roads and transport
Department: Roads and Transport
GAUTENG PROVINCE

GAUTENG 25-YEAR INTEGRATED TRANSPORT MASTER PLAN

5-YEAR TRANSPORT IMPLEMENTATION PLAN

OCTOBER 2012

FINAL

PREFACE

In May 2011, I had appointed a Panel of Experts to formulate a transformative 25 year Integrated Transport Master Plan (ITMP25) for Gauteng. The ITMP25 is to be finalised by June 2013.

The Panel's terms of reference also was to develop an initial report in the form of a Five Year Gauteng Transport Implementation Plan (GTIP5). The GTIP5 should identify the urgent, short-term measures to be implemented by the Department of Roads and Transport to begin the process of re-fashioning the transport system in our province. Such a transport system should be reliable, accessible, safe, affordable and environmentally sustainable. Also, it should be managed effectively and efficiently.

I am pleased to release the Panel's recommended GTIP5 for public comment. Public input on this report will certainly be considered by the Panel for inclusion in the final report. Written submissions should be submitted to the Chairperson of the Panel, Mr Jack van der Merwe, by 15 September 2012, by email to jackvdm@gautrainpo.co.za; or at 22 Milky Way, Linbro Business Park, Johannesburg.

Obviously, a short-term report of this kind will not be wide-ranging and comprehensive; that will take the form of the ITMP25. Notwithstanding this point, the GTIP5 is an important starting point for a meaningful dialogue between the Gauteng Department of Roads and Transport and the public at large on the shape, form and design of a transport system for a globally competitive city-region that Gauteng aspires to become over time.

Finally, I wish to thank the Panel of Experts and the 2037 Consortium for producing the GTIP5 and I commend it to the public for careful and critical consideration.

Ismail Vadi
Gauteng MEC for Roads and Transport
23 July 2012

STATEMENT BY THE CHAIRPERSON OF THE STEERING COMMITTEE

The MEC for Roads and Transport appointed a Steering Committee to take responsibility for the development of a 25 Year Integrated Transport Master Plan for the Gauteng Province. Its core mandate is to develop a 25 Year Integrated Transport Master Plan (ITMP25) that will enable the Gauteng Department of Roads and Transport, in collaboration with other spheres of government, to regulate, plan and develop an efficient and integrated transport system that serves the public interest by enhancing mobility and delivering safe, secure and environmentally responsible transportation. The ITMP25 should embody the principles of an efficient, competitive and responsive economic infrastructure network that prioritises public transport. It should assist Government at all levels to deliver a world class, sustainable transport system that supports Gauteng's economic, social, cultural, environmental and developmental goals.

The members of the Steering Committee are:

- Mr. Jack van der Merwe (Gautrain) Chairperson
- Prof. Jackie Walters (Univ. of Johannesburg)
- Dr. Bridget Ssamula (Univ. of Pretoria)
- Dr. Vuyo Mahlati (Univ. of Pretoria)
- Dr. John Sampson (Independent Transport Expert)
- Ms. Noxolo Maninjwa (DRT)
- Mr. Nazir Alli (SANRAL)
- Mr. Dries van der Walt (PRASA)
- Ms. Jane Barrett (COSATU)
- Ms. Amanda Nair (Blue IQ)
- Ms. Yolisa Mashilwane (Cross Boarder Agency)
- Mr. Jeffrey Mashele (Gauteng Department of Finance)

This 5-Year Gauteng Transport Implementation Plan (GTIP5), as presented by the Steering Committee, sets out a "fast-track" implementation plan of key intervention projects based on a detail analysis of the current planning and construction projects in Gauteng as a precursor to achieving the ITMP25 goals and objectives. After extensive consultation, the GTIP5 report is in its final format and is presented to the MEC and Officials in the Department of Roads and Transport together with all the role players and stakeholders in the Gauteng Province.

Jack van der Merwe
Chairperson Steering Committee

GAUTENG 25-YEAR INTEGRATED TRANSPORT MASTER PLAN

FIVE-YEAR TRANSPORT IMPLEMENTATION PLAN

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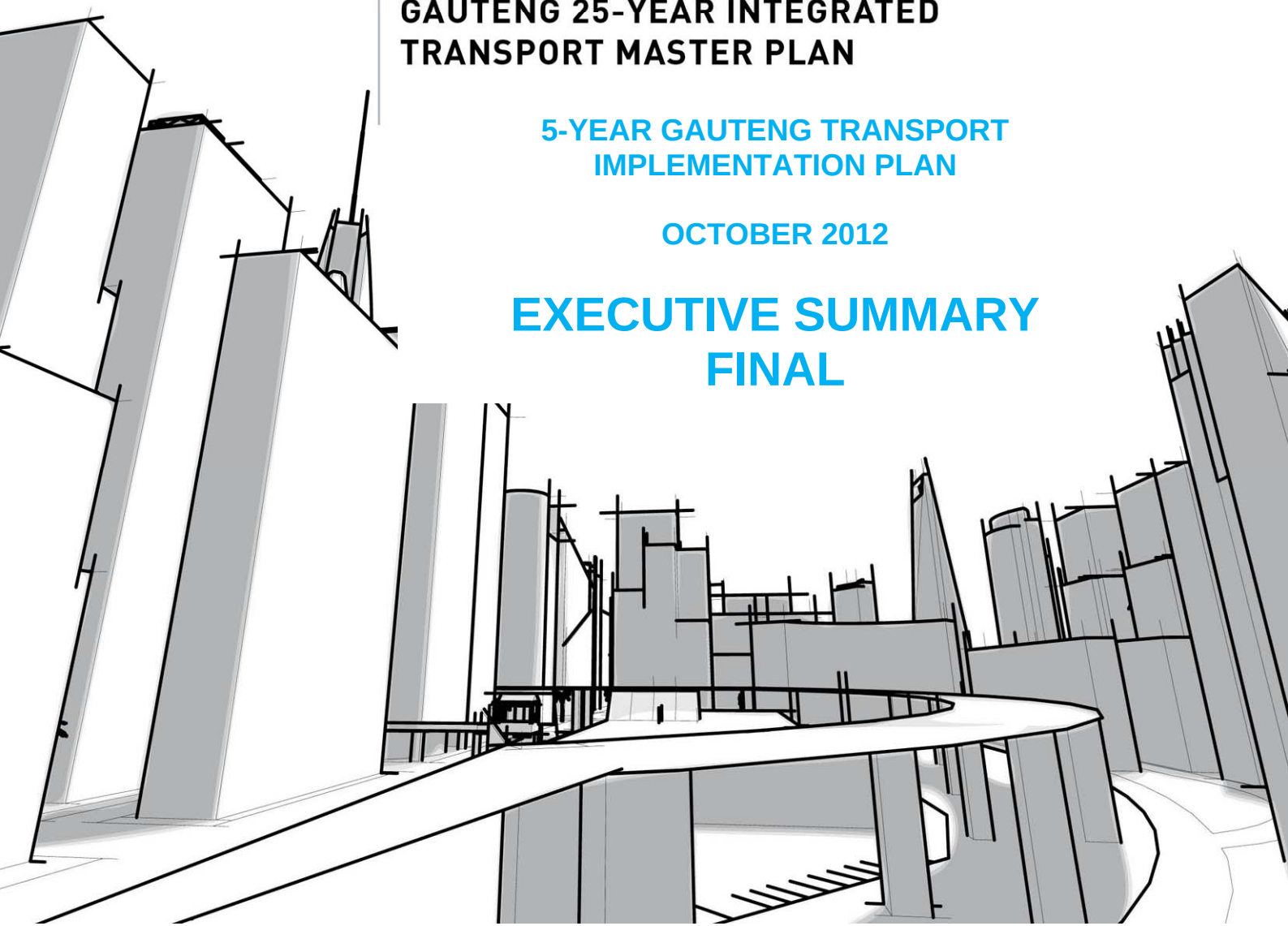
5-YEAR GAUTENG TRANSPORT IMPLEMENTATION PLAN

OCTOBER 2012

EXECUTIVE SUMMARY FINAL



EXECUTIVE SUMMARY

1 INTRODUCTION

The aim of the 5-Year Gauteng Transport Implementation Plan is to "fast-track" the implementation of certain urgent initiatives and projects. This includes major projects that are already contained in the range of transport plans prepared at the respective spheres of Government recently. The 5-Year Gauteng Transport Implementation Plan is guided by the current policy framework, and studies carried out by the various authorities in the respective disciplines, such as Freight, Passenger Transport, Roads, etc. The assessment is done in terms of the level of integration and coordination between plans. The assessment also identifies gaps, overlaps and inconsistencies between plans, as well as certain developments and trends coming to the fore. The analysis covers the Gauteng Global City Region area which incorporates some towns from the adjacent Municipalities and Gauteng such as Rustenburg, Sasolburg, Potchefstroom, Klerksdorp, Balfour, etc.

The core objective is to deliver a world class sustainable transport system that supports Gauteng's economic, social and cultural, and environmental goals. The key departure points are:

- Institutional Arrangement: The Case for the Gauteng Transport Authority;
- Gauteng Global City Region Land Use Restructuring;
- Public Transport Rationalisation and Restructuring: Strategic Public Transport Network – "Clearly defined hierarchy and continuity across the Gauteng Global City Region";
- Freight Network – "Focus on major rail-based freight logistic hubs developed on the periphery of the core urban areas";
- Transformation of the urban form towards greater efficiency and sustainability;
- Underpin the Gauteng Global City Region concept;
- Environmental soundness and sustainability;
- Incorporate current and future land-use needs (including two proposed new mega-cities in Gauteng);
- Prioritise public transport and the movement of freight;
- Optimise the deployment of various modes, to minimise traffic congestion and maximise service delivery;
- Include non-motorised transport facilities, to support public transport services specifically and enhance the quality of the built environment in general; and
- Utilise financial support to transport and subsidies as a lever and catalyst for the development of the desired urban form.

The GTIP5 is guided by the current policy framework and studies carried out by the various authorities in the respective disciplines such as Freight, Passenger Transport and Roads. The Plan is aligned with the principles of the 25-Year Integrated Transport Master Plan, and the proposed projects are effectively hypotheses of the longer term analysis.

Part A of this report covers the following:

- Executive Summary;
- Methodology;
- Policy Framework;
- Economic Development Scenarios;
- Land Use Plan and Spatial Perspective;

- Principles and Departure Points for GTIP5;
- 5-Year Gauteng Transport Implementation Plan (GTIP5);
- Funding Options;
- Institutional Arrangements; and
- Legislative Framework

Part B of the report presents an assessment of the current transportation system in Gauteng, and covers the following:

- Strategic Public Transport Network Plan;
- Rail Network and Services Plan;
- Freight Logistics Transport;
- Road Network Planning;
- Non-motorised Transport;
- Airports Planning;
- Intelligent Transport System (ITS);
- Sustainable Transport and Green Solutions;
- Regulation and Enforcement;
- Accessible Transport; and
- Road Safety.

Part C of the report is a summary of the comments received from the stakeholder engagement.

2 KEY POLICY DIRECTIONS

A scan and assessment of applicable policy frameworks and strategies related to transport in Gauteng, was done. Based on this, recommendations on the key policy directions, which will underpin the development of the ITMP25 are given. The aims of these policy directions are to:-

- create the context for the ITMP25; and
- provide criteria against which the various network proposals and strategies can be "measured".

The areas of policy development that are further unpacked, include:

- Transport in support of economic development;
- Transport integration with development in pursuance of greater efficiencies and social integration;
- Environmental soundness and sustainability;
- Optimum utilisation of existing and new transport resources; and
- Development, maintenance and operation of an efficient transport network and system.

3 ECONOMIC DEVELOPMENT SCENARIOS

External demographic and macro-economic perspectives were developed, to provide a basis for the further development of the ITMP25. Various previous studies (of a similar nature) were consulted. This was supplemented with additional projections and forecasts, based on the latest available data and/or official sources.

The scenarios assessed are mainly developed around:-

- population growth; and
- economic growth.

For the population projections, the Statistics SA's mid-year estimate for 2010 is used as the base year, at just over 11 million people in the Gauteng Province. For growth into the future a fairly high in-migration is assumed, with a growth in population of over 16 million by 2037. With respect to economic growth, it was decided to use the most probable economic scenario. This is assuming a long-term average annual economic growth of 5%. These forecasts and projections strike a balance between realistic outcomes and conservative planning.

4 LAND USE PLAN AND SPATIAL PERSPECTIVE

There is several statutory land use/spatial plans or development concepts relevant to the Gauteng Province. Most of these have been compiled in terms of legislation, e.g. the Metropolitan and District Spatial Development Frameworks, Local Spatial Development Frameworks and Precinct Plans which have all been compiled in terms of the Municipal Systems Act (2000), and the Provincial Spatial Development Framework which has been developed in terms of the Gauteng Planning and Development Act (2003). At national level the National Spatial Development Perspective (NSDP) puts forward five principles to guide and inform spatial planning in all spheres of government in South Africa, while planning pertaining to the future Gauteng Global City Region is undertaken by the Office of the Gauteng Premier.

Collectively, all these plans/principles should be consolidated to create a Land Use Plan/Spatial Development Perspective for Gauteng Province which will inform the 25 year Gauteng Integrated Transport Master Plan (ITMP25). It is worth mentioning that the principle of using public transport as the backbone to the future urban structure of the province, leading to densification and infill development along all major public transport routes and railway stations, is supported by the Gauteng Spatial Development Framework and the Spatial Development Frameworks of all metropolitan and district municipalities in the Province.

5 PRINCIPLES AND DEPARTURE POINTS

Principles and departure points are proposed, which will underpin the Integrated Network Plan and the various component plans thereof. The purpose of this section is to a large extent derived from the key policy directions. It also "concretises" the policy objectives, and provides a more tangible understanding of the "new" integrated transport system and its key characteristics.

The broader areas for which principles and departure points are proposed are:

- Economic development;
- Land use;
- Network hierarchy;
- Network continuity;
- Public transport specific;
- Freight transport specific;
- Road network specific;
- Airports;
- Non-motorised transport;
- Standards;
- Sustainable Transport;
- Regulation and Enforcement;
- Accessible Transport; and
- Road Safety.

6 5-YEAR GAUTENG TRANSPORT IMPLEMENTATION PLAN

The 5-year Gauteng Transport Implementation Plan (GTIP5) section provides for transport initiatives and projects for implementation in the short- to medium-term. This is based on:

- A scan and assessment of all approved transport plans;
- Assessment of the state of transport and "pressing" issues, problems and requirements; and
- Inputs and participation of stakeholders and role-players in workshops on transport matters.

Projects and initiatives proposed for the medium-term are aimed to "alleviate" bottlenecks or to address prevailing and pressing transport issues or problems, without compromising the 25-Year Master Plan. This is dealt with in terms of the following:

- Key short-term initiatives, which will alleviate "bottlenecks" in the short- to medium-term;
- Key transport capital projects to be supported in the short- to medium term; and
- Lists of all approved transport capital projects on budgets of government departments, agencies and entities.

6.1 Key Short-term Initiatives

The short-term initiatives proposed in the table below, fall within the Provincial Governments' core functions, as well as areas where the Province can influence the development of an integrated transport network for the Province as part of its transport coordination role.

	Initiatives and Key Focus Areas
1.	Transport Authority for Gauteng
1.1	Provincial-wide Public Transport Information Centre
1.2	"One Province One Ticket"
2.	Integration with the Commuter Rail Corridor Modernisation Project of PRASA
3.	Restructured Subsidised Road-based Public Transport
4.	Transformation of the Taxi Industry
5.	Greener Public Transport Vehicles Technologies
6.	Travel Demand Management, Less Congestion and Shorter Travel Times
7.	Access to Major Freight Nodes
8.	International and City Airports
9.	Pedestrian Paths and Cycle Ways
10.	Continued Provincial Wide Mobility
11.	Effective Management of Existing Transport Infrastructure
12.	Regulation and Enforcement
13.	Accessible Transport

The above-mentioned key short-term initiatives are unpacked and discussed further in context of:

- Status Quo assessment;
- Departure points;
- Description of the initiative; and
- Typical projects and actions.

6.2 Key Capital Projects

An assessment of the State of Transport Planning applicable to Gauteng, as well as the transport status quo were used as a basis to identify key capital projects that need to be promoted as a matter of priority. The key capital projects are an addition to the key short-term initiatives listed in the previous sections and their implementation will not necessarily be completed in the next five years.

However, the implementation of these projects will significantly contribute to the continued improvement of a transport system serving the Gauteng Global City Region, its mobility requirements and support economic growth. It is therefore important to highlight these projects.

The key capital projects contained in this section are either already approved, in process of being implemented or on budgets for implementation. Others are listed in terms of the MTEF. The categories of projects covered are:

- Commuter Rail Capital Projects;
- IRPTN Capital Projects;
- Freight Network Capital Projects; and
- Road Network Capital Projects.

6.3 Approved Transport Capital Projects

All the approved transport capital projects of the Province, municipalities and other government entities and agencies are listed in the last paragraphs of this section of the report.

7 FUNDING OPTIONS

The section on initial funding options addresses:

- Summary of the existing transport financing and funding;
- Highlights gaps and problems;
- Initial investigation and assessment of possible additional financing sources to close the funding gap; and
- Views not only on “filling” the funding gap, but the deployment/allocation mechanisms of funding in a coordinate, integrated and sustainable manner across the Gauteng Global City Region and authorities.

Current funding instruments available to the national, provincial and local transport authorities include:

- Funds allocated through the Division of Revenue Act (DORA), which include the Equitable share and Conditional Grants such as Provincial Road Maintenance Grant, Public Transport Infrastructure and Systems Grant, Public Transport Operations Grant, Municipal Infrastructure Grant and various others;
- Toll fees;
- Issuing of bonds;
- Borrowing;
- Internally generated revenue (Public contributions, Donations); and
- Private sector investment.

Adequate sources to finance the current backlog and expected future funding requirements of transport across the Gauteng Province have always been a major challenge. Not only is the funding gap problematic, but also the deployment of finances in a coordinated, integrated and sustainable manner across the region and authorities.

The primary funding focus areas of the ITMP25 is on:

- Introduction of policies, systems and technology enablers that would result in better use of existing infrastructure and facilities before costly expansions of the network are undertaken;
- Enhancing the institutional capacity of transportation infrastructure providers and transportation service providers; and
- Preserving existing transportation assets (infrastructure and facilities), safety of networks and security of users that should attract a high priority during the allocation of available funding.

Initial funding instruments which need to be considered:

- Conditional Grants are strongly supported as a means to support critical objectives. Consideration should be given to introduce new grants to support specific objectives such as the integration of transport and traffic safety;
- Private Sector involvement to enhance the efficiency of the preservation of the transportation network and to design, build, operate and maintain new transportation infrastructure and facilities;
- A single public transport authority or responsible entity is preferable to address the current disaggregated planning, implementation and management of public transport operators and services, and the different operational funding mechanisms currently adopted. Such an approach would result in a better alignment of funding sources and the alignment of contracting models and subsidy allocation mechanisms; and
- Continual pressure would be required to ensure fair and equitable delivery of services through “user pay” policies. The levying of tolls on road networks should be part of the holistic approach to road funding.

8 INSTITUTIONAL AND LEGISLATIVE ARRANGEMENTS

The section on institutional and legislative arrangements provides background to the unique public transport governance and management challenges faced by the Gauteng Global City Region (GGCR). The case is then made for appropriate public transport governance and management arrangements in the Gauteng Global City Region.

Further, insight is provided into the public transport governance and management models from a selection of comparative international and African cities and city regions with similar challenges to the GGCR, as well as an overview of the Constitutional and Legislative framework in which public transport governance and management needs to take place.

Three main options are outlined and some conclusions made to serve as the starting point for discussion of the proposed options.

Initial conclusions reached are as follows:

- The three options outlined in the initial institutional discussion document could be depicted on a continuum that runs from *“weak institutional arrangement”* reliant on strong inter-governmental cooperation to “strong” (legislated) institutional arrangement reliant on legislative compliance;
- The discussion of the pros and cons of the three options outlined in the initial discussion document is not aimed at playing the options off against each other, but

rather at providing the decision-makers with a set of conclusions that will result in opting for the right *"starter model"* and allowing progression to a *"desired end state"*; and
- In assessing the three proposed options the legality, complexity, time and costs involved and the "disruptive implications" of each option needs to be considered.

9 STATE OF THE TRANSPORT SYSTEM

An extensive amount of transport planning had been done over the past decade in all three spheres of government (as well as government agencies and entities) which has and will in future impact on the Gauteng Global City Region and its transportation system.

The planning is unpacked, summarised and assessed with respect to the various sub-networks (i.e. roads, public transport, rail, freight, air and Non-motorised Transport (NMT)). The assessment of the "State of Planning", *inter alia* focussed on:

- level of integration and coordination between plans;
- gaps, overlaps and inconsistencies between plans; and
- key developments and trends coming to the fore.

In addition, an assessment of the existing transport system in Gauteng is included, considering the current transport realities, problems and issues. These were identified from:

- literature;
- plans assessed; and
- public events (ITMP25 Consultative Conference and the Gauteng Global City Region Public Transport Conference).

The current realities discussion covers all the respective sub-components of the ITMP25. From these key short-term initiatives, projects and programmes are identified, which may be pursued and implemented to "unlock" bottlenecks and alleviate current inefficiencies in the transport system.

9.1 Strategic Public Transport Network

9.1.1 State of Planning

An extensive amount of public transport planning work had been done over the past decade or so. However, some of the planning is already dated, has been over-taken by other planning initiatives and is therefore not that relevant anymore.

This section of the report also provides a summary of the latest plans for the various public transport modes done by the respective authorities and entities responsible for such modes (i.e. commuter rail, BRT, bus, etc.). An assessment of the various plans highlighted the following:

- Planning of public transport networks and services are "spread" across a variety of government spheres, agencies and entities, with limited integration and coordination, as well as in modal "silos";

- Planning of networks did not always follow a network approach, adhering to *inter alia* the principles of **network hierarchy** and **network continuity**; and
- Planning for the deployment of the most appropriate mode within a corridor.

Further, major opportunities are emerging, where significant improvements in public transport nodes, interchanges and facilities offer the potential to attract development and stimulate higher density development, which should be exploited through planning.

Reliable and up to date information on travel patterns and trends, user preferences and actual passenger volumes (i.e. satisfied demand) is essential as a basis for effective public transport planning at strategic, tactical and operational levels. However, such information is not available at or in a "centralised" data base or format and is dispersed across various planning authorities and entities. This needs to be addressed as a matter of urgency, in order to assist with more efficient planning processes.

9.1.2 State of Public Transport in Gauteng

An assessment of the public transport system reveals that its characteristics still largely reflect the transport arrangements of 30+ years ago, in that it still mostly supports the pre-1994 political dispensation, which was largely planned by operators in isolation of one-another to maximise their market share.

A number of key issues, problems and inefficiencies with the public transport system *inter alia* are:

- Not appropriately distributed across the Province;
- Need for long-term stability in managing public transport systems;
- En-route competition (healthy vs. destructive);
- Sustainability issues in the rail, bus and taxi industries;
- Disaggregated funding streams (PTOG, PTIS, etc.);
- Affordability of public transport services (both to the users and government);
- Quality of public transport services in general is not attractive;
- Safety issues - user and operator related;
- Ineffective regulation;
- Accessible Transport;
- Lack of and disaggregated passenger information (integrated one-stop); and
- Adequate, convenient and safe non-motorised access to PT services ("*last mile*").

9.2 Freight Logistics Transport

The flow of freight can be described as flowing from Gauteng to ports, flowing from ports to Gauteng and freight flowing from origin and destination via Gauteng. The bulk of freight is currently on road and has a direct impact on congestion levels experienced during peak hours, as well as the rapid deterioration of the road network.

An assessment of freight planning done by Transnet and other entities, as well as projections of freight volumes, clearly shows that the multiplication effect and the resulting increases in surface freight, as it is expected to more than double by 2050. Based on these projections it also becomes important to develop a strategy to accommodate freight in and around Gauteng in future, which should *inter alia* include:

- Develop intermodal facilities with supporting services on the periphery of Gauteng;
- Establish freight roads around the CBD;
- Identify roads to link the intermodal facilities;
- Develop sufficient road capacity for the distribution of freight to and from the intermodal facilities;
- Establish rail and public transport capacity to support the intermodal facilities; and
- Develop sufficient road capacity for the distribution of fuel and liquids from the tank farms (increase in pipeline capacity) and planned tank farms.

9.3 Road Network Planning

9.3.1 State of Planning

In the review of the road network, the planning and the programmes of SANRAL, the Gauteng Provincial Government, the three Metropolitan Councils, as well as the two District Municipalities are considered.

9.3.2 State of the Strategic Road Network

Considering the evaluation of the planning documents and the current status of the road network in the Gauteng Province the following overall conclusions can be made:

- The broad road network planning is in place in Gauteng and the Gauteng Strategic Road Network Plan provides structure to the development of the province;
- The Strategic Road Network Plan has to a large extent been taken into account in the road master planning undertaken by SANRAL, the Metropolitan and District/Local Municipalities. There is a general cohesion with regard to road planning between the three spheres of Government;
- The current road planning is an extremely valuable element to enable economic growth in Gauteng;
- Available road reserves may be utilised differently than originally anticipated with emphasis on integrated transport corridors where public transport and non-motorised transport plays a more important role than private cars;
- Due to a lack of funding the Gauteng Department of Transport and the Metropolitan, District and Local municipalities implicitly rely on SANRAL to implement the mobility/freight backbone road network of which i.e., GFIP Phase 2 & 3 is the prioritised road network needed; and
- Funding is a major constraint – The GDRT funding for the development of new roads and the upgrading of existing roads is limited and majority of the budget is earmarked towards road maintenance.

Similarly the Metropolitan, District and Local Authorities again rely on both SANRAL and the Province to upgrade and provide the new higher order (Class 1 and 2) road infrastructure in their respective jurisdictions.

9.4 Non-Motorised Transport (NMT)

9.4.1 State of Planning

Non-motorised transport planning in the past has received very little attention by the three spheres of government and was limited largely to the planning and provision of pedestrian facilities along the road network. However, society and the public sector is slowly awakening to the importance of this component of the transport system, which enhances local access, safety, as well as contributing to the development of a more sustainable urban environment. The City of Joburg has taken the lead with its City Greening Initiative, with its *Complete Streets* and *Streets Alive* programmes, as well as the development of a cycling framework.

9.4.2 State of NMT

An assessment of the state of non-motorised transport revealed that:-

- More than 23 per cent of the work force and 90 per cent of scholars (in some parts of the Province) are walking to their final destinations. Many others are walking to public transport facilities (rail, bus, taxi) as part of their commuting trip(National Household Travel Survey, 2003);
- NMT road users comprise about 40 percent of all road fatalities in South Africa, and large numbers of pedestrians are maimed for life, with Gauteng one of the provinces with significant pedestrian fatalities; and
- NMT casualties placing a huge burden on the national and provincial fiscus, national health system, police and traffic administration, third party claims, etc.

This illustrates that NMT needs far more attention and prevalence in order to promote:

- Liveable urban areas;
- Convenient local access;
- Safe neighbourhoods; and
- Sustainable development.

9.5 Airports Planning

9.5.1 State of Planning

The section on airports unpacks the up to date planning done for the following airports in Gauteng, namely:

- OR Tambo International Airport;
- Lanseria International Airport;
- Wonderboom Airport; as well as
- the other two main civilian airports in Gauteng, Rand Airport in Germiston and Grand Central in Midrand.

9.5.2 State of Airports in Gauteng

The following initiatives and projects are also unpacked, namely:

- Ekurhuleni Aerotropolis;
- Updated airspace management plan for Gauteng;
- Integrated planning of airports;
- OR Tambo International Airport Midfield terminal development;
- Lanseria International Airport Runway Development; and
- Wonderboom Airport's Accessibility.

9.6 Intelligent Transport System (ITS)

9.6.1 State of Planning

ITS planning is currently focussed on public transport and traffic signal management systems, with DRT developing an Integrated Fare Management (IFM) Framework to guide deployment of the associated Electronic Fare Collection systems and ensure compliance with the National Regulations.

Urgent planning is required to address the critical gaps, which are essentially institutional relating to the lack of:

- ITS skills and retention of existing expertise;
- Spending on ITS projects as a result of poor management of the contractual process;
- political support for ITS, which impacts on the priority assigned to allocation of ITS funding;
- institutional & technical coordination, which prevents systems integration; and
- awareness of ITS technology.

These issues could be largely addressed by establishing an:

- ITS Education & Training programme; and
- ITS Directorate within DRT.

9.6.2 State of ITS

Nationwide, most of the ITS projects before 2001 were being undertaken by the Durban, Cape Town and Johannesburg Municipalities, in the form of Urban Traffic Control (managing a system of signalised intersections from a Traffic Management Centre (TMC)). However, the 2010 Soccer World Cup created the catalyst for ITS, with an injection of funding on an unprecedented scale that helped establish a local ITS industry.

The current state of ITS in Gauteng is fairly healthy, with 3 key flagship projects:

- SANRAL Freeway Management System;
- SANRAL ITS Design, Build, Operate & Maintain (DBOM); and
- Johannesburg BRT (Rea Vaya).

However, there is need for further intervention by the GDRT on ITS applications such as the implementation of the IFM Framework, establishment of a Provincial ITS integration committee, setting provincial standards for urban traffic control systems, implementation and monitoring of urban traffic control systems, etc.

9.7 Sustainable Transport

9.7.1 State of Planning

Sustainable Transport and Green Solutions addresses the impact on the natural and build environment, as well as the quality of life from a Transportation perspective.

Sensitive areas that were identified, namely Grasslands, Ridges, Wetlands, Ephemeral pans, Highveld protected areas, areas identified in the Gauteng Conservation Plan characterised as *Protected*, *Irreplaceable*, *Important* and *Ecological Support* as well as areas identified by the National Protected Area Expansion Strategy (NPAES) should be maintained and present as well as future transport development should not negatively impact on these areas either directly or indirectly.

9.7.2 State of Sustainable Transport

The transport sector's dependence on non-renewable oil resources will lead to a challenging future if it does not consider the diversification of fuel sources and reduction of greenhouse gas emissions. A mindset shift is needed to move away from sustaining the present to actively creating new sources of energy which draw upon renewable energy resources and energy efficiency. These technologies are crucial for long term environmental sustainability seeing that there are significant new challenges arising from ecological constraints to the business-as-usual approach.

Shifting to a lower carbon impact on the environment will require a shift away from the use of fossil fuels. This can be achieved in a number of ways, one of which is to reduce the number of liquid fuel vehicles on the road by, amongst others, shifting people from private cars to public transport. As a result, there is need to increase the quality, affordability and availability of public transport.

Compressed Biogas is the preferred alternative energy source for public transportation vehicle propulsion in terms of environment conservation and reduction of greenhouse gas emissions. Further, the CoJ studied different alternative fuel sources in addition to compressed biogas. Production and end-use of this alternative energy source will have a low carbon footprint and will provide cities with an opportunity to use their own waste and wastewater to fuel its fleet of vehicles Although the development of low-carbon or 'clean' technologies are crucial for the reduction of greenhouse gas emissions, it still has a long way to go in terms of research needed to determine its feasibility as well as its sustainability.

The combination of Public Transport, 'clean' or 'green' energy and technologies, and Intelligent Transport Systems will contribute to a more sustainable transport system.

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GAUTENG 25-YEAR INTEGRATED TRANSPORT MASTER PLAN

5-YEAR TRANSPORT IMPLEMENTATION PLAN

OCTOBER 2012

PART A
FINAL

1 INTRODUCTION

The **2037 Consortium** incorporating the following members and sub-consultants was appointed on 16 January 2012 by the Gauteng Department of Roads and Transport to prepare the Gauteng 25-Year Integrated Transport Master Plan. The 2037 Consortium is composed of the following member firms include GIBB; BKS/Khuthele; Iliso; Aganang and Plan Associates. The sub-consultants are CSIR; Equinox; Global Insight; AfriGIS and TECHSO.

The two primary deliverables of this project are:

1. **A 5-Year Gauteng Transport Implementation Plan (GTIP5); and**
2. **A 25-Year Integrated Transport Master Plan (ITMP25).**

As it was anticipated that the 25-Year Integrated Transport Master Plan will take 18 months to be developed, the existence of pressing issues and immediate problems related to the transport system, and economic and land use development patterns had to be addressed sooner. The aim of the 5-Year Gauteng Transport Implementation Plan (GTIP5), therefore, is to 'fast-track' the implementation of certain urgent initiatives and projects. This includes major projects that are already contained in the range of transport plans prepared at the respective spheres of government recently.

The GTIP5 is guided by the current policy framework and studies carried out by the various authorities in the respective disciplines such as Freight, Passenger Transport and Roads. The Plan is aligned with the principles of the 25-Year Integrated Transport Master Plan, and the proposed projects are effectively hypotheses of the longer term analysis.

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- and Legislative Framework

Part B of the report presents an assessment of the current transportation system in Gauteng, and covers the following:

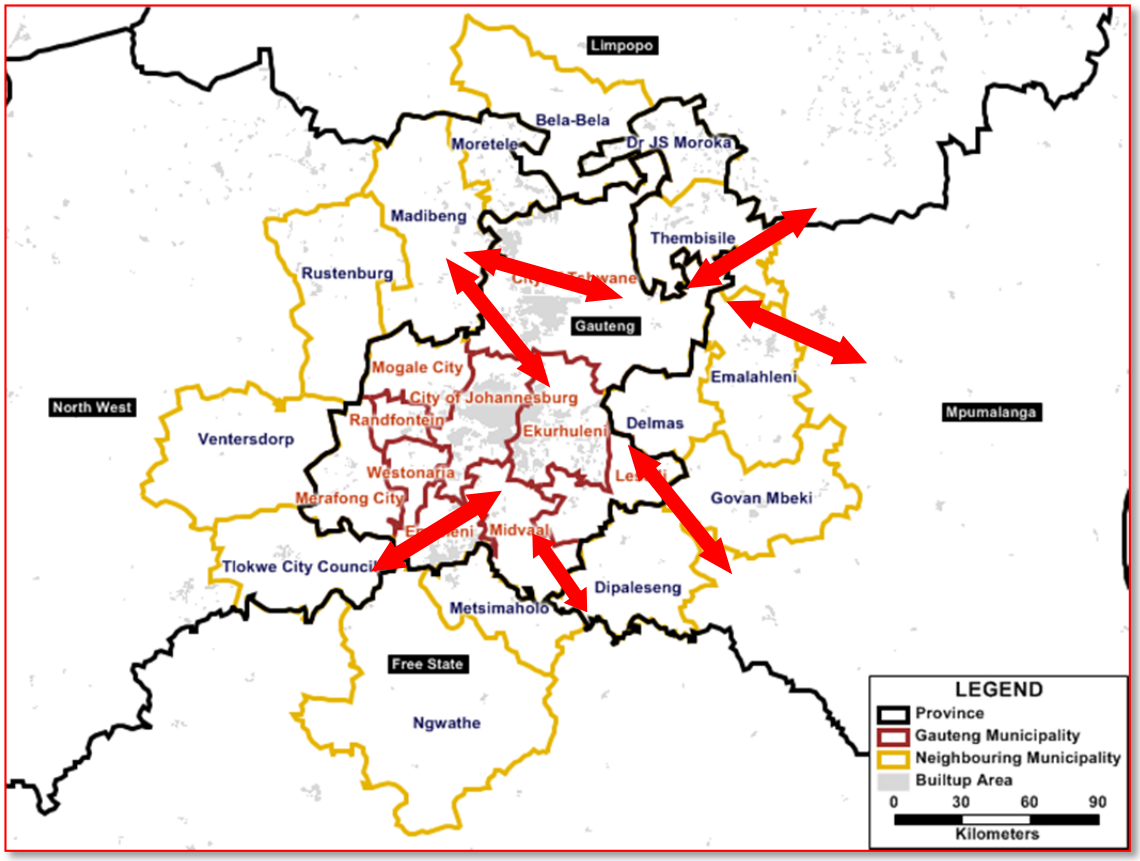
- Strategic Public Transport Network Plan;
- Rail Network and Services Plan;
- Freight Logistics Transport;
- Road Network Planning;
- Non-motorised Transport;
- Airports Planning;
- Intelligent Transport System (ITS);
- Sustainable Transport and Green Solutions;
- Transport Regulation and Enforcement;
- Accessible Transport; and
- Road Safety.

Part C of the report is a summary of the comments received from the stakeholder engagement.

1.1 Methodology

The study is basically on the Gauteng Province, but the analysis extends beyond the demarcated boundary. The analysis includes the Gauteng Global City Region area which incorporates some towns from the adjacent municipalities, for example, Rustenburg, Sasolburg, Potchefstroom, Klerksdorp and Balfour. **Figure 1.1** shows the Gauteng boundary and the adjacent municipalities.

Figure 1.1 – Gauteng Global City Region



1.2 5-Year Gauteng Transport Implementation Plan

The 2037 Consortium proposed that the basis for the development of the GTIP5 will be current Strategies, Transportation Studies, Plans and Projects. Short-term priorities will then be confirmed and prioritised through an assessment of the status quo, consultation and a measurement against a provisional “new” transport vision for Gauteng. The main output for the GTIP5 will be a priority list of urgent transport interventions, initiatives and projects to be implemented in the short-term by the Gauteng Department of Roads and Transport (DRT).

The main steps for the preparation of this plan are:

- Conducting a high-level scan of existing planning information, to identify significant initiatives and projects, which will in the short to medium term “kick-start” or accelerate the integrated development of the Provincial transport

system; address critical issues, problems areas or gaps; and address lack of coordinated planning or overlaps;

- Doing a high-level assessment of the development, land use and transport status quo and current realities, to assist in identifying problems and issues that need urgent interventions;
- Developing a “first cut” or high-level integrated transport vision for Gauteng, to ensure that the implementation of the Plan and its “urgent” implementation projects do not compromise the direction in which the ITMP25 will steer the development of the transport system for the Province in the longer-term; and
- Developing a priority list of “urgent” projects, with project scoping and cost estimates under-pinned by implementation timeframes, as well as a financial plan and funding strategy.

1.3 Status of Transportation Planning

This section unpacks the “State of Planning” with respect to transport in the Province. Although in many instances not (or not yet) implemented or operationalized, an extensive quantity of transport planning for Gauteng had been done over the past decade or more in all three spheres of Government.

A summary of all plans relevant to the various sub-networks (i.e., roads, public transport, rail, freight and air) are given and the respective plans are assessed. The assessment is done in terms of level of integration and coordination between plans. The assessment also identifies gaps, overlaps and inconsistencies between plans, as well as certain developments and trends coming to the fore.

Key initiatives, projects and programmes being recommended from the plans are noted and highlighted, especially where such initiatives would alleviate bottlenecks, unlock potential gains in efficiencies in the transport system or promote economic development in the shorter-term.

1.4 Current Transport Realities - Problems and Issues

The report highlights current transport realities, problems and issues as identified from literature, the plans assessed, as discussed in the previous paragraph, and those highlighted at the first meeting of the ITMP25 Consultative Conference on 11 November 2011 and the Gauteng Global City Region Public Transport Conference held on 28 May 2012.

The extent of the current realities highlighted in the report cover all the respective sub-components of the integrated transport network for Gauteng, namely;

- Economic Modelling and Demographics;
- Road network;
- Strategic public transport network (road-based);
- Passenger Rail network;
- Freight network (road, rail, air, and pipeline);
- Airports;
- Non-motorised transport;
- ITS & Technology Applications;
- Sustainable Transport;
- Spatial Planning;
- Accessible Transport;
- Regulation and Enforcement;
- Road Safety;
- Institutional Arrangements; and
- Funding and Financial Plan

Again, a number of key initiatives, projects and programmes are recommended in the report, which may be pursued and implemented to “unlock” bottlenecks and alleviate inefficiencies in the transport system.

1.5 Confirmation of Key Policy Directions

The report recommends a number of key policy directions for further consideration that will also be used in the development of the ITMP25. These policy directions (or principles) will create the context for the development of the integrated transport network plan and also will used be as criteria against which the various network proposals and strategies can be “checked”.

On a broader level the policy is also in pursuance of the strategic priorities as outlined in the Gauteng Vision 2055, namely:

- Creating decent work and building a growing, inclusive economy;
- Promote quality education and skills development;
- Providing better healthcare for all;
- Stimulating rural development and food security;
- Intensifying the fight against crime and corruption;
- Building cohesive and sustainable communities; and
- Strengthening the developing state and good governance.

More specifically in relation to transport, the GTIP5 provides the basis for a 25-year Transport vision for the Province, as well as policy directions on *inter alia* the following;

- A transport network in support of economic development;
- Transport integration with spatial development in pursuance of greater efficiencies and social integration;
- Transport, environmental soundness and sustainability;
- Optimum utilisation of existing and new transport infrastructure (smart solutions); and
- Development, maintenance and operation of an efficient transport network and system.

This translates into objectives as part of the further consultation and work done on finalising the vision and objectives for the ITMP25.

1.6 Key Principles and Departure Points

Key principles and departure points, which underpin the Integrated Network Plan and the various component plans thereof, are presented in the GTIP5. This to some extent is derived from the key policy direction, and "concretises" some of the policy objectives into a more tangible understanding of the "new" integrated transport system for the Gauteng Global City Region and its key characteristics.

Key principles for the following sub-plans of the ITMP25 are contained in the GTIP5:

- Road network;
- Strategic Public Transport Network (road-based);
- Passenger Rail network;
- Freight network (road, rail, air, and pipeline);
- Airport Planning;
- Non-motorised Transport;
- Spatial Planning;
- Accessible Transport;
- ITS;
- Regulation and Enforcement;
- Road Safety; and
- Funding and Financial Plan

In addition, the key principles and departure points also deals with "green" and "smart". This underpins all the sub-plans from a sustainability and efficiency perspective, where "smart" goes to using *inter alia* technology to optimise the utilisation of available infrastructure and resources. These two concepts may have a significant influence on the "way we do business" in the transport sector in future in the Province and the solutions proposed as part of the development of the integrated transport plan.

1.7 Economic Development Scenarios

The expected economic development and the rate thereof have a distinct impact on both the rate and type of land use development, as well as the nature and volumes of transport in future in the Gauteng Province. In order to plan for the future, it is essential to have a picture of what the future might hold from two perspectives, namely;

- population growth; and
- economic growth.

The GTIP5 recommends the scenarios for both population and economic growth, which forms the basis for the projections of land use development and the development of the future integrated transport network for Gauteng.

The recommendations are based on current and previously completed projects related to demographic and economic scenarios, as well as comparisons with the current best estimates based on the latest available data.

1.8 Land Use Development Options

The GTIP5, as part of the section on land use development options, provides a summary of the information obtained during the Status Quo Analysis. This includes:

- An update of all new residential, business, office, and industrial development in Gauteng Province from 2007 to 2010 (which is the Base Year). From this certain spatial trends in terms of development in the province have been identified;
- The official Gauteng Spatial Development Framework has been analysed to determine the future Vision for the province in terms of the Gauteng Global City Region; and the Development Principles and associated Land Use Proposals for future development in Gauteng Province as contained in the Gauteng Spatial Development Framework have been identified; and

- The official metropolitan-, district- and local Spatial Development Frameworks and Growth and Development Strategies of municipalities in the province have been analysed to identify development principles/points of departure for these plans; the most prominent future development initiatives proposed by municipalities; and general spatial trends proposed for future expansion and consolidation of the urban fabric.

The findings emanating from the Situational Analysis (including the gaps identified) are summarised by highlighting the future Land Use Development Options for Gauteng Province.

It is expected that one option be based on a continuation of existing spatial development trends where private transport maintains its current dominance over public transport. The modelling of this scenario will provide the “worst case” from a road network perspective.

The second and preferred option assumes that public transport becomes far more preferential mode of transport and that this will lead to significant changes in the urban structure with densification and infill development along public transport corridors becoming the dominant spatial/land use feature of Gauteng Province. The projected land use and changes thereto, based on this scenario will be modelled, to obtain the “best case” option from efficiency and sustainability points of view.

The City of Joburg is in the process of approving a Sustainable Human Settlements Plan which contains important and useful information as to where new housing developments will focus on and the potential yield at different locations.

1.9 Initial Institutional Arrangements

The original scope for the development of the ITMP25 stated that institutional and organisational arrangements must be proposed that will enable the effective and efficient implementation of the ITMP25. In general, however, for the evolving Gauteng Global City Region and a functional transport system to adequately support

the region, greater coordination and integrated planning across municipal and provincial boundaries are essential. Institutional arrangements therefore will have to deal not only with implementation of the ITMP25 specifically, but with the development, operation and maintenance of the transport system and coordination across municipalities.

The GTIP5 includes a section providing provincial wide institutional and organisational options for the Gauteng Global City Region as a whole. These options are based on an assessment of the needs, considering:

- Coordination;
- Planning;
- Service provision and contracting; and
- Regulation.

This section is in essence a discussion document in nature, which can be used as a basis for consultation with key decision-makers and stakeholders on the future institutional dispensation.

1.10 Funding Options for the Transport System

Adequate sources to finance the current backlog and expected future funding requirements of transport across the Gauteng Province have always been a major challenge. This section of the GTIP5 starts with the exploration of transport funding options and sources for the development, operation and maintenance of the integrated transport network for the Gauteng Global City Region into the future. Current financing sources available to the national, provincial and local transport authorities include, amongst others:

- MTEF funding;
- MIG funding; and
- Financial support to public transport (e.g. Commuter Rail Subsidies, PTIS, PTOG)

Further, an initial investigation and assessment of possible additional financing sources, to close the funding gap, is done as part of this section of the report. Not only is the funding gap problematic, but also the deployment of finances in a coordinated, integrated and sustainable manner across the region and authorities. Allocation mechanisms are also unpacked at a high-level in the report.

1.11 Catalytic Projects

The report presents a schedule of transport projects for implementation during the next five years, based on a scan and assessment of all existing and approved transport plans applicable to the Gauteng City region.

In addition, a number of catalytic projects or key initiatives are identified and listed in the GTIP5 (i.e., by applying the 80:20 principle), to be implemented in the short- to medium-term that will “alleviate” bottlenecks or address prevailing pressing transport issues or problems, without compromising the 25-Year Integrated Transport Master Plan.

2 POLICY FRAMEWORK AND GOALS

2.1 Objectives of the ITMP25

The core objective of the ITMP25 is to deliver a world class sustainable transport system that supports Gauteng's economic, social and cultural, and environmental goals.

The ITMP25 is to provide a blue-print for the development of a transport system for Gauteng over the next 25 years, which will be sustainable and also result in skills development, sustainable job creation and improved quality of life.

The ITMP25 has to enable the Gauteng Department of Roads and Transport to regulate, plan and develop an efficient and well integrated transport system that enhances mobility and is safe, secure and environmentally sustainable.

2.2 Policy Directives

The current policy directives and information extracted from existing plans and other relevant documentation, which could inform the process of developing a high-level Integrated Transport Vision for Gauteng and underpin the ITMP25 are given in the following paragraphs. The policy directives encapsulate political, social, financial, and economic objectives. The policy framework is based on the following key official documents:

- Gauteng Provincial Vision 2055;
- White Paper on Transport Policy, 1996;
- National Land Transport Act, 2009;
- National Planning Commission, 2011;
- National Land Transport Strategic Framework, 2006-201;
- Moving South Africa, 1998;
- Road Infrastructure Strategic Framework for SA (RISFSA), 2005;
- National Transport Master Plan (NATMAP 2050);

- DOT Public Transport Policy and Action Plan, 2007;
- Gauteng Medium-term Strategic Framework 2009-2014 (MTSF);
- Gauteng Infrastructure Renewal and Investment Plan (GIRIP);
- Gauteng Employment, Growth and Development Strategy, 2010;
- Global City Region (GCR) Perspective;
- Gauteng White Paper on Transport Policy, 1998;
- Gauteng Land Transport Framework 2009-2014;
- Gauteng Spatial Development Framework (GSDF);
- ITMP25 Terms of Reference, 2011;
- MEC for Roads and Transport Address to the Legislature, 5 July 2011; and
- Gauteng Budget Speech, 2012.

From the documentation listed above, certain common and over-arching policy directives on transforming society, promoting a democratic urban and rural order and providing equal access to opportunities are found. These *inter alia* include:

- Pro-active government interventions to improve the status quo;
- Promote quality education and skills development;
- Strengthening the developing state and good governance;
- Democratising decision-making;
- Public participation, stakeholder engagement, and partnerships; and
- Redistribution.

In addition and more directly relevant to the Province's transportation system, possible key policy focus areas which may *inter alia* be addressed in terms of the Vision and Objectives for the 25-Year Integrated Transport Master Plan are listed in **Table 2.1**. The policy directives will have a significant influence on the "way we do business" in the transport sector in future in the Province.

TABLE 2.1 – SUMMARY OF POLICY DIRECTIVES

Policy Focus Area	Policy Directives
Economic Development	• Reducing the cost of logistics, doing business, and cost of living; • Globally competitive urban area; • Creating decent work and building a growing, inclusive economy; • Support economic growth and investment through the provision of appropriate transport system and socio-economic infrastructure and services; • BBBEE, empowerment of women, youth, people with disabilities, and SMEs, and; • Promote sustainable job-creation
Spatial Development and Social Integration	• Improving the quality of life; • Poverty Alleviation • Stakeholder Engagement; • Gauteng City Region Concept; • A sustainable urban environment; • Public spaces for social cohesion and liveable communities; • Compact City development with infilling along key public transport corridors; • Physical, social and economic integration; • Stimulation of growth and productivity to rural areas; • Gender Equity; • Re-distribution of access to wealth • Affordable Transportation System • Accessible Transportation System • Safe and Secure Transportation System • Efficient Transportation Services
Environmental Soundness and Sustainability	• 'Green', 'Smart', and sustainable solutions; • Reduction of current levels of non-renewable energy usage (reduce the transport carbon footprint); • Contain the dependency on private cars; • Minimise destructive environmental impacts of transport; • Renewable energy sources; and • Open space system and green lungs.
Optimum Utilisation of new and existing Infrastructure	• Implementation of global best-practice solutions, customised for local conditions; • Protect corridors; • Prioritise NMT infrastructure;

	• Prioritise public transport infrastructure and services; • Travel demand management; and • Information management and sharing.
Policy Focus Area	**Policy Directives**
Development of an Efficient and Effective Transport Network and System	• Emphasis on Mass Transit - Public Transportation, Non-motorised Transport, and modal integration; • Promotes a functional transport area and the transport inter-action in the Global city Region and with adjacent provinces; • Integrated transportation system and infrastructure; • Balance mobility needs with access; • Provides for strategic and operational integration; • Offers acceptable levels of predictability and reliability; • Prioritise public transport and the movement of freight; • Optimise the deployment of various modes, to minimise traffic congestion and maximise service delivery; • Consider key freight and logistics nodes and corridors; • Utilise financial support to transport and subsidies as a lever and catalyst for the development of the desired urban form. • Optimise the time and cost for travel; • Acceptable levels of safety and security; and • Adequate attention to NMT and Accessibility
Institutional Efficiency	• Co-operative Governance and partnership between all spheres of Government, Private Sector, media, and the citizens • Leadership and Management excellence in the Department of Roads and Transport • Customer Focus • Integrated Management Systems • Regulatory Efficiency • Sustainable Funding and Financing mechanisms

2.3 Departure Points and Considerations

The Terms of Reference lists a number of departure points for the development of the ITMP25, which *inter alia* include:

- Institutional Arrangement: The Case for the Gauteng Transport Authority;
- Gauteng City Region Land Use Restructuring;
- Public Transport Rationalisation and Restructuring: Strategic Public Transport Network – "Clearly defined hierarchy and continuity across the City Region";
- Freight Network – "Focus on major rail-based freight logistic hubs developed on the periphery of the core urban areas";
- Transformation of the urban form towards greater efficiency and sustainability;
- Underpin the Global City Region concept;
- Environmental soundness and sustainability;
- Incorporate current and future land-use needs (including two proposed new mega-cities in Gauteng);
- Prioritise public transport and the movement of freight;
- Optimise the deployment of various modes, to minimise traffic congestion and maximise service delivery;
- Include non-motorised transport facilities, to support public transport services specifically and enhance the quality of the built environment in general; and
- Utilise financial support to transport and subsidies as a lever and catalyst for the development of the desired urban form.

Moreover, in developing the ITMP25, the following needs to be considered:

- Further unlocking the economic development potential of the Gauteng Province from a transport perspective;
- A functional transport area and the transport inter-action with adjacent provinces;

- Pro-active government interventions to improve the status quo;
- Planning transport for people must deal with person trips and not only vehicle trips; and
- Optimise the time and cost for travel.

2.4 Key Performance Areas

The Key Performance Areas to be addressed by the Province through the implementation of the ITMP25 are:

- Public transport efficiency;
- Increase in public transport patronage;
- Modal shift from private vehicle to public transport;
- Administration efficiency;
- Management system;
- Road safety;
- Transport mobility and accessibility;
- Infrastructure development and maintenance;
- Social empowerment;
- Sustainable transportation;
- Environmental management;
- Restructuring and rationalisation of public transportation system;
- Land use restructuring;
- Accessible transport;
- Enforcement;
- Freight transportation management (cost of freight logistics); and
- Sustained funding.

3 ECONOMIC DEVELOPMENT SCENARIOS

3.1 Background

The status quo of economics and demographics in the Gauteng Province are recorded in the Gauteng Provincial Land Transport Framework (2009–2014), as well as in the Gauteng Employment Growth and Development Strategy (GEGDS). The recordings are based on a StatsSA Community Survey 2007 undertaken prior to the 2009 recession and economic downturn. These recordings have become outdated. The analysis and results of the national census performed during 2011 will definitely update the status quo, but will unfortunately not be ready for inclusion in this report. The 2037 Consortium prepared an *Economic and Demographic Scenarios* report which uses later economic and demographic figures as a basis for the different scenarios and future projections. These recordings are up to date and found to be much more informative than outdated statistics. The economic and demographic analysis is based on global and local indicators and trends.

> "*In order to plan for the future, one needs to have a picture on what the future might hold, both on the human and business side - in terms of population projections and forecasted economic growth. (Global Insight, 2012)*

As part of this project there is an emphasis on the use of existing studies and plans – across all the various functional aspects of transport planning. This report presents a brief literature review on current and previously completed projects related to demographic and economic scenarios. It further compares the output from studies with the current best estimates based on the latest available data. Finally, it makes a recommendation on which demographic and economic scenarios to use for the purposes of the GTIP5.

3.2 State of Planning

The following studies in **Table 3.1** were consulted.

Table 3.1 – Supporting Studies

Source	Time horizon	Economic Scenarios	Population Projections
Gauteng Transportation Model Scenarios (2004) BMR, Global Insight Panel of experts	2001-2025	Baseline Labour Capital Tiger Combined	Low High
National Transport Master Plan 2050 (2007) BMR, Global Insight	2005-2050	Base Low High	Red Blue Green
Gauteng PERO (2011) IHS Global Insight	2010-2015	Base only	None
Gauteng Vision 2055 Landau, L. (2008). Population And Migration Trend Paper.	2008-2055	Limited data	Low Medium High

In addition, IHS Global Insight also added projections and forecasts based on the latest available data and/or official sources.

3.3 Gauteng Demographic Indicators

The section describes the population of Gauteng in the context of South Africa as a whole and also provides a breakdown by age and gender comparing this to the national picture. The total population of Gauteng as indicated in **Table 3.2** includes all residents, non-residents and individuals of any age, gender and population group in Gauteng.

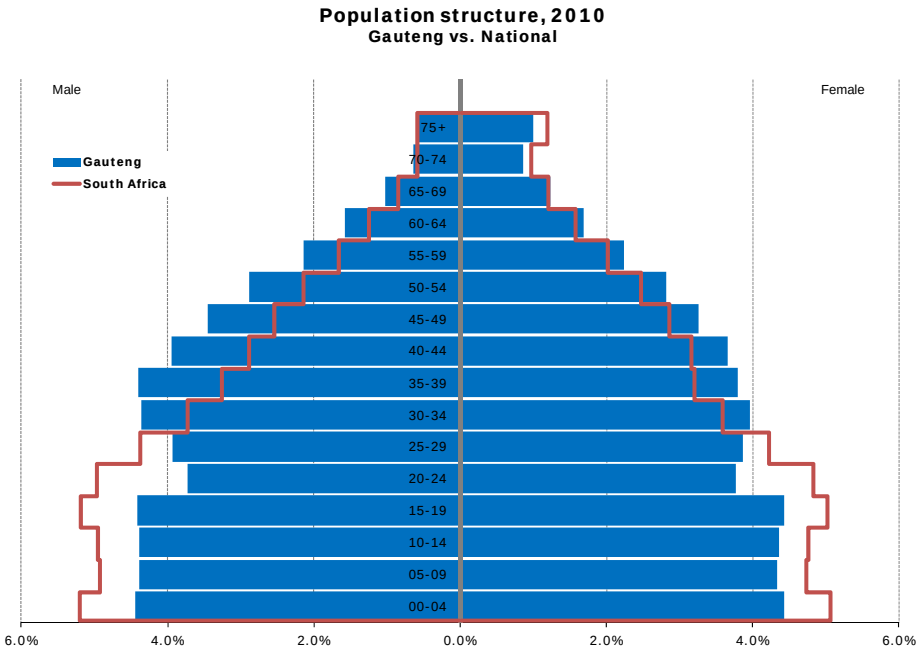
Table 3.2 - Total Population in Gauteng Province and South Africa, 1996, 2001 and 2010 (Numbers in Millions)

Year	Gauteng	National	GP % Share of National
1996	8.57	42.16	20.3%
2001	9.71	45.86	21.2%
2010	11.19	50.98	21.9%

The total population of Gauteng was 8.57 million in 1996, which constituted 20.3% of the population in South Africa. This increased to 21.9% in 2010, with an estimated 51 million people in South Africa. Gauteng's population grew faster compared to the rest of South Africa. This is primarily due to in-migration into Gauteng and not due to natural growth.

A population pyramid is a visual representation of the population broken down by gender and age for the selected year and region. The horizontal axis depicts the share of people, with the left pane depicting males and the right pane depicting females; the vertical axis depicts the 5-year age categories. **Figure 3.1** depicts the population pyramid for Gauteng.

Figure 3.1 - Population pyramid – Total population in Gauteng relative to South Africa, 2010



The age breakdown for Gauteng differs quite significantly from the national picture. Where the national demographic pyramid is shaped like a traditional pyramid, with some flattening off at the younger ages (the typical shape of a developing country), Gauteng has a large working-age population, with relatively fewer children and also fewer elderly people. This working-age phenomenon is more exaggerated for males compared to the females. The problem of HIV/AIDS is also visible with a pronounced dent at the sexually active ages between 15 and 30 years.

A household is a group of people who live together and who provide themselves jointly with food and/or other essentials for living, or a single person who lives alone. An individual is considered part of a household if he/she spends at least four nights a week within the household.

Table 3.3 - Number of households in Gauteng Province and South Africa, 2010 (Number, average household size)

2010	Gauteng	National
Number of households (in millions)	3.52	13.77
Average household size (number of persons)	3.18	3.7

In 2010 the number of households in Gauteng was 3.5 million and the total number of households in South Africa counted 13.7 million. In Gauteng, the average household size was smaller at 3.2 individuals per household compared to the 3.7 persons per household for South Africa as a whole.

3.4 Gauteng Economic Indicators

3.4.1 Economic Growth - Gross Domestic Product (GDP)

Gross Domestic Product by Region (GDP-R) represents the value of all goods and services produced within a region, over a period of one year, plus taxes and minus subsidies. **Figure 3.2** is the GDP growth for Gauteng from 1996 to 2011.

The economic growth of Gauteng reveals a positive growth until the economic slowdown in 2008/09 but a fast economic recovery from then onwards. The recovery from the economic slowdown from 2008/09 for the economy is expected to have the classic V-shape, as is evident from the chart. Compared to the economy as a whole, Gauteng is on average growing slightly higher than the rest of the economy.

Figure 3.2 - GDP growth – Gauteng province and South Africa, 1996 - 2011 (%, Constant 2005 prices)

3.4.2 Sector Composition - Gross Value Added by Region (GVA-R)

Gross Value Added is a measure of output or production. GVA is often broken down by various production sectors. One can think of GVA-R as the difference between the inputs obtained from outside the region and the outputs of the region, that is, the region's total "value added".

Table 3.4 - GVA by broad sector from Gauteng and South Africa (Current prices rand millions, 2010)

2010	Gauteng		National	
	GVA	% of total	GVA	% of total
Agriculture	3,478	0.4%	58,644	2.4%
Mining	30,068	3.6%	227,117	9.4%
Manufacturing	136,282	16.5%	332,470	13.8%
Electricity	23,609	2.9%	71,403	3.0%
Construction	45,001	5.4%	102,801	4.3%
Trade	120,852	14.6%	342,750	14.2%
Transport	65,455	7.9%	203,673	8.4%
Finance	207,936	25.2%	522,048	21.6%
Community services	193,456	23.4%	551,584	22.9%
Total Industries	826,137	100.0%	2,412,491	100.0%

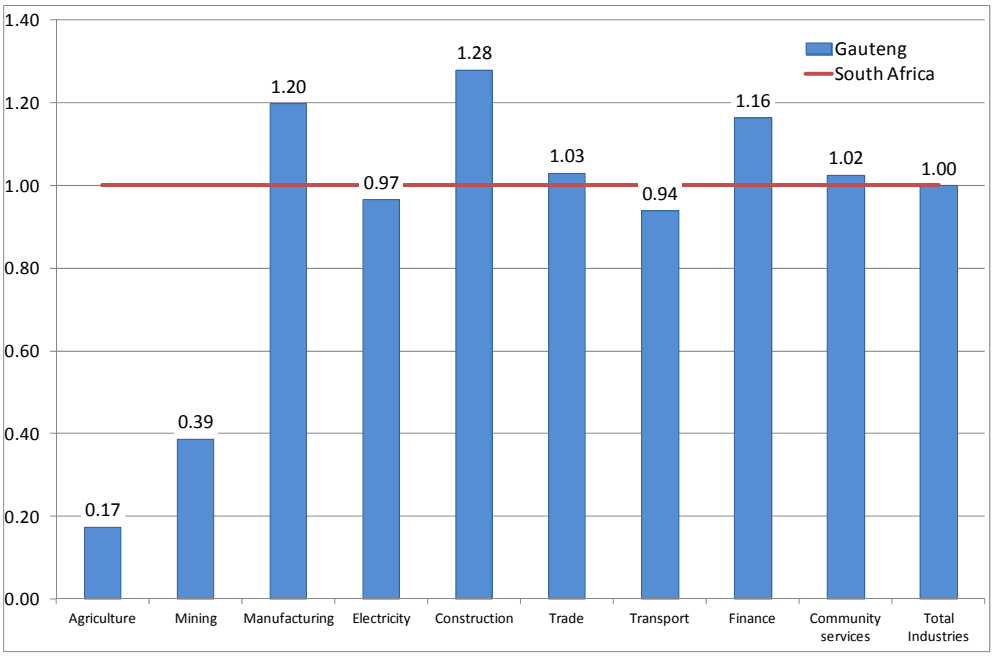
In terms of GVA, the sector that contributes the largest share to the Gauteng economy is the Finance sector, which is 25% of its economy, followed by Community Services which is 23%, Manufacturing (17%) and Trade (15%). Community Services GVA comprises government administrative activities that are mainly headquartered in Pretoria and Johannesburg, and there are also more hospitals and schools in Gauteng.

3.4.3 Location Quotient

A specific regional economy has a comparative advantage over other regional economies if it can produce the same good more efficiently. The location quotient is one way of measuring this comparative advantage by taking into account production and employment. If the location quotient is larger than one for a specified sector and region, then that region has a comparative advantage in that sector. This is because the share of that sector of the specified regional economy is greater than the same sector in the national economy.

Compared to the national economy, the Gauteng province has a comparative advantage when it comes to construction, manufacturing and finance. The sectors that have a comparative disadvantage compared to the rest of South Africa are the mining and agriculture, as indicated in **Figure 3.3**.

Figure 3.3 - Location quotient – Gauteng Province and South Africa, 2010



3.4.4 Gross Domestic Product (GDP) Per Capita

Gross Domestic Product by Region (GDP-R) per capita is a broad measure of economic progress within a region. GDP-R per capita is equal to the GDP-R of the region divided by the population of that region.

Table 3.5 – Nominal GDP per capita – Gauteng Province and South Africa 1996, 2001 and 2010 (Rand per Person)

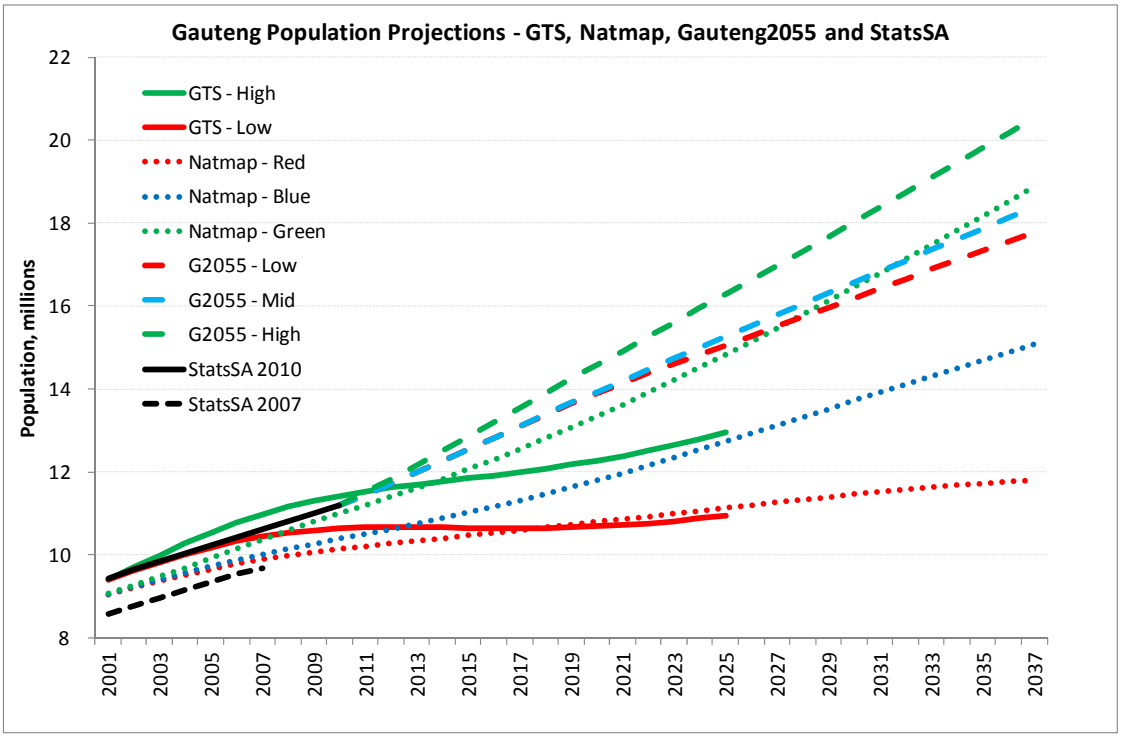
Year	Gauteng	National	GP/Nat Ratio
1996	24,641	14,658	1.68
2001	35,517	22,242	1.60
2010	81,554	52,210	1.56

The nominal GDP per capita for the Gauteng in 1996 amounts to 24,600 and increased to 81,600 in 2010. The GDP per capita of Gauteng is much higher than that of South Africa as whole, which is one of the driving factors for in-migration. In 2010 the GDP per capita for South Africa was R52 200, as indicated in **Table 3.5**. One can expect that the Gauteng and the National GDP per capita numbers will move closer over time, as migration into Gauteng will weaken in the future.

3.5 Population Projections

Figure 3.4 highlights the large differences between the various studies on projected population growth patterns. It is important to note that StatsSA made adjustments between 2007 and 2010 on its projections. Both the GTS and NATMAP projects started off at a point higher than what the official government numbers (StatsSA 2007). StatsSA adjusted its numbers upwards after the release of Community Survey 2007, even higher than the estimates by other demographers. However, all project a sizeable increase in Gauteng's population over the next two decades.

Figure 3.4 – Gauteng Population Projections



The Gauteng-2055 projections are extremely optimistic and generally higher – both from a historical projection perspective as well as compared to other studies. The IHS Global Insight analysed these projections in more detail and concluded that the assumptions are somewhat unrealistic. Even the low scenario had a fertility assumption which is very high; it assumed constant in-migration into Gauteng from the rest of South Africa – where we do have confirmed evidence of declining in-migration. Movement of people is usually driven by longer term trends, GDP per capita (wealth), etc., which factors in economic cycles. According to the latest mid-

year estimates from StatsSA, the population growth for 2011 for Gauteng was 1.6%; slowing down from 2.2% in 2002, where Gauteng-2055 had growth of 2.3% in 2011, only reaching 1.5% in 2025.

3.5.1 Alternative Population Scenarios

Cohort-component demographic models draw heavily on population census data. In South Africa a population census is only conducted every 10 years. For the years in between, the models are calibrated by smaller surveys, and also administrative data such as registered births and deaths. It is therefore possible to estimate population numbers using these inputs. The IHS Global Insight therefore produced projections based on a cohort component demographic model. The 2010 base scenario describes the highest probable population outcome using the best estimates for the various demographic input variables. Note that this estimate is slightly higher than the IHS Global Insight estimate, assuming slightly higher fertility to align better with the historical StatsSA fertility estimates. This scenario assumes a slowing in-migration into Gauteng as well as a gradual decline in fertility. The low-scenario assumes that the in-migration into Gauteng will slow down fairly quickly in future and then remain at very low levels. This is a somewhat unrealistic assumption, although it illustrates the importance of the migration assumption relative to the base scenario. The high scenario assumes migration-levels like we had in 2005 as a constant into future, as well as keeping the fertility levels at the same rate as in 2010 constant into the future. **Table 3.6** summarises the different scenarios.

Table 3.6 – Population Growth Scenarios

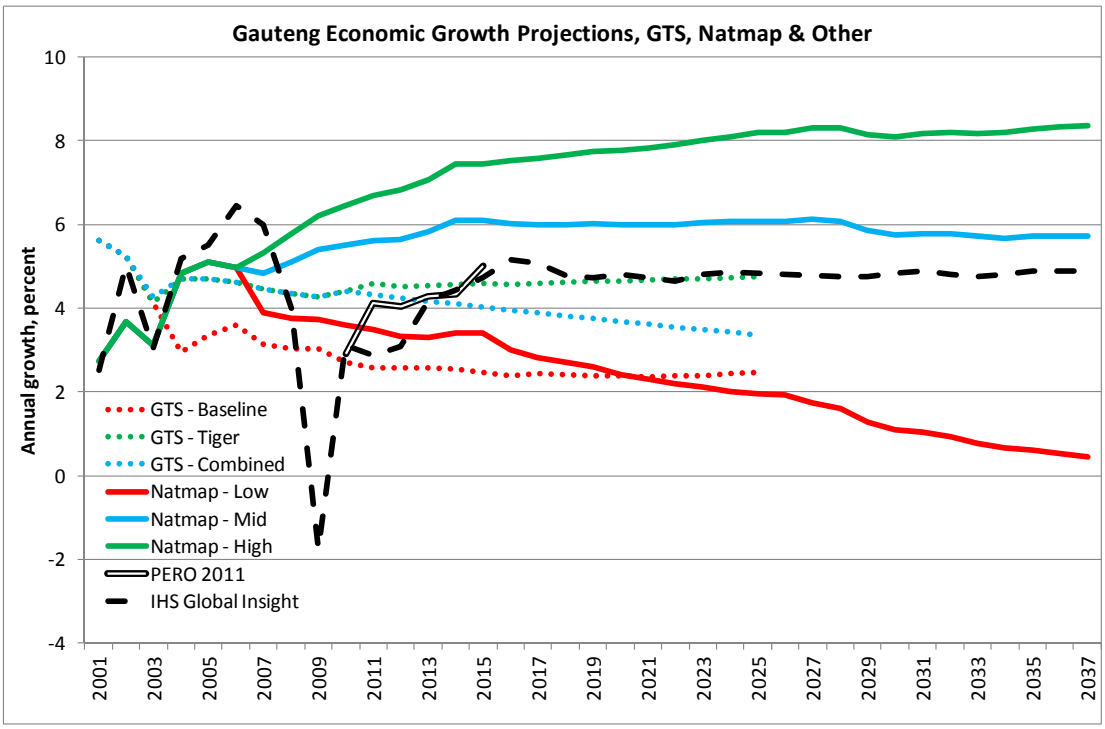
Variable	Base	Low	High
Fertility	Slowing down	Slowing down	Constant after 2010
Migration	Slowing in-migration: 2000 – 100,000 pa 2010 – 80,000 pa 2025 – 50,000 pa 2037 – 40,000 pa	In-migration slowing rapidly: 2010 – 80,000 pa 2025 – 10,000 pa 2037 – zero	Constant in-migration at 2005-levels (2011 onwards): 90,000 pa
Life Expectancy	-	HIV/AIDS prevalence rate: 5% higher (2011 onwards) Lower Life Expectancy	-

3.6 Economic Growth Scenarios

Similar to the population projections, **Figure 3.5** describes the various studies and specifically the economic growth forecasts.

It is just as difficult to do economic growth forecasts as it is to do the population projections. What makes the economic forecasts even more difficult is the fact that we are exposed to the global economy far more compared to the population projections.

Figure 3.5 – Gauteng Economic Growth Projections



The fact is the economic outlook changes almost on a daily basis and is substantially more volatile than the movement of people. Although the short-term outlook changes quickly, the longer term growth outlook is substantially more stable and this is important from a planning perspective.

Figure 3.5 shows the GTS study had a somewhat slower economic growth, ranging between 2% and 5% where the baseline outlook was roughly 2.5%. This study was conducted in the years remembered for its pessimism, huge data revisions and lack of capacity at StatsSA. The NATMAP study a few years later was conducted during

the economic boom years and had a baseline economic growth rate of roughly 6%. Since then we had the global recession.

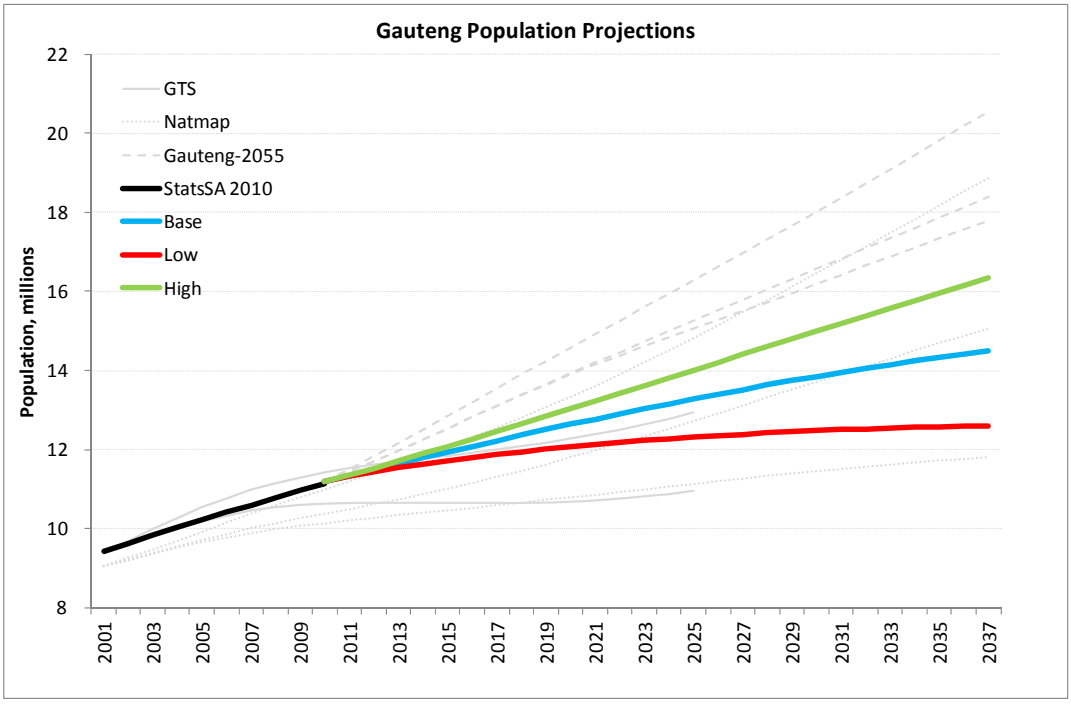
The black line represents the IHS Global Insight forecasts as at March 2012, together with the Gauteng Provincial Economic Review and Outlook (PERO) of 2011, which predicts a moderate growth rate of 4.5%.

3.7 Deductions

3.7.1 Population Forecast

Figure 3.6 displays the results of the various scenarios overlaid on top of the population projections considered in the literature review (in gray). The high projection is recommended. The uncertainty around the in-migration parameter justifies a more conservative population projection to be used in the transport modelling. Currently, there is evidence of in-migration slowing down, but the exact level of slowdown is uncertain. Although the base scenario provides the highest probable population outcome based on most recent data, in order to allow for getting the maximum benefit from the transport model it is recommended to use the higher scenario. A conservative transport planning approach requires a high population projection. Consulting international studies do not provide a simple solution as the cultural and socio-economic conditions are unique to South Africa. The high scenario also provides a balanced projection between previous studies, the Gauteng Vision 2055 and most recent available data.

Figure 3.6 – Population Growth Projections



3.7.2 Economic Forecast

The IHS Global Insight economic growth forecast scenarios is reflected in **Table 3.7.** The Gauteng Base provides a balanced view of what to expect in future. It is important to note that any economy does have its business cycles and unavoidably there will be periods of upswings and periods of slower growth or recession. The long term economic projections provide the average annual economic growth across the entire planning horizon.

For transport planning, the biggest risk is on the upper side – when the economy grows faster than anticipated and it runs into transport infrastructure constraints. Having slower growth will result in having sufficient spare capacity on the transport system. In order to come up with a low and high variant of the base assumption, the following assumptions were applied to differentiate between the scenarios. The low growth scenario assumes a slower world economy impacting on South Africa through all the international economy linkages. The higher economic growth assumes a higher level of infrastructure spending. In the base growth scenario we have assumed an under spending based on the historical average when comparing planned projects against actual build projects. The high scenario assumes no under

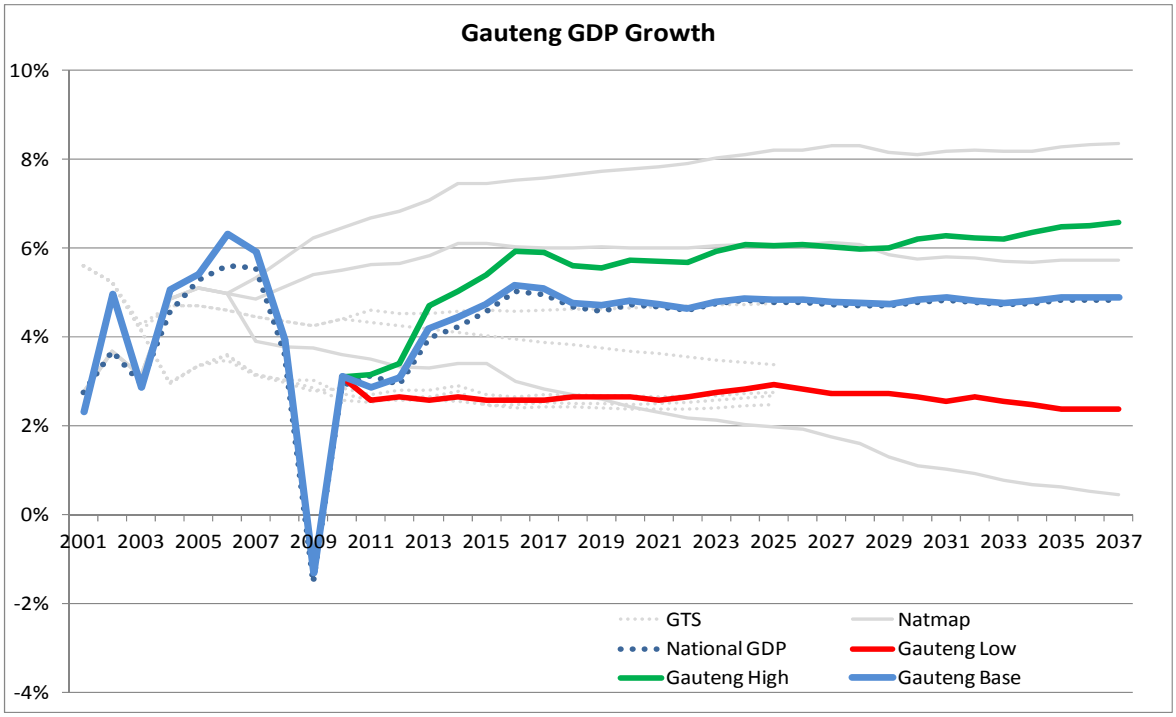
spending and more success with government's initiatives to create jobs, thereby lowering the unemployment rate, which is one of the structural constraints in the economy.

Table 3.7 – Economic Growth Scenarios

Topic	Base	Low	High
Infrastructure Spending	Assume under spending (historical average)		Assume no under spending
World economy		Slow and prolonged recovery, resulting in slower global growth	
Labour New jobs created	Status quo / limited success		Better success with the "new growth path" in creating jobs

Figure 3.7 demonstrates the result of the three economic growth projections. As mentioned above the lower growth scenario is less important. The Gauteng Base scenario is recommended. The Gauteng high path is indeed possible – as we have seen through the economic boom years earlier. However, the IHS Global Insight attaches a very low probability (10%) to this scenario, where the economy grows consistently at a level of 6%.

Figure 3.7 – Economic Growth Forecast

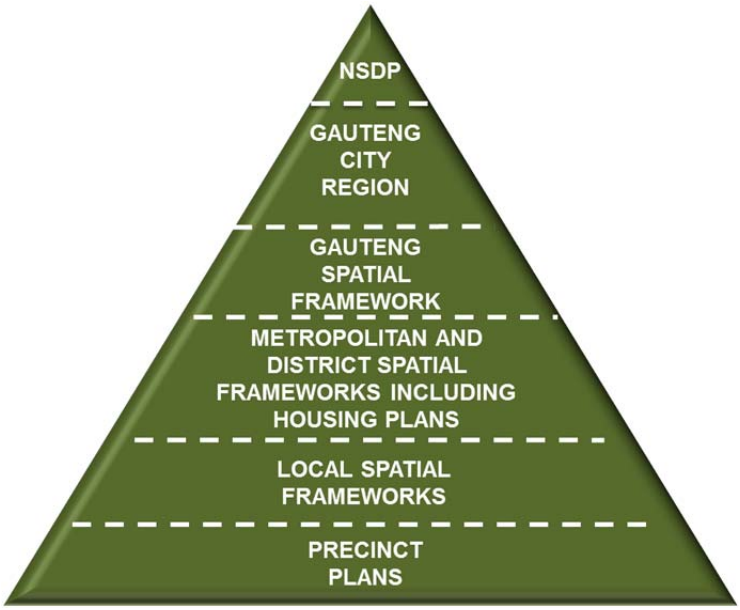


4 LAND USE PLAN AND SPATIAL PERSPECTIVE

4.1 State of Planning

As illustrated on **Figure 4.1** there are several statutory land uses/spatial plans or development concepts relevant to Gauteng. Most of these have been compiled in terms of legislation, e.g. the Metropolitan and District Spatial Development Frameworks, Local Spatial Development Frameworks and Precinct Plans, which have been compiled in terms of the Municipal Systems Act (2000) and the Gauteng Planning and Development Act (2003). The National Spatial Development Perspective (NSDP) puts forward five principles to guide and inform spatial planning at all spheres of government in South Africa, while planning pertaining to the future Gauteng City Region is undertaken in the Office of the Premier. Collectively, these plans should be consolidated to create a Land Use Plan/Spatial Development Perspective for Gauteng which should inform the ITMP25.

Figure 4.1 - Spatial Perspective for Gauteng Province



4.2 Policy Directives

4.2.1 National Spatial Development Perspective (NSDP)

The National Spatial Development Perspective was initiated with the aim of not only providing a strategic assessment of the spatial distribution and socio-economic characteristics of the South African population, but also gaining an understanding of the

distribution of economic activity and potential across the South African landscape. Based on the research conducted, and with key trends and issues identified, the NSDP delineates a number of guidelines for infrastructure investment in South Africa, including Gauteng, as summarised below:

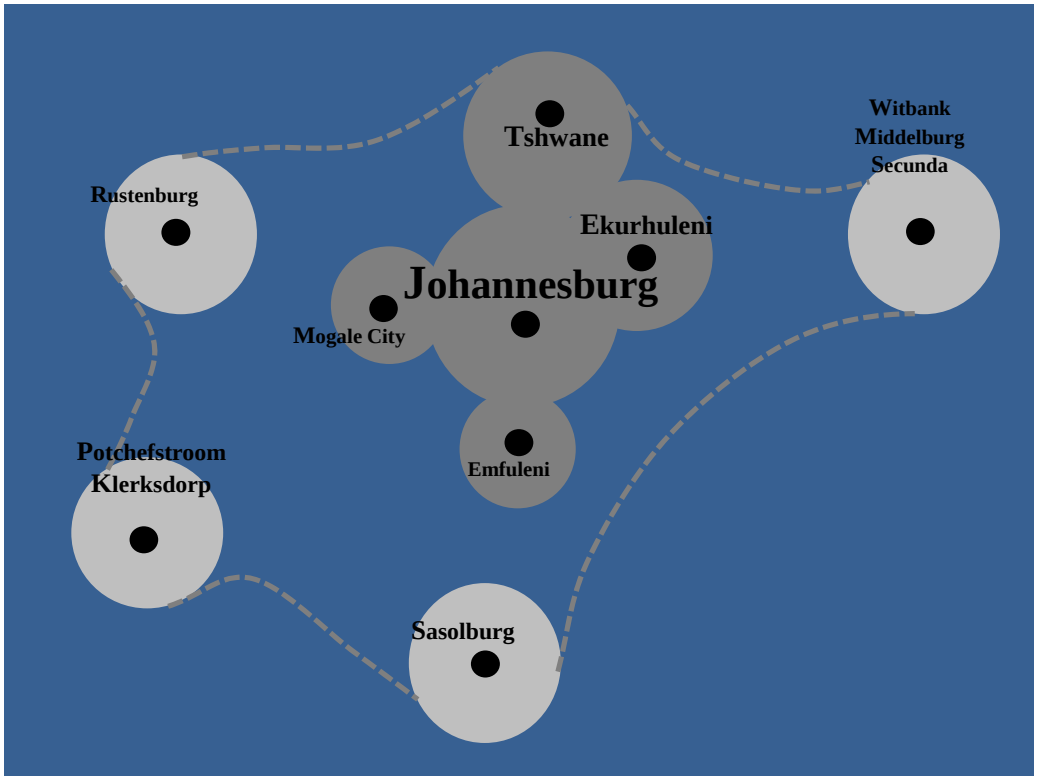
- Economic growth is a prerequisite for the achievement of other policy objectives, key among which would be poverty alleviation.
- Government spending on fixed investment, beyond the constitutional obligation to provide basic services to all citizens (such as water, electricity and health and educational facilities), should be focused on localities of economic growth and/or economic potential in order to attract private-sector investment, stimulate sustainable economic activities, and/or create long-term employment opportunities.
- Efforts to address past and current social inequalities should focus on people, not places. In localities where there are both high levels of poverty and development potential, this could include fixed capital investment beyond basic services to exploit the potential of those localities.
- In localities with low development potential, government spending, beyond basic services, should focus on providing social transfers, human resource development and labour market intelligence. This will enable people to become more mobile and migrate, if they choose to, to localities that are more likely to provide sustainable employment or other economic opportunities.
- In order to overcome the spatial distortions of apartheid, future settlement and economic development opportunities should be channelled into activity corridors and nodes that are adjacent to, or link the main growth centres. Infrastructure investment and development spending should primarily support localities that will become major growth nodes in South Africa and the Southern African Development Community region to create regional gateways to the global economy.

4.2.2 Gauteng Global City Region

The primary objective of the Global City Region (GCR) is to build Gauteng into an integrated and globally competitive region where the economic activities of different parts of the province complement each other in consolidating Gauteng as an economic hub of Africa and an internationally recognised global city-region. The main aim is to encourage greater internal coherence and co-operation within the province for greater external competitiveness.

Gauteng is not only seen as a GCR – it is also most likely a future “Mega-City” within the African context. **Figure 4.2** graphically depicts the concept of the Gauteng City Region with the primary urban conurbation clustered around Tshwane, Ekurhuleni, Johannesburg, Mogale City and Emfuleni. The Gauteng City Region is supplemented by four large secondary economic clusters around Rustenburg, Potchefstroom/Klerksdorp, Sasolburg and Secunda/Middelburg/Witbank as illustrated in **Figure 4.2**. Functional linkages between these areas and the Gauteng City Region core area are critically important.

Figure 4.2 - Concept of Gauteng City Region



The salient economic links between Gauteng and the adjacent Provinces are:

- There are around 235 000 person trips per month by taxi from Gauteng to Limpopo
- 6.2% of all work trips originating in Mpumalanga is destined to Gauteng, of which 5.3% is from the Nkangala District Municipality
- The Moloto Corridor transports about 36500 bus passengers, of which 95% are destined for the City of Tshwane
- The N4, N12, N17, N3, and R23 are significant road linkages between Mpumalanga and Gauteng provinces

- The Babelegi Industrial Estate, though it falls within the City of Tshwane, is a significant employer of residents from the rural municipality of Moretele and there are about 31000 daily trips
- Sasolburg is one of the primary economic activity centres for the residents of the Sedibeng DM with the R57, R59 and N1 as the major mobility routes, and the provision of a subsidised bus service from various towns in the SDM to Sasolburg.

The GCR concept aims to develop the province based on the following principles:

- Reducing reliance on private mobility in favour of safe, convenient and affordable public transport and non-motorised transport.
- Reduce present rates on non-renewable energy usage.
- Reduce rates of energy expended on the manufacture of goods, the delivery of these goods to market and the import of goods.
- Integrating open space systems into the city region and providing sustainable ecosystems, urban agriculture and quality of life as being fundamental to the province's development patterns.
- Promoting a democratic urban order in terms of opportunities for all.

The GCR implementation/action plan comprises eleven strategic pathways to facilitate and integrate implementation and alignment of this concept. Of specific relevance to this report is Strategic Pathway Ten, which deals specifically with aligning strategies within the GCR perspective. In this regard, the key project relates to contextualizing the following strategies within the GCR short and long terms vision:

- Safety and security;
- Transport infrastructure and authorities;
- Integrated safety and transport system;
- Sustainable human settlements;
- Investment and tourism promotion;
- Infrastructure provision; and
- Environment and sustainability.

Transportation will play a vital role in urban consolidation; the restructuring of GCR and in finding sustainable movement solutions which lessen the reliance on private mobility in

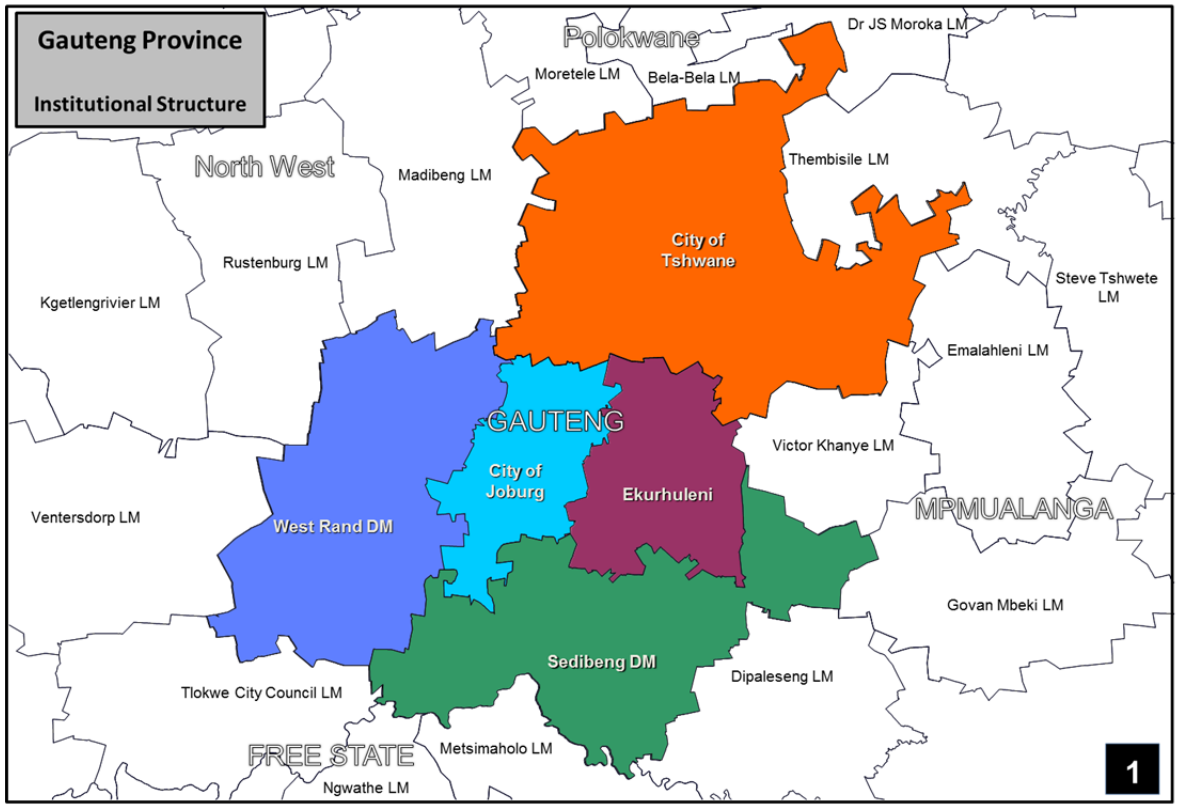
favour of safe, environmentally friendly and affordable public transport and non-motorised transport.

4.3 Current Realities

4.3.1 Socio-Economic Features

Gauteng comprises three metropolitan areas and two district municipalities as illustrated on **Figure 4.3**. These include the City of Tshwane; City of Johannesburg; Ekurhuleni Metropolitan Municipality; West Rand District Municipality; and Sedibeng District Municipality. The West Rand District Municipality comprises the local authorities of Merafong City, Randfontein, Westonaria and Mogale City Local Municipality, while the Sedibeng District Municipality includes Emfuleni, Midvaal, and Lesedi Local municipalities.

Figure 4.3 – Municipal Boundaries



Gauteng is the economic powerhouse of Southern Africa. A number of strategic airports, an extensive rail system comprising both commuter rail services and high-speed inter-city functions, and an extensive road network ensure that Gauteng is well connected in terms of national and international links into the SADC hinterland. However, a rapidly growing

urban population is placing increasing pressure on the movement system of the province, with the majority of the incremental population representing low income communities residing on the urban periphery, far removed from the majority of economic opportunities. Although Gauteng is the smallest province in the country, representing only 1.4% of the land area of the country, it accommodates 11.2 million people which make it the most populous province in South Africa. The population increased by 3.2 million residents between 1995 and 2009, at a rate of 2.6% annually, as compared with the national rate of 0.6%. Population growth has been concentrated in a few locations (90% of the population live in urban centres) and has resulted in strong spatial polarisation, urban sprawl and tracts of under-utilised land between main urban centres.

Gauteng is not only the most urbanised, but also the wealthiest province in South Africa. It is a major determinant and contributor of economic and social development in the country and is classified as Africa's fourth largest economy after South Africa, Egypt and Algeria. It is generally acknowledged as the economic hub of the sub-continent and SADC region. Gauteng contributes 33% to the national economy of South Africa, and a phenomenal 10% to the GDP of the entire African continent; while the City of Johannesburg contributes 49% of the total provincial GDP. This is followed by Tshwane at 25% and Ekurhuleni at 19%.

The three major sectors contributing to the provincial GDP are Finance, Real Estate and Business Services (contributing 24% of the total GDP of the province), followed by Manufacturing (21%) and Wholesale and Retail (16%). Gauteng is the financial capital of Africa with more than 70 foreign banks that have their head offices in the province and at least that number of South African banks, stockbrokers and insurance giants. The JSE in Johannesburg is the 17th largest stock exchange in the world by market capitalisation.

About 75% of manufacturing companies in South Africa are located in Gauteng. Gauteng also plays a pivotal role in the region and sub-Saharan Africa from a logistical perspective, due to the OR Tambo International Airport and a number of existing Regional Distribution Centres like the City Deep container depots.

About 58% of the population in Gauteng is economically active. The highest unemployment rate and number of unemployed people are currently found in Ekurhuleni (about 600,000 affected), while about 48% of all job opportunities in the province are currently located in Johannesburg, followed by Tshwane (24%), and Ekurhuleni (21%).

4.3.2 Spatial Structure

Figure 4.4 depicts the spatial structure of Gauteng. The first important feature to note is the regional open space network in the province which includes a number of nature reserves and conservation areas that act as strong structuring elements. This will guide, direct and influence future spatial development patterns. The most prominent of these features are the Dinokeng Nature Reserve initiative located to the north-east of City of Tshwane; the Cradle of Humankind to the north-west to the City of Joburg; the Magalies mountain range which runs through the City of Tshwane from west to east; the Rietvlei Dam Nature Reserve which is located to the south-east of the City of Tshwane; and the Suikerbosrand Nature Reserve which is located to the south of the Ekurhuleni Metropolitan area.

The core area in terms of economic activity within the province is located in the triangular area defined by the CBD of the City of Tshwane, the CBD of the City of Johannesburg and the OR Tambo International Airport in the Ekurhuleni Metropolitan Area. As is clearly evident from **Figure 4.5**, there are three major concentrations of economic activities in the province: one around the central parts of the City of Tshwane, the second one in the central part of the Ekurhuleni-Johannesburg Metropolitan complex, and the third, smaller concentration is located towards the south of the province in the Emfuleni (Vereeniging-Vanderbijlpark) area. Apart from these major clusters of economic activity, there are a few smaller, decentralised activity nodes located in the peripheral areas of the province. There is also a vast stretched out industrial area to the east of ORTIA towards Springs, Germiston etc.

The major concentrations of business (office and retail) development occur in the north-western suburbs of the City of Johannesburg and the south-eastern parts of the City of Tshwane. As far as industrial development is concerned, the major features reflected in **Figure 4.4** include the north-south and east-west axis of industrial development, which converges in the vicinity of Germiston in Ekurhuleni. The east-west industrial belt extends from Chamdor in the West Rand area right through the City of Johannesburg to Springs and Nigel in the east; while the north-south belt extends from Olifantsfontein in the north, southwards past Isando-Spartan and Wadeville-Alrode, and along the R59 Corridor through Meyerton (Midvaal), and up to the Emfuleni (Vereeniging-Vanderbijlpark) industrial complex in the Sedibeng District Municipality.

Figure 4.4 – Gauteng Spatial Structure

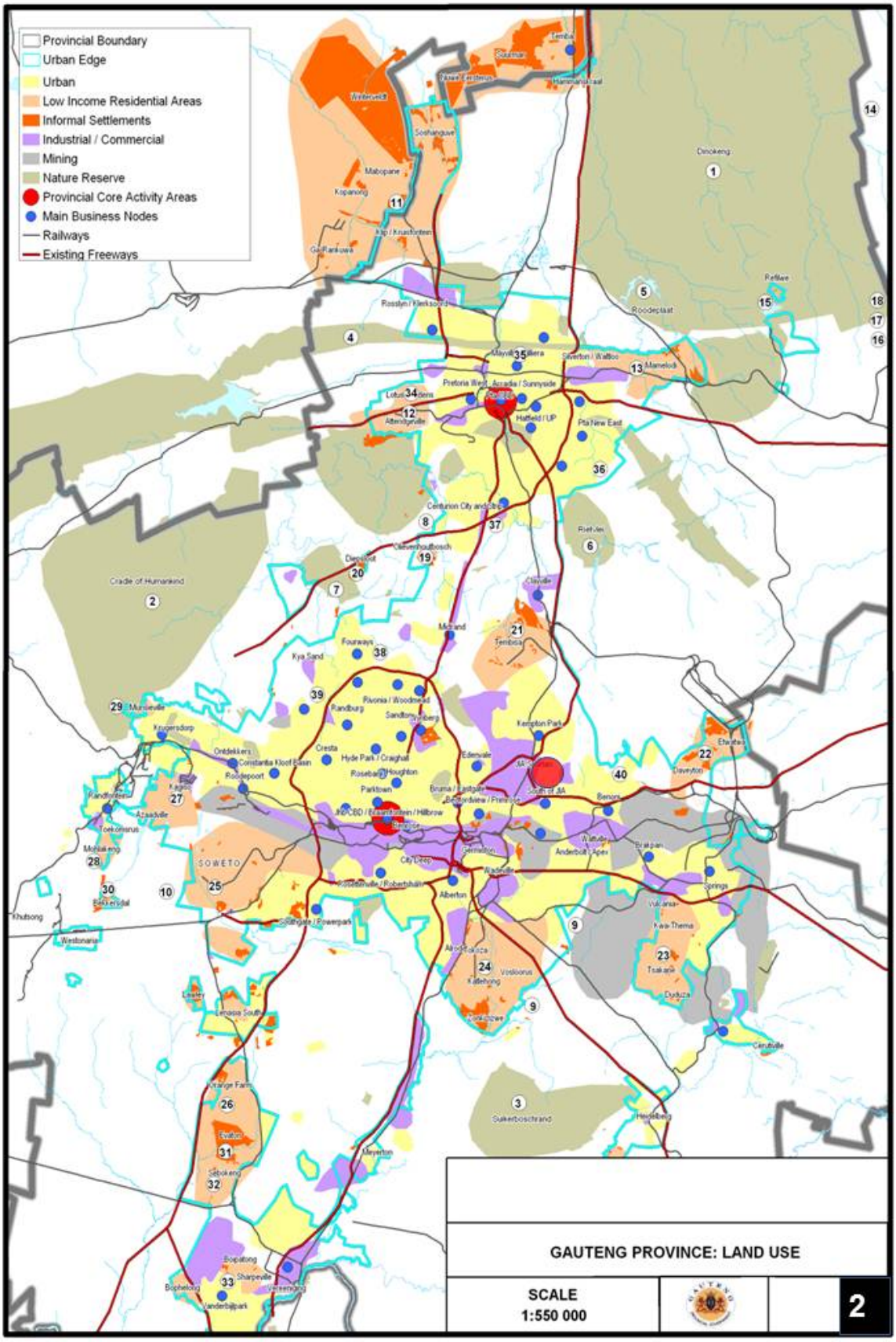
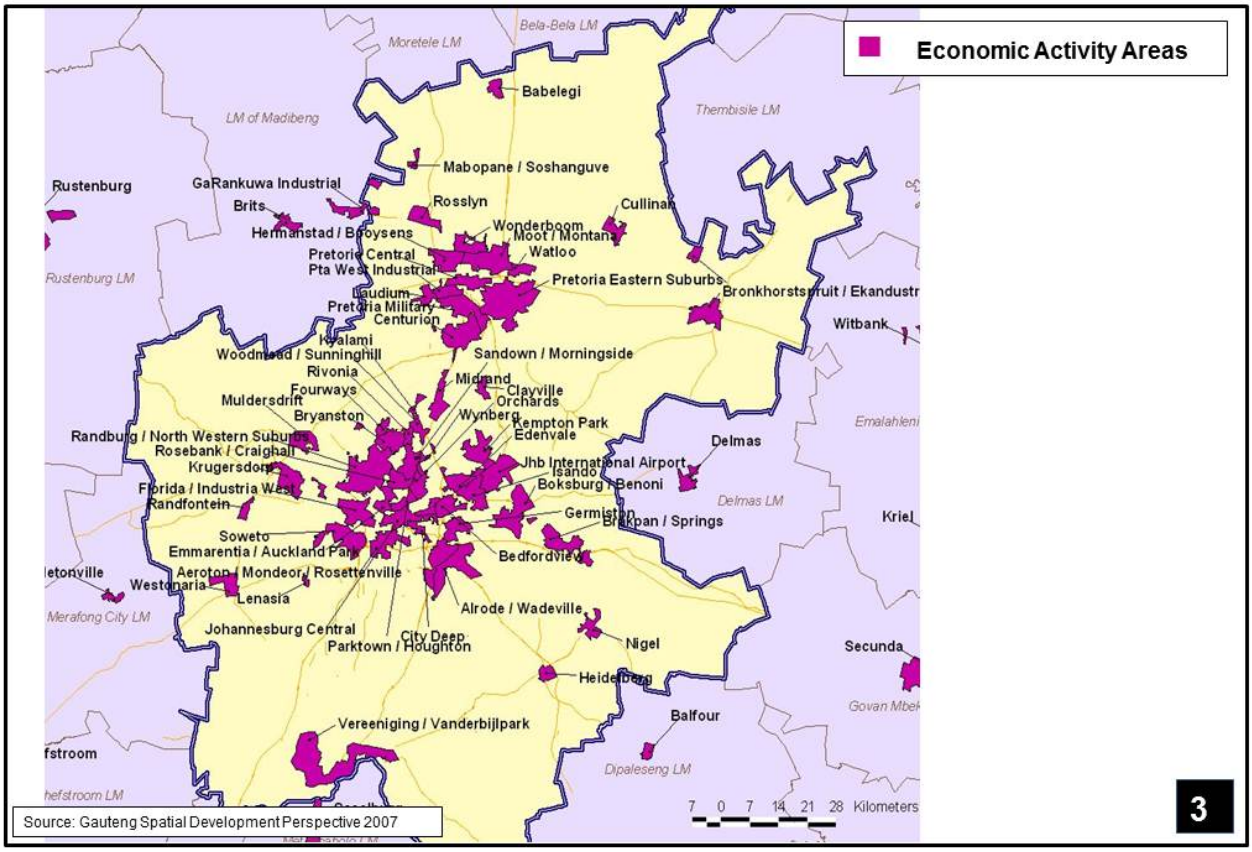


Figure 4.5 – Major Economic Concentrations in Gauteng



Apart from this major industrial footprint in the province, there are also several smaller industrial areas located to the north-west of the City of Johannesburg around Laserpark, Kaya Sands, and Kyalami, as well as along the N1-Midrand Corridor extending towards Centurion in the central part of the province. In the City of Tshwane the four major industrial areas include Pretoria West, the Silverton-Waltloo complex to the east, the Rosslyn industrial area located towards the north-west in the vicinity of Soshanguve, and Ekandustria near Bronkhorstpruit.

The Province has historically been a major mining region, with a large proportion of land use and economic development funded by gold production. However, declining production and increasing costs threaten the viability of several mines, so the overall opportunities for employment have significantly reduced. The relatively small geographic size of Gauteng means that the agriculture sector only accounts for a minor percentage of the total GVA. Its potential is further hampered by the lack of adequate water supplies to support intensive farming practices, reducing its level of job opportunities compared with industrial activity.

Although natural tourist attractions form an important economic driver, its role within Gauteng is limited, particularly when compared with the neighbouring provinces of Limpopo and Mpumalanga. Two prominent tourism features include the Cradle of Humankind near Mogale City and the Dinokeng Nature Reserve to the north-west of Tshwane.

From **Figure 4.4** it is also evident that the low income residential areas and associated informal settlements in Gauteng are located on the urban periphery of the major urban settlements. These include the GaRankuwa-Mabopane-Winterveld-Temba complex located to the north-west of the City of Tshwane, and Atteridgeville, Mamelodi and Olievenhoutbos located to the west, east and south-west respectively. In Ekurhuleni the low income communities are clustered together in four main urban complexes: Tembisa to the north-west, Daveyton-Etwatwa to the north-east; Kwatsaduza to the south-east and Katorus to the south-west. In the City of Johannesburg low income communities are mainly concentrated in the Zandspruit and Diepsloot areas to the north-west, Ivory Park (which is functionally part of Tembisa) and Alexandra to the north-east, and Soweto towards the south-west. Towards the south of Soweto low income communities reside in Lawley, Ennerdale and Orange Farm, followed by the Evaton-Sebokeng complex further towards the south in the Sedibeng District Municipality. These settlements form a linear urban conurbation parallel to the N1 South freeway over a distance of approximately 40 kilometres. In the central parts of the Emfuleni urban area are the Bophelong, Boipatong and Sharpeville low income residential areas. Further towards the west of Soweto are Kagiso, Munsieville, Mohlakeng, and Bekkersdal located in the West Rand District Municipality.

4.3.3 Development Trends

The following is a brief summary of the most salient development trends in the Gauteng:

- The areas that have seen the bulk of new property investment in recent years are the central, northern and north-western parts of the City of Johannesburg; the eastern, southern and south-eastern parts of the City of Tshwane; and the western parts of the Ekurhuleni Metropolitan Municipality, especially around OR Tambo Airport and southwards towards Boksburg and Germiston;

- Office development is by and large concentrated in the wealthier north-western suburbs of the City of Johannesburg; followed by the south-eastern suburbs of the City of Tshwane; with the core area around OR Tambo Airport in the Ekurhuleni Metropolitan Municipality a distant third;
- Mixed-use developments are concentrated in the City of Johannesburg and the City of Tshwane and are located along main roads in high-income areas in these two municipalities;
- Residential development, especially of a higher density nature, has focused in the northern, north-western and southern sections of the City of Johannesburg, the eastern and south-eastern parts of the City of Tshwane, and the northern section of the Emfuleni Local Municipality;
- The three metropolitan cities are home to just below 90% of all households living in informal settlements in the province;
- Although the Johannesburg CBD has experienced a major slump in building occupancy rates in recent years, there is a renewed interest with major investment planned for the CBD;
- The majority of new property investment in recent years has been constructed in the central, northern and wealthier north-western parts of the City of Johannesburg, displacing sites at other locations;
- The Tshwane CBD plays a significant office, retail and administrative function serving the greater Tshwane region. Much of the office development is located to the east, south and southern parts of the City; and
- The Germiston CBD, Boksburg and OR Tambo International Airport form part of the 'Ekurhuleni Core Economic Triangle', which include the proposed future development of an Aerotropolis around the OR Tambo airport.

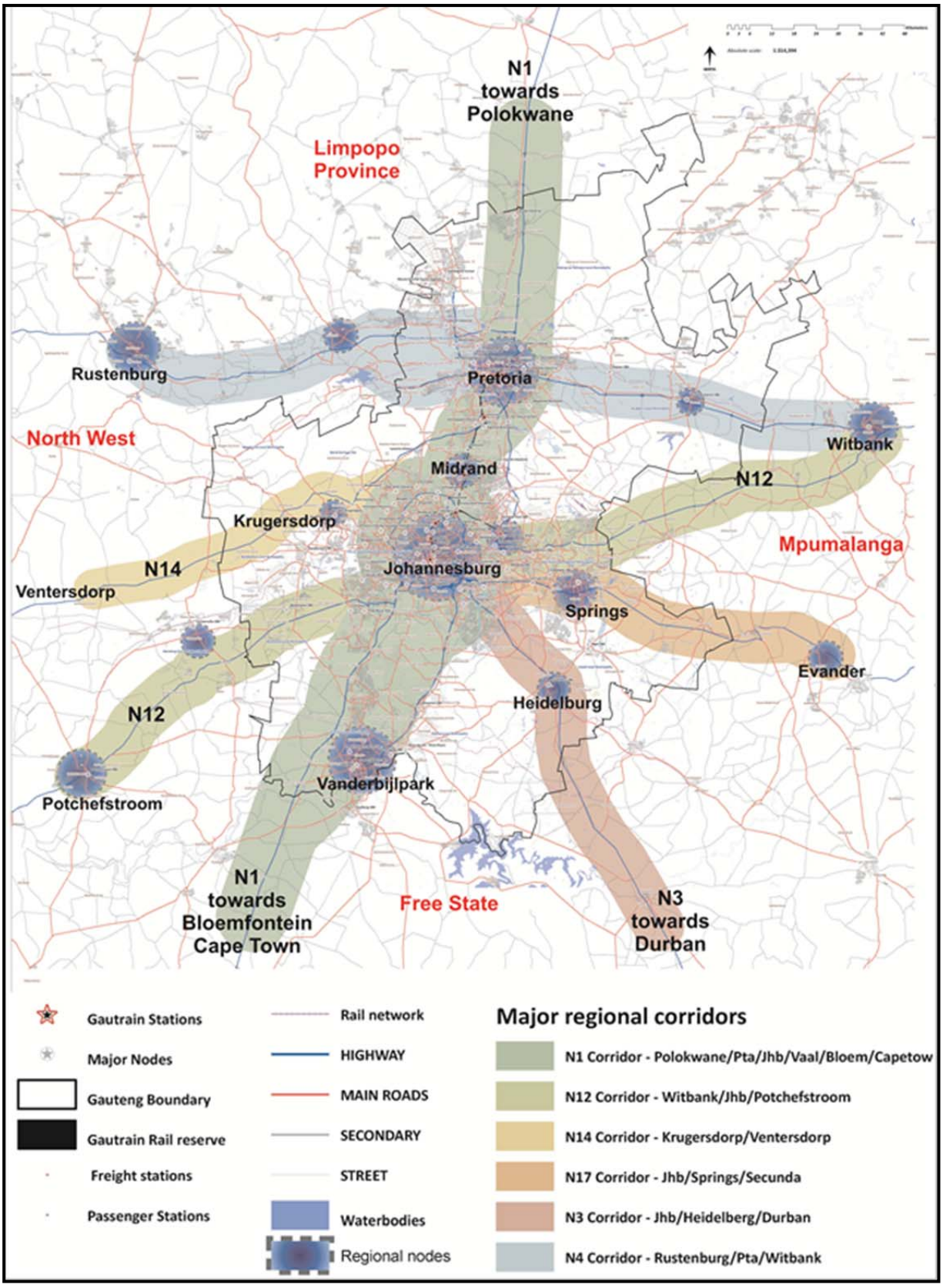
As Gauteng represents the economic hub of South Africa, most national freeways converge on Gauteng, resulting in a number of national and provincial corridors affecting the study area. These are illustrated on **Figure 4.6** below.

The rail commuter system in Gauteng comprises four major links, working together with several shorter feeder systems linking low-income communities to the main system:

- An east-west orientated line serving the Witwatersrand from Springs in the east to Randfontein in the west;
- A north-south link between the Witwatersrand and Tshwane to the north; and

- Two north-south links between the Witwatersrand and Sedibeng to the south.

Figure 4.6 – Economic Corridors



4.4 Future Vision and Development Principles

4.4.1 Provincial and Local Development Frameworks

The Gauteng Spatial Development Framework as reflected in **Figure 4.7** below represents the future spatial vision for Gauteng. It seeks to achieve the following:

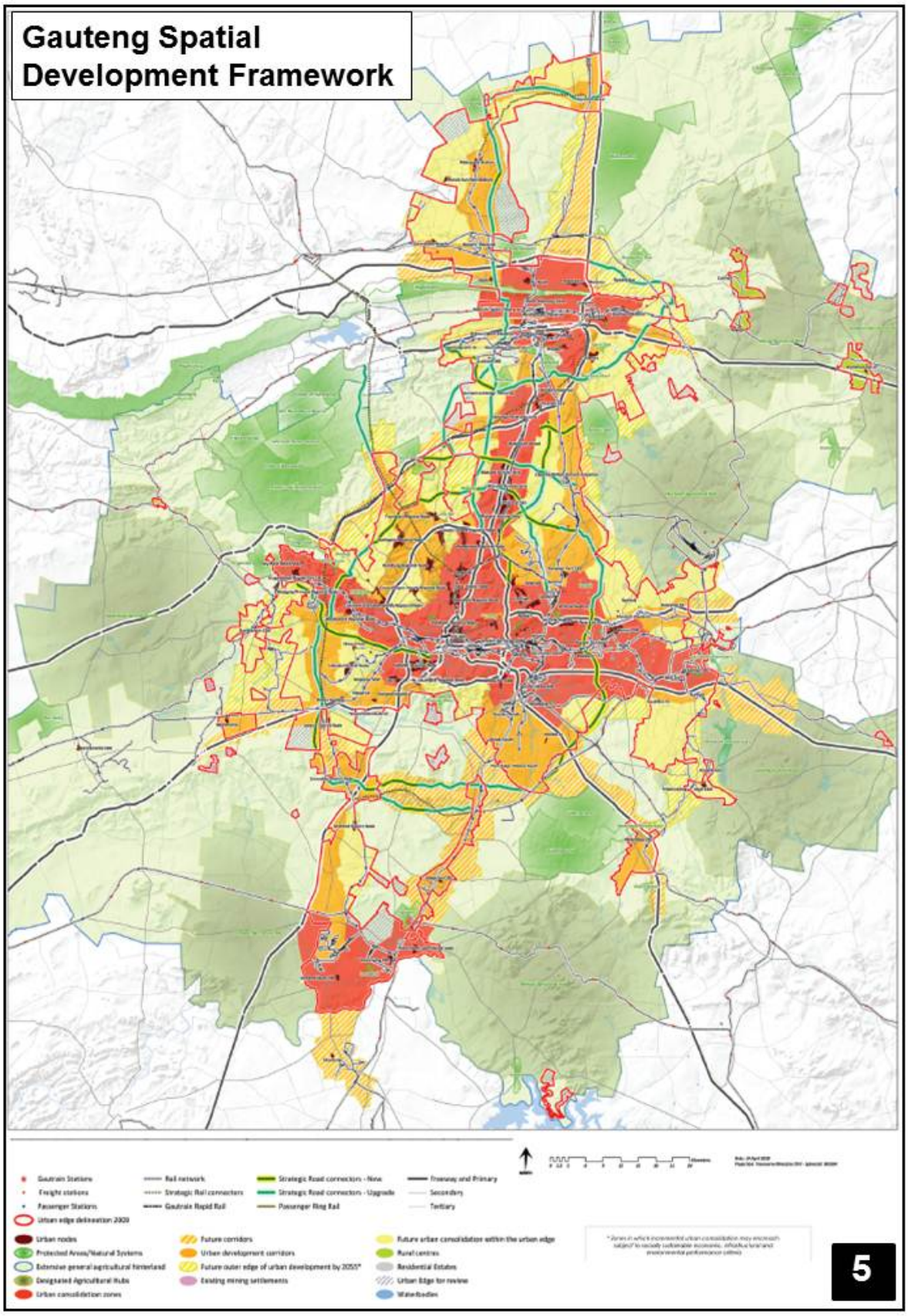
- The creation of an integrated open space system and promoting the function of natural systems;
- The integration of economically disadvantaged communities into the urban system, particularly those on the periphery of the system;
- The promotion of densification in specific areas to utilise resources more efficiently;
- The promotion of viable public transport systems and reduction of reliance on private mobility. Noteworthy in this regard is the strong emphasis on densification along the priority public transport routes, especially rail and BRT routes in the Spatial Development Frameworks of Ekurhuleni, Johannesburg and Tshwane;
- The establishment of a hierarchy of nodes, and supporting existing development nodes;
- The improvement of linkages and connectivity;
- Land use-public transport integration through nodal and corridor development; and
- Growth management that seeks to advance compaction, residential densification, in-fill development and the restriction of sprawl.

4.4.2 Development Principles

The GSDF as reflected on **Figure 4.7** is based on the following Development Principles:

- The horizontal spatial extent of the urban system is kept tight and an urban edge is placed on outward sprawl;
- The majority of the province is kept rural for agricultural, recreational, bio-diversity and aquifer management purposes; and
- The intensity of urban development and the densities at which people are accommodated are increased significantly through time as population increases;

Figure 4.7 – Gauteng Spatial Development Framework



- An integrated open space network is embedded in the urban system as one of the principal spatial ordering principles;
- Mass public transport is used as a fundamental shaper of the urban structure with the existing rail systems and BRT routes forming the basis of the movement system;
- Urban structuring elements (consolidation zones, urban corridors, urban activity nodes, activity spines) are defined to create a 'skeleton' on which urban development/redevelopment takes place over time;
- Strong relationships between movement, particularly public transport routes and urban intensification, are formed as public transport routes become the priority areas for densification and infill development; and
- The shape and pattern of the urban system's existing and proposed road network is used to reinforce and shape the urban form.

It is important to note from the above principles the strong emphasis on public transport becoming the basis of the movement system in the province; and urban corridors, activity spines and public transport routes creating the "skeleton" for future process of densification and intensification. This would also include Transit Oriented Development around public transport nodes and interchanges.

4.4.3 Strategic Initiatives

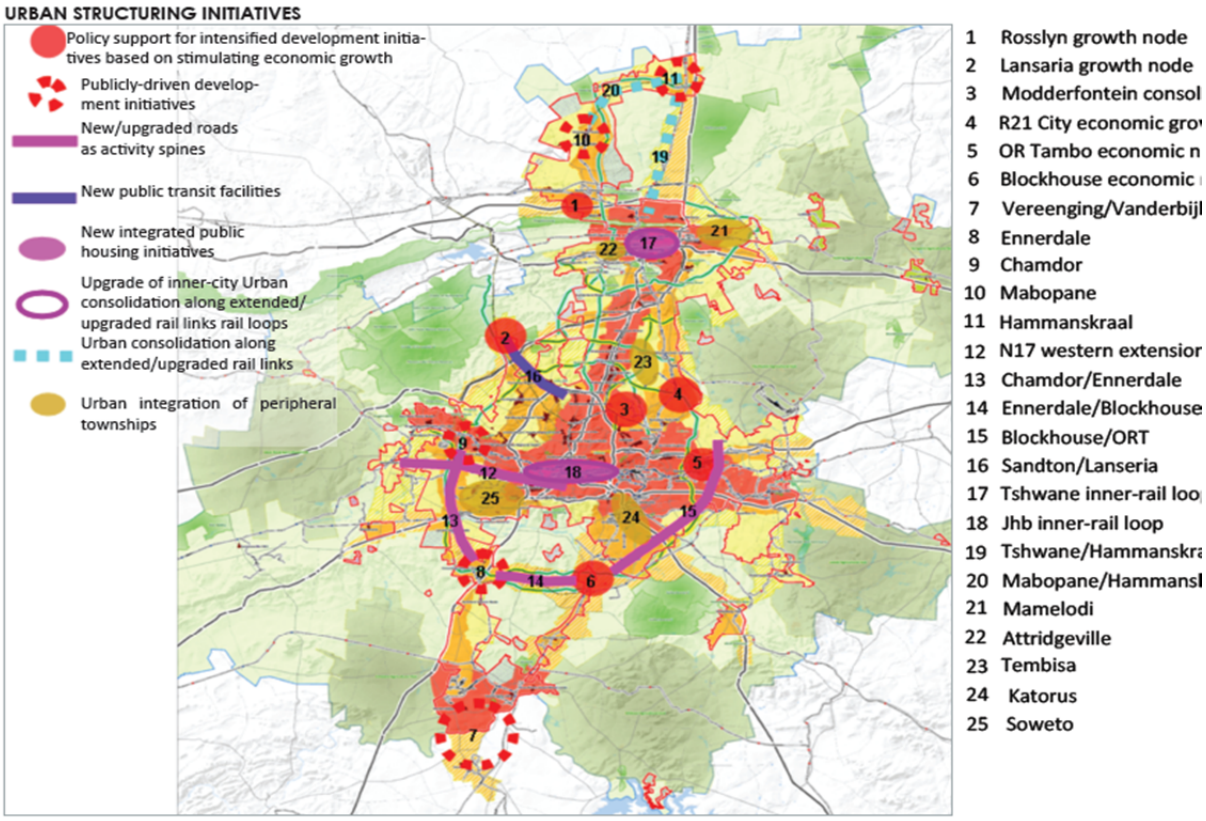
The GSDF identifies several strategic initiatives focused on implementation within the next 5 to 10 years, which relate to urban structuring and priority action areas. These initiatives are regarded as the primary spatial focal points to act as catalysts in terms of significant urban transformation in Gauteng over the next decade. Following is a brief overview of these projects/initiatives as depicted on **Figure 4.8**.

- The continued growth and expansion of the Rosslyn Industrial Node which should serve as an urban anchor to support the large concentration of low income communities located to the north of the City of Tshwane. This node is located at the intersection between the Maputo Corridor (N4) and the Mabopane Freeway (PWV9);
- The Lanseria Airport holds enormous potential for economic and residential development with an estimated residential capacity of about 30 000 households. It

is already acknowledged as a future metropolitan node to the City of Johannesburg. At present the major development constraint is the lack of bulk water, sanitation and electricity infrastructure to the area;

- The Modderfontein consolidation and infill development which holds development capacity in excess of 50 000 residential units. This area could also be expanded northwards onto the agricultural holdings of President Park, Austin View and Glen Austin in the future. It is strategically located in the central part of the economic core triangle of Gauteng Province being bordered by the N1 to the west, R24 towards the south, and R21 towards the east. It is also served by Gautrain and PRASA passenger rail services. This area represents a large-scale mixed use infill development opportunity between the three major activity nodes in Gauteng Province-Joburg CBD, Tshwane CBD and OR Tambo Aerotropolis;

Figure 4.8 – Strategic Initiatives



- The R21 development corridor between Tshwane and Ekurhuleni currently attracts significant private investment with a wide range of economic activities establishing along this route;

- The OR Tambo Aerotropolis is a new initiative intended to further intensify and optimally utilise the economic benefits to be derived from the OR Tambo Airport and surrounds. This is expected to become the third large activity node within Gauteng Province, at similar scale to the Inner Cities of Joburg and Tshwane;
- The Waterfall node to the south of Gauteng Province along the R59 development corridor is an emerging activity node which recently attracted a large investment with the Heineken brewery plant being established here. This represents the first phase of a longer term initiative driven by the Midvaal Local Municipality to promote corridor development along route R59;
- Along the N1 south in the vicinity of Ennerdale, the City of Joburg intends to initiate the development of a mixed-use activity node in close proximity to the Ennerdale and Orange Farm communities next to the N1 Freeway. This is an effort to promote local economic development in the southern parts of the City of Joburg which would enhance the economic sustainability of the large concentrations of low income communities residing in this area;
- The Chamdor node has a predominant industrial focus and forms part of a cross-border initiative between the City of Joburg and the Mogale City Local Municipality with large housing projects like Lufhereng, Leratong, as well as extensions of Kagiso being located in close proximity. The proposed extension of the Naledi railway line to link up to this node is also being investigated;
- The City of Tshwane identified the areas around the Temba-Hammanskraal railway station, the Mabopane railway station, as well as the Kopanong railway station further towards the south in Klip-Kruisfontein as future activity nodes intended to support the surrounding low income communities. Applications for Neighbourhood Partnership Development Grant initiatives have been approved for these three areas, and some of the urban renewal initiatives are currently underway. Large parcels of council owned land, especially in the Temba-Hammanskraal area will also be made available to the private sector to enhance investment in these areas;
- The Western Mining Belt in the City of Joburg currently attracts extensive development interest, specifically for low and middle income residential development. In the far western parts of the mining belt south of the Roodepoort CBD current housing projects at different stages of planning total about 26 000 units. As the development potential of the mining belt is exploited more and more, the need to create a proper east-west link through this area by way of the N17 western extension becomes more prominent;

- Following from the above, the Gauteng Spatial Development Framework highlights the need for a continuous ring road through the southern parts of the Gauteng City Region which would link the existing and/or proposed nodes at Chamdor, Ennerdale, and Klip River, to the Aerotropolis located around the OR Tambo International Airport. This ring road will not only enhance the economic potential of these areas by improving access and accessibility to the individual nodes, but it will also provide a functional link between the N1 and route R59 which will offer the low income communities in the southern parts of the City of Joburg access to a wider range of economic opportunities in the province;
- With the increased importance of the Lanseria node in the north-western parts of the City of Joburg, there is also interest to establish a mass transport service between Sandton and Lanseria through the Fourways area.
- Within the inner cities of the City of Tshwane there is potential to create/enhance a local ring-rail system/loop which would enhance and fully utilise the development potential in the surrounding areas;
- The functional extension of the existing Mabopane railway line to link up to Temba in the north and eventually create a circular rail system through the far northern parts of the City of Tshwane is also one of the priority projects emanating from the Gauteng Spatial Development Framework. Not noted in the GSDF is the potential to establish a rail system along the existing Moloto road to serve the communities of Thembisile and Dr JS Moroka to the north-east of Tshwane; and
- Apart from the above, the upgrading of activity nodes in peripheral townships like Mamelodi, Atteridgeville, and Katorus is also high on the agenda of the Gauteng Spatial Development Framework. The Neighbourhood Partnership Development Grant managed by National Treasury already contributes significantly towards this initiative.

4.5 Future Land Use Development Options

As far as future land use development options for Gauteng are concerned there are basically two alternatives. The first alternative represents a continuation of existing development trends which is predominantly private transport based with limited urban densification taking place and as a result the gradual expansion of the Gauteng urban footprint continues.

The alternative, which is supported by the Gauteng Spatial Development Framework and the Spatial Development Frameworks of all the metropolitan and district municipalities in the province is to use public transport as the backbone to the future urban structure of the province, leading to densification and infill development along all major public transport routes and Transit Oriented Development around public transport nodes and interchanges. As a result of the higher densities and intensification of uses pressure on outward sprawl of the urban footprint is limited and a compact city is established.

The principles of urban structure on which the GSDF is based requires that road planning, which strongly patterns the future shape of the urban system and the anticipation of the market in this regard, take into account the shape and form of the city system desired (composite urban spatial structure). The GSDF recommends de-emphasising investment in road infrastructure on the scale previously suggested in the Gauteng Strategic Road Network. The view is that the GSRN has the potential to take the urban system in a direction that is incompatible with the spatial structure on which the GSDF is predicated. To the extent that further investment into new or upgraded roads for ease of private car-based mobility detracts from the very extensive investment now needed in public transport. In the GSDF certain routes have been identified for upgrading and a select number of new links have been proposed. These have not been considered as additional freeways but rather higher order roads that satisfy both regional mobility and local access objectives. It was therefore recommended that the scope of the GSRN review be extended to have a more integrated transport planning and urban structuring approach that is now embedded in the GSDF. Due to this recommendation the Gauteng Department of Economic Development imposed the purposeful alignment of the Strategic Road Network for Gauteng with the GSDF as a specific condition in light of the implementation of the GSDF. This review is currently underway and should be noted as far as the GSRN and the un-built roads it proposes is concerned.

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5 PRINCIPLES AND DEPARTURE POINTS FOR GTIP5

Principles and departure points that provide the basis for the development of the 25-year Integrated Transport Master Plan for Gauteng are presented in this chapter. These are meant to underpin the Integrated Network Plan and guide the various components and the integrated network plans, albeit the commuter rail, public transport, freight and roads networks and the development thereof.

The principles and departure points are to a large extent derived from the key policy directions outlined in **Chapter 3**. This is in the sense that it also provides a more tangible understanding of the "new" integrated transport system and its key characteristics. On a strategic level, the whole set of principles are aimed to facilitate, enhance and promote the following general policy prerogatives, as part of the development of the ITMP25 network proposals:

- Transformation and restructuring of the urban community and social integration of society;
- Being "smart" by using scarce resources more effectively and application of suitable technology; and
- A more sustainable Global City Region.

The principles and departure points are in many instances cross-cutting and are applicable to more than one component of the ITMP25, such as transport network hierarchy and continuity, whereas others are network or transport mode specific.

5.1 Economic Development

Departure points for the ITMP25, with respect to economic development and the development of the integrated transport system for the Gauteng City Region as being a catalyst in facilitating this, are as follows:

- Production competitiveness across the manufacturing, retail, and service industry sectors are to be enhanced, by improving mobility and access;
- Household welfare are to be improved, by improving mobility and access to opportunities, goods and services;

- Transport and the manner in which the system evolves contributes to the strengthening of the economy (efficiency gains, employment creation and attraction of foreign direct investment);
- Underpins and support growth corridors and nodes;
- Barriers to travel are to be lowered (more convenient, faster and cheaper to travel);
- Road safety is to be improved and road accidents reduced; and
- A reduction of congestion and travel delays.

5.2 Land Use

For the future sustainability and efficiency of the Gauteng City Region, the integration and interaction between the urban structure and the development of land in relation to the transport system are very important. In this regard the departure points are as follows:

- Mass public transport are to be used to shape the urban structure (rail and BRT networks and nodes to form the basis);
- Urban structuring elements such as urban corridors, urban activity nodes and activity spines are used to defined a basis for future urban development or redevelopment;
- Strong relationships between movement, particularly public transport routes and urban intensification, are formed; and
- Key public transport corridors and nodes will guide the densification of land use.

5.3 Transport Network Hierarchy

The integrated transport networks for the future of Gauteng are to provide for:

- Rail mainly being the backbone of an integrated multi-modal system;
- Creation of a clear Public Transport Network hierarchy that provides a balance between mobility and accessibility, through optimal deployment of modes onto the network;
- Roads that primarily support public transport such as the SPTN should have definitive characteristics to support public transport such as dedicated lanes, ITS, public transport shelters and stops and other accommodation to make public transport accessible and attractive. and

- A hierarchy of roads that provides mobility roads (Class 1 and Class 2) and roads, which enhances accessibility (Class 4 and 5) with Class 3 roads that provided a balance between mobility and access.

5.4 Network Continuity

The integrated transport networks across the Global City Region provide for:

- Seamless and convenient travel, from one municipal area to another, as well as across provincial boundaries; and
- A transport system that allows for continuity of travel across the province in terms of road network; public transport systems and services; and freight and logistic networks.

5.5 Public Transport Specific

Principles for the development of the integrated public transport networks, which includes commuter rail and road-based public transport modes, are based on the following:

- Coordinated and integrated planning, integration and funding;
- Seamless and convenient travel;
- Well-developed interchanges and stations (i.e. with Transit Oriented Developments and Transit Oriented Housing);
- Optimal utilisation of existing infrastructure;
- Avoidance of duplication/parallel subsidised services. (modes should complement each other, and not compete);
- Appropriate deployment of modes to suit demand and travel distance (All corridor feasibility studies to consider alternative technologies such as express bus, light rail transit, etc.);
- Equitable and targeted allocation of financial support in such a way that transport becomes affordable to everyone;
- Effectively regulated;
- Provision for universal access on normal scheduled services;
- Promotion of environmental sustainability through the modes and technologies deployed on the Network;

- Provision for the “last mile” access to public transport in terms of Non-Motorised Transport and Accessible Transport; and
- Integration of NMT with BRT, Gautrain and MetroRail.

5.6 Freight Transport Specific

The freight transport network and its future development are to provide for:

- The decrease in the number of heavy freight vehicles in the urban core areas and central business districts by providing freight hubs, and road and rail mobility on the periphery of the Global City Region;
- Establishment of freight intermodal facilities on the northern and eastern periphery of Gauteng;
- Adequate linkages for inter-provincial and cross-border freight (for example, Gauteng - KZN Corridor);
- Supporting infrastructure to freight intermodal facilities;
- Equitable and targeted allocation of financial support;
- Adequate public transport to the planned freight intermodal facilities and associated developments; and
- Coordinated planning and integration between authorities
    - improving safety and security around deliveries in CBDs so that freight can be delivered at night and thus reduce congestion in CBDs
    - overload control to reduce negative impact of freight on roads
    - use of smaller and greener/cleaner fuel vehicles especially for waste and deliveries within cities and towns.

5.7 Road Network Specific

The road network specific principles and departure points are:

- Acceptable levels of service during peak hour travel i.e. LOS D or better;
- Accommodation of heavy vehicles, private vehicles and public transport;
- Provision for non-motorised users on the Class 2 to 5 network;
- Provision of priority measures for higher occupancy vehicles where appropriate;
- Management of congestion and focus on the promotion public transport;

- Sustainable infrastructure maintenance program
- Sustainable drainage maintenance program of road shoulders to ensure that sidewalks, walkways and cycle lanes are accessible during inclement weather; and. Effective use of existing and future freeway road space.

5.8 Airports

The development of the aviation network and airports to adequately serve the Gauteng City Region must be able to accommodate growth in both passenger and air traffic beyond 2037 in terms of:

- Airport capacities;
- Airspace management; and
- Land side implications (passenger access and freight hubs and terminals).

5.9 Non-Motorised Transport (NMT)

Safe, secure and convenient NMT facilities characterised by operational features such as continuity, connectivity, accessibility, comfortable and convenience are to be mandated through Provincial and Municipal regulations. As a result, every development application must provide for NMT and accessibility infrastructure.

- Most NMT infrastructure should be publically funded and planned. There is need for the provision of sidewalks, street lighting, and universal access.
- For cycling there is need for the provision of dedicated infrastructure, promotion of cycling and cycling safety.
- NMT norms and standards need to be developed to ensure that NMT is considered in road planning, land-use provision and public transport operations, such that every new development application is required to provide pedestrian and cycle infrastructure as a minimum.

5.10 Standards

Standards for the integrated transport network must facilitate efficiency, convenience, acceptable service levels and sustainability, and must include:

- Road cross-section making adequate allowance for private cars and freight vehicles; public transport infrastructure and facilities; NMT facilities; accessibility facilities; and urban design and greening;
- Minimum service levels for public transport (punctuality, reliability, frequency, safety, operating hours) and freight;
- Minimum standards for rolling-stock in relation to fuel, universal access, etc (rail, BRT, bus);
- adequate levels of safety and security (i.e. on public transport, at freight hubs, etc); and
- Effective infrastructure and facility operations and maintenance in respect of safety, environmental design, cleanliness, security, access and egress for vehicles.

5.11 Sustainable Transport Solutions

Sustainable transport solutions must facilitate:

- Promotion of environmental sustainability through the modes and technologies deployed on the network;
- Greening of transport and reducing traffic congestion through the popularising of cycling and short distance walking trips to destinations; using NMT modes (walking and cycling) as feeder systems to public transport; Application of Travel Demand Management and Transport System Management; and Utilisation of “sustainable power sources” for transport facilities, amenities and equipment.

5.12 Accessible Transport

In pursuance of providing accessible transport for people with disabilities, the following will apply:

- Persons with disabilities to have equal access to transport facilities and services available to the general public, to the greatest extent possible, in rural and urban areas;
- Without the need for further adaptation or specialised features beyond those provided as standard and for the mainstream services; to be
- Complemented by dedicated services that provide for those people for whom the mainstream services do not meet their needs.

5.13 Road Safety

Road safety programmes will;

- Be comprehensive and holistic; and
- Avail dedicated engineering, communication, enforcement, and emergency services resources.

5.14 Intelligent Transport System

Intelligent Transportation Systems (ITS) will facilitate:

- Improved traffic management and enforcement;
- Reductions in travel costs and time;
- Saves lives through improved travel safety; and
- Systems and diverse technology components operate seamlessly together.

6 5-YEAR GAUTENG TRANSPORT IMPLEMENTATION PLAN (GTIP5)

6.1 Key Short-Term Initiatives

The 25-year Integrated Transport Master Plan (ITMP25) will contain a full Implementation Strategy for the transformation of the transport system in Gauteng over the next 25 years. However, given the current state of transport in the Gauteng City Region and the associated pressing problems and challenges, some urgent interventions are required.

In order to be decisive and pro-active in dealing with the current transport challenges, as well as accelerating the development of the transport system that underpins the development of the Gauteng City Region, this chapter proposes a number of key initiatives and projects that should be considered for implementation in the immediate future. It consists of three types of initiatives and projects, namely:

- Key short-term initiatives, which will alleviate “bottle-necks” in the short- to medium-term;
- Key transport capital projects to be supported in the short to medium term; and
- Lists of all approved transport capital projects on budgets of government departments, agencies and entities.

Collectively, these key initiatives constitute the 5-Year Gauteng Transport Implementation Plan (GTIP5), which are being recommended for consideration by the Gauteng Department of Roads and Transport. These initiatives were identified and based on:

- A scan and assessment of all existing and approved transport plans applicable to the Gauteng City Region; and
- Recent inputs and participation of stakeholders and role-players in workshops on transport matters.

All the proposed initiatives fall within the provincial government’s core functions, as well as where the province can influence the development of an integrated transport network for the Gauteng, as part of its transport coordination role.

The proposed initiatives are founded in the following prerequisites and will enhance and promote:

- Transformation and restructuring of the urban community;
- Social integration of society;
- Being “smart” by using scarce resources more effectively and application of suitable technology; and
- Promotion of a more sustainable Gauteng City Region.

Projects to be implemented in the short- to medium-term are aimed to “alleviate” bottlenecks or address prevailing and pressing transport issues or problems, but with the intention not to compromise the development of the integrated transport network proposals for the ITMP25.

The recommended key initiatives are listed in **Table 6.1** below and should be considered by the Gauteng Department of Roads and Transport for urgent implementation.

Table 6.1 – Key Implementation Initiatives

	Initiatives and Key Focus Areas
1.	Transport Authority for Gauteng
1.1	Provincial-wide Public Transport Information Centre
1.2	“One Province One Ticket”
2.	Integration with the Commuter Rail Corridor Modernisation Project of PRASA
3.	Restructured Subsidised Road-based Public Transport
4.	Transformation of the Taxi Industry
5.	Greener Public Transport Vehicles Technologies
6.	Travel Demand Management, Less Congestions and Shorter Travel Times
7.	Access to Major Freight Nodes
8.	International and City Airports
9.	Pedestrian Paths and Cycle Ways
10.	Continued Provincial Wide Mobility
11.	Effective Management of Existing Transport Infrastructure
12.	Regulation and Enforcement

13.	Accessible Transport

Each of the above-mentioned key short-term initiatives is discussed under the following sub-headings:

- Status Quo assessment;
- Departure points;
- Description of the initiative; and
- Typical projects and actions.

6.1.1 Establishment of a Provincial Transport Authority

(a) Need for Co-ordination and Integration

In contrast to other cities in South Africa, Gauteng City Region is unique in the sense that it spreads across a significant portion of the province. Whereas eThekwini and Cape Town are comprised of one central metropolis surrounded by smaller urban areas, Gauteng consists of three metropolitan municipalities and multiple district and local municipalities ranging from peri-urban to high density in nature. Each of the municipalities is at different levels of transport planning and implementation, resulting in fragmented and uncoordinated service delivery.

The transport challenges that Gauteng is facing can be ascribed to the lack of cross-municipal boundary integration of public transport services. Improved public transport accessibility, affordability, consistency and safety is required to give effect to redressing apartheid spatial planning; allowing economic growth; and reducing economic and social opportunity cost for communities to access economic opportunities.

At present, the province is responsible for the Provincial Land Transport Framework (PLTF) and the performance of all regulatory functions pertaining to public transport. The provincial government is the Contracting Authority in respect of the main commuter bus services operating across municipal boundaries in Gauteng; the Gautrain Management Agency; and the Provincial Regulation Entity (PRE).

The metropolitan and local municipalities are responsible for Integrated Transport Plans (ITP) and Integrated Public Transport Network Plans (IPTNs) pertaining to their areas of jurisdiction. Metropolitan and Local ITPs in turn inform the need to align with the PLTF. Metropolitan municipalities also act as Contracting Authorities in respect of some public transport services in their areas of jurisdiction, such as bus operations, municipal bus operations and Bus Rapid Transit operations. Metropolitan and local municipalities also fulfil a critical role in the regulatory and law enforcement processes. The relatively strong autonomy of metropolitan and local municipalities over practical matters such as fare management systems and traffic management systems point to the fact that the Gauteng City Region requires a public transport governance and management model that institutionalizes cooperation in respect of planning, regulation and contracting.

(b) Departure Points

Against the backdrop of the Constitutional and Legislative provisions, it is imperative that the discussion of appropriate institutional arrangements for the governance and management of public transport in the Gauteng City Region be informed by the following principles for the proposed institutional arrangements:

- Facilitate co-governance and co-ownership of transport, or at least public transport;
- Not undermine the legislative duties and accountability of the participating institutions;
- Not seek to remove powers or revenue from participating institutions;
- Facilitate greater equity and inter-operability with respect to public transport;
- Facilitate the appropriate allocation of Public Transport powers, duties and functions, and this must be followed by a corresponding allocation of resources;
- Combine functions where economies of scale can be achieved and must seek to separate functions where separation of powers, duties and functions is required to ensure good governance (e.g. Contracting and Regulation);
- Legal institutional arrangements, which draws on the Constitutional and legislative provisions for cooperative governance
- Institutionalisation of NMT in the Province; andEnhance and unlock own funding for public transport.

(c) A Provincial Transport Authority

Addressing the fragmentation of the public transport governance and management in a polycentric region through appropriate institutional arrangements is thus the key way forward for Gauteng, and may take the form of a **Gauteng Public Transport Authority.** The first step in working towards a Gauteng Transport Authority is assessing and obtaining agreement amongst all stakeholders in such an institutional structure.

In assessing the institutional options discussed latter in this report, the legality, complexity, time and costs involved and the "disruptive implications" of each option needs to be considered carefully.

6.1.2 Integrated Passenger Information and Communication

(a) Lack of Integrated Passenger Information and Communication

The potential for collecting and integrating passenger travel information has always existed, but never realised because complex surveys were necessary to record this data. However, this problem has been resolved with the advent of Integrated Fare Management and, in particular, the requirement for fare collection systems to comply with National AFC Regulations through the of use bank issued fare media. Many such electronic fare collection systems calculate and deduct a passenger's public transport fare through a "tap-on tap-off" process. With the aid of vehicle satellite tracking systems this data translates into information on passenger travel patterns and volumes.

A central data warehouse is required to be established in order to collect and collate this passenger travel data from different operators. The data can then be analysed to produce passenger travel information and real-time data for schedule information systems at stations and on-board busses. The advent of fast, reliable and affordable wireless/Internet communication has made it possible for travel information to be disseminated timeously and reliably via mobile phone (sms or social media), web sites and electronic signs.

(b) Departure Points

Firstly, the use of an integrated, bank issued fare media must be established, through compliance with National AFC Regulations, followed by a Provincial Public Transport Data Warehouse. This will ensure the centralised collection of passenger data, to be

disseminated as required once analysed. A Passenger Information Call Centre would be one means of co-ordinating the dissemination of such travel information.

(c) A Provincial Passenger Information Call Centre

The core of this initiative is the setting up of a Provincial Passenger Information Call Centre, which could assist public transport passengers with service information. It may even go to the extent of providing “real time” information. The Call Centre should be linked to a “back office”, which is linked to various information sources; manages an extensive transport data basis; and possesses efficient reporting capacity. It should also have the ability to disseminate information on a “real time” and “historic” basis. It should accommodate the national data structure and data collected through and integrated public transport ticketing system and EMV card application. The “historic” information should not only be available for passenger information and communication purposes, but also for tactical and operational planning of services, as well as the management of operations.

Many transport authorities have an existing Traffic Management Centre (TMC), which can also be used as an information source for a Passenger Information Call Centre and there are good reasons for these functions to be integrated.

(d) Projects and Actions

The action and projects related to the setting up of a Provincial Passenger Transport Call Centre and associated “back office” is:

- Development of a “centralised” GIS, containing transport information for the province as a whole;
- Establishment of an Advanced Public Transport Management Systems (APTMS), including Fleet management, GPS and vehicle satellite tracking systems;
- Technical and operational scoping of a Provincial Public Transport Data Warehouse
- Development of a National Operational Concept for Integrated Passenger Information and Communication; contract for technical integration of passenger information, and contract for operation and maintenance of Integrated Passenger Information System; and
- Setting up of the Call Centre and supporting Back Office.

6.1.3 Integrated Public Transport Tickets

(a) Status of Integrated Fare Management (IFM) Framework

In April 2011, Gauteng Department of Roads and Transport undertook the "Completion of Public Transport Systems Planning and Development of an Integrated and Interoperable Fare Management Framework", which was the successor to a previous desktop study.

The objective of Integrated Fare Management (IFM) is to make it possible for seamless travel and transfer across an entire journey using a single fare media (and possibly a single fare) for different operators and modes of transportation. Furthermore, it is to promote an integrated fare collection system that will improve the transit experience and convenience for commuters. The IFM approach is to make public transportation systems more efficient by reducing the need for cash and cash management, and improving boarding times, which in turn reduces delays leading to better schedule adherence.

IFM relates to multiple operators (and multiple modes such as bus, rail, taxi) who deploy and accept the same fare collection mechanism for public transport services within a defined region. This type of system allows customers to travel throughout the region in a seamless manner. At a minimum, the use of a common fare media permits commuters to load individual Transit Products (e-Tickets or passes) from multiple operators as well as e-Money (electronic cash for fare payment) onto a single card.

IFM not only facilitates an efficient public transport service, but also supports the secure storage of fare transactions to provide information on public transport operations and commuter travel patterns. This facilitates the better planning of routes and integrated schedules and provides operators with the intelligence and insight they need to visualise trends in usage, enabling them to optimize the use of the assets and networks.

Successful IFM involves coordination and cooperation among stakeholders to ensure that formal institutional arrangements are understood and are in place. This will ensure the effective management and transformation of transport related institutions, systems and processes (including subsidy management systems) and assist in a smooth transition from legacy fare management systems.

The purpose of the IFM Framework is to establish a common basis and vision from which to promote and execute Integrated Fare Management, towards establishing an integrated public transport system in Gauteng. The framework is being developed on a provincial level (to ensure consistency for strategic components), although operational components of the framework will be carried out primarily at a municipal level.

The IFM Framework identifies the strategic issues to be addressed in the development and delivery of interoperable fare payment media. It addresses the key objectives of the Gauteng Department of Roads and Transport for the introduction of integrated and interoperable fare payment for the province. This initiative focuses on the integration of all aspects of electronic fare payment systems in public transport, particularly the requirement that these systems must comply with the recently gazetted National AFC Regulations.

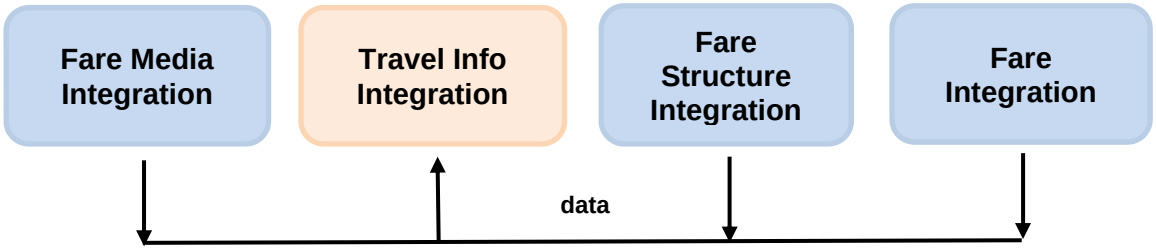
Development of this framework required consultation and cooperation with key stakeholders, in order to understand their existing services and what measures would be required for them to be compliant with the National AFC Regulations and to ensure interoperability with other IFM related technologies that are currently being installed. These consultations facilitated the undertaking of Institutional Agreements with stakeholders and preparation of User Requirements. This IFM Framework document is currently in draft form and will be finalised by August 2012.

(b) Departure Points

(i) Integration in Public Transport

The IFM Framework should be used as a tool to direct the deployment of IFM across Gauteng to ensure compliance within 5 years of legacy AFC systems. It should ensure that all new electronic fare payment systems comply immediately with the National AFC Regulations. In achieving a fully integrated solution for Public Transport fare payment, it is important to consider that there are four different levels of integration required, as depicted in **Figure 6.1.**

Figure 6.1 - Forms of Integration



In terms of the way forward two critical IFM components have to be deployed immediately to assist in achieving integration in public transport, namely, Fare Media Integration; and Travel Information Integration. The IFM Framework describes what is required to achieve these two levels of integration, as well as additional components (Fare Structure Integration and Fare Integration) that would be required for a fully integrated public transport system.

(ii) Provincial Data Warehouse

A Provincial Data Warehouse should be established where all public transport related transactions can be stored, consolidated and analysed. This is an important step in achieving general public transport integration and will facilitate the central management of aggregated transportation data for strategic planning; reporting; transport policy; and providing accurate travel information.

(iii) Provincial Public Transportation Integration Committee

A Provincial Public Transport Integration Committee should be established to take the integration process forward, along with other strategic provincial integration initiatives. There is a dire need for a forum to manage transportation integration across Gauteng and such a Committee should include key stakeholders such as PRASA, Metropolitan Authorities the Gauteng Department of Roads and Transport and Gautrain. However, it will be necessary to establish a clear mandate for this Provincial Public Transport Integration Committee through the ITMP25 and also determine its possible association with the proposed Gauteng Transport Authority.

(c) “One Province One Ticket”

The vision for IFM in Gauteng should maximise the accessibility and convenience of public transport, while also offering value for money. The slogan, “One Province-One Tariff-One Ticket” encapsulates this vision. In order to realise this vision, the following actions should be prioritised:

- Fare Media Integration - promote and market the IFM Framework for the deployment of fare collection systems that are compliant with the National AFC Regulations, thereby ensuring Fare Media Integration;
- Travel Information Integration - Establish a Provincial Data Warehouse for receiving fare collection data from the compliant operator’s fare collection systems, thereby facilitating Travel Information Integration; and
- “One Tariff” - This refers to Fare Integration (where the commuter pays a single fare for complete journey, using the services of more than one transport Operator or mode of transport) and requires other measures to be in place, such as Fare Structure Integration. As such the concept of “One Tariff” can only be implemented at a much later stage.

(d) Actions

Entrench the Gauteng IFM Framework Strategy in the ITMP 25. This will ensure, not only the immediate “quick wins” of Fare Media Integration (i.e. seamless travel between modes using a single card) and Travel Information Integration, but also the longer term goal of fully Integrated Public Transport through implementing Fare Structure Integration and Fare Integration.

Establish a Provincial Public Transport Integration Committee through the ITMP25 process. This may be the ideal forum to facilitate establishing such a Committee, which would include IFM deployment in its mandate. As such this Committee would also consider IFM matters such as a branded Gauteng fare payment media and identifying aspects of public transport where interoperability needs to be addressed.

6.1.4 Integration with the Rail Corridor Modernisation

(a) Commuter Rail Planning

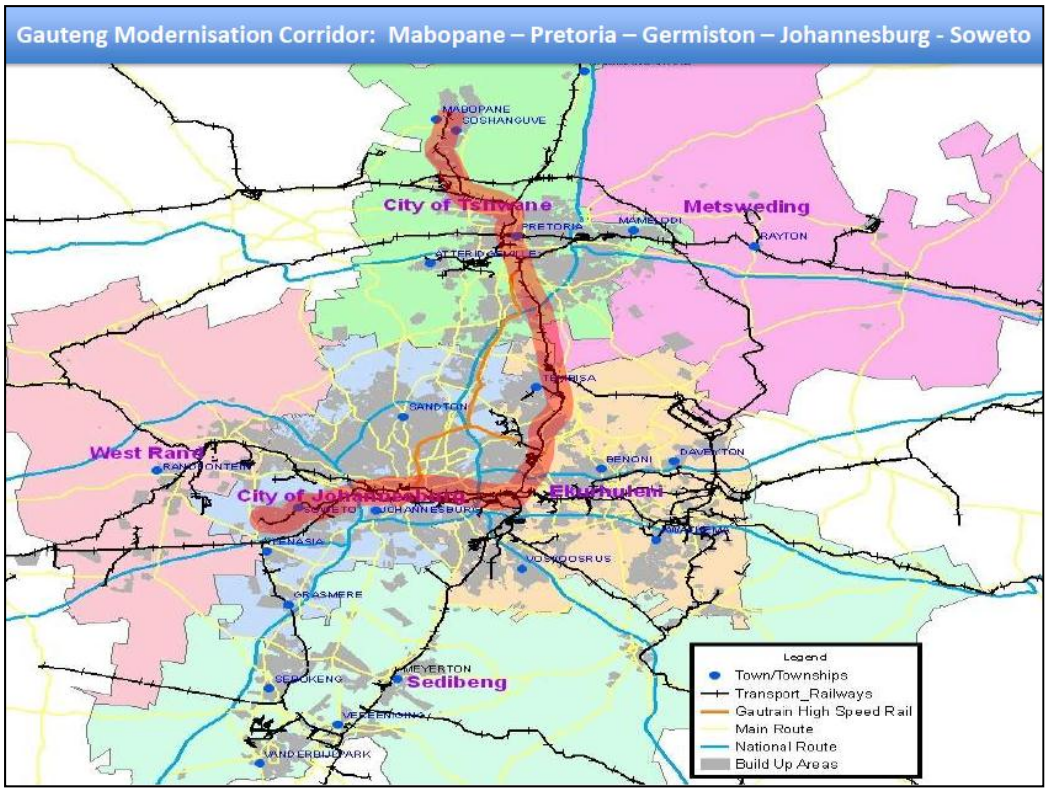
Commuter rail services have reached a state where the role that this mode is able to play and to contribute towards transport is diminishing. This is as a result of the reported under-investment in the commuter rail system. As the commuter rail network is viewed in terms of stated government policy as the “back-bone” of the public transport system, this trend clearly needs to be redressed. In 2006, the Department of Transport accepted a national rail plan, which prioritised commuter rail corridors into Categories A, B and C for investment and development purposes with a view to focussing significant investment into the Category A Corridors. This was further refined into a Master Plan, whereby PRASA prioritised three Category A Corridors on the Gauteng rail network into a so-called “super corridors”, to spearhead its modernisation drive. This includes the Mabopane-Pretoria; Pretoria-Germiston- Johannesburg (including Tembisa); and Johannesburg - Soweto corridors, as shown below in **Figure 6.2.**

The critical priorities for PRASA over the next three to five years include the modernization of the existing passenger railway system and the introduction as well as the implementation of new passenger rail technology. The modernization of the signalling, telecommunication system, rolling stock and train operating systems will lay the foundation for a modern, efficient and sustainable rail transport system in Gauteng.

A major component of the PRASA Rail Corridor Modernisation initiative is the revitalisation of the aging train fleet (rolling-stock). The first new train sets are expected by 2015 and will be deployed on these priority corridors.

Over R4bn has also been earmarked for the modernisation of track, signalling and electrical infrastructure. It also includes the improvement of access to stations and the upgrade of station facilities and amenities. A number of these station upgrades include joint project development with Gauteng Provincial Government and local authorities to create fully integrated intermodal facilities at stations.

Figure 6.2 - PRASA "Super Corridor"



Given the key role that the commuter rail system is and will in future play in providing mobility across the Gauteng City Region, this initiative needs to be supported and aligned and integrated with other public transport initiatives undertaken in the province. This *inter alia* includes the integration with the integrated road-based public transport network, ticket system and passenger information and communication.

(b) Departure Points

PRASA's objective is to create a fresh new service experience for the commuter rail service users and to attract passengers back to the rail mode of transport. This is also viewed as a pilot project to change their approach towards operational planning and management of services.

The vision for this corridor is that safe, reliable, affordable and comfortable rail transport should be delivered at global standards of quality and reliability. In addition, this vision implies that PRASA intends to achieve the following:

- Extended hours of service;
- Improved travel times, improved customer experience and improved security and uncompromised safety on trains and on rail stations, including railway station precincts;
- Improved service levels in terms of reliability, availability and predictability (i.e. punctuality to at least 98% right time arrivals at all times and zero cancellations).
- Full system accessibility;
- Provide capacity to ultimately move 60 000 - 80000 passengers per hour in peak periods;
- Modal integration, seamless transfer between different modes and coordination with planning authorities and public transport operators;
- Transit oriented development around stations and improved business sustainability;
- Dedicated passenger rail corridor to reaffirm rail as the backbone of an integrated multi-modal system; and
- Green corridor.

(c) Integration with the Modernisation of the Passenger Rail Corridor

The initiative to support PRASA's Modernisation of the Passenger Rail Corridor and to integrate therewith is based on the coordination and alignment with other public transport initiatives undertaken in Gauteng. This *inter alia* includes:

- Integration with the integrated road-based public transport network (IPTN) at key stations;
- Effective road linkage to key stations (where required);
- Integrated public transport ticketing;
- Integrated passenger information and communication;
- Creation of a fresh new service experience for the commuter rail service users to attract passengers back to the rail mode of transport; and

- Initiation of a pilot project to demonstrate a changed approach towards capacity and operational planning and management to meet the public transport requirements for the respective cities.

Furthermore, this initiative is supported as it is more than just the modernisation of the identified super rail corridor in Gauteng. It is about two key economic catalysts for the province, namely, improved mobility and increased economic activity in the corridor facilitated by the transport sector, which could result in significant job creation opportunities.

(d) Actions

The following actions and sub-initiatives should *inter-alia* form part of province's pro-active support of PRASA's Rail Corridor Modernisation in Gauteng:

- Creation of joint planning and monitoring forums to coordinate all transport and integration related activities, which includes all key role-players;
- Agreement on a joint corridor vision between all role-players and PRASA;
- Agreement with PRASA on the main stations on the corridor to be focussed on (i.e., Germiston, Vereeniging, Roodepoort and Leralla);
- Support of PRASA's full implementation of the Gauteng Re-signalling (Phase 1 and Phase 2) programme;
- Encouragement of PRASA to operate express trains between these higher order stations on the corridor;
- Encouragement of PRASA to finalise the automatic fare collection system investigation and to proceed with the implementation of an integrated pilot project;
- Consider key stations as integrated multi-modal transfer facilities and identification of those that could be targeted for Transit Orientated Developments (TODs);
- Alignment with the road-based public transport planning and the IPTN development;
- Ensure integrated provision of passenger service information on this corridor. This should be the first integrated service to be addressed when a Transport Information Call Centre is established in Gauteng;
- Improvement of road and NMT access to key stations; and
- Ensure that signage to and from these stations are improved.

6.1.5 Restructuring of Subsidised Bus Contracts

(a) Status Quo of Subsidised Bus Contracts

Subsidised commuter bus services are managed by the Gauteng Department of Roads and Transport in terms of kilometer- based contracts, which have all long expired and have for a number of years been extended on a month-to-month basis. All contracts have been extended and will again expire in September 2012. The letting of new contracts have been delayed for many years, largely as a result of disagreements between organized labour and government on certain contracting terms. These short-term contracting arrangements have created instability in the bus industry and have discouraged operators to invest in fleet and infrastructure.

The services operated in terms of the current subsidized commuter contracts still largely reflect the pre-1994 era, with very little integration with other public transport services. In order to align the next generation of contracts to be let with the evolving public transport system in Gauteng, the services will require significant restructuring and redesign. Many of the services are not aligned with either the local or provincial IPTN designs.

However, to promote integration and remove some of the inefficiencies and duplication from the public transport network of services in Gauteng, the restructuring, design and letting of new contracts should be done as soon as possible.

Further, the disaggregated funding dispensation, whereby various modes and types of road-based public transport services are supported operationally does not enhance integration; the sustainability of public transport systems; and the affordability thereof to government. To effectively promote integration amongst modes, a more integrated operational funding dispensation for road-based public transport services is required.

In addition, a range of contracting arrangements for the provision of the various public transport services and the basis for providing operational support (i.e. subsidy allocation mechanisms) are found in Gauteng. For the effective integration and management of road-based public transport services across the Gauteng City Region, a strategy for arriving at a common or shared basis for contracting public transport operators needs to be developed.

Mini-bus taxis, transporting the majority of commuters, are mostly providing “own planned” services, which are often not aligned and/or integrated (but in competition) with most other subsidised public transport services.

(b) Departure Points

The departure points in dealing with the planning and development of an integrated public transport network for the province, which will also provide a basis for the finalisation of a new subsidised road-based commuter contracting dispensation, are;

- Commuter rail being the backbone of an integrated multi-modal system;
- Enables seamless and convenient travel;
- Public Transport Network hierarchy that provides a balance between mobility and accessibility, through optimal deployment of modes;
- Provides a transport network that allows for continuity of travel across the province;
- Integrated operational funding dispensation;
- A more aligned service provision and contracting arrangements; and
- Viable and sustainable role for the mini-bus taxi mode.

(c) Rationalisation of the IPTNs

The restructuring of subsidised road-based public transport services will use the finalisation of the Integrated Public Transport Network (IPTN) as a departure point. Thereafter, the implementation thereof will be done through the optimal deployment of modes onto such a network and its corridors in an integrated manner, through operational contracts and other appropriate mechanisms. This will enable all road-based public transport modes to operate more viably and sustainably on restructured routes forming part of the IPTN. As a result, this will deliver on a system that provides a balance between mobility and accessibility, as well as identify routes and corridors which can be “reserved” for mini-bus type services.

(d) Sub-projects

The sub-projects dealing with the restructuring of subsidised road-based public transport services will *inter alia* include:

- Finalisation of the Gauteng IPTN;
- Identification of the appropriate modes to be deployed on the IPTN corridors and links (i.e. rapid bus transport, bus and mini-bus);
- Integration of funding strategies for road-based public transport;
- Strategy for arriving at a common basis for contracting public transport operators; and
- Development and letting of subsidised contracts for the provision of commuter services.

6.1.6 Transformation of the Mini-bus Taxi Industry

(a) Status of the Mini-bus Taxi Industry

Despite being the largest mover of passengers in Gauteng, the slow rate of reorganisation and formalisation of the industry *inter alia* impacts on the potential role that mini-bus taxis could play and sustainability of this mode. This causes marginally viable operations and often “destructive” competition. It has also lead to unsafe operations often using old vehicles, which are expensive to maintain. This also has an impact on the efficiency of the transport system as a whole.

Although the inclusion of operators into BRT operating companies has gone some way in transforming the business of taxi operators, other opportunities as part of the IPTN needs to be exploited to put the industry on a more viable footing and provide it with a more sustainable future. However, this will require further restructuring and reorganisation of the industry into larger operating entities (companies), for it to be able to optimally exploit and benefit from participation in more formalised and profitable service opportunities, offer *inter alia* as part of the establishment of the Provincial IPTN. This may also entail access to further financial support from Government.

(b) Departure Points

The following are departure points for this initiative:

- Transformation and restructuring to become more “formalised”;
- More business opportunities;
- Training and facilitation;
- Improved service quality and safety;
- Improved viability and sustainability; and
- Growth.

(c) The Mini-bus Taxis Transformation Initiative

This initiative is aimed at transforming the mini-bus taxi industry and placing it on a more sustainable path to the future through;

- Reorganisation and corporatisation strategy;
- Stream-lined registration and licensing systems;
- Development of business opportunities on the IPTN, with associated financial support;
- Implementation of pilot projects; and
- More effective urban & CBD planning for taxi facilities (R.O.W, stops, etc.).

6.1.7 Alternative Public Transport Vehicle Propulsion

(a) Current Vehicle Propulsion Technologies

The transport sector is responsible for 34% of the energy use in Gauteng. Its dependence on non-renewable oil resources will lead to a challenging future, if it does not consider the diversification of fuel sources and reduction of greenhouse gas emissions. Present patterns of transportation based on petrol and diesel fuelled vehicles generate social, environmental and economic damage and are highly unsustainable.

A shift in mind-set is needed to move away from the idea of sustaining the present, to actively creating new sources of energy which draw upon renewable energy resources and energy efficiency. These renewable/green technologies are crucial for long-term environmental sustainability, seeing that there are significant new challenges arising from ecological constraints to the business-as-usual approach. Therefore, not only promoting a

modal shift towards public transport, but reducing vehicle use and the use of fossil fuels are important interventions to address climate change and to improve the quality of life for present and future generations.

The City of Johannesburg has taken several initiatives to develop and implement biogas technology as alternative energy source and focus will thus be placed on pilot *Biogas-to-Energy* projects within the city in order to set a precedent for other districts within Gauteng. The City of Tshwane seems to be following suit with its recent tender specification for IRPTN vehicles. Current projects include the following:

- A reputable company has offered to reactivate and operate dormant anaerobic digesters at Johannesburg Water's waste water treatment plants or Energy Systems collected gas from Johannesburg's landfill sites. This company could produce clean, concentrated, compressed and transported truck fuel-grade biogas for Metrobus use from either landfills or waste water treatment plants; and
- The Industrial Development Corporation (IDC) is developing a scheme for the production of biogas at multiple sites and from multiple feed stocks.

It is evident that a coordinated and integrated approach towards alternative public transport vehicle propulsion for Gauteng is required.

(b) Departure Points

One of the key departure points in promoting environmental sustainability is through the modes and technologies deployed on the public transport network.

(c) "Green Re-fleeting" Strategy

The Green Strategic Programme for Gauteng envisages a province that "provides accessible mobility for all, thereby ensuring proximity to social and economic opportunities by embracing the principles of transport safety, efficiency and sustainability and by developing a well-designed, integrated and well-maintained public transport system that is less dependent on fossil fuels".

The “Green Re-fleeting” Strategy focuses on measures to shift the energy source for transportation from current non-renewable oil resources to sustainable or ‘clean’ fuels. The aim of the strategy is to reduce transport’s contribution to greenhouse gas emissions by 35% by the year 2020 and 50% by 2040. This strategy focuses on the improvement of vehicles and fuels to not only reduce urban air pollution and greenhouse gas emissions but also to contribute to the green economy and employment and income generation opportunities.

Alternative/clean forms of energy that were identified include Natural Gases (Compressed Natural Gas and Liquid Natural Gas), Biofuels (Bio Ethanol and Bio Diesel) and electric vehicles.

The Green Re-fleeting Strategy identified a number of alternative energy initiatives. This strategy envisages the development of the economy by transforming it into a low carbon using, increased resource efficient and socially inclusive economy. Possible projects within Gauteng include:

- Bio fuel development and processing facilities;
- Massive distillery ethanol manufacture plant;
- Wide distribution of gas to households; and
- Conversion of public transport vehicles to gas.

Initial investigations point to Compressed Biogas as the preferred alternative energy source for bus propulsion in terms of the environment and reduction of greenhouse gas emissions. It is naturally produced under controlled circumstances in specially designed biogas digesters. The extended use of biogas for city buses will not only lower emissions and improve inner city air quality, but will also strengthen the role of public transport in an efficient strategy to limit the impact of the transport sector on climate change. Biogas is more sustainable compared to diesel seeing that it has no net emissions of $CO_{2;}$ less than half the emissions of $NO_{x;}$ and minimal emissions of hydrocarbons, carbon monoxide and particulates. Production and end-use of this alternative energy source will have a low carbon footprint and will provide cities with an opportunity to use their own waste and wastewater to fuel bus fleets.

(d) Projects and Actions

It is recommended that biogas be investigated as alternative energy source for bus propulsion within Gauteng. The use of biogas for bus propulsion will require the following actions:

- A feasibility study is required to determine the feasibility of alternative energy sources, in particular Biogas, as alternative bus propulsion energy to be used in Gauteng;
- Monitor and evaluate above mentioned pilot projects in terms of feasibility and sustainability, and depending on evaluation outcomes, expand to other districts within Gauteng;
- Implement, monitor and evaluate a pilot project involving the use of buses fuelled by biogas. Evaluate vehicle performance including emissions and energy consumption of biogas propelled buses; and
- If buses are to switch to alternative energy for propulsion, the existing Euro III vehicles also have to be converted over time, to run on biogas or buses would have to be replaced by new vehicles. The feasibility of converting existing diesel powered vehicles to gas operated vehicles has to be investigated.

6.1.8 Travel Demand Management (TDM)

(a) Status Quo Assessment

The population of Gauteng is estimated to double by 2037. Two of the policy objectives of government are to reduce poverty and create jobs. Assuming these policies are implemented successfully and as people progress economically, there is a tendency to prefer car ownership over public transport. This will result in private car travel increasing significantly.

Gauteng is the economic hub of Southern Africa. Transportation is the highest contributor to the cost of logistics, while the cost of logistics in South Africa is one of the highest relative to global standards. The results of congestion are loss of productivity, higher energy consumption, pollution and loss in family time. Addressing congestion aggressively is important to achieve better quality of life.

The current level of congestion, especially during the peak periods, is high. Fortunately, the Gauteng Freeway Improvement Scheme Phase 1 has provided some relief for regional travel over the medium-term, but will again change for the worse over time if current traffic growth rates are sustained. The morning and evening peak periods are prolonged over three hours respectively, and are spreading even further. There are limited alternative routes in the event of incidents that cause severe congestion.

As choice, public transport services are available to some extent as an alternative to some, but these services are often fragmented, unreliable and unsafe. It may be unrealistic to expect a major shift by the middle and higher income private car users to public transport in the short- to medium term (especially for all trip purposes). Gautrain is currently the best example of a public transport alternative for higher income travellers, but it is limited in terms of geographic reach even with its feeder bus service.

Heavy vehicle freight traffic is also significant contributors to congestion and incidents on the Gauteng network. Gauteng is the economic hub of Southern Africa and high volumes of road freight (local, inter-provincial, and cross-border) is transported to, from and through Gauteng.

Travel demand management (TDM) measures, in addition to the promotion of public transport, are appropriate for the reduction of traffic, travel and creating a more sustainable urban environment. This also contributes to the more effective utilisation of transport infrastructure and scarce resources.

(b) Departure Points

Managing congestion is critical for the socio-economic sustainability of Gauteng and TDM should focus on the effective use of the existing road network; extent and time of travel; distance of travel; and public transportation improvements as priority focus areas.

(c) Travel Demand Management Strategy

Travel Demand Management strategies in first world economies is concurrent with Transport System Management (TSM) strategies, and generally includes measures such as user-pay (i.e. toll and congestion pricing), higher parking fees, limited inner-city parking, high-occupancy vehicle lanes, high-occupancy toll lanes, telecommuting, reversible lanes,

traffic signal optimisation, bus priority at intersections, incident management and application of Intelligent Transport Systems (ITS).

The current global and South African economic circumstances and inequity among South Africans present a challenging dilemma to implement punitive measures like congestion pricing and tolls. There is need for a balanced approach or the "carrot and stick" approach where affordable and effective choices are presented to the users. Gauteng should focus on effective use of the existing road network and providing an improved quality of public transport service. This may also include the spreading of working hours and time of travel.

The key thrust of the Public Transport Action Plan is accelerated modal upgrading which focuses on the 3-7 year transitional period with regard to improving the quality of the public transport fleet and its current operations. In addition, the implementation of TDM requires coordination between the province and the metropolitan municipalities, political commitment, appropriate technical expertise, effective public participation and communication, and budget.

(d) TDM Initiatives and Actions

The following TDM and TSM initiatives are possible with the current road network and public transport system:

- Creation of the capacity within the Gauteng Department of Roads and Transport to manage TDM and TSM programmes;
- Set new standards for public transportation and rationalise municipal public transport corridors according to the new standards (for example, there is currently duplication of services between municipal bus services, provincial subsidised services and taxi operators);
- Implementation of HOV lanes on parts of the regional road network;
- Application of ITS for congestion and incident management (i.e. variable message signs and cell-phone messaging);
- Support to municipalities with respect to capacity, analysis and funding for TDM related initiatives (i.e. reversible lanes, continuous assessment of traffic signals to optimise signal timing plans and maintenance of traffic signals);
- Parking policies to disincentive private car use;
- Feasibility studies into spreading of working-hours; and

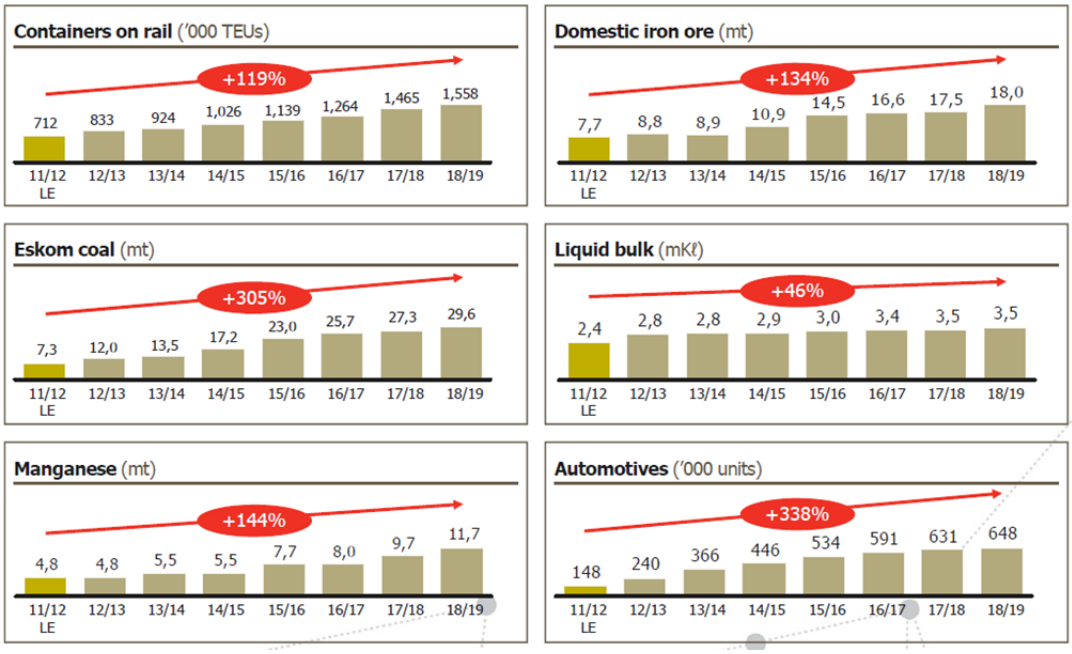
- Active promotion of integration with land uses development to facilitate densification and mixed use.

6.1.9 Accessibility to Major Freight Nodes

(a) Freight Tends and Requirements

The projected growth in volumes of freight which will be moved into, out of and within Gauteng is significant. This is depicted in Transnet's latest Market Demand Strategy for the next 7 years as shown in **Figure 6.3.** The demand for containers, manganese, liquid bulk and automotive freight is directly link to Transnet's planned port developments.

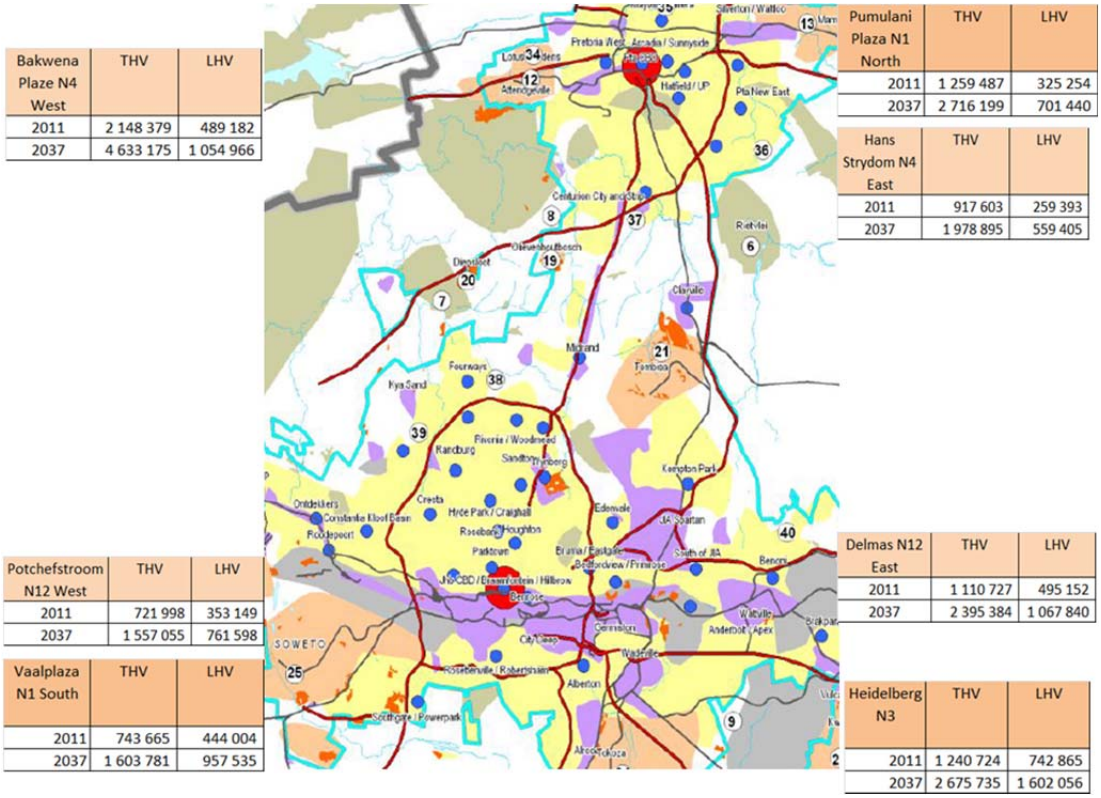
Figure 6.3 – Transnet Market Demand up to 2018/2019



The trend shown above will lead to tremendous increases in freight traffic on Gauteng roads and freeways, leading to decreased road capacity for other types of traffic, increased congestion and also air pollution. The projected numbers of freight vehicles on the strategic road network links in Gauteng in 2037 are shown in **Figure 6.4**. These numbers are based on a growth rate of 3%. In reality, the current growth rate of container traffic is closer to 5%. This type of traffic can be considered as the fastest growing type in South Africa. Currently, less than 20% of all container traffic is on rail.

Transnet's freight strategy is based on the establishment and/or strengthening of freight rail terminals located on the periphery of the core urban areas forming part of the Gauteng City Region. The philosophy behind the establishment of freight terminals on the periphery of the urban conurbation is that cargo is moved in bulk to these terminals, where it is then packed into containers for export. As an example, cobalt, cotton and tobacco are transported by road from Zimbabwe to City Deep, where these commodities are packed into containers and transported by rail to the Durban Port. With a newly upgraded terminal at Pyramid, this freight traffic will move to the north of Tshwane, where it will be containerised and railed to Durban. This will take off approximately 50 000 heavy vehicles per annum from the R21.

Figure 6.4 - Heavy Freight Vehicles on Gauteng road network and projected number of vehicles in 2037



The proposed new or upgraded freight terminals will also provide the opportunity to establish light industrial development and office parks around these terminals. This will further create the opportunity for retailers to build their distribution centres at the freight terminals from where final distribution will take place. However, these freight terminals will require an integrated road system for feeding and distribution of smaller consignments of

cargo into the central business districts and key commercial nodes. Effective public transports services will also have to link up with these terminals to transport workers there.

(b) Departure Points

The following key principles and departure points should underpin any initiative to provide effective commuter and freight access to major decentralized freight terminals on the northern and eastern periphery of the urban core of the Gauteng City Region;

- Decrease in heavy freight vehicles numbers in core urban areas and central business districts;
- Adequate linkages outside the province (i.e. Gauteng - KZN Corridor);
- Supporting infrastructure to freight intermodal facilities;
- Align freight intermodal facilities with Transnet's Container Strategy for Gauteng and Durban port developments; and
- Adequate public transport to the intermodal freight facilities and associated developments around them.

(c) Making Major Freight Terminals Accessible

In essence, this is aimed at providing effective accessibility to major decentralized freight terminals on the northern and eastern periphery of the urban core of the Gauteng City Region, such as Tambo Springs, and City Deep through:

- Integration with the PRASA Passenger Rail Plan;
- Finalisation of integrated public transport network;
- Upgrade and development of key road links and section; and
- Creation of dedicated freight routes on the periphery of the province for freight to flow directly to and from the N1/N12 via the freight terminals to Limpopo, Mpumalanga and KZN or vice versa.

(d) Projects

The following projects will enable freight flows “around” core urban areas and central business districts, as well as provide for adequate connectivity to major freight intermodal facilities:

- Conduct feasibility studies on the PWV 18 between N1 and PWV 17; PWV 17 between PWV 18 and PWV 5, and PWV 5 between PWV 17 and N1;
- Conduct feasibility, Environmental Impact Assessments and socio-economic studies for the proposed sites;
- Plan effective road connectivity linkages between the Aerotropolis and freight intermodal facilities (i.e., R25, R21, PWV5); and
- Set up a coordination structure between all role-players to enable integrated planning between government departments, developers and potential operators to establish such freight intermodal facilities.

6.1.10 International and City Airports

(a) Air Transport Trends

The OR Tambo International Airport is the major hub, which connects Southern Africa with the rest of Africa and the world. It is the busiest airport on the African continent and will most probably fulfill a similar role in the next 25 years. Last year, the OR Tambo International Airport accommodated over 19 million passengers and 212 580 flights. Assuming a 5% conservative passenger growth rate over the next 25 years will mean that the demand will increase to 65 million passengers per annum. In addition, the Aerotropolis development may further facilitate the growth in demand and development.

This means that careful consideration should be given as to how the growth in demand could be met in future. This will entail the adjudication of the potential capacities of all the major airports in the province, airspace optimisation and the analysis of landside implications from a passenger and freight perspective.

It may also require that an approach of “hub and city airport” be analysed and considered. This is due to the cost differentiate and land requirements to develop a hub airport which can accommodate wide body aircraft on intercontinental journeys, compared to the cost to develop city airports which can accommodate maximally ICAO Class C aircraft (aircraft

with wingspans up to 36 metres carrying a maximum of 200 passengers). A distinction may have to be drawn between hub airports and city airports, where a hub airport connects Southern Africa as a region to Heathrow, Frankfurt, Dulles (Washington), JFK (New York) and city airports, which connect cities such as Johannesburg to Cape Town, Durban, Harare, Maputo, Luanda etc. In order for city airports and the hub airports to support one another, the network should be planned holistically and effective land based connections must be available between the airports.

Given the rapid rate of urban development, the early reservation of land for the expansion and development of further airport capacity, if and where required, needs to be considered. This is to ensure that a situation does not develop, where future airport capacity has to be developed further and further away from the urban centres due to the non-availability of land, thereby placing a further burden on the land-based transport system in terms of accessibility.

(b) Departure Points

The approach towards the development of airports for the Gauteng City Region should be based on the following principles:

- Must accommodate growth in both passenger and air traffic beyond 2037 in terms of airport capacities; airspace management and land side implications (passenger access and freight hubs and terminals);
- Early reservation of suitable and adequate land for the extension/development of airports; and
- Effective passenger and freight linkages to, from and between airports.

(c) International Hub and City Airports Strategy

An analysis of international hub and city airports will entail that all major role players need to confirm whether or not they are comfortable that OR Tambo International Airport will be able to solely fulfill the role of hub airport by 2037 and beyond. Should the outcome be that OR Tambo will not be able to serve the Gauteng City Region and the Southern Africa economy adequately a determination must be made as to which existing or new city airports and air freight hubs can fulfill a supporting role to OR Tambo. Consultations on possible city airports should be entered into with the major airport owners and

management, local authorities as well as corporate and general aviation representative bodies to determine their needs to ensure that these airports can be developed to fulfill this supportive role. This will include land requirements, land reservation and land-based transport linkages. Given the province's concern for economic growth, its transport coordination role and the requirement to maintain adequate levels of regional transport mobility, it is in the interest of the province to facilitate such an initiative.

(d) Projects and Actions

The following projects and actions will be supportive of such an initiative:

- Whether Gauteng requires a second major hub airport needs to be debated between all aviation role players and a firm decision should be taken in that regard;
- If a second hub is needed for either passengers, freight or a combination thereof, an area should be earmarked as such and servitudes should be registered to reserve the land for that purpose; and
- If city airports are required, what is the niche markets are to be served by each of them, and where should these be located.

6.1.11 Pedestrian Paths and Cycle Ways

(a) Status of Non-Motorised Transport

A very significant portion of daily commuters walk to work and an even larger proportion of commuters walk to access public transport. This is often done under very unsafe, insecure and inconvenient conditions caused by the lack of good non-motorised transport (NMT) facilities and amenities. This explains the fact that 40% of road fatalities are of pedestrians. Although not such a significant mode of transport in Gauteng currently, the same goes for cyclists.

A number of non-motorised initiatives are being implemented in Gauteng, namely, City of Johannesburg's "Streets Alive Programme" and cycling framework; the City of Tshwane's NMT Master Plan, 2010; Gauteng NMT Policy Guidelines, 2005; and distributing bicycles such as Qhubeka and Shova Kalula. The "Streets Alive Programme" seeks to establish high quality pedestrian and cycling routes across Johannesburg to establish NMT as preferred mode for short distance trips; to increase the NMT modal split; to facilitate access to the City for marginalised and low income families; and to integrate NMT with

other strategic public transportation initiatives such as Gautrain, Metrorail and BRT. The City of Tshwane's Non-Motorised Master Plan identified various implementation projects for the provision of bicycle routes in terms of the Shova Kalula Bicycle Project. Many of these projects are located within marginalised areas. The Gauteng NMT Policy Guidelines pertain to the type of pedestrian and bicycle facilities to be provided along the various classes of urban and rural roads and streets in the province.

Qhubeka, which means 'to move forward', is a Corporate Social Investment Project backed by MTN that aims to help rural communities advance their lives by providing bicycles to children in return for work done to improve their environment and communities. It is funded through bike sales, Corporate Social Development funds, corporate sponsors and donors, consulting, events, fund raisers, individual donors, and merchandise sales and sports team endorsement. The *Shova Kalula (Ride Easy)* programme was initiated by the Department of Transport. The primary focus is on providing scholars with bicycles.

However, the challenge remains to establish a coordinated approach toward NMT across the Gauteng City Region and integrating the above-mentioned NMT initiatives. Furthermore, the provision of NMT facilities and amenities are relatively inexpensive and can make a huge difference to the quality of life of most inhabitants of Gauteng, especially those living in previously disadvantaged communities.

(b) Departure Points

Key principles and departure points of an initiative that will provide for convenient and safe NMT, as well as promoting the greening and sustainability of the transport system as a whole, are:

- Promoting the greening of transport and reducing traffic congestion through popularising of cycling and short distance walking trips to destinations;
- Provide for non-motorised users on the Class 2 to 5 road network with the appropriate application of road safety principles and engineering standards
- Using NMT modes (walking and cycling) as feeder systems to public transport and provide for the "last mile" access to public transport facilities and interchanges.

(c) The Pedestrian Paths and Cycle Ways Initiative

The pedestrian paths and cycle ways initiative is aimed at bringing the various schemes in the province together and mobilise the development of a more comprehensive NMT network in a meaningful way, through:

- Agreement on a coordinated approach and strategy;
- Development of pedestrian paths and cycle ways and amenities, integrated with the IPTN and key public transport interchanges;
- Linking the *Shova Kulula* and *Qhubeka* initiatives; and
- Launching an education, awareness and road safety campaign.

(d) Projects and Actions

The key actions and projects to flow out of the Pedestrian Paths and Cycle Ways Initiative are:

- Finalisation of the Provincial NMT policy and strategy in collaboration with the DOT and Municipalities;
- Development of a Pedestrian and Cycle Master Plan for the Province in conjunction with the Municipal NMT Master Plans
- Development of 50km pedestrian paths;
- Development of 50km cycle ways;
- Provision of 200 cycle racks at key public transport interchanges; and
- The launch of and a continuous program campaign on NMT awareness, education, law enforcement, and safety.

6.1.12 Continued Provincial Wide Road Mobility

(a) The Strategic Road Network

The national road network in Gauteng constitutes a small percentage of the entire road network (470 km), but carries high traffic volumes and provides the freight network. The provincial road network, comprising 14.1% of the roads (4 830 km), performs an important role in linking the national road network with the main municipal road network. The proper maintenance of the provincial road network is restricted by budget allocations and is a major concern, especially considering the required mobility function of the network. The

provincial road network also performs an important role in catering for public transport either in mixed traffic conditions or exclusive public transport/high occupancy vehicle lanes as well as freight traffic.

Continued road planning and development of the strategic road network is an extremely valuable element to enable economic growth in Gauteng. The Gauteng Department of Roads and Transport and Metropolitan, District and Local Councils rely heavily on the Gauteng Freeway network as the “backbone mobility road network” of the province. It is, therefore, critical that cohesive planning be achieved between SANRAL, the Gauteng Department of Roads and Transport and the Metropolitan authorities to ensure that continued and acceptable mobility and service levels are maintained.

Based on the Gauteng Strategic Road Network (GSRN) Review, a prioritization plan for Class 1 and 2 roads exists. The top 5 priorities of each is summarised in **Table 6.2.**

Table 6.2 - GSRN Top Five Class 1 and Class 2 Priority Roads

	Route	From	To
Class 1 Roads			
1.	PWV9 Southern	N1	N14
2.	PWV5 Eastern/Central	PWV9	R21
3.	N17 Western	Soweto	M1 Crownwood
4.	PWV14 Entire	M2	N12
5.	PWV16 Eastern	K133	N3
Class 2 Roads			
1.	K57	K142	K158
2.	K71	K103 North	D49
3.	K105	K220	K121
4.	K145	K22	K34
5.	K69	K34	K16

In the development of the National Transport Master Plan, the following key strategies were also identified for the Gauteng province:

- Strategy 1: Develop a link between Johannesburg and Rustenburg via Lanseria Airport and the N4 Platinum Corridor;
- Strategy 2: Provide a link between Sandton and the N4 Platinum Corridor; and

- Strategy 3: Link the N3 to the N4 Maputo Corridor through Ekurhuleni, specifically catering for freight haulage.

(b) Departure Points

The continued development of the national and provincial road network should be based *inter alia* on:

- Acceptable levels of service during peak hour travel i.e. LOS D or better;
- Adequate provision for all types of traffic, including heavy vehicles, private vehicles and public transport; and
- Priority measures for higher occupancy vehicles, where appropriate.

(c) Continued Provincial Wide Road Mobility

Continued provincial wide road mobility and acceptable service levels are to be maintained for road-based public transport, freight and private vehicle traffic, through the proper planning and development of the strategic road network.

(d) Projects

The following road projects have been identified as important projects that are catalytic in nature and which will unlock and stimulate growth and thus job opportunities in Gauteng:

- Detail design and construction of the K148/N3 interchange;
- Detail design and EIA of K148, K146 and PWV15;
- Detail design of the PWV 18; and
- GFIP Phase 2.

6.1.13 Management of Transport Infrastructure

(a) Status Quo

The Gauteng Pavement Management System shows that about 80% of the total road network in Gauteng has a pavement structure older than 20 years, which is normally considered the design life for a pavement. In other words, 3100km have already reached the end of their design life. In the 20 years since 1985, the proportion of sub-standard roads has increased from 4% to 24% and the proportion of those in acceptable or better

condition has reduced from 96% to 76%. In order to maintain and preserve the provincial road network diligently, about 100km to 200km of road (for a 40-year to 20-year life span target respectively) should be reconstructed or rehabilitated each year. Since 1990, the rate of repair/rehabilitation has decreased markedly, averaging only 22km per annum.

During the 2009 visual assessment, 4092km of the total length of the paved provincial network was assessed. This represents 95% of the paved carriageways shown on the Road Network Management System as being under jurisdiction of the Gauteng Department of Roads and Transport. The assessment data, expressing the condition of the surfacing, the structural condition and functional condition through the degree (seriousness) and extent of occurrence of distresses, are used to calculate a single Visual Condition Index (VCI) for each visual segment. This index expresses the condition of the road segment as a percentage between 0% for very poor, to 100% for very good. The VCI is furthermore grouped into five condition categories that are used to describe the condition distribution of the visual segments in the road network. The categories adopted by the Gauteng Department of Roads and Transport and the rest of South Africa are:

- Very Good = 86% to 100%
- Good = 71% to 85%
- Fair = 51% to 70%
- Poor = 36% to 50%
- Very Poor = 0% to 35%.

Figures 6.5, 6.6 and 6.7 show the VCI for the road network, the road class and per area respectively.

Figure 6.5 - VCI Distribution of the Network (% Length and km) for 2009

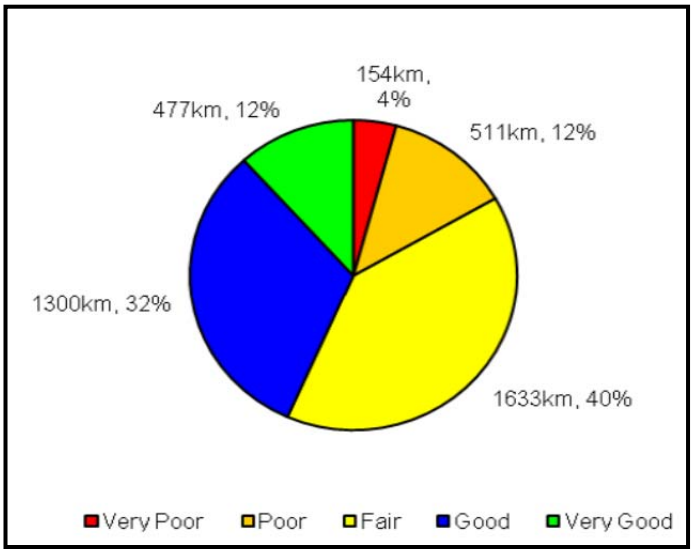


Figure 6.6 - VCI per RISFSA Road Class (% Length) for 2009

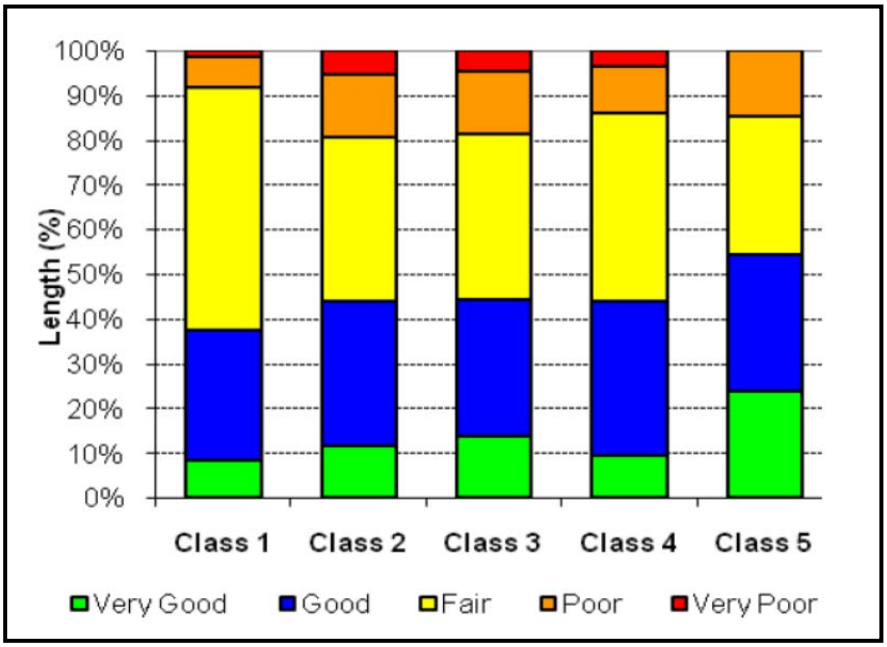
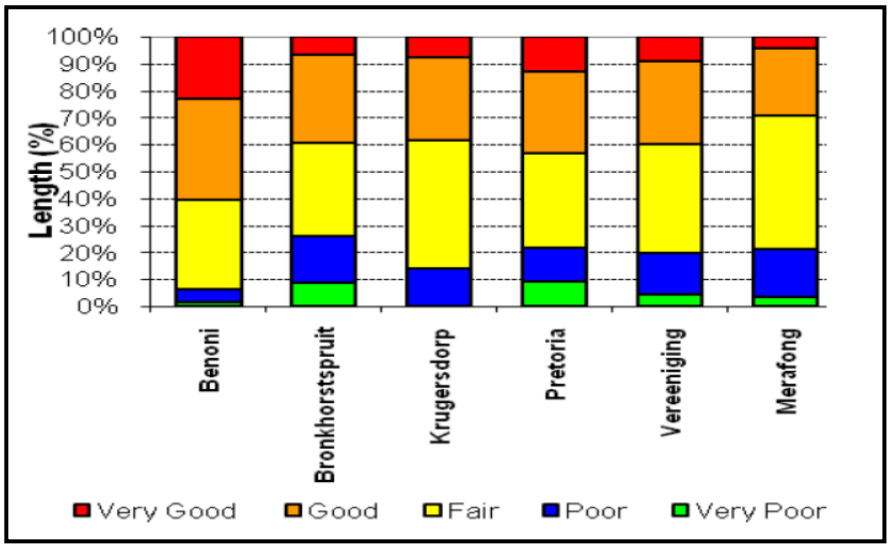


Figure 6.7 – VCI per RISFSA Area for 2009



The current (2012/13) budget allocation of the GDRT is R4.36 billion, which includes R1.245 billion for infrastructure. The infrastructure budget is further allocated as follows:

- Maintenance R783 million
- Construction R276 million
- Design R72 million
- Transport Branch R114 million

It can be seen that a relatively small amount is available for road upgrading and new roads. In order to effectively utilise and maintain the extensive past investment in road infrastructure in the province, the above-mentioned trend needs to be redressed urgently, to ensure adequate mobility across the Gauteng City Region going into the future.

(b) Departure Points

The Government's "New Growth Path" outlines an approach to accelerate growth and employment focusing on job creation targets and sector-based actions, which will assist to achieve them. Jobs drivers are identified as:

- Continuing public investment in infrastructure, creating employment directly in construction, operation, maintenance and the production of inputs, and indirectly by improving efficiency across the economy;

- Targeting more labour-absorbing activities in the agricultural and mining value chains, manufacturing, construction and services;
- Promoting innovation through “green economy” initiatives; and
- Supporting rural development and regional integration.

Gauteng strives for world class standards for transportation infrastructure and services and needs to maintain the existing road network through a sustainable Road Network Management System.

(c) Effective Transport Infrastructure Management and Maintenance

Strategic preventive maintenance planning is necessary annually over the MTEF period, where road sections are prioritised for preventative maintenance, with the list of priorities being reviewed during each financial year.

This initiative is aimed at revitalisation and updating of the Provincial Road Network Management System (RNMS). The RNMS provides the motivation and upgrades to the provincial road network. The RNMS comprises primarily of the Pavement Management System, the Bridge Management System and Storm Water Management System. However, the foundation for the RNMS is the annual infrastructure assessment, which has not been done over the past three years.

(d) Actions

The RNMS is a critical tool for the Gauteng Department of Roads and Transport and requires dedicated resources. The Department needs to address the following:

- Creating further roads engineering capacity within the Department (i.e. Road Pavement and Bridge expertise);
- Have the annual pavement, bridge, and storm water assessment done (where capacity is lacking this may be outsourced); and
- Develop an Annual Report, containing project prioritisation, as well as budget estimates for preventative maintenance, rehabilitation and upgrades.

6.1.14 Regulation and Enforcement

(a) Lack of Effective Regulation and Enforcement

Law enforcement can be defined as the act of enforcing, ensuring observance of or obedience to any law. This includes the prevention, combating and investigation of crime, to maintain public order, to protect and secure the inhabitants of the Republic and their property, and to uphold and enforce the law.

The main contributing factors to unlawfulness related to public transport, freight and non-motorised transport on the roads in Gauteng include speeding, alcohol abuse, un-roadworthy or unregistered private and public transport vehicles, general driver attitude, overloading, operating without an operating license or a valid operating license, and a general lack of non-motorised facilities, but to name but a few. Under ideal circumstances, regulation and enforcement deal with these problems accurately and swiftly. Unfortunately the current situation is far from ideal and the lack of effective enforcement leads to high rates of traffic and transport infringements, which in turn results in very high rates of road traffic accidents and fatalities in Gauteng.

It seems that the lack of effective law enforcement can be attributed to the general allocation of manpower in traffic departments across the province, the lack of continuous visible policing, as well as corruption. This is further aggravated by low levels of cooperation between different spheres of government and need to be addressed if Gauteng wants to achieve the aims as set out in the National Road to Safety Strategy.

(b) Departure points

Road-traffic enforcement is at the heart of combating unlawfulness on the roads in Gauteng. However, the three areas where the Provincial Government and its Department of Roads and Transport can make a major contribution in enhancing the levels of enforcement are:

- Effective public transport regulation and inspections;
- Improved over-load control and enforcement; and
- Development Control.

Effective public transport regulation improves the quality of public transport operations and prevents destructive competition through “inspections”, whereas over-load control prevents the destruction of roads by over-loaded freight vehicles. Key to over-load control is continuously operating and well-functioning weigh bridges and related facilities. The enforcement of wayleaves, and the protection of road reserves and servitudes according to the Gauteng Transport Infrastructure Act, 2001 requires greater attention by the GDRT. Central to these components of enforcement is adequate and well trained staffing, and committed capacity in the GDRT to consistently manage Development Control.

(c) Description

This initiative consists of three components dealing with improved public transport regulation, over-load control enforcement, and Development Control. In order to improve public transport regulation and enforcement, the application and disposal process with regard to operating licences needs to become more efficient and streamlined, as the application process is experienced as very cumbersome, complicated and long-winded by the industry. This is partially contributing to illegal public transport operations, which is specifically true for the metered taxi industry.

In addition, for effective public transport control and enforcement, enforcement officials need to be empowered and capacitated to simultaneously deal with the legality of public transport operations, covering *inter alia*:

- Legality of the operations (operating licences),
- Quality and condition of the vehicle (CoF),
- Driver fitness (licence and PDP),
- Driver behaviour (adherence to the Road Traffic Act), and
- Development Control.

The initiative needs to also deal with over-loading of freight and other heavy vehicles, the revitalisation of effective enforcement and the “re-operationalisation” of provincial weighing stations and weigh bridges.

The protection of infrastructure is critical. The issuing of wayleaves is necessary for continuous development of infrastructure, but the monitoring and enforcement is relatively weak. Further, there is illegal trading and occupation of road reserves and servitudes

resulting in illegal accesses, unsafe pedestrian activities and crossings, and illegal developments.

(d) Projects and Actions

The action and projects related to public transport regulation, inspections and enforcement, are:

- Identify and implement the most appropriate institutional arrangements and structures for the delivery of effective regulation, which may form part of the considerations on the mandate of a provincial wide Transport Authority and/or Provincial Regulatory Entity;
- Ensure that enforcement officers are adequately and appropriately trained and deployed, to deal with the legality of all the components of public transport operations, covering both inspections and enforcement.

The main action and project related to over-load control and enforcement are;

- Development of a comprehensive and all-encompassing strategy for over-load control, involving all three levels of authority and other relevant enforcement entities,
- Re-operationalise the provincial weigh bridges and related facilities on an on-going basis;
- Ensure that over-load control facilities are adequately, appropriate and uninterruptedly resourced, with manpower that can perform the necessary enforcement duties, through buy-in and support from all applicable role-players.

The main action for Development Control is;

- Dedicated capacity in the GDRT for Development Control, monitoring, and implementation of the Gauteng Transport Infrastructure Act
- Audit of Provincial Roads to determine the level of illegal occupation of road reserves and servitudes and the potential road safety impacts
- Enforcing the Gauteng Transport Infrastructure Act in terms of closure of illegal accesses, enforcement of wayleaves, closure of illegal developments along Provincial Roads, etc

6.1.15 Accessible Transport

(a) Status Quo

- Lack of physical access, both to and within built environments, is a major factor contributing to the on-going exclusion of people with disabilities from mainstream society. The accessibility of built environments concerns how easily, safely and equally people with special needs or impairments can use buildings, facilities and constructed spaces. Physical and other barriers discriminate against some people by not allowing them to move freely and independently within their built surroundings (SAHRC, 2002). The Gauteng Provincial Disability Rights Policy addresses Universal Barrier-Free Access with the objective of all persons with disabilities having equal access to the physical built environment and to other facilities and services provided for or open to the general public in rural and urban areas.
- The vision of the Gauteng Provincial Government through the Disability Rights Policy is to attain a Province that includes people with disabilities to such an extent that they effectively contribute to its economic, social, cultural, and political life with the full enjoyment of human rights together with able-bodied persons.

(b) Departure Points

The Gauteng Provincial Disability Rights Policy is used as a point of departure in which it commits to People with Disabilities with a specific view on accessible transport. The GPG commits to the following interventions:

- Involving people with disabilities in the development and implementation of a comprehensive and integrated transport system, including public transport.
- Integrating the needs of people with disabilities in the design and construction of new roads and in the upgrade of the existing road infrastructure.
- Preventing new disabilities by aggressively pursuing road safety programmes using communication tools that are also accessible to people with various disabilities.

Adoption of norms and standards on the construction of the transport infrastructure that is accessible to people with disabilities..

(c) Accessible Transport Initiative

- This initiative is aimed at transforming the public transport environment in which the mainstream services can be used by all people, to the greatest extent possible,

without the need for further adaptation or specialised features beyond those provided as standard. The provision of accessible transport is not seen as a once-off project, but a continuous program at various government levels, to provide a barrier-free built environment. Accessible transport comprises of accessible vehicles, infrastructure and transport.

(d) Projects and Actions

The following short term interventions should be considered by the GDRT in the five-year implementation plan:

- Review subsidised public transport contracts based on rationalised routes and services, and which incorporates green bus technologies, integrated fare collection technologies, and universal design features;
- Ensure sufficient institutional capacity for Accessible Transport at GDRT. Non-motorised Transport may form part of this portfolio.
- Ensure proper information system, signage, and communication structures (before and during the journey);
- Ensure that universal access design standards are applied on new public transport facilities, public transport vehicles, and NMT infrastructure;
- Representation of a universal access specialist on the Gauteng Transport Commission/Authority;
- Initiate research on universal access demand/needs for the GCR;
- Initiate the adoption of existing standards and guidelines and determination of the transformation of bus and taxi vehicles to accommodate Class 2 type service;
- Awareness program through the Passenger Charter, Marketing and Communications; and
- Investigate concessionary fares for People with Disabilities.

6.2 Key Capital Projects

An assessment of the state of transport planning applicable to Gauteng as well as the transport status quo was used as a basis to identify key capital projects that needs to be promoted as a matter of priority. The key capital projects are an addition to the key short-term initiatives listed in the previous section and their implementation may not necessarily be completed in the next five years.

However, the implementation of these projects will significantly contribute to the continued improvement of the transport system serving the Gauteng City Region, its mobility requirements and support economic growth. It is, therefore, important to high-light these projects.

The key capital projects contained in this section are either already approved, in process of being implemented or on budgets for implementation. Others are listed in terms of the MTEF.

6.2.1 Commuter Rail Capital Projects

The following key Commuter Rail projects are supported:

- PRASA - Tshwane/Pretoria Ring Rail;
- PRASA - Hammanskraal Commuter System;
- PRASA - Baralink to Johannesburg Park Station;
- PRASA - East Rand to Gautrain/Rhodesfield; and
- PRASA - Moloto Public Transport Corridor.

6.2.2 IRPTN Capital Projects

The following key Integrated Rapid Public Transport Network implementation projects done by metropolitan authorities are supported in principle:

- City of Johannesburg - *Rea Vaya* Phase 1 Business Plan;
- City of Tshwane - Draft IRPTN Operational Plan; and
- Ekurhuleni Metropolitan Municipality - IRPTN Scoping Study.

However, further coordination between these projects and the finalisation of the Provincial IPTN may be required to ensure optimal integration and public transport network continuity.

6.2.3 Freight Network Capital Projects

The following Transnet freight network capital projects are supported:

- Durban capacity expansion programme;
- Durban rail infrastructure to support freight intermodal facilities to existing port and Airport Dig-out Port; and
- Rail link from Ermelo to Richards Bay via Swaziland.

6.2.4 Road Network Capital Projects

The important capital projects identified for Gauteng by the National, Provincial and Local Authorities, which needs to be supported are summarised below:

- National Road Network Planning
  - GFIP Phase 2 and 3;

- Provincial Road Network Planning
  - K71 Between K103 (Wierda Road) and Laudium (doubling of existing road);
  - K46 (William Nicol) - Doubling of road K46 from Fourways to Diepsloot/N14; and
  - K15 (R512) - Doubling of Adcock Street from Dobsonvile to Protea Glen.

- Metropolitan Road Network Planning
  - The improvement of the K8 and extension south of Wonderboom Airport;
  - K97 link;
  - K99 link to the south (Dr Swanepoel Drive);
  - PWV9;
  - PWV13/14; and
  - PWV 15.

6.3 APPROVED TRANSPORT CAPITAL PROJECTS

The approved transport capital projects of province, municipalities and other government entities and agencies are listed in the paragraphs below. The information on projects was sourced from plans, budget documentation or engagements with officials.

6.3.1 Gauteng Department of Roads and Transport (MTEF)

The approved transport capital projects for the GDRT are summarised in **Table 6.3**:

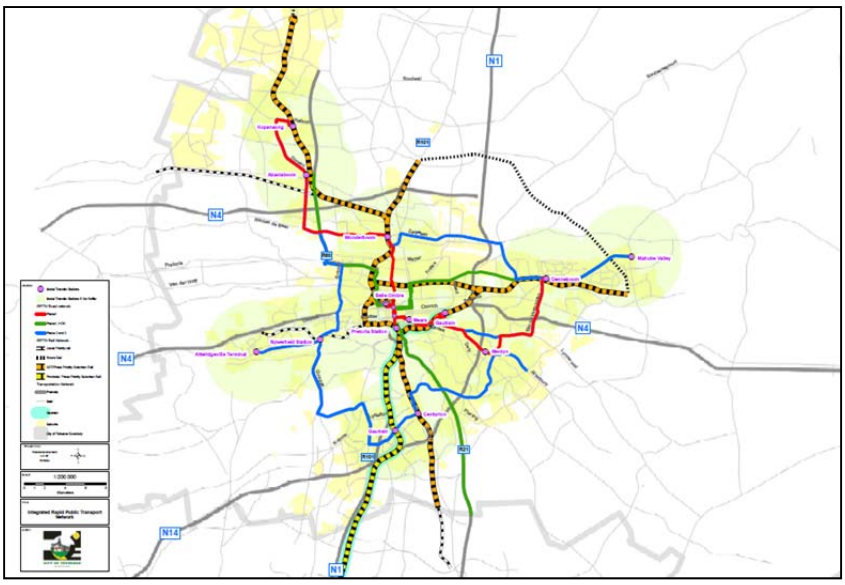
Table 6.3 – GDRT Approved Capital Projects

Project	Length	Budget (million)			
		2011/ 2012	2012/ 2013	2013/ 2014	2014/ 2015
K71 Between K103 (Wierda Rd) and Laudium (doubling of existing road) (P66-1)	6.3 km	R 150.0	R 154.9	R 0.2	R 0.0
Surfacing of Cayman road as an access road to the Eye of Africa Development	4 km	R 15.0	R 7.3	R 0.0	R 0.0
K46 William Nicol: Doubling of road K46 from Fourways to PWV 5 (Erling road) (P79-1)	4 km	R 5.3	R 150.0	R 105.3	R 14.4
K46:PWV 5 to Diepsloot/N14: Doubling of road	7.2 km	R 9.0	R 9.0	R 0.0	R 0.0
Doubling of Adcock Str (R55) from Dobsonvile to Protea Glen. (Last section) (D524)	5.8 km	R 10.0	R 150.0	R 124.6	R 12.5
K72/P126-1: Construction of P126-1 N14 interchange including 3km approaches	-	R 7.0	R 135.0	R 151.0	R 15.0

6.3.2 City of Tshwane

The City of Tshwane has identified and/or is implementing the following transport capital projects. BRT (Line 2) Phase 1A - Eastern corridor to Mamelodi via Hatfield and Menlyn is indicated in **Figure 6.8**. Phase 1A (CBD to Hatfield) construction is planned to commence in August 2012 and will be operational in August 2014. Completion and operational of the full Phase 1 is scheduled for April 2016.

Figure 6.8 – City of Tshwane BRT Network



(a) Tshwane NMT – Masterplan

Proposed projects to develop the walking and cycling network includes Hammanskraal to Babelegi (26km), Mabopane to Soshanguve (9km), Wonderpark to Akasia (11km), Claremont (10km), Atteridgeville (12km), Pretoria CBD to Sunnyside (19km), Centurion, Olievenhoutbosch and Sunderlandridge (28km), Erasmusrand and Faerie Glen (25km) and Mamelodi East (23km).

(b) Road Infrastructure (new link construction and upgrading of capacity – major roads)

Eight projects are listed on the capital budget, namely, Menlyn area (including Atterbury Road and N1 Garsfontein interchange), Nelson Mandela Drive, Simon Vermooten Road, Stormvoël Road, Derdepoort Avenue, Hans Strijdom Drive, Lynnwood Road and Church Street. The following lead transport projects have also been identified: K8, N4 – K97 Link to Rainbow Junction and K99 Link to the South (Dr Swanepoel Drive).

6.3.3 City of Johannesburg

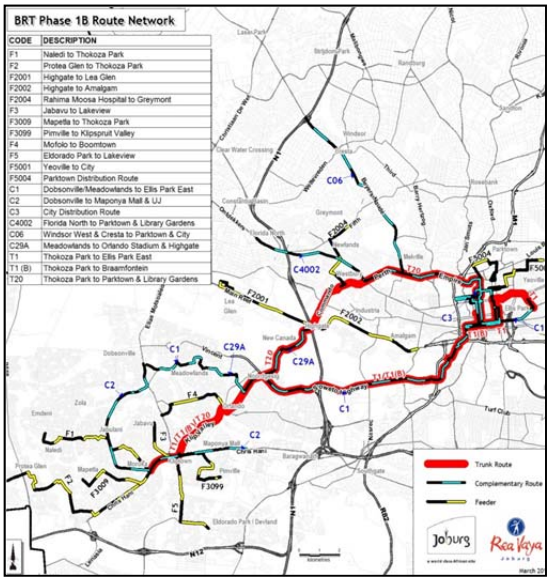
The City of Johannesburg has identified and/or is implementing the following transport capital projects.

BRT Phase 1B: Trunk route being implemented for 2013 - (T20 Thokoza to Parktown/ Library Gardens) as indicated in **Figure 6.9.**

Phase 1B: Complementary route being implemented for 2013 - (C06 - Windsor West/Cresta to Parktown/City along Beyers Naude from N1 and along Empire Road, C4002, Florida North to Parktown and Liberty Gardens along Ontdekkers/Perth /Empire Roads).

Phase 1B: Feeder routes being implemented for 2013: (F5001 - Yeoville to City, F5004 - Parktown Distribution Route, F2004 - Rahima Moosa Hospital to Greymont, F2001 - Highgate to Lea Glen, F2002 Highgate to Amalgam, F3009 - Mapetta to Thokoza Park and F3099 - Pimville to Klipspruit Valley).

Figure 6.9 – City of Johannesburg BRT Network



(a) Lay-bys, shelters and Public Transport Infrastructure

Implementing lay-bys, shelters and public transport infrastructure along SPTN routes, (priority W/E = Roodepoort - Cresta - Randburg - Sandton - Wynberg - Alexander. N/S = Sunninghill - Rivonia - Sandton - Rosebank - Parktown - RAU - Highgate - Mlamlankuzi - Orlando - Baragwanath, Nasrec, Ellispark).

(b) Upgrade traffic signals along SPTN routes (priorities as recorded in the ITP)

- Nasrec, Ellispark and E/W flagship components, bus priority signals along SPTN routes (W/E = Roodepoort - Cresta - Randburg - Sandton - Wynberg - Alexander. N/S - Sunninghill - Rivonia - Sandton - Rosebank - Parktown - RAU - Highgate - Mlamlankuzi - Orlando – Baragwanath). However, this does not feature on the COJ capital budget.
- Implement centralised control to monitor/control network operations along SPTN routes.
- Support NMT cycle lanes, intersection pedestrian crossings infrastructure and lighting.

(c) City Deep Freight Hub and Supporting Road Infrastructure

City Deep anticipated Transnet Intermodal Facility Development will require access/collector roads (suggested to be funded by developers) plus City responsibility of a bridge over Main Reef Road along Cleveland Road. Key intervention identified also includes: Rosherville Road extension, Bonsmara Road upgrade, Heidelberg Road upgrade, Lower Germiston Road upgrade, Vickers – Heidelberg loop-road, Cleveland Road link.

(d) Road Infrastructure (upgrades, rehabilitation, capacity increases, extensions)

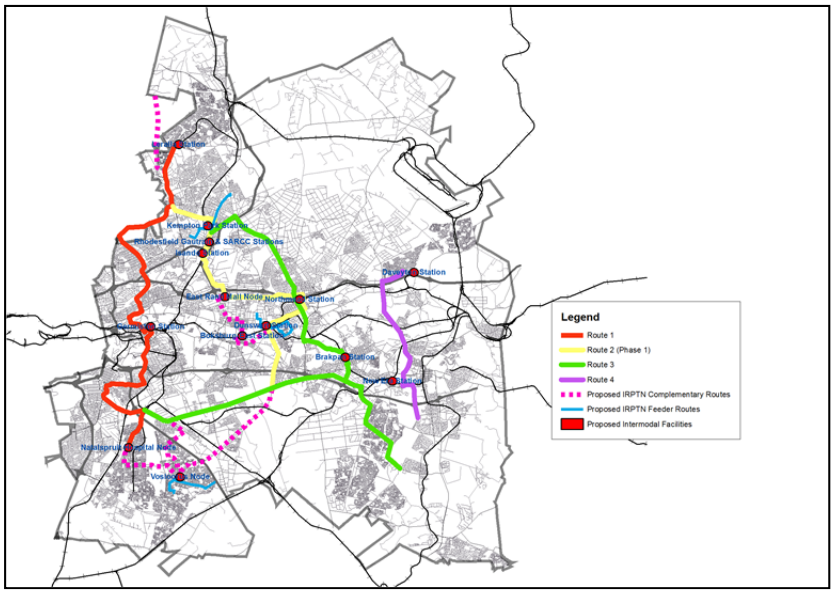
Johannesburg has listed 30 priority road projects for possible implementation over the following 5 year period. The following roads have been proposed for implementation commencement during the first year: Odendal Road - Main Reef Road link, West Lake Road extension, James Street extension, Spencer Road new link, Jan Smuts Avenue - doubling, Bally Claire Drive widening and Outspan Road upgrading.

6.3.4 Ekurhuleni Metropolitan Municipality

Ekurhuleni Metropolitan Municipality has identified and/or is implementing the following transport capital projects.

BRT Route 2 (Phase 1) - **Figure 6.10** shows the chosen Route 2 (Phase 1) in a scoping phase, inclusive of confirmation of the full BRT network and detailed investigation to implement Phase 1.

Figure 6.10 – Ekurhuleni BRT Network



(a) Compliance to South African Roads Traffic Signs Manual

Emphasis is placed in the budget on tasks to ensure compliance of all road signs and traffic signal installations to the SARTSM.

(b) Road upgrades, rehabilitation, capacity increases, extensions

Twenty Five priority road projects for implementation up to 2020 were budgeted for.

(c) Ekurhuleni Aerotropolis

Development initiatives in line with the Ekurhuleni Aerotropolis concept are supported.

6.3.5 West Rand District Municipality, Sedibeng District Municipality and Nkangala District Municipality

BRT systems are not currently planned. Consensus exist that a sustainable public transport solution is required along the Moloto corridor for implementation.

(a) Lay-bys, shelters and Public Transport Infrastructure

Apart from two intermodal (taxi) facilities significant public transport infrastructure projects, planned to be implemented, could not be sourced.

(b) Support NMT - Cycle Lanes

Significant NMT projects are planned to be implemented, but the details on these projects could not be sourced.

(c) Road Infrastructure

Important and priority roads for upgrading, extensions and capacity improvements have been identified only.

6.3.6 Passenger Rail Agency of South Africa (PRASA)

The infrastructure investment allocation for the Gauteng rail network is in excess of R10bn over the next 3 years. The investment program includes:

- R3bn for the upgrade of existing trains in Gauteng to ensure continuity of the service until the new trains are introduced into the system;
- R4bn for the signalling modernization over the next 5 years. Work on Phase 1 of this project valued at R1bn has already started. The project will increase train safety and network capacity optimisation over the short term, and will lay the foundation for full digital signalling and automatic train protection in future;
- Corridor Modernisation Project – complete remodelling of Mabopane-Johannesburg- Naledi corridor with R4bn earmarked for track, platform, station and electrical infrastructure rehabilitation;
- New gate control systems, electronic display boards and CCTV cameras at major stations to improve access control and security. R900m has been allocated for installations in Gauteng over the next 3 years. New PA systems at 40 stations in Gauteng. Pretoria station completed;
- Station upgrade programme: Mabopane (R260m) plus additional 7 stations upgrade projects and 20 station improvement projects;
- Station modal integration projects in conjunction with province and municipal authorities: Stredford, Leralla , Vereeniging, Germiston and Roodepoort;
- 5 stations identified for universal access pilot projects;
- Corridor public works job creation programme: Cleaning of corridors, fencing and walling of stations; and

- Three corridors on the Gauteng rail network have been prioritised to spearhead modernisation in preparation of the new rolling stock. The corridors include Mabopane – Pretoria; Pretoria – Germistion – Johannesburg and Johannesburg – Soweto.

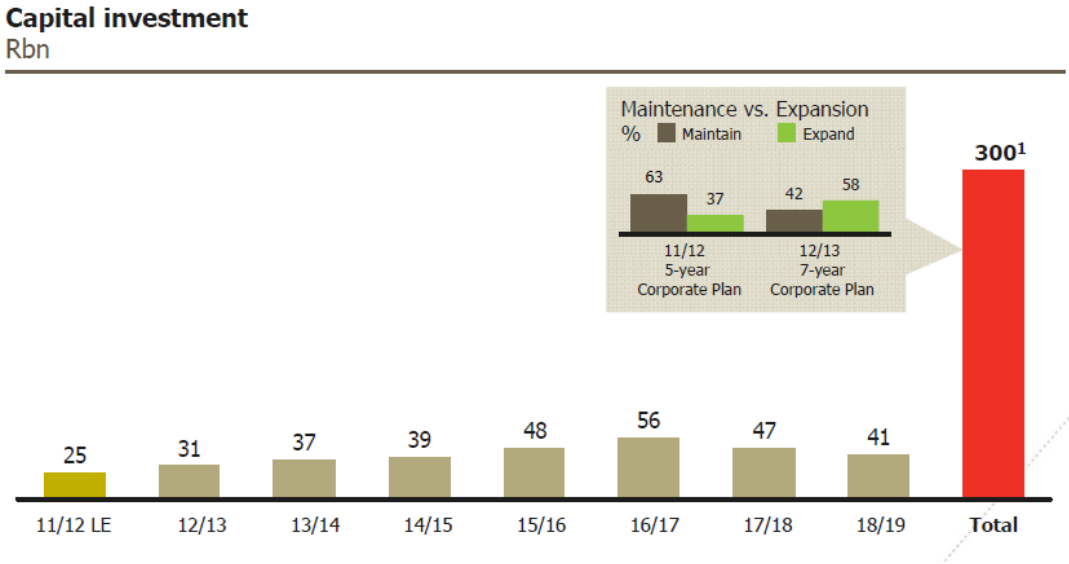
6.3.7 TRANSNET Freight Rail

The following planning and capital projects form part of the 7 year (R300bn) and 2050 expansion plans:

- Procurement of rolling stock;
- Upgrading of City terminal;
- Gauteng and Durban freight terminals;
- Capacity expansion projects on the rail line between Gauteng and Durban as well as the freight ring to support freight terminals;
- Durban port capacity expansion project;
- Durban airport dig-out port project;
- Coal expansion project;
- Manganese expansion project;
- Iron ore expansion project;
- Rail link between Ermelo to Richards Bay via Swaziland; and
- Completion of the new multi-purpose terminals.

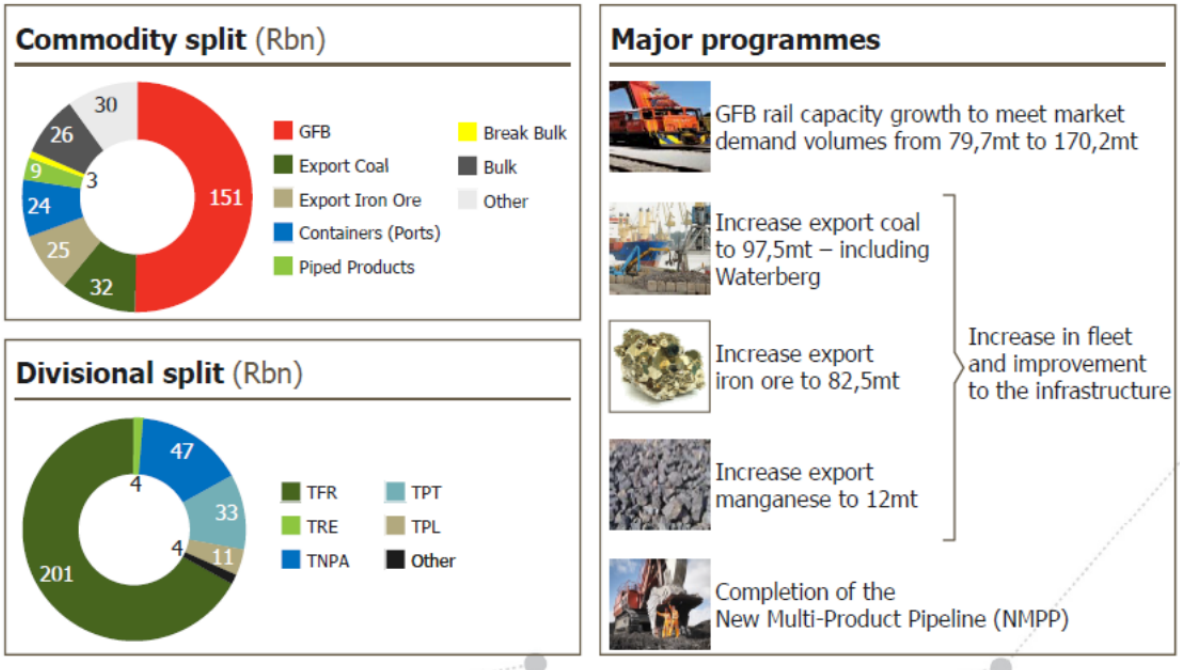
The capital allocation for the next seven years in Transnet is shown in **Figures 6.11 and 6.12.**

Figure 6.11 – Transnet Capital Investment



Source: Transnet MDS 2012

Figure 6.12 – Transnet Capital Investment Allocations



Source: Transnet MDS 2012

7 FUNDING OPTIONS

7.1 Introduction

The Medium-Term Expenditure Frameworks (MTEF) of the national and provincial governments for the 2012/13 to 2014/15 financial years and the Medium Term Revenue and Expenditure Budget (MTREF) of the local government for the 2012/13 to 2014/15 financial years were only recently officially tabled at the various legislatures. The devolution of power according to the NLTA to the lowest level of government results in different and in certain cases conflicting objectives with regards to the preservation and upgrading of the transportation networks.

An equitable share of the total national income is allocated to the respective national, provincial and municipal authorities in terms of the Division of Revenue Act (Act 5 of 2012). Each of the authorities then follows a budget prioritisation process to allocate the equitable share and other available funds to various functional areas. In this process the transportation sector competes with the other functional areas for an equitable portion of the funding. It would seem that the outcome of this process of devolution of power and fragmentation results in the allocation of inadequate funding to transportation authorities for the management, preservation, upgrading and extension of the transportation networks due to significant needs within other functional areas.

It could be argued that the current institutional framework and process of allocation of funds will not change in the short-term. A few initial comments on principles and departure points and possible funding options are made in the following sections.

7.2 Principles and Departure Points

The ITMP25 should reflect regional, social, economic, environmental and transport policies that aim to ensure a competitive, safe, sustainable, equitable and accessible integrated transport system. These policy drivers have an impact on funding sources, prioritization and resultant budgets.

The primary funding focus areas of the ITMP25 is on:

- Introduction of policies and system and technology enablers that would result in better use of existing infrastructure and facilities before costly expansions of the network are undertaken;
- Enhancing the institutional capacity of transportation infrastructure providers and transportation service providers; and
- Preserving existing transportation assets (infrastructure and facilities), safety of networks and security of users that should attract a high priority during the allocation of available funding.

7.3 Funding Instruments

7.3.1 Conditional Grants

The funding approach introduced by National Treasury to allocate funds by means of Conditional Grants is strongly supported. With this approach funds are channelized to enhance the achievement of certain critical objectives such as the improvement of the skills base of local municipalities or the maintenance of provincial and local transportation networks.

Consideration should be given to restructure or introduce new Conditional Grants. Such new grants should focus on the achievement of critical objectives such as:

- Integration of Transportation Network Grant. This proposed Conditional Grant aims to promote an integrated transportation network in Gauteng. Projects that would enhance the integration of transport should be financed through this grant; and
- Road Safety Grant. This grant should be allocated to local municipalities to subsidize safety-related maintenance of mini-bus taxis, training of drivers, etc.

7.3.2 Public Transport Funding

The current institutional arrangements portray a disaggregated dispensation that is in place for the planning and management of public transport operators and services. This is not conducive to the notion of “planning, implementation and management of modally integrated public transport networks and travel corridors” within a functional transport area.

Neither, will it be advantageous for the successful implementation of an integrated fare management system incorporating most, if not all modes of public transport.

It could be argued that although no significant changes in this environment will take place in the short-term, fare media integration may still be viable within the context of the current institutional arrangements. However, international experience and best practice have shown that far better institution integration and/or alignment is necessary for achieving fare integration. The best of such examples are achieved under a single transport authority/responsible entity for planning, implementation and management an integrated network of public transport services. It has to be added that the National Land Transport Act, 2009 promotes and provides for a much better aligned institutional dispensation for the planning, implementation and management of integrated public transport in the country. The implementation of these institutional structures and arrangements is something that will, however, not be achieved in the short-term.

Similarly, from the current funding arrangements, it is evident that a multitude of funding sources for financial operational support is used. This is almost to the extent that each mode of public transport has its own and different operational funding mechanism. As operational subsidies and the funding thereof will play an inseparable role in the establishment of an integrated fare regime for the province, much better alignment of funding sources will be required to enable this. This may almost have to be taken to the level of a consolidated and/or single source of “pot” of funds for providing operational support to an integrated public transport network of services.

Lastly, from the breakdown of contracting dispensations in Gauteng, it becomes clear that a range of contracting arrangements and bases for subsidy allocation to public transport operators or operating companies are found. Furthermore, an array of subsidy allocation mechanisms are deployed (i.e., deficit, top-up, gross cost- and net cost kilometre based, operating fees). Alignment of contracting models and subsidy allocation mechanisms may be required to create a more enabling environment for developing an integrated fare system. It will most probably not be possible to have exactly the same mechanisms for all rail modes and road-based modes, but the bases should to be similar. Consideration should for example be given to at least contract all road-based modes on a gross cost kilometre basis.

7.3.3 Private Sector Involvement

The private sector should be involved to enhance the efficiency and the preservation of the transportation network. Routine Road Maintenance contracts are good examples where the private sector is tasked to maintain a specific section of the road network. The involvement of the private sector in road maintenance can be further expanded through the commercialisation of the maintenance of transport infrastructure funded through the use of shadow tolls. Furthermore, private funding could be used to design, build, operate and maintain new transportation infrastructure and facilities.

7.3.4 Adoption of the "User pay" Principle

Additional funding instruments should be implemented to supplement current funding levels. The "user pay" principle is considered a more sustainable funding instrument. Continual pressure should be maintained to ensure fair and equitable delivery of services through "user pay" policies. The following additional transportation funding sources should be considered:

- An electronic toll collection system provides a platform not only as an additional source of funds for the provision of road infrastructure, but also to introduce transport demand management. The levying of tolls is part of a holistic approach to road financing and has a role to play in the Global City Region.
- The possible introduction of a "balanced road user tariff" should be considered that would consist of:
    - Vehicle license fees to access the network;
    - Fuel levy to provide for the usage of the network;
    - Weigh-distance levy to allocate responsibility for the structural impact on network;
    - Congestion charges to allocate responsibility for cause of congestion, and
    - Environmental charges to allocate responsibility for cause of environmental impact.
- It is preferable to introduce a mechanism that is based on Time, Distance and Place (TDP) of vehicle movements. The privacy concerns of road users should be addressed that limit the application of innovative new means of road user charging enabled by GPS.

8 INSTITUTIONAL ARRANGEMENTS AND LEGISLATIVE FRAMEWORK

8.1 Current Realities

There are various public transport modes, operators and services currently found in the Gauteng. All of them differ significantly in characteristics and nature. The following is generally what they are and who currently offers the service:

- Commuter rail services are provided by Metrorail/PRASA;
- The Gautrain Rapid Rail Link is operated by a private concession company;
- The Rea Vaya bus rapid transit system is operated by privately owned operating Companies in Johannesburg;
- Commuter bus services are provided by privately owned operators providing services between previously disadvantaged residential areas and major employment nodes;
- Municipal bus operators in Ekurhuleni, Tshwane and Johannesburg provide commuter services largely within the boundaries of the pre-1994 metropolitan areas;
- Dedicated learner transport services are provided mostly by small bus companies for learners in the province; and
- A large number of mini-bus taxis are operated by private operators organised in associations.

The institutional arrangements related to the “planning, implementation and management of modally integrated public transport networks and travel corridors” as legislated in terms of the National Land Transport Act, 2009 (NLTA, 2009) by the municipal sphere of government are not currently in practice in many respects.

8.1.1 Commuter Rail Services

Passenger rail services in Gauteng, including commuter rail services, are provided by PRASA, an entity responsible to the national government. These services are operated by one of PRASA’s subsidiaries, namely, Metrorail.

In terms of the NLTA, 2009, the municipal sphere of government in its capacity as a planning authority is required to prepare transport plans, ensure the implementation thereof and monitor its performance. This is to include “service level plans” for passenger rail and means that the planning of commuter rail is to be devolved to the local level.

Discussions had commenced on this devolution process between the Department of Transport and the respective metropolitan municipalities. However, due to the lack of capacity and rail expertise at a local level this will largely be a consultative process around rail planning, still lead by PRASA.

One can deduce that joint passenger rail planning at a strategic and tactical level will be done through this process, whereas operational planning will be done by Metrorail. PRASA will in the foreseeable future take the responsibility for the planning and development of fare management system for passenger rail, whereas fare structures will be determined by Metrorail.

The Integrated Transport Portfolio, which includes rail management as one of its functions, established a slightly different perspective to the other portfolios. Gauteng has not as yet been delegated the heavy rail function but is, at the same time, responsible for the Gautrain and is in the process of exploring other rail investments for the Province.

The overall objective of the Integrated Transport Portfolio is to facilitate processes and projects across Gauteng that will elevate the rail agenda and assist the current custodians of the rail function to ensure that both domestic and commercial rail services are brought to the fore in Gauteng, for the benefit of its population. In general, the need for institutional restructuring for rail services in the province is to:

- Ensure that mandated rail authorities unlock the potential that rail should play as a public transport mode;
- Respond to local commuter needs and to ensure relevant response times;
- Ensure integrated planning at the appropriate level and to phase such planning with a short/medium and long term rail vision; and
- Maximise successful funding applications/initiatives for new/upgrading and maintenance projects.

8.1.2 Gautrain

The operation of the Gautrain Rapid Rail Link is managed by the Gauteng Provincial Government through the Gautrain Management Agency (GMA) based on a Concession Agreement with a concessionaire, Bombela, consisting of a number of private sector companies. The strategic and tactical planning is largely done by the GMA, whereas the concessionaire plans the system on an operational level and operates it. The access control and fare management system was procured as part of the overall procurement process for the total system and the fare structure is largely fixed in terms of a schedule contained in the Concession Agreement. Any future changes to the fare management system or structure will have to be done through a variation of the Concession Agreement and could be very costly for the Province.

8.1.3 Rea Vaya

The Rea Vaya bus rapid transit system is planned by the City of Johannesburg and its transportation planning department. An entity has been established called the *Rea Vaya* Business Unit that is continuing with implementation and management of the various contractors and entities involved in the system. The system currently operates, as an interim solution, a paper ticket system with a flat fare regime. The intention is to introduce an electronic fare collection (EFC) system in the near future, which is compliant with the National Regulations on EFC. This may also entail a fare structure based on zones.

8.1.4 Regional Commuter Bus Services

Subsidised regional commuter bus services operated by private bus companies are planned, managed through contracts and monitored by the Gauteng Department of Roads and Transport. Electronic ticketing equipment (mainly Way Farer technology) is deployed on all buses and passengers use a combination of cash and coupon cards. Fares are generally based on zonal structures, with the tariff being paid by passengers having its origin in the pre-1994 “economic fare calculation” (what it costs the operators to provide the service in relation to what the average passenger on a specific route/area could afford), which was then escalated annually more-or-less in line with inflation.

8.1.5 Municipal Bus Services

In certain cases these are co-called “corporatized entities” with a service level agreement signed between the relevant metropolitan municipality and the municipal bus operator. Metropolitan authorities are mostly involved in the strategic planning of these operators, through their transport planning departments, whereas the operators themselves do their own tactical and operational planning. Most of these operators use electronic ticketing and fare collection systems, similar to the regionally subsidised bus services. Fare tariffs are often based on a regional or flat fare structure, with the mayoral committees approving fare increases.

8.1.6 Dedicated Learner Transport Services

Dedicated learner transport services are being provided on contract by mostly small transport operators for the Gauteng Department of Education (GDE). Although the GDE has an oversight responsibility, these services are only managed at a high and superficial level. Operations are mostly planned and managed by school principals, parent committees and operators. No ticketing or fare regimes are applicable to these services as they are supplied at no cost to the users.

8.1.7 Mini-bus Taxi Services

The planning and management of mini-bus taxi services are limited to government fulfilling the responsibility of regulation and control function, as well as law-enforcement. The regulation and control function lies with the province, through the Provincial Regulatory Entity (PRE), whereas the law-enforcement duties are performed at a local level. The NLTA, 2009, makes provision for a Provincial Regulatory Entity and for it to take over the roles and responsibilities of the Operating Licence Board. Regulation 1208 published in relation to the NLTA, 2009, also provides for Municipal Regulatory Entities to be established.

8.2 Legislative Provisions

In addition to the municipal sphere of responsibility to plan, implement and monitor public transport systems, the NLTA, 2009, also states that municipalities must introduce or assist in the "*establishment of integrated ticketing systems, the managing thereof including through-ticketing and determining measures for the regulation and control of revenue-sharing amongst operators involved in those systems*". The NLTA, 2009, goes on to state that municipalities shall "*in the case of gross cost contracts for subsidised services determine fare structures and fare levels and periodically adjust fares after publishing the proposed adjustments for public comment"*.

Except for the cases of the *Rea Vaya* operations and the various municipal bus operations, the municipalities are not involved with ticketing or fares of other modes of public transport in their respective areas. Similarly, they are also not involved with the route or operations planning of the other modes of public transport at present.

8.2.1 Constitutional Allocation of Transport Functions

As a point of departure, the provisions of the Constitution allocating functions to the three spheres of government need to be considered. Schedule 4 lists functional areas of concurrent national and provincial legislative competence. These include the following:

- Public transport;
- Road traffic regulation;
- Vehicle licensing; and
- Environment.

The following municipal functions are listed in Part B:

- Municipal public transport;
- Municipal planning; and
- Municipal airports.

Schedule 5 lists functional areas of exclusive provincial legislative competence. These include the following:

- Provincial planning; and
- Provincial roads and traffic.

The following municipal functions are listed in Part B:

- Municipal roads; and
- Traffic and parking.

Provinces are responsible for the abovementioned functional areas set out in Schedules 4 and 5 and other functions assigned to them by national legislation (Section 125 of the Constitution). Municipalities are responsible for the functional areas set out in Parts B of those Schedules and other functions assigned to them by national or provincial legislation (Section 156). These functions are funded by the equitable share of revenue received each year and the province or municipality's own sources.

Furthermore, the Constitution provides for additional functions to be assigned to municipalities. If any function is to be assigned to one or more municipalities outside of their normal constitutional functions (e.g., rail functions), this can be done by means of a specific provision in transport legislation, but only if certain procedures are followed in terms of other municipal and financial legislation. These procedures involve, among others, that sufficient funding and capacity on the part of the municipality/ies must be assured, the financial implications must be assessed and approval must be obtained from the National Treasury and the Financial and Fiscal Commission (FFC).

The Constitution provides that a function in Part A of Schedule 4 or 5 must be assigned to a municipality if —

a) the matter would most effectively be administered locally; and
b) the municipality has the capacity to administer it (Section 156(4)).

Before the national government or a province assigns a function to a municipality, it must

ask the Financial and Fiscal Commission to assess the financial and fiscal implications and consult the Department of Finance and other bodies. There are also other processes that must be followed. It must also take appropriate steps to ensure sufficient funding. Where a function is assigned without adequate provision for funding, it is known as an unfunded mandate.

8.2.2 White Paper on National Transport Policy, 1996

The White Paper identified the fragmentation of functions across the three spheres of government as a major weakness besetting the effective planning, development and overall management of the transport system. It advocated the establishment of transport authorities at the municipal sphere to take responsibility for the full range of transport functions. It set out a number of policy principles dealing with, amongst other matters, the role of government, institutional principles, arms-length bodies and financing principles. Drawing on the Constitution, it supports the principle of subsidiarity. In the mission statement for land passenger transport it states:

> *"In observing national development principles, the policy is mindful of subsidiarity, which is the exercising of devolved power at the lowest competent level of government."*

In support of this position, it recognises the important role of metropolitan municipalities in addressing transport:

> *"The metropolitan conurbations in particular are, however, of major importance, and a large proportion of South Africa's transport activities take place within metropolitan areas. Institutional arrangements should recognise this. Government is committed to the principle of subsidiarity."*

The White Paper supports the notion of establishing suitable structures in the form of transport authorities to take responsibility for transport functions.

> *"In line with the Constitution….land passenger transport powers and functions should be assigned to the lowest competent level of government. This level should take full responsibility for execution and implementation in metropolitan areas. The functions*

assigned to this level should be executed within the framework of provincial legislation, policy, guidelines, norms and standards, and appropriate institutional structures should be established to take responsibility for these functions."

As one of the strategic objectives on planning and regulation, it states:

"To provide appropriate institutional structures, which facilitate the effective and efficient planning, implementation, funding, regulation and law enforcement of the passenger transport system, devolved to the lowest competent level."

Outside metropolitan areas, the White Paper advocated options for the province, district or local municipalities to act as transport authorities. The clear policy emanating from the White Paper is the notion of devolution to the lowest competent level and the establishing of appropriate structures in the form of transport authorities in the metropolitan areas.

8.2.3 National Land Transport Transition Act, 2000

The National Land Transport Transition Act of 2000, Act No. 22 of 2000 (6) (NLTTA) provided that the establishment of transport authorities at the municipal sphere to have be responsible for transport functions. After the enactment of the legislation, the option of a transport authority was pursued with great enthusiasm in a number of metropolitan municipalities and district municipalities. The reality, however, has been that only one such authority was established in eThekwini.

At the time the NLTTA was being developed, metropolitan municipalities were still two-tier structures with the metropolitan municipality and a number of sub-structures. The concept of a TA as a single body which could operate across political jurisdictions was well founded, and drew largely on the practice overseas. With the advent of unitary metropolitan municipalities, the case for a TA is somewhat weaker since a single municipality has full responsibility for all its functions. The issue of horizontal fragmentation and transport across political boundaries falls away. There are still benefits however: focused attention to transport, a governing body responsible for transport, its own funds, etc.

Given rapid urbanisation pressures, transport functional areas may expand to include more than one municipality. In these circumstances the case for a TA is strong. A good example is in the Gauteng region with three metropolitan municipalities in close proximity with transport cutting significantly across jurisdictional boundaries.

In the district and local municipalities, there would seem to be a case for a TA but from a different perspective, one of a lack of any real capacity. Rather than attempt to replicate or build capacity in a number of local municipalities, there may be a case to garner resources in one municipality which could then serve the whole area. The lack of capacity in non-metropolitan municipalities, and the ability to attract these resources, is a reality.

The White Paper argued strongly for transport authorities in metropolitan municipalities. The NLTTA provided for their establishment as a voluntary process through negotiation between the MEC and the participating municipalities. The argument was that a transport authority may be formed if its *"effect is to improve transport service delivery in the local sphere of government by grouping transport functions into a single, well-managed and focussed institutional structure".* (NLTTA Section 10(3)).

The case for a transport authority is strong in complex regions with a diversity of land uses; multi-modal transport systems – bus, minibus-taxi, rail, long-distance bus, metered taxi; existence of subsidised public transport services; high proportion of internal trip making; and an extensive economic area of influence. Some form of inducement for such a municipality or municipalities to form transport authorities could be considered.

8.2.4 National Land Transport Act, 2009

The NLTTA was replaced by the National Land Transport Act, (NLTA 2009). The purpose of the NLTA is set out in Section 2 of the Act as follows:

> *2. The purpose of this Act is –*
>
> *(a) To further the process of transformation and restructuring the national land transport system initiated by the Transition Act;*
>
> *(b) To give effect to national policy;*
>
> *(c) To prescribe national principles, requirements, guidelines, frameworks and national norms and standards ….; and*

(d) To consolidate land transport functions and locates them in the appropriate sphere of government.

Matters included in the NLTA that differ from or are additional to the NLTTA from an institutional and planning perspective are, *inter alia,* the following:

- Section 15: The establishment of Intermodal Planning Committees (IMPC) by municipalities that are establishing integrated public transport networks and/or has significant passenger rail services; the function of these committees is to co-ordinate public transport between modes, especially while different institutional bodies or spheres of government are responsible for different modes of transport;
- Section 16: The establishment of land transport advisory bodies (LTAB) with representation from government and the private sector, to advise a municipal planning authority in relation to transport;
- Section 11: The detailed description of the transport responsibilities of the different spheres of government, including the municipal sphere – previous provisions for the establishment of Transport Authorities have been scrapped;
- Section 11(2) and Section 17: Provision for the assignment by the Minister of the operating license function to a municipality, relating to operating licenses for services wholly in their areas of jurisdiction or starting in their areas of jurisdiction, but excluding applications that must be made to the National Public Transport Regulator (NPTR) or a Provincial Regulatory Entity (PRE); and
- Section 40: The integration of the current bus subsidy system into the larger public transport system in terms of relevant integrated transport plans.

It is important to note that, contrary to the transition legislation, no specific mention is made in the NLTA of transport authorities.

The NLTA places much emphasis on the co-ordination responsibilities of the provinces and requires from the MEC to establish coordinating structures or take any other steps it deems necessary for this purpose (Section 9(2)(f)). In addition, the provincial sphere of government is required in Section 11(b)(iii) to take responsibility for the: *co-ordination between municipalities with a view to ensuring the effective and efficient execution of land transport in the province and promoting provincial legislation with a view to promote the objects of this act;*

In Section 12 on intergovernmental relations, the act makes provision for the joint exercise of functions by a province as follows:

> *12. (1) A province may enter into an agreement with one or more municipalities in the province to provide for the joint exercise or performance of their respective powers and functions contemplated in this Act and may establish a provincial entity or similar body in this regard, subject to the Constitution and this section.*
> *(2) One or more adjacent municipalities may agree on the joint exercise or performance of their respective powers and functions contemplated in this Act, or may establish municipal entities in terms of the Systems Act for this purpose.*
> *(3) If the spheres of government cannot agree, subject to this Act, on the division of land transport functions between them, they must act in a manner and spirit consistent with the principles of co-operative government prescribed by section 41 of the Constitution and apply the provisions of the Intergovernmental Relations Framework Act, 2005 (Act No. 13 of 2005).*

In Sections 15 of the NLTA it is required from Planning Authorities (defined as a municipality in relation to its planning functions) with significant rail services in its area, to establish an Intermodal Planning Committee. Allowance is also made in Section 16 for a Planning Authority to establish a Land Transport Advisory Board in order to be advised on land transport matters as it relates to its area. It can be assumed that the province will play an important role in any of these bodies given its mandate to co-ordinate transport within the province as discussed above.

8.2.5 Municipal Systems Act, 2000 and Municipal Finance Management Act, 2003

The Municipal Systems Act and Municipal Finance Management Act were enacted after the NLTTA. These Acts govern, amongst other things, the establishment by municipalities of bodies and mechanisms for delivery of functions and services.

A possible conflict arises between the NLTTA and municipal legislation. The conflict arises from the definition of municipal entities and the legal status of transport authorities as interpreted by the local government legislation. These Acts do not define or refer directly to transport authorities.

The relevant parts of the municipal legislation set out the legal status, structure and governance of municipal entities. Section 86B (2) of the Municipal Systems Amendment Act states that:

> *"(2) No municipality may establish or participate in the establishment of, or acquire or hold an interest in, a corporate body, including a trust, except where such a corporate body is-*
> *(a) private company, service utility or multi-jurisdictional service utility referred in Section 1;"*

In this context a private company refers to a municipal entity which is defined as such in the Amendment Act. The Amendment Act states that the directors or governing body of such entities must not comprise municipal councillors.

According to Reference 4, the key question is whether a TA falls under the definition of a *corporate body* as set out in Section 2 above. If so, and given the governance model of a TA in the NLTTA where only councillors may serve on the governing body, there is clearly a conflict with municipal legislation. This implies that a TA cannot be established in this form.

On the other hand it can be argued that a TA is an "authority", not a municipal entity, and does not fall within the definition of a corporate body as used in the Amendment Act. On this basis, there is no conflict between the NLTTA and municipal legislation.

8.2.6 National IRPTN Initiative

The Department of Transport published in 2007 its Public Transport Strategy aimed at transforming public transport on an accelerated recovery programme and leaving a lasting legacy of improved public transport and a car-competitive public transport system. This is founded on the development of integrated rapid public transport networks. The strategy also speaks to the institutional model for strong municipal control of the integrated networks:

"*Strategic shift to municipal controlled integrated networks - Achieving the legacy articulated in detail above will require a municipality acting as a network authority that procures the required public transport infrastructure – including dedicated road space, dignified public space, good pedestrian and bicycle access, good park and ride facilities for car users, and high quality stations, stops, interchanges, terminals and depots. High quality vehicles are specified in the operating contracts and are tailored to meet a corridor's particular service requirements."*

8.3 Gauteng Initiative to Achieve Cooperative Governance

Various initiatives were implemented in the past to improve the co-ordination and integration of transport on a province-wide basis.

8.3.1 Conceptual Plan for the Establishment of a Gauteng Transport Management Authority

The need for a provincial Transport Authority was debated since 2006 in line with the need to consider Gauteng as a Global City Region. An attempt to establish the Gauteng Transport Management Authority (GTMA) was undertaken in May 2008 through the promulgation of the Gauteng Framework Revision Act of 2008. Due to inadequate and limited resources, overlap and duplication of functions experienced in the province, a need to re-organise the Provincial Government Departments was announced by the Premier during the course of the 2009-2010 financial year to ensure effective and efficient service delivery for the people of Gauteng.

The objectives of the Gauteng Transport Management Agency (GTMA) as stated in the Gauteng Transport Framework Revision Amendment Act, Act no.3 of 2008 (7), were to:

- Improve the planning, coordination and facilitation to transport functions of the Province as may be delegated to it by the MEC from time to time; and
- Promote intergovernmental relations within the transport environment.

The roles and responsibilities of the GTMA include the following:

- Determine the strategic policy and agenda for the province;
- Ensure that there is a linkage with other matters that have an impact on transport including land use and economic development;
- Set transport related standards, performance criteria and related indicators to ensure intermodal integration and efficient management of transport investment;
- Source financial mechanisms to enable investment in transport;
- Determine similar transport implementation opportunities across Gauteng; and
- Coordinate transport initiatives with the local authorities and transport stakeholders.

Essentially, this provincial legislation allows the province to establish its own provincial planning, coordination and facilitation transport authority which will be responsible for the execution of the mandate of the GTMA as required in the provincial legislation.

The decision to re-organise government institutions included the creation of new departments, the rationalisation of provincial public entities, incorporating best practices on transformation of government to deliver on services and build on existing success and deal with challenges. This decision to rationalise government institutions in Gauteng, particularly public entities, saw the disestablishment of the GTMA. In addition, the Department embarked on a process of rationalizing all its Provincial Transport Laws, most of which had become outdated with the coming into effect of the National Land Transport Act (NLTA) in 2009 and its subsequent implementation. Furthermore, in the light of the NLTA being enacted in 2009, the approach to establishing any Transport Authority would need to be significantly different from the approach taken previously. Thus, the GTMA was disestablished.

8.3.2 Gauteng Transport Framework Revision Act of 2002

The Act was promulgated in 2002 with the objective to, inter alia, “provide a framework for integrated planning and provision of a transport system in the Province”. In Chapter 11, allowance is made for the establishment of co-ordination structures at the political and technical levels respectively, namely the Gauteng Transport Consultative Forum (GTCF)

and Transport Co-ordination Committee (TCC). The functioning of these two bodies has been successful to some extent.

Both the GTCF and the TCC were established, with the TCC probably the more successful of the two bodies. As these structures have largely been initiated by the province, they were not always acknowledged and supported to the same degree by the municipalities. The concern was expressed from time-to-time that the province was interfering in the areas of responsibility of the municipalities. They also criticized the province of relying too much on support by consultants even as far as participating in the proceedings during meetings.

This act also allows in Section 37 for the establishment of a Joint Planning Structure (JPS), *"to deal with common transport planning matters on a provincial wide basis".*

As a point of departure, the TCC agreed that the role of the JPS should initially be fulfilled by a subcommittee of the TCC to be called the Transport Planning Subcommittee or TPC. This would result in the disestablishment of TCC: Working Group 1 which was responsible for the co-ordination of transport planning in the province. The basic purpose of the TPC is to advise the TCC on the co-ordination of municipal transport plans, to incorporate municipal plans into the Provincial Land Transport Framework (PLTF) and to develop province-wide transport policies and strategies.

Neither the TPC nor JPS came off the ground despite the fact that most of the preparatory work for their establishment was completed. This was probably due to significant changes in the organisational structure provincial roads and transport department over the years, coupled to some reservations by the municipalities on the merits of these bodies.

8.3.3 TCC Transport Planning Sub-committee (TPC)

During the course of 2002, the planning working group, Working Group 1, of the Gauteng Transport Coordinating Committee appointed a Task Team to investigate the feasibility and need for the establishment of a joint planning structure in Gauteng. The Task Team concluded that there are many common tasks that could be undertaken more effectively if handled jointly by a body such as the proposed TPC. This would speed up the planning process and avoid the situation described in the preceding section. Examples of these common tasks include the following:

- establishment of a TPC Website and a common Transport Information System (TIS) linked to the GDRT Website (the Website could contain all the reports and transport plans prepared in terms of the transport legislation making the information available to all planning authorities);
- application of a standardised province-wide household travel survey;
- establishment of a common set of Key Performance Indicators for use by all Core Cities and Planning Authorities in the province; and
- co-ordination of the infrastructure survey required by GDRT Modal Integration Directorate.

It was felt that there are many planning tasks which can and should be standardised, for example, traffic counts, should be done by means of a joint or collaborative exercise. The main benefit of such joint exercises is that they can be planned and managed centrally. The standardised results are useful to all parties, provide a common information resource and enable comparisons between all municipalities in the province. This is important because of the extent of inter-authority travel and transport interaction, which call for multilateral agreements about the management and control of cross-border movement and inter-authority bus contracts. It was proposed that the TPC would serve as a resource centre and advisory body for all municipalities. In some cases, where district municipalities are under-resourced, the TPC could undertake a large part of the planning required by the NLTTA and GTFRA, if requested to do so. Unfortunately, the establishment of the TPC never materialized and the functioning of the TCC and its Working Groups also scaled down significantly from 2004.

8.3.4 Gauteng Inter-governmental Transport Charter

This Charter is a high level agreement between the transport MMCs of the six municipalities and the provincial MEC in Gauteng, committing themselves and the public officials in their respective spheres to work together to achieve shared transport objectives and outputs over the next five years. The national and provincial legislative framework details the respective roles and responsibilities for transport of different spheres of government in Gauteng. Within this framework, the Charter sought to set out what they want to achieve collectively, and to provide a high level agreement about the nature, scope and form of co-operation and co-ordination between the provincial and local spheres on

transport roles and responsibilities. The Charter sought to give a joint focus and common purpose to their endeavors. The common objectives and key outputs to be jointly achieved were:

- The need for strong political oversight and decision-making;
- Delivery should happen at the local level unless economies of scale or nature of the function dictate otherwise;
- Commitment to build Gauteng as a globally competitive city region with increased co-operation between the different spheres of government; and
- The imperative to make the 2010 Soccer World Cup a success and to use the opportunity to create a lasting public transport legacy.

This Charter should help in the efforts and apply collective resources more efficiently to achieve the objectives. It sought to give momentum to move policies, plans and strategies forward to tangible implementation and solutions. Some of the outputs described in the Charter will require engagement with non-signatories to the Charter for its success. Interaction with others – including the national sphere, parastatal bodies, other provinces and the private sector – will be guided by the objectives and outputs expressed in the Charter. The Charter was structured around the following themes:

- Planning: Ensuring effective and informed planning which prioritised public transport and good land use management;
- Public Transport: Ensuring a quality public transport system that offers a realistic alternative to individual transport;
- Transport Infrastructure: Increasing provision of transport infrastructure with a focus on public transport friendly facilities and transformation of delivery;
- Road Space Management: Ensuring the efficiency and effectiveness of the transport system for the movement of people and goods;
- Regulation: Ensuring the regulation of the public and private transport system so that it is efficient and safe; and
- Freight and logistics: Ensuring that goods are moved efficiently and safely around our province and between our province and the sub-region.

8.4 Institutional Challenges

There are identified problems associated with the management and implementation of integrated, efficient and sustainable transportation systems across Gauteng, namely,

- Currently there are several accountable structures/bodies determining transportation planning, standards and implementation parameters or carrying out the coordination role between local authorities within Gauteng. This is even more apparent because of the diversity in structure and capacity that exists at local level. The result is a fragmented approach to planning and implementation of transport infrastructure, standards and systems. Furthermore, there is a need for accountability in the implementation of the requirements as determined in the Gauteng Growth and Development Strategy and in accordance with the Gauteng Global City Region;
- There are no common standards or performance criteria in operation in Gauteng, in relation to achieving integrated, sustainable transportation;
- There is inadequate spatial and operational integration within the transport system and network;
- Transport functions cut across jurisdictional boundaries thereby requiring the need for more effective co-ordination and planning;
- Commuters do not have any access to intermodal transport systems and communication, and the cost of transport is high; and
- The absence of uniform standards makes it difficult to monitor and results in incongruence within the system.

In December 2005, the Technical Coordinating Committees ("TCC') agreed that to ensure integration and the most effective implementation, the following appropriate institutional arrangements should exist:

- A province-wide planning and co-coordinating body whose critical mandate is to ensure integration across transport infrastructure and operations;
- Local government to decide whether Transport Authorities is the most appropriate structure to address integration between transport, land use and other municipal functions; and

- Rationalised service delivery public entities such as roads and rail implementing bodies which could be accountable to the province wide body or local government depending on the function.

The Gauteng Department of Roads and Transport is adopting new and revised approach in considering the establishment of an authority. Such an approach would need to be in line with the NLTA and ensure significant involvement of and ownership by municipal stakeholders. At the Public Transport Conference on 28 May 2012, the MEC of Transport articulated the need again for a Gauteng Transport Authority and expressed a commitment towards the establishment of Transport Authority by March 2013. In response to this political commitment, the Gauteng Department of Roads and Transport will need to execute that commitment by investigating the options available to the department to successfully establish such an authority.

8.5 Principles and Departure Points

A Charter is required in the context of the NLTA which ensures that municipalities participate once more in the determination of such an authority. The key question is no longer whether a single authority is needed, but rather what and how can the Province and Municipalities collaborate to jointly build a single sustainable institution.

- In addition to the above, the Gauteng Global City Region perspective and initiative has also been considered in formulating proposals for intergovernmental relations for transport in Gauteng. The objective of the GCR perspective is "to build Gauteng as an integrated and globally competitive region, where the economic activities of different parts of the province complement each other in consolidating Gauteng as an economic hub of Africa and an internationally recognized global city-region". A guiding principle is that "for our city-region to compete better externally, we must co-operate internally";
- "*Getting government right*" is one of the success factors for building a GCR. The GCR strategy notes that world city-region governance models are notable in that they do not promote monolithic government structures; and
- Fundamental to the success of the GCR is the development of measures to strengthen both local government and intergovernmental relations. This can be facilitated by an institution that complements the work of the Department.

Institutions such as the Gauteng Transport Authority for the Global City Region will also contribute to the positioning of Gauteng as an economically active and sustainable region.