.
		2.2	**Multimodal Transportation** Promoting a mix of transportation modes, ensuring accessibility for all. Encouraging the use of various transport modes to reduce dependence on private vehicles.	**Multimodal Transportation** Promoting a diverse mix of transportation modes to cater to different mobility needs.	**Multimodal Transportation** Encouraging the use of various modes of transportation to distribute traffic and reduce road congestion.	**Multimodal Transportation** Developing and promoting a diverse mix of transportation modes to cater to different needs.
		2.3	**Universal Design** Designing transportation systems that can be accessed and used by everyone.	**User-Centric Design** Designing transportation systems based on the needs and preferences of users.	**Smart Traffic Management** Using technology and data analytics to optimise traffic flow and reduce congestion.	**User-Centric Design** Designing transportation systems based on the needs and preferences of users.
		2.4	**Demand Management and Innovation** Implementing strategies to manage and reduce transportation demand, especially during peak times. Utilising new technologies and methods to improve transportation.	**Smart Mobility** Leveraging technology to enhance transportation efficiency and user experience.	**Demand Management** Implementing strategies to manage and reduce traffic demand, especially during peak times.	**Sustainable Infrastructure** Investing in infrastructure that supports green and sustainable transportation modes.
3	Primary Objectives	3.1	**Reduce Congestion** Minimise traffic bottlenecks and ensure smooth flow on urban roads by optimising traffic flow and promoting public transport.	**Reduce Congestion** Minimise traffic bottlenecks and ensure smooth flow on urban roads.	**Reduce Congestion** Minimise traffic bottlenecks and ensure smooth flow on urban roads.	**Reduce Congestion** Minimise traffic bottlenecks and ensure smooth flow on transportation networks.

NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
		3.2	**Enhance Accessibility** Ensure that transportation networks are accessible to everyone, including people with disabilities. By improving connectivity and accessibility.	**Enhance Mobility** Ensure that transportation networks support the efficient movement of people and goods.	**Enhance Road Safety** Reduce accidents and ensure safety for all road users.	**Enhance Connectivity** Ensure that all parts of the urban area are well-connected by efficient transportation networks.
		3.3	**Promote Sustainable Modes** Encourage the use of public transit, cycling, walking, and other sustainable modes of transportation using clean energy sources and efficient vehicles	**Promote Sustainable Modes** Encourage the use of public transit, cycling, walking, and other sustainable modes of transportation.	**Minimise Environmental Impact** Reduce emissions and other environmental impacts associated with traffic.	**Promote Sustainable Modes** Encourage the use of public transit, cycling, walking, and other sustainable modes of transportation.
		3.4	**Improve Safety** Reduce accidents and ensure safety for all road users.	**Improve Safety** Reduce accidents and ensure safety for all road users.	**Optimise Traffic Flow** Use advanced traffic management systems to ensure efficient movement of vehicles.	**Improve Safety** Reduce accidents and ensure safety for all users of the transportation system.
4	Secondary Objectives	4.1	**Boost Economic Growth** Ensure efficient transportation to support economic activities and job opportunities. Enhancing urban landscapes through well-designed transport systems.	**Boost Economic Growth** Ensure efficient transportation to support economic activities and job opportunities.	**Boost Economic Growth** Ensure efficient transportation to support economic activities and job opportunities.	**Boost Economic Growth** Ensure efficient transportation to support economic activities, trade, and job opportunities.
		4.2	**Enhance Urban Liveability** Improve the overall living experience by reducing pollution, noise, and other transportation-related nuisances. Encouraging walking and cycling to improve public health.	**Enhance Urban Liveability** Improve the overall living experience by reducing pollution, noise, and other transportation-related nuisances.	**Enhance Urban Liveability** Improve the overall living experience by reducing pollution, noise, and other transportation-related nuisances.	**Enhance Urban Liveability** Improve the overall living experience by reducing pollution, noise, and other transportation-related nuisances.
		4.3	**Promote Social Inclusion** Ensure that transportation systems support social cohesion and interaction.	**Promote Social Inclusion** Ensure that transportation systems support social cohesion and interaction.	**Promote Sustainable Modes** Encourage the use of public transit, cycling, walking, and other sustainable modes of	**Promote Social Inclusion** Ensure that transportation systems support social


NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
			Implementing measures to reduce crime and enhance passenger security.		transportation to reduce road traffic.	cohesion, interaction, and accessibility for all.
		4.4	**Encourage Technological** Advancements: Adopt and promote new technologies that enhance accessibility and efficiency.	**Encourage Technological Advancements** Adopt and promote new technologies that enhance mobility and efficiency.	**Encourage Technological Advancements** Adopt and promote new technologies that enhance traffic management and efficiency.	**Encourage Technological Advancements** Adopt and promote new technologies that enhance transportation efficiency and user experience.
5	Parameters	5.1	**Accessibility Index** A measure of how easily services and amenities can be accessed using the transportation network. The financial aspects, including fares, subsidies, and investments.	**Mobility Index** A measure of how easily people and goods can move around the city.	**Traffic Volume** The number of vehicles on major roads and intersections during specific times.	**Connectivity Index** A measure of how well different parts of the city are connected by the transportation network.
		5.2	**Average Travel Time** The average time taken for commuters to reach their destinations which includes the time taken for a journey, including waiting and transfer times.	**Average Travel Time** The average time taken for commuters to reach their destinations.	**Average Travel Time** The average time taken for commuters to reach their destinations.	**Average Travel Time** The average time taken for commuters to reach their destinations.
		5.3	**Modal Share** The percentage of travellers using different modes of transport and transportation.	**Modal Share** The percentage of travellers using each mode of transportation.	**Modal Share** The percentage of travellers using each mode of transportation.	**Modal Share** The percentage of travellers using each mode of transportation.
		5.4	**Traffic Accident Rates** Number of accidents per capita or per vehicle-mile travelled.	**Traffic Accident Rates** Number of accidents per capita or per vehicle-mile travelled.	**Traffic Accident Rates:** Number of accidents per capita or per vehicle-mile travelled.	**Emission Levels** Number of pollutants emitted by the transportation sector.


NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
6	Functions	6.1	**Universal Design** Implementing design principles that make environments, products, and services accessible to all people, regardless of age, disability, or other factors. This includes designing buildings, public spaces, and transportation systems that are easily navigable by everyone	**Integration** This function focuses on creating a seamless transport experience by integrating various modes of transport (like buses, trains, and bikes) and the technologies that support them (like ticketing systems and information platforms). The aim is to allow easy transfer between different modes for a smooth journey.	**Flow Management** This function involves optimising the movement of traffic to prevent congestion and ensure smooth transit. Techniques used include traffic signal control, roundabout management, and implementing one-way systems to enhance the flow of vehicles.	**Infrastructure Development** Building and maintaining the physical framework necessary for transportation, such as roads, railways, airports, and ports. This function is crucial for enabling various modes of transportation to operate efficiently.
		6.2	**Inclusivity in Transportation Planning** Ensuring that transportation services cater to the needs of all segments of the population, including those with physical, sensory, or cognitive impairments. This can involve providing accessible public transit options, adequate signage, and assistive technologies.	**Innovation** Developing and adopting new technologies and methods to improve transport efficiency. This includes advancements in vehicle technology, like electric or autonomous vehicles, and smart infrastructure, such as intelligent traffic management systems.	**Incident Management** Dealing promptly with accidents, breakdowns, and other disruptions to minimise their impact on traffic flow. This includes clearing incidents quickly, managing traffic around them, and providing real-time information to road users.	**Vehicle Provision and Maintenance** Ensuring the availability and operational readiness of vehicles, including cars, buses, trains, airplanes, and ships. This involves regular maintenance, safety checks, and upgrades to meet evolving standards and needs.
		6.3	**Barrier Removal** Identifying and eliminating physical, informational, and systemic barriers that prevent people from accessing services and facilities. This includes modifying existing structures (like adding ramps or tactile paving) and ensuring clear, understandable information is available.	**Optimisation** Enhancing the efficiency of transport systems by improving route planning, reducing travel time, and maximising the capacity of existing infrastructure. This function often involves using data analytics and real-time information to adjust services according to demand.	**Demand Management** Implementing strategies to control or reduce traffic demand, especially during peak hours. This could involve promoting carpooling, encouraging public transport use, or implementing congestion charges in high-traffic areas.	**Operational Management** Overseeing the day-to-day operations of transportation systems. This includes scheduling, route planning, fleet management, and ensuring that transportation services run on time and efficiently.
		6.4	**Policy Development and Advocacy**	**Sustainability**	**Safety Enhancement**	**Logistics and Freight Management**


NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
			Creating and advocating for policies that promote accessibility in urban development and transportation. This function involves working with government bodies, organisations, and communities to develop standards and regulations that support accessibility.	Promoting environmentally friendly transport options to reduce emissions and energy consumption. This can involve increasing the use of public transport, cycling, and walking, as well as encouraging the use of vehicles powered by alternative energy sources.	Implementing measures to reduce the risk of accidents and enhance the safety of all road users, including pedestrians, cyclists, and motorists. This could include speed limit enforcement, pedestrian crossings, and improved road signage.	Coordinating the movement of goods, which includes managing supply chains, warehousing, cargo handling, and delivery services. Effective logistics are vital for the timely and cost-effective transport of goods.
		6.5	**Community Engagement and Education** Engaging with community members, particularly those with disabilities, to understand their needs and challenges. Educating designers, planners, and policymakers about the importance of accessibility is also key	**Safety and Security** Ensuring the safety of passengers and goods during transit. This includes implementing safety regulations, maintaining vehicles and infrastructure, and employing technology like surveillance systems to prevent accidents and crime.	**Parking Management** Regulating parking spaces to ensure they are used efficiently and do not contribute to traffic congestion. This can include metered parking, time-limited zones, and the provision of adequate parking facilities.	**Passenger Services** Providing services for the comfort and convenience of passengers. This encompasses ticketing, customer service, amenities in transit, and ensuring accessibility for all users, including those with disabilities.
		6.6	**Accessible Technology Implementation** Incorporating assistive technologies and digital solutions to enhance accessibility. This can include everything from audible signals at pedestrian crossings to apps that provide navigation assistance for people with visual impairments.	**Service Quality** Focusing on the user experience by providing reliable, convenient, and comfortable transportation. This encompasses aspects like frequency of service, cleanliness, and customer service.	**Environmental Management** Reducing the environmental impact of traffic through measures like promoting electric vehicle use, implementing low-emission zones, and encouraging alternative transport modes that reduce reliance on private vehicles.	**Policy and Regulation Compliance** Ensuring that transportation activities adhere to relevant laws, regulations, and policies. This includes regulatory compliance for safety, environmental standards, and labour laws.
		6.7	**Transportation Network Analysis**	**Inclusivity** Making transport accessible to all sections of society, including	**Data Analysis and Planning** Utilising data from various sources (e.g., traffic cameras,	**Technology Integration** Implementing and managing technology systems that


NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
			Evaluating transportation networks to ensure they provide accessible routes to key destinations like healthcare facilities, schools, workplaces, and leisure areas. This function involves assessing the connectivity and coverage of public transport, pedestrian pathways, and cycling infrastructure.	those with disabilities, the elderly, and low-income populations. This involves designing inclusive infrastructure and services that cater to diverse needs.	sensors) to analyse traffic patterns and plan improvements. This can involve adjusting traffic light timings, planning roadworks at less busy times, or redesigning intersections to improve flow.	support transportation, such as GPS for navigation, tracking systems for logistics, and digital ticketing and payment systems for passenger convenience.
		6.8	**Spatial Planning for Accessibility** Integrating accessibility considerations into spatial and urban planning. This involves ensuring that residential areas, commercial centres, and public facilities are planned in a way that they are accessible to everyone, especially those with mobility challenges.	**Economic Viability** Ensuring that transport systems are financially sustainable. This includes managing costs, generating revenue (e.g., through fares, taxes, or subsidies), and investing in infrastructure that supports economic growth.	**Public Information and Communication** Providing real-time traffic information to the public through various channels like apps, websites, and radio broadcasts. This helps commuters make informed decisions about their routes and travel times.	**Safety and Security Management** Ensuring the safety and security of passengers and goods. This involves implementing safety protocols, emergency response planning, and security measures to protect against threats. transportation activities. This includes promoting sustainable modes of transport, reducing emissions, and managing noise and pollution levels.
		6.9	**Monitoring and Evaluation** Regularly assessing the effectiveness of accessibility measures and making improvements based on feedback and changing needs. This function is critical for ensuring ongoing compliance with accessibility standards and for identifying areas for further development.		**Regulation and Enforcement** Implementing and enforcing traffic laws and regulations to ensure orderly movement on roads. This includes speed enforcement, checking vehicle compliance with standards, and penalising illegal parking or driving behaviours.	**Environmental Impact Management** Adopting practices and technologies to minimise the environmental impact of transportation activities. This includes promoting sustainable modes of transport, reducing emissions, and managing noise and pollution levels

NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
		6.10	**Emergency Preparedness and Response** Ensuring that emergency services and disaster response plans are accessible to all members of the community. This includes accessible emergency communication, evacuation plans, and disaster relief services.			**Research and Innovation** Engaging in research and development to improve transportation technologies and methods. This can lead to innovations in vehicle design, fuel efficiency, and sustainable transportation solutions.
7	Influencing Factors	7.1	**Urban Density** The number of people and jobs in each urban area. The growth of cities and the corresponding need for transport.	**Urban Density** The number of people and jobs in each urban area.	**Urban Density** The number of people and jobs in each urban area. Higher densities can lead to more traffic but can also support public transit.	**Urban Density** The number of people and jobs in each urban area, which can influence transportation demand.
		7.2	**Infrastructure** The quality and extent of roads, public transit systems, and pedestrian/cyclist facilities. The role of new technologies in shaping transport	**Infrastructure** : The quality and extent of roads, public transit systems, and pedestrian/cyclist facilities.	**Infrastructure** The quality, design, and extent of roads, public transit systems, and pedestrian/cyclist facilities.	**Infrastructure** The quality and extent of transportation infrastructure, including roads, transit lines, and pedestrian/cyclist facilities.
		7.3	**Policies and Regulations** Government policies that guide transport planning sand influence transportation patterns and choices.	**Policies and Regulations** Government policies that influence transportation patterns and choices.	**Policies and Regulations** Government policies, such as zoning laws, parking regulations, and road pricing, that influence traffic patterns and transportation choices.	**Policies and Regulations** Government policies, incentives, and regulations that promote or hinder certain modes of transportation.
		7.4	**Economic Factors** The cost of transportation and the overall economic health of the city. Economic factors that influence transport demand and supply.	**Economic Factors** The cost of transportation and the overall economic health of the city.	**Economic Factors** The cost of transportation, economic growth rates, and the overall economic health of the city.	**Economic Factors** Economic growth rates, cost of transportation, and the overall economic health of the city.
		7.5	**Public Awareness**	**Public Awareness**		**Technological Advancements**

NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
			The level of understanding among the public about the importance of accessibility and sustainable transportation.	The level of understanding among the public about the importance of mobility and sustainable transportation.		Adoption of new technologies, such as electric vehicles, smart traffic management systems, and shared mobility solutions.
8	Operational Requirements	8.1	**Efficient Traffic Management Systems** Systems that monitor and manage traffic flow in real-time. Adequate roads, railways, ports, and other facilities	**Efficient Traffic Management Systems** Systems that monitor and manage traffic flow in real-time.	**Efficient Traffic Management Systems** Systems that monitor and manage traffic flow in real-time, such as adaptive traffic signal control.	**Efficient Traffic Management Systems** Systems that monitor and manage traffic flow in real-time to optimise transportation efficiency.
		8.2	**Accessible Transit Facilities** Features like ramps, elevators, and tactile paths in transit stations. : Suitable and efficient vehicles for different modes of transport.	**Integrated Transit Facilities** Seamless integration between different modes of transport, like buses, trains, and shared mobility services.	**Integrated Transit Facilities** Seamless integration between different modes of transport to distribute traffic efficiently.	**Integrated Transit Facilities** Seamless integration between different modes of transport, such as buses, trains, and shared mobility services.
		8.3	**Regular Maintenance** Ensuring that transportation infrastructure is regularly maintained to ensure safety and efficiency. Trained and skilled workforce to manage and operate the system.	**Regular Maintenance** Ensuring that transportation infrastructure is regularly maintained to ensure safety and efficiency.	**Regular Maintenance** Ensuring that transportation infrastructure, especially roads and signals, are regularly maintained to prevent disruptions.	**Regular Maintenance** Ensuring that transportation infrastructure is regularly maintained to ensure safety and efficiency.
		8.4	**Stakeholder Engagement** Regularly engaging with the public and other stakeholders to gather feedback and improve transportation systems. Sufficient funding for construction, operation, and maintenance.	**Stakeholder Engagement** Regularly engaging with the public and other stakeholders to gather feedback and improve transportation systems.	**Public Engagement** Engaging with the public to gather feedback on traffic issues and proposed solutions.	**Public Engagement** Engaging with the public to gather feedback on transportation issues, needs, and proposed solutions.
		8.4	**Training and Capacity Building** Ensuring that transportation planners and operators are	**Training and Capacity Building** Ensuring that transportation planners and operators are well-trained in mobility	**Training and Capacity Building** Ensuring that traffic planners, engineers, and operators are	**Training and Capacity Building** Ensuring that transportation planners, engineers, and operators are well-trained in

NO	ATTRIBUTES	NO	ACCESSIBILITY	MOBILITY	TRAFFIC	TRANSPORTATION
			well-trained in accessibility and sustainability considerations. In conclusion, Sustainable Urban Development in the context of transport requires a holistic approach that considers a wide range of factors. It involves careful planning, integration of various modes, and a strong focus on sustainability, accessibility, and efficiency. By adhering to these core values, principles, and objectives, cities can create a transport system that meets the needs of all citizens while minimising negative impacts on the environment and society.	considerations and best practices.	well-trained in modern traffic management techniques and tools.	modern transportation management techniques and tools.

In summary, the focus on Integrated Transport Planning and efficient Traffic and Transport Operations within an Accessibility and Mobility focus in Sustainable Urban Development is about creating cities where everyone can move efficiently, safely, and sustainably. It requires a holistic approach that integrates various disciplines, considers a wide range of factors, and is guided by core values and principles that prioritise both the environment and the well-being of residents.

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THE CITY FOR ALL REASONS

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AUGUST 2024