6.2 Freight Transport in the Johannesburg Inner City

Background to Study

Freight operations in Gauteng have evolved substantially since the early 1990s when South Africa held its first democratic elections. Re-entry into global markets led to an increase in freight-related transport movements in Gauteng. This increase, parallel with the ongoing growth in private transport, has had a negative impact on the overall traffic conditions on the main freeway and arterial network of the province.

Although the smallest of the nine provinces, Gauteng produces approximately 38% of the national Gross Domestic Product (GDP). Within Gauteng, the City of Johannesburg (CoJ) serves as the main economic hub in Southern Africa and a major proportion of goods movements utilize the infrastructure of Johannesburg when in transit. The Johannesburg inner city forms part of service region F of the Johannesburg Metro. It is an area of contrasts that incorporates business districts such as the CBD, Braamfontein (an important office precinct), high density residential suburbs to the east and north-east as well as light industrial activities to the south and south-west.

Retail activity in the inner city is intense and depends on the retail activities that are concentrated in the vicinity of the Retail Improvement District (RID). In order to ensure the sustainable growth of the retail sector in the inner city, reliable and efficient freight transport services are required.

In this report, current freight movements in Gauteng will be assessed to form a picture of the freight transport scene in the province. Thereafter, the scope will narrow down to the CoJ. Entry and exit into the inner city, freight movements within the inner city, typical problems experienced within the inner city and freight transport solutions for the inner city are other topics that will be discussed in this report.

6. Transport System Analysis

Urban Freight Transport

Introduction

Urban freight transport is important for many reasons, including:
The total cost of freight transport and logistics is significant and has a direct bearing on the efficiency of the economy;
The role it plays in servicing and retaining industrial and trading activities which are essential for major wealth generating activities;
It is a major employer in its own right;
It is fundamental in sustaining existing life styles.

Urban Freight Problems

In addition to the positive impact of freight transport, typical freight transport problems experienced in urban areas include the following:

Economic Impact

- Congestion;
- Resource waste.

Environmental Impact

- Pollutant emissions;
- Use of non-renewable fossil fuel;
- Waste Products (e.g. tyres, oil).

Social Impact

- Injuries and death resulting from traffic accidents;
- Noise;
- Visual intrusion

The relevance of these typical freight problems to the inner city will be highlighted in in this report.

6. Transport System Analysis

Economic Profile of Gauteng

Background

Gauteng is the economic powerhouse of the country, and plays an important role in the growth of the national economy and the stimulation of progressive and investment-friendly developments. Manufacturing, trade and financial services are the most important economic sectors of the Gauteng economy. In addition, sectors such as smart industries, tourism, and infrastructure investment are targeted for economic growth.

Despite the fact that Gauteng is the smallest province in South Africa in terms of land space and has the least length of roads in the country, the province produces the highest vehicle kilometres for heavy goods vehicles, including the highest number of registered trucks and the highest fuel sales in the country.

The spatial distribution of economic activity in Gauteng is of importance as it has an impact on the generation of freight volumes that must be distributed on the transport network. In this regard the economic contribution of the metropolitan and district areas of Gauteng are shown in table 9.1.

From table 9.1, it is evident that the CoJ makes the greatest contribution towards the provincial Gross Domestic Product (GDP), hence the majority of freight volumes and subsequent movements will occur in the CoJ Metropolitan Municipality.

Table 9.1: Economic Contribution of Metropolitan Areas in Gauteng

Municipal Area	Economic Contribution (% of Provincial GDP)
CoJ	37%
City of Tshwane Metropolitan Municipality	23%
Ekurhuleni Metropolitan Municipality	21%
Sedibeng District Municipality	10%
West Rand District Municipality	7%
Metsweding District Municipality	2%

Evolution of Freight Congestion in Gauteng

Background

Freight congestion on roads has developed gradually over a period of time, as there is presently no suitable freight transport alternative that can compete with the freedom and flexibility offered by road transport.

The decline in rail as the chosen mode for freight transport, due to a decline in service delivery levels, has led to the utilization of roads as an accessible and more reliable transport medium. This has resulted in a corresponding increase in road preference due to the fact that roads provide improved transport options. As road infrastructure developed, improved connections to national ports were also established which further rendered rail as unnecessary.

Since Gauteng is the economic powerhouse of South Africa, economic growth in the province triggers increased investment which generates increased development and increases in freight movement of all modes, levels and directions. Simultaneously, population growth and an increase in private car ownership, due to the overall lack of public transport, has further contributed to an increase in road transport congestion by private vehicles which has an impact on all mobility.

According to recent research, there are several existing freight congestion hot-spots within Gauteng province, which has a negative impact on the efficiency or road transport operations. Although almost all of the primary road networks are congested during peak periods, the most congested sections (hot-spots) are:

–N1 North of Buccleuch interchange in Midrang;
–N3, Geldenhuys to Buccleuch;
–R24, Gillooly's to IRTIA;
–N12, Gillooly's to Rietfontein (R21);
–R21, Rietfontein past ORTIA;
–M2, South of Johannesburg.

Freight Movements in the City of Joburg

Economic Activity in the City of Joburg

The CoJ is characterised by an **active economy** and reflects a high economic growth rate. Since 1996, the City's GDP growth rate has outpaced the national growth rate in GDP, largely due largely to the dominance of the fast-growing financial and business services sector in Johannesburg's economy, which has consistently outperformed average growth rates.

The current composition of the CoJ economy is dominated by the **financia**l and **business** sector and the **wholesale** and **retail** sectors. Given the fact that the CoJ dominates the national economy in these sectors, it is due to become the finance, trade and business hub of South Africa.

The retail function of the inner city has changed form and character over the years and sports niche areas of retail and wholesale functions, personal services, restaurants and fast food outlets, small-scale and micro shops as well as a large informal trade. It remains an important retail node for township and inner city residents and most importantly, for cross-border shoppers

Retail Activities in the inner city

The retail function of the inner city is intense and depends on both **formal** and **informal** economic linkages. Retail activities are not evenly spread out through the inner city and include:

•Informal Activity

Informal activity is concentrated at transport interchanges as well as in retail nodes in the eastern and south-eastern side of the inner city. Many forced migrants to the inner city are often unable to obtain necessary certification to trade formally in small business. This has expanded to the micro-businesses and informal trade of the inner city's sidewalks and facades.

•Formal Activity

Formal activity is concentrated around the office precincts of Braamfontein and the banking core and the secured environments such as the Carlton centre.

•Retail Improvement District

The Retail Improvement District (RID), located between Jeppe Street in the north, Harrison Street in the west, Commissioner Street in the south and Von Brandis Street in the east, are the main retail areas of the inner city.

Freight Demand Forecasting – Gauteng Province

The forecasting of freight demand is of major importance as it provides an indication of the expected volume and magnitude of freight transport for the future on a specific transport network. As part of the Gauteng Province Freight Transport Implementation Strategy, a **freight demand forecasting modelling exercise**, that correlates with the expected growth of the provincial economy, has been conducted to get an indication of the expected volume and magnitude of freight transport movements on the Gauteng transport network between 2008 and 2020.

Freight Demand Forecasting was achieved through a **sensitivity analysis** whereby three scenarios (low, medium and high) were used to predict freight volumes up to the year 2020 for 6 metropolitan areas of Gauteng. For the purpose of the exercise, the CoJ was divided into **4** freight zones (zones 10 to 14) and according to this classification, the greater part of the Johannesburg inner city falls within zone **11.** The area shaded in green refers to projected growth for the inner city (zone 11) while the area shaded in pink refers to the projected growth scenarios for Gauteng Province.

Freight Est.	% growth	Estimated Freight Volumes: 2008 - 2020												
		2008 (Tonnage)	2009 (Tonnage)	2010 (Tonnage)	2011 (Tonnage)	2012 (Tonnage)	2013 (Tonnage)	2014 (Tonnage)	2015 (Tonnage)	2016 (Tonnage)	2017 (Tonnage)	2018 (Tonnage)	2019 (Tonnage)	2020 (Tonnage)
Low	2.00%	36,377,586	37,105,138	37,847,240	38,604,185	39,376,269	40,163,794	40,967,070	41,786,412	42,622,140	43,474,583	44,344,074	45,230,956	46,135,575
Medium	5.00%	38,548,913	40,476,358	42,500,176	44,625,185	46,856,444	49,199,266	51,659,230	54,242,191	56,954,301	59,802,016	62,792,116	65,931,722	69,228,308
High	8.00%	40,783,176	44,045,830	47,569,496	51,375,056	55,485,061	59,923,866	64,717,775	69,895,197	75,486,813	81,525,758	88,047,818	95,091,644	102,698,975
Low	2.00%	218,484,000	222,853,680	227,310,754	231,856,969	236,494,108	241,223,990	246,048,470	250,969,439	255,988,828	261,108,605	266,330,777	271,657,392	277,090,540
Medi um	5.00%	231,525,000	243,101,250	255,256,313	268,019,128	281,420,085	295,491,089	310,265,643	325,778,925	342,067,872	359,171,265	377,129,828	395,986,320	415,785,636
High	8.00%	244,944,000	264,539,520	285,702,682	308,558,896	333,243,608	359,903,096	388,695,344	419,790,972	453,374,249	489,644,189	528,815,725	571,120,982	616,810,661

If a **2% scenario applies**, the following findings are derived:

- Freight volumes for the inner city are expected to increase by approximately **24%** between the period 2008 to 2020;
- Approximately **16%** of the total Gauteng freight volumes will be generated/attracted to the inner city;
- The abovementioned volumes include freight originated from and destined for City Deep (inner city and City Deep both form part of region F);
- The projected increase in freight volumes is significant and will put increased pressure on the transport network of Gauteng;
- Interventions might be the only way to managing freight transport in Gauteng as well in the CoJ without constraining the economy of Gauteng.

6. Transport System Analysis

The Movement System

Freight operations within the Greater Johannesburg Metropolitan Municipality have evolved substantially over the years. This led to an increase in freight-related transport usage by road, rail and air and an increase in infrastructure usage. According to the freight demand forecasting model, this tendency is expected to continue in future, with increasing volumes of freight moving on the Gauteng network and into the inner city.

In the vast majority of cases, goods are transported by road within the CoJ area, whether these trips are from/to the industrial or major retail areas, the City Deep inland port, the ORTIA or to/from the major routes which provides access to/from Johannesburg.

Road Transport

The CoJ is well served by a number of national roads, as well as well-developed strategic regional arterials. These include, inter alia, the **N1, N3, N12, M1** and **M2** which provide accessibility movement in both an east-west and a north-south direction linking Johannesburg to the metropolitan areas of both Ekurhuleni and Tshwane. The north-south routes are well defined whereas the east-west routes are not as prominent and poorly defined.

Entry/Exit to inner city

•Primary Roads

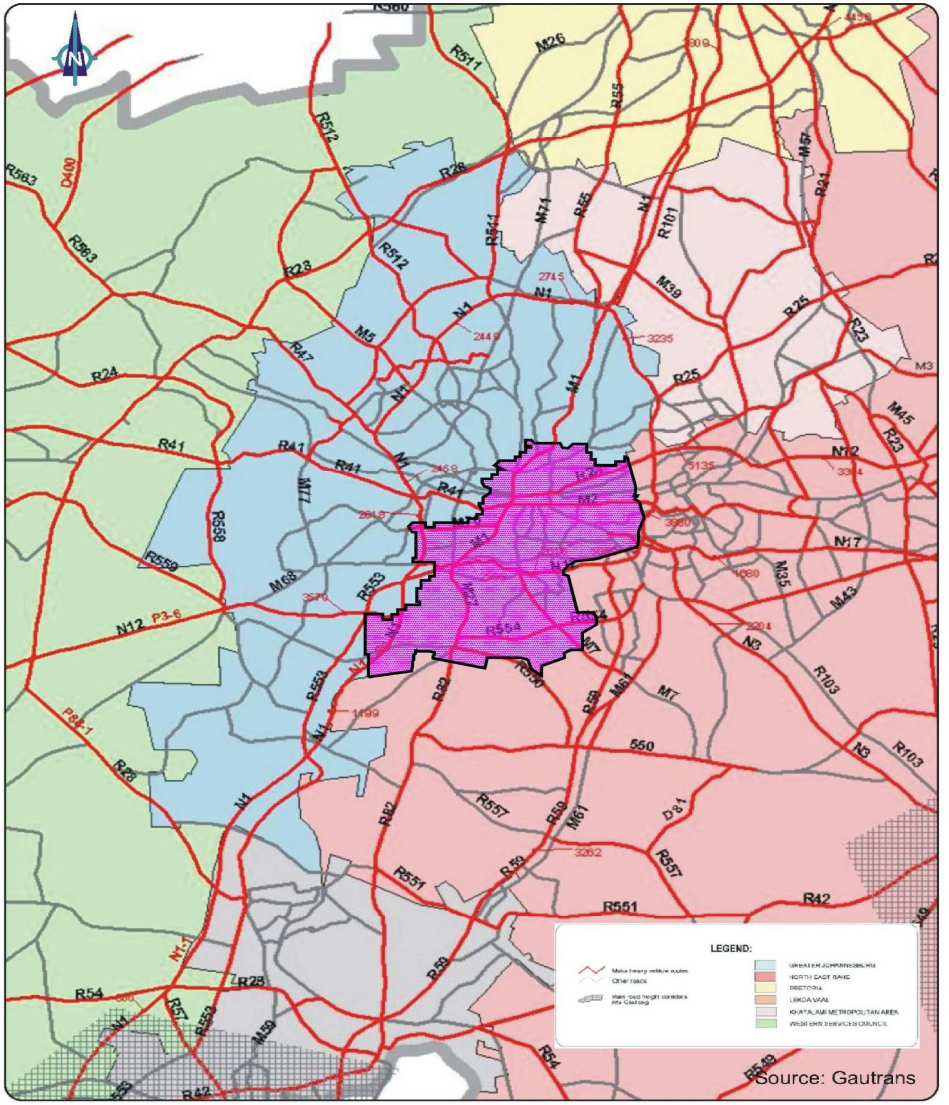
N1, M1, M2, M7, N12/R24 & N17

•Regional Roads

•R59,R82 & R41

Figure 9.1 illustrates major heavy vehicle routes and freight corridors in Gauteng as identified by the Gauteng Provincial Department of Public Transport, Roads and Works. Although the CoJ features in the areas shaded in blue, the inner city, which forms part of the CoJ road network has, for illustration purposes, been highlighted in magenta (with a black border).

Figure 9.1



Rail Transport

- There are 4 railway stations located in the inner city, with Park Station acknowledged as the busiest station.
- Although an extensive railway network traverses the central portion of the inner city in an east-west direction, these stations are passenger stations and do not cater for the handling and distribution of freight.
- The National Freight Logistics Strategy (NFLS) promotes the restoration of rail reliability by means of the building of a ring freight rail around Gauteng province as a means to transform rail in becoming the key component of the transportation chain, this development is not expected to have any impact on rail freight movements into the inner city.
- The reason for this lies in the fact that, although rail is destined to become the chosen mode of transport for freight commodities from coastal ports to inland hubs, railway stations in the inner city serve passenger movements only. Road transport will therefore remain the primary mode for the delivery/collection of freight commodities in the inner city.

Summary of Findings

In light of the previous discussion (section 9.5), the following findings have been derived at:

- According to the findings of the Freight Demand Forecasting Model, increasing volumes of freight will be transported on the Gauteng, and subsequently, the CoJ and inner city road networks in coming years;
- The projected increase in freight volumes is significant and will put increased pressure on the transport network of Johannesburg in future;
- Goods are mostly transported by road on the CoJ network;
- All goods moving into and from the inner city are road-based;
- A number of primary and regional roads allow freight movements into the inner city;
- Railway stations in the inner city accommodate passenger movements only.

City Deep as a Major Freight Hub

Background

- City Deep is an area of concentrated freight movement.
- In terms of carrying on with the Blue IQ project, originally initiated by Gauteng Province, the CoJ has been tasked to continue with the planning and development of City Deep to establish the City Deep node as Southern Africa's prime state-of-the-art trans-shipment freight logistics and distribution hub.
- The majority of freight handled at City Deep are carried on the CoJ road network.
- City Deep lies to the south of Johannesburg CBD and, like the inner city, falls within region F of the CoJ metro.
- City Deep is recognised at the largest freight hub in Gauteng and serves as the centre of specialised import and export traffic via container terminals and depots.
- It houses a number of logistics service providers, cold storage industries and food-processing facilities.
- City Deep consists of 6 precincts, each with their own unique features (refer to table 9.2).

Table 9.2: City Deep Precincts

Precinct	Feature(s)
City Deep Trade Port	• Specialised import and export facilities; • Container terminals and depots; • Cold storage industries; • Logistics service providers
Kazerne	• Transnet Freight Rail goods and marshalling yard; •Transnet Freight Rail container terminals.
Rosherville	• Eskom-owned infrastructure.
Heriotdale	• Mixed commercial and industrial area.
The Market	• Johannesburg Fresh Produce Market; •Network of wholesale and retail activities.
George Goch	• Informal housing squatters; •Mine dumps.

6. Transport System Analysis

Road Transport

- The City Deep area is ideally located in terms of access to freeways (e.g. M2, N17 and N12) but in terms of major arterial roads, only two arterials serve the City Deep area. These arterials are:
  - Heidelberg Road;
  - Vickers Road.
- The above roads tend to become severely congested during certain times of day, thereby retarding movement into the area.
- Of specific importance is **Heidelberg road**, which forms a vital link to the inner city.

(a) Flow of traffic from City Deep to Inner City by Road

- Traffic counts are imperative in determining how traffic flows from City Deep to the inner city.
- As part of the City Deep Study (conducted for the CoJ Transportation Department), a number of AM traffic counts were conducted between 23 and 27 March 2009 throughout the City Deep node.
- These included counts at **intersections** as well as **link counts** on major and minor arterial roads that were carried out during normal weekdays.
- Refer to the separate pdf format figure included on the source CD, named **"Freight Volumes: City Deep".**

From the **N17**, traffic can access the inner city via:

- Intersections 7 and 16 to move along Heidelberg Road;
- From **Heidelberg Road** traffic can either move via **Bonsmara/Chilvers Road** (intersections 17, 18, 19, 5, 4 and 3) or **Vickers/Ruven Road** (intersection 28, 27, 26, 25 and 24) into the inner city;
- Alternatively, traffic can move along Heidelberg Road to enter the inner city at End Street.

From **Heidelberg Road**, traffic can enter the inner city via:

- Intersections 17 and 18 to gain access to **Bonsmara/Chilvers Road** from which the inner city is reached via intersections 19,5, 4 and 3;
- Vickers/Ruven Road via intersections 28, 27, 26, 25 and 24;
- Continue along Heidelberg Road to access the inner city at End Street.

From the **M2 highway**, traffic can access the inner city via:

- Intersections 35 and 36 (Main Reef road/R29);
- Intersection 3 (Chilvers road);
- Intersection 2 (New Goch road);
- Intersection 24 (Ruven road);
- Intersections 9 and 8 (Maritzburg road).

(b) Analysis of Classified Counts

- When assessing the classified counts, it is evident that the following roads carry the highest volumes of traffic during peak hours:
  - Heidelberg Road;
  - Vickers/Ruven Roads
- A limitation of this data is that it does not reflect the composition of traffic (light versus heavy vehicles).
- Table 9.3 outlines the findings of classified traffic counts, conducted in March 2009 at a number of intersections (all which provide access to the inner city) from the M2 highway).
- Table 9.3 shows that the **Ruven/Northern Intersection** had the greatest percentage of heavy vehicles in the traffic stream.
- This once again, illustrates the importance of the Vickers/Ruven Road in terms of heavy vehicle movements.
- The **Maritzburg/Northern Terminal** with its 15.7% heavy vehicle composition is also an important freight transport route.

Table 9.3: Percentage of Heavy Vehicles in the traffic stream

Intersection	Percentage of heavy vehicles in the traffic stream
Ruven/Northern Terminal	24.7%
Ruven/Southern Terminal	13.8%
Maritzburg/Northern Terminal	15.7%
Maritzburg/Southern Terminal	6.1%
Maritzburg/Droste Crescent	8.6%
New Goch/Northern Terminal	5.5%
Chilvers/Southern Terminal	13.7%
Chilvers/Northern Terminal	11.1%

City Deep Rail Network

City Deep is privy to an intricate and vast rail network feeding into both Transnet and private rail sidings. The rail network is well connected to the Durban port as well as to cross border posts.

Most freight trains that feed into the City Deep Container Terminal are running on sections of track developed, maintained and operated by Metro Rail. The rail network runs from west to east across the site and forms a man-made barrier in terms of access to the M2 highway to the north and north-south linkages into the inner city and industrial precincts to the north of the M2.

There are currently between 5 and 6 daily trains to the City Deep area, each carrying 80 to 100 TEUs. In 2008, approximately **150 000 TEUs** were handled at City Deep.

A basic operational review of the TFR terminal shows that the whole system is operating at well below the design capacity of the existing infrastructure and equipment, and that the main constraints are related to operating procedures, management systems and the need to upgrade facilities. Another limitation is that the existing railway infrastructure within City Deep is not ideally suited for intermodal operations (e.g. sidings are not long enough, or don't have sufficient capacity to accommodate full trains).

- **Road versus Rail**

  The largest portion of freight transported into and out of the City Deep area is transported in containers. Of the goods imported by container via South African ports and transported to the City Deep freight hub, approximately 95 percent come through the port of Durban and 5 percent through Port Elizabeth.

- **Inland Container Flows**

  Current estimates put the amount of containers transported from the ports of Durban and Port Elizabeth to the Reef at approximately **640 000** TEUs per annum. The Reef incorporates the old PWV area of Pretoria, Witwatersrand and Vereeniging. Of the 640 000 containers destined for the Reef, approximately:

  – 50% (320 000) of containers are unpacked at Durban and transported by road as loose cargo (break bulk) to the end customers on the Reef;
  – 25% (160 000) TEU's is transported by rail from the ports to City Deep;
  – 25% (160 000) is transported as full containers by road directly to the customers on the Reef, without passing through a container handling facility.

- **Outward Container Flows**

  Current estimated put the amount of containers transported from shipping companies on the Reef to the ports (mostly Durban) at approximately **306 000** TEU's per annum. Of this number approximately:

  – 50% (150 000 TEU's) are currently transported by rail from City Deep to Durban;
  – The other 50% are transported by road.

Current Programmes/Projects at City Deep/Kazerne

Table 9.4, extracted from the Transnet National Infrastructure Plan 2009, provides information on current development initiatives/programmes at City Deep/Kazerne.

From the information in table 9.4 it is deduced that the City Deep and Kazerne programmes have a long-term focus. The focus is on addressing several operating constraints (e.g. efficiency and condition of equipment, working hours) to increase the capacity at these locations in years to come.

Table 9.4: Development Plans – Hubs & Terminals in Gauteng

Programme	Intervention	Motivation	Needed by
City Deep – Phase 1	•Rehabilitate existing terminal equipment; •Upgrade/replace existing terminal infrastructure.	Capacity (460, 000 TEUs pa)	2017
City Deep – Phase 2	•Introduce rubber tyre gantries; •Replace rail mounted gantry cranes.	Capacity (800. 000 TEUs pa)	2021
Kazerne Upgrade – K1	•Retain existing equipment; •Maximize throughput within existing hours.	Capacity (105, 000 TEUs pa)	2009
Kazerne Upgrade – K2b	•24 hour operation; •Higher stacking; •Infrastructure improvement within existing terminal •Extension of terminal operating hours	Capacity (280, 000 TEUs pa)	2023

Freight Transport within the Inner City

Background

Section 9.6 concluded that all freight movements in the inner city are **road based**. It is commonly acknowledged that road freight transport creates a number of problems within cities. In order to determine which freight problems are currently being experienced within the inner city, a number of blocks between Bree Street in the north, Anderson Street in the south, Von Brandis in the east and Simmonds in the west, were observed on a number of occasions during the months of September and October 2009

The following streets (that form part of quadrant 3) were observed:

- Bree;
- Jeppe;
- Kerk;
- Pritchard;
- President;
- Market;
- Commissioner;
- Main;
- Marshall;
- Anderson;
- Von Brandis;
- Eloff;
- Joubert;
- Rissik;
- Harrison.

The observation area was selected on the basis that the abovementioned streets form part of the **RID**, commonly acknowledged as the **main retail area** of the inner city that provides the largest concentration of retail space. In addition to this, the close proximity of Park Station, the largest multimodal transportation destination in Johannesburg, attracts the most feet to this area.

Freight-related Problems/Issues

Section 9.7.2 outlines freight-related problems/issues within the inner city that was identified during the visual observation.

(a)Law Enforcement

Public Taxis

•Public taxis switching vehicle lanes without prior notice (use of indicators);

•Taxis disturbing the flow of traffic by stopping in vehicle lanes to load/off-load passengers;

•Taxis parked at loading/offloading bays reserved for freight vehicles.

Private Vehicles

•Private vehicles driving in dedicated BRT lanes;

•Private vehicles parked in street loading/offloading bays reserved for freight vehicles.

Freight Vehicles

•Double parking of freight vehicles in street to load/offload vehicles.

It thus seems that the issue of disrespect for the law runs across all forms of transport. The JMPD provides law enforcement relating to the operation of heavy vehicles. At present the JMPD is characterised by a shortage of skilled human resources and this limitation allows many violations to go unchecked, since the screening of vehicles cannot be done on a 24-hour basis or effectively over the entire inner city.

Photo 1: Double parking of freight vehicle for loading/offloading

Photo 2: Illegal parking of private vehicle in freight loading/offloading bay

(b) Signage pertaining to Vehicle Weight and Size

Regulations are frequently put in place by urban authorities for safety and environmental reasons to prevent vehicles above a certain weight, size (length or width), or number of axles from using either a particular street or a particular area. Reasons for introducing this type of regulation include:

- A narrow street;
- Overhanging buildings.

No signage, that prohibits heavy vehicle access into the observation area, was noted. In addition signage pertaining to the loading/offloading of heavy vehicles was limited.

(c) On-street loading/offloading

On-street goods vehicle loading bays provide dedicated space for goods vehicles to load and unload and are useful in cases where there is competition for kerbside space between goods vehicles and other street users, as is the case in the inner city. During the observation the following findings were noted:

- The majority of on-street parking is reserved as private vehicle parking;
- On-street goods vehicle loading bays do not always provide sufficient space to efficiently load/off-load bigger freight vehicles (see picture 3);
- The illegal parking of private vehicles in parking bays reserved for goods vehicles (see picture 2);
- Only a few law enforcement officers were notes within the observation area.

Photo 3: Space considerations: On-street goods vehicle loading bay

Photo 4: Goods vehicle loading/offloading – Von Brandis Street

(d) Overloading

Closely linked to vehicle weight and size regulations is the issue of vehicle overloading. Although visual inspections did not reveal any seemingly overloaded heavy vehicles in the observation area, special attention is paid to overloading practices in the CoJ ITP that acknowledges the fact that overloaded vehicles traveling on streets within the CoJ area are contributing, in a major way, to the degradation of the current road infrastructure. It is thus important that overloading control be exercised in the inner city, not only to protect the road network, but also to decrease accidents, that is often the result of premature heavy vehicle brake and tyre failure.

(e) Informal Trading

Street vendors were heavily concentrated on all streets within the observation area and although the presence of street vendors is believed to lower street crime rates, they tend to block walkways and have a negative impact on waste and debris levels.

Despite signage that prohibits informal trade at certain locations within the inner city, these regulations are not always adhered to, once again pointing to insufficient law enforcement practices. The illegal placement of informal trading stands on the kerbside/pavement at heavy vehicle loading/offloading points hinder the efficient offloading of freight vehicles.

Photo 5: Informal Trading – Inner City

Summary of Findings

In light of he observations made during the visual observation, the following findings have been derived at:

The majority of on-street parking bays are private vehicle parking bays;
Other vehicle types (mainly private vehicles) were parked in goods vehicle loading/offloading bays;
The above tendency might be the reason for the observation of heavy vehicles parked in streets to conduct offloading activities, a practice that has obstructed the flow of traffic;
No signage, limiting access for goods vehicles above a certain weight and size to the observation area, was noted;
The placement of informal traders at certain locations within the observation area has obstructed loading/offloading activities and pedestrian movements.

Heavy Vehicle Movements within Inner City

Background

In order to establish heavy vehicle movements within the inner city, classified traffic counts of **100** intersections, within the inner city were analyzed. These counts were undertaken in 2005 by Traffictrans (Pty.) Ltd. and focused on 12 hour turning movements for the following vehicle types:

- Minibus Taxi;
- Public Bus;
- Light Vehicles;
- Heavy Vehicles (assumed to be all vehicles with a double rear axle or a single rear axle with two wheels on both sides).

It should be noted that:

A **qualitative approach** was followed in analyzing the data. No formulas were applied to derive new findings. In addition not all intersections within the inner city were counted, which made it impossible to accurately determine freight vehicle flows within the inner city;
The AM and PM peak period(s) represent the time of morning and afternoon that reflected the highest concentration of heavy vehicle movements over a consecutive 60-minute period.

Intersection movements were used to determine link flows (where all movements recorded at various intersections were transferred to the streets directly following the intersection). For the purpose of this discussion, the movement of heavy vehicles in the following directions were captured:

- North–South;
- South-North;
- East-West;
- West-East.

6. Transport System Analysis

North - South heavy vehicle movements - AM Peak

N ↓ S	M Makeba ↓	Ntemi Piliso ↑↓	Sauer ↑	Simmonds ↓	Harrison ↓	Rissik ↑	Elof ↑↓	Von Brandis ↓	Kruis ↑↓	Von Weilligh ↑↓	Delvers ↑↓	Troye ↑	Polley ↑↓	Moo ↓	Nugget ↑↓	
Noord → ←														4		
De Villiers → ←					***22***											
Gwigwi Mrwebi → ←	0	0		12												
Plein → ←					***20***		0				0				7	
Bree →	8			10					0	6			1	16	6	
Jeppe ←	2	3			**20**		4		0	7					6	
Kerk → ←															6	
Pritchard → ←		3		9						7				6	5	
President →	0	1			15			4							5	
Market →	0						0		5		0			6	4	*Arrows indicate*
Commissioner ←	0	4		7						7	0			5	4	*direction of movement*
Fox ←	0														5	Note: ← Indicate a
Main → ←					0		14		2		0				10	one way street
Marshall →					15			0						5	11	Note: → ← Indicate a
Anderson ←	2	7		7						8				2	9	two way street
Albert →															0	
Durban/Grahamstown ←										18			0	15	0	

Note: Most concentrated (AM peak hour) heavy vehicle movements along **Harrison** road.
Retail Improvement District (RID) shaded in orange.

6. Transport System Analysis

North - South heavy vehicle movements - PM Peak

N ↓ S

	M Makeba ↓	Ntemi Piliso ↑↓	Sauer ↑	Simmonds ↓	Harrison ↓	Rissik ↑	Elo… ↑↓	Von Brandis ↓	Kruis ↑↓	Von Weilligh ↑↓	Delvers ↑↓	Troye ↑	Polley ↑↓	Moo… ↓	Nugget ↑↓
Noord → ←													0	0	
De Villiers → ←	***55***				17										
Gwigwi Mrwebi → ←				***55***											
Plein → ←					19		0				0				3
Bree →	3			***43***					2	8			1	2	1
Jeppe ←	6	1			***23***		1			7					2
Kerk → ←															4
Pritchard → ←				1						5				1	7
President →	0	***23***			***22***			8			0				10
Market →	0						2		5				2	2	7
Commissioner ←	0	4		0						0			7	7	6
Fox ←	0						0								6
Main → ←	0				1		5		7						7
Marshall →	0				15			0					2	2	11
Anderson ←	4	3		1						0			15	15	3
Albert →															0
Durban/Grahamstown ←										2	0		11	11	

Arrows indicate direction of movement

Note: ← Indicates a one way street

Note: → ← Indicates a two way street

Note: Most concentrated (PM peak hour) heavy vehicle movements along **Simmonds** and **Harrison** roads.
Retail Improvement District (RID) shaded in orange.

6. Transport System Analysis

South - North heavy vehicle movements - AM Peak

N ↑ S

	M Makeba ↓	Ntemi Pilis ↑↓	Saue ↑	Simmond ↓	Harrison ↓	Rissik ↑	Elo ↑↓	Von Brandis ↓	Kruis ↑↓	Von Weilligh ↑↓	Delve ↑↓	Troye ↑	Polley ↑↓	Moo ↓	Nugget ↑↓	
Noord → ←												***22***				
De Villiers → ←						13										
Gwigwi Mrwebi → ←			6													
Plein → ←							1					***23***			6	
Bree →			8			17			0						6	
Jeppe ←									4			9			6	
Kerk → ←															8	
Pritchard → ←			3			***23***									7	
President →											0				6	
Market →			7			***23***	3		1			19			7	*Arrows indicate*
Commissioner ←															***20***	*direction of movement*
Fox ←			14			0	1								12	Note: ← Indicates a one way street
Main → ←							2		3			7			0	
Marshall →															14	Note: → ← Indicates a two way street
Anderson ←			***26***												14	
Albert →															18	
Durban/Grahamstown ←									3				17		8	

Note: Most concentrated (AM peak hour) heavy vehicle movements along **Rissik** and **Troye** roads.
Retail Improvement District (RID) shaded in orange.

6. Transport System Analysis

South - North heavy vehicle movements - PM Peak

N ↑ S

	M Makeba ↓	Ntemi Pilis ↑↓	Saue ↑	Simmond ↓	Harrison ↓	Rissik ↑	Elo ↑↓	Von Brandis ↓	Kruis ↑↓	Von Weilligh ↑↓	Delve ↑↓	Troye ↑	Polley ↑↓	Moo ↓	Nugget ↑↓	
Noord ⟶ ⟵																
De Villiers ⟶ ⟵						12										
Gwigwi Mrwebi ⟶ ⟵			7													
Plein ⟶ ⟵							0								7	
Bree ⟶			7			12			1	0		4	0		3	
Jeppe ⟵							0		2	12					5	
Kerk ⟶ ⟵															6	
Pritchard ⟶ ⟵			2			***24***				10					5	
President ⟶															3	
Market ⟶			2			***21`***	***22***		1			12			3	*Arrows indicate*
Commissioner ⟵										7					9	*direction of movement*
Fox ⟵			19				0								5	Note: ⟵ Indicates a
Main ⟶ ⟵							0		3			9			5	one way street
Marshall ⟶															6	Note: ⟶ ⟵ Indicates a
Anderson ⟵			14							6					7	two way street
Albert ⟶															3	

Note: Most concentrated (PM peak hour) heavy vehicle movements along **Rissik** street.
Retail Improvement District (RID) shaded in orange.

6. Transport System Analysis

East - West heavy vehicle movements - AM Peak

W ⟵ E

	M Makeba ↓	Ntemi Pilis ↑↓	Saue ↑	Simmond ↓	Harrison ↓	Rissik ↑	Elo ↑↓	Von Brandis ↓	Kruis ↑↓	Von Weilligh ↑↓	Delver ↑↓	Troye ↑	Polley ↑↓	Moo ↓	Nugget ↑↓
Noord ⟶ ⟵															
De Villiers ⟶ ⟵					**1**										
Gwigwi Mrwebi ⟶ ⟵		2	5												
Plein ⟶ ⟵							1					2			2
Bree ⟶															
Jeppe ⟵	12	7			11		16		14	15		***22***			17
Kerk ⟶ ⟵															6
Pritchard ⟶ ⟵		5	5	8		1				6				7	7
President ⟶															
Market ⟶															
Commissioner ⟵	10	12		11						***51***				***61***	***63***
Fox ⟵	2		4				3								1
Main ⟶ ⟵									13			6			15
Marshall ⟶															
Anderson ⟵	13	19	16	14						***25***				***33***	***28***
Albert ⟶															
Durban/Grahamstown ⟵										1	14		13	12	***24***

Arrows indicate direction of movement

Note: ⟵ Indicates a one way street

Note: ⟶ ⟵ Indicates a two way street

Note: Most concentrated (PM peak hour) heavy vehicle movements along **Commissioner**, followed by **Anderson** and **Jeppe** streets. Retail Improvement District (RID) shaded in orange.

6. Transport System Analysis

East - West heavy vehicle movements - PM Peak

W ⟵ E	M Makeba ↓	Ntemi Pilis ↑↓	Saue ↑	Simmond ↓	Harrison ↓	Rissik ↑	Elo ↑↓	Von Brandis ↓	Kruis ↑↓	Von Weilligh ↑↓	Delver ↑↓	Troye ↑	Polley ↑↓	Moo ↓	Nugget ↑↓	
Noord ⟶ ⟵														0		
De Villiers ⟶ ⟵					**1**	1										
Gwigwi Mrwebi ⟶ ⟵			0	1												
Plein ⟶ ⟵															2	
Bree ⟶																
Jeppe ⟵	17	***22***			***27***		15		15	12		11			9	
Kerk ⟶ ⟵																
Pritchard ⟶ ⟵		4	5	7		3				8				2	2	
President ⟶																
Market ⟶					0	0	0									
Commissioner ⟵	***31***	***31***		10						***44***				***45***	***49***	*Arrows indicate*
Fox ⟵			7												1	*direction of movement*
Main ⟶ ⟵									5			3			4	Note: ⟵ Indicates a one way street
Marshall ⟶																
Anderson ⟵	7	8	10	8						15				***30***	***23***	Note: ⟶ ⟵ Indicates a two way street
Albert ⟶																
Durban/Grahamstown ⟵										0	7		8	5	9	

Note: Most concentrated (PM peak hour) heavy vehicle movements along **Commissioner,** followed by **Anderson** and **Jeppe** streets. Retail Improvement District (RID) shaded in orange.

6. Transport System Analysis

West - East heavy vehicle movements - AM Peak

W ⟶ E

	M Makeba ↓	Ntemi Pilis ↑↓	Saue ↑	Simmond ↓	Harrison ↓	Rissik ↑	Elo ↑↓	Von Brandis ↓	Kruis ↑↓	Von Weilligh ↑↓	Delver ↑↓	Troye ↑	Polley ↑↓	Moo ↓	Nugget ↑↓
Noord ⟶ ⟵												4			
De Villiers ⟶ ⟵					2	4									
Gwigwi Mrwebi ⟶ ⟵			2	0											
Plein ⟶ ⟵					2		7					2			
Bree ⟶	8		11	12		13			***25***	8			3	2	2
Jeppe ⟵															
Kerk ⟶ ⟵															1
Pritchard ⟶ ⟵			2	3		1				8				1	3
President ⟶	4	4			7			9			5				2
Market ⟶	16		6			5	6		7			13		11	14
Commissioner ⟵															
Fox ⟵															
Main ⟶ ⟵					1	1	1		3			4			9
Marshall ⟶	5				16			15						5	2
Anderson ⟵															
Albert ⟶						0	3								5
Durban/Grahamstown ⟵															

Arrows indicate direction of movement

Note: ⟵ Indicates a one way street

Note: ⟶ ⟵ Indicates a two way street

Note: Most concentrated (PM peak hour) heavy vehicle movements along **Market** and **Bree** streets.
Retail Improvement District (RID) shaded in orange.

6. Transport System Analysis

West - East heavy vehicle movements - PM Peak

W → E	M Makeba ↓	Ntemi Pilis ↑↓	Saue ↑	Simmond ↓	Harrison ↓	Rissik ↑	Elo ↑↓	Von Brandis ↓	Kruis ↑↓	Von Weilligh ↑↓	Delver ↑↓	Troye ↑	Polley ↑↓	Moo ↓	Nugget ↑↓
Noord → ←														2	
De Villiers → ←					***8***	0									
Gwigwi Mrwebi → ←			1												
Plein → ←					***3***		8					0			0
Bree →	***21***		***25***	***25***		***27***			***28***	***25***			***21***	***44***	10
Jeppe ←															
Kerk → ←															1
Pritchard → ←			6	7		3				6				7	6
President →	5	10			8			4			10				2
Market →	16		***28***			11	11		11			***42***		***38***	***56***
Commissioner ←															
Fox ←															
Main → ←					0	0	***20***		10			2			9
Marshall →	16				***23***			13						3	5
Anderson ←															
Albert →						4	1								4
Durban/Grahamstown ←															

Arrows indicate direction of movement

Note: ← Indicates a one way street

Note: → ← Indicates a two way street

Note: Most concentrated (PM peak hour) heavy vehicle movements along **Market** and **Bree** streets.
Retail Improvement District (RID) shaded in orange.

Light versus Heavy Vehicle Movements

The classified traffic data of Traffictrans revealed that light vehicles (e.g. private vehicles and light delivery vehicles below 3 ton) constitute the greatest percentage of total vehicle movements within the inner city.

When comparing light vehicle movements with heavy vehicle flows it becomes clear that heavy vehicles constitute only a small percentage of light and heavy vehicle movements, as portrayed in tables 9.5 to 9.9 below. If public bus and minibus taxi movements were taken into account, the percentage of heavy vehicles within the traffic stream would even be lower

Table 9.5: Light versus Heavy Vehicle Movements – All Movements (AM and PM Peak)

Total Light and Heavy Vehicle Movements - AM & PM Peak		
Light	Heavy	% Heavy
39664	972	2.4

Table 9.6: North-South Movements – AM & PM peak

North-South Movement: Light versus Heavy Vehicle Movements - AM Peak						
↓	Harrison ↘			Von Wielli… ↘		
	Light	Heavy	% Heavy	Light	Heavy	Heavy
De Villiers → ←	1084	22	2.0			
Plein → ←	1017	22	2.1			
Jeppe ←	1481	31	2.1			
Durban/Grahamstown ←				1063	36	3.3

North-South Movement: Light versus Heavy Vehicle Movements - PM Peak						
↓	Simmonds ↘			Harrison ↘		
	Light	Heavy	% Heavy	Light	Heavy	Heavy
Bree →	2356	68	2.8			
Jeppe ←				1481	50	3.3
President →				1403	30	2.1

Table 9.7: South-North Movements – AM & PM peak

South-North Movement: Light versus Heavy Vehicle Movements - AM Peak						
↑	Sauer ↖			Rissik ↖		
	Light	Heavy	% Heavy	Light	Heavy	Heavy
Anderson ←	1756	42	2.3			
Pritchard → ←				2189	24	1.1
Plein → ←						

South-North Movement: Light versus Heavy Vehicle Movements - PM Peak						
↑	Rissik ↖			Eloff ↖↘		
	Light	Heavy	% Heavy	Light	Heavy	Heavy
Pritchard → ←	2189	30	1.4			
Market →	2387	32	1.3	1250	35	2.7

Table 9.8: East-West Movements – AM & PM Peak

East-West Movement: Light versus Heavy Vehicle Movements - AM Peak						
←	Mooi			Nugget		
	Light	Heavy	% Heavy	Light	Heavy	Heavy
Commissioner ←	2441	66	2.6	2915	87	2.9
Anderson ←	1825	35	1.9			

East-West Movement: Light versus Heavy Vehicle Movements - PM Peak						
←	Mooi			Nugget		
	Light	Heavy	% Heavy	Light	Heavy	Heavy
Commissioner ←	2108	52	2.4	1977	64	3.1
Anderson ←	1592	45	2.7			

Table 9.9: West-East Movements – AM & PM Peak

West-East Movement: Light versus Heavy Vehicle Movements - AM Peak						
→	M Makeba			Kruis		
	Light	Heavy	% Heavy	Light	Heavy	Heavy
Bree →				471	25	5.0
Market →	1490	24	1.6			

West-East Movement: Light versus Heavy Vehicle Movements - PM Peak						
→	M Makeba			Kruis		
	Light	Heavy	% Heavy	Light	Heavy	Heavy
Bree →	1502	46	3.0			
Market →	1507	40	2.6	2180	66	2.9

Summary of Findings

In light of the data set out in the previous tables, the following qualitative findings were derived at:

- Freight movements within the inner city represent a very small percentage (less than 3%) of total vehicle movements;
- In light of the above findings, heavy vehicle traffic does not seem to present a major problem to general traffic flows in the inner city;
- Given the low percentage of heavy vehicles in the traffic stream, it is unlikely that freight vehicles use the CBD as a thoroughfare, but rather to reach final destination points,
- Light vehicle flows have a much larger effect on traffic flows in the inner city than heavy vehicle traffic;
- Given the fact that railway stations within the inner city cater for passenger traffic only, it is unlikely that freight collections/deliveries in the inner city will be performed by this mode of transport in future;
- Given the relatively high concentration of freight movements in Market and Commisioner streets (that serve as trunk BRT streets), it is possible that freight movements and deliveries within these streets will be negatively influenced by the BRT system;
- In light of the above finding, alternative routes for traffic moving in an east-westerly and west-easterly direction have to be prioritized and promoted.

In the next section, more light will be shed on the impact of the BRT system on freight movements in the inner city.

Impact of BRT on Freight Vehicle Movements

Background

The Bus Rapid Transit (BRT) system, or Rea Vaya, is a public transport system that aims to combat congestion and improve the quality of public transport in the COJ. It will make use of dedicated lanes on selected streets for high tech public buses, complemented by smaller complementary buses operating on BRT routes without dedicated lanes, feeding commuters into the trunk routes.

A number of BRT stations is currently being developed and it is expected that the full phase 1A will be completed ahead of the 2010 Soccer World Cup. The BRT system is expected to fulfil a key role in the convenient movement of spectators between soccer destinations during the 2010 Soccer World Cup tournament. Further phases will be constructed in a step-by-step manner, with the full phase 1 expected to be completed by 2013 (refer to map 1).

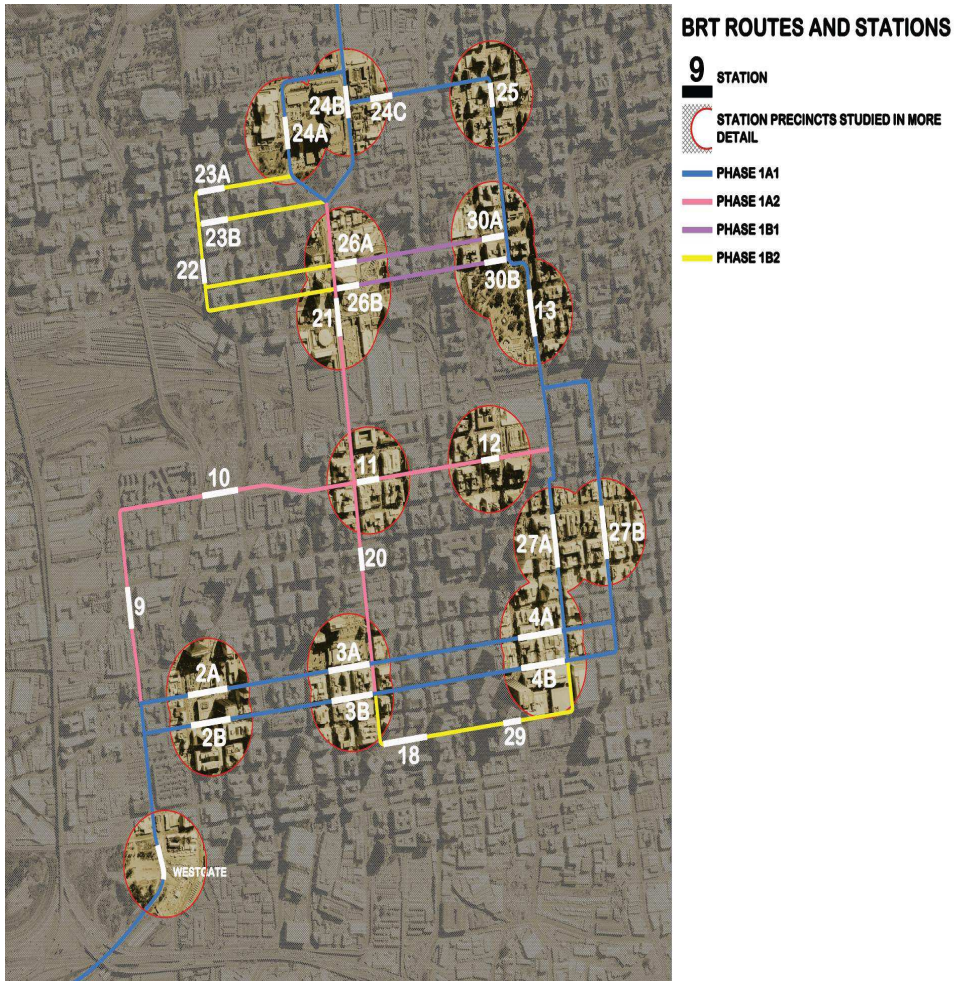
Section 9.8 identified the following streets as important in terms of heavy vehicle movements:

Market;
•Troye;
•Commissioner;
•Rissik;
•Simmonds;
•Harrison;
•Anderson;
•Jeppe;
•Bree.

In light of the BRT route prioritization, it becomes evident that the operation of BRT services could influence the ease of freight movements and associated activities (e.g. loading/offloading) in the following streets:

•Market;
•Troye;
•Commissioner;
•Rissik (Rissik Street forms part of phase 1A2 and has not yet been developed into a BRT route)

Map 1: BRT Routes and Stations



Observation of Heavy Vehicle Movements in BRT Streets

Heavy vehicle movements along Market and Commissioner streets were observed in October 2009. Both streets are vehicle dominated one-way streets that have four vehicle lanes each. The middle two lanes are taken up by the BRT system, while the remaining lanes (on the left and right hand side) of both streets are allocated to other vehicles types – a development that will most likely have a negative impact on the flexibility of vehicle movements along Market and Commissioner streets.

The observation was made that retail activities are more concentrated between the Library Gardens Trunk Station (corner of Market/Rissik and Commissioner/Rissik streets) and the Carlton Trunk Station (corner Market/Von Weilligh and Commissioner/Von Weilligh) where small-scale and micro shops are complemented by bigger well-known outlets, such as Woolworths, Truworths, Jet, Bradlows, Russels and Geen & Richards. The Small Street Mall is also located in this area. Various LDV's were noted in Market and Commissioner streets. These vehicles probably serve the smaller retail stores located along both streets

During the observation exercise, the following tendencies were noted:

(a) On-Street Parking

- The majority of on-street parking bays are private vehicle parking bays;
- On-street goods loading/offloading bays are scarce and unevenly spread along Market and Commissioner streets;
- Many goods loading bays were occupied by private vehicles, for long duration parking and not deliveries;
- The stopping and offloading of heavy vehicles in the street;
- On-street parking bays have been removed opposite the BRT stations;
- Goods vehicle offloading activities were noted in Kruis, Von Brandis and Von Weilligh streets. These streets are narrow and due to space limitations not ideally suited for loading/offloading activities.

Photo 6: Illegal parking of private vehicle in goods loading/off-loading bay

(b) Informal Traders

The location of informal trading stalls opposite on-street goods loading/offloading bays tend to block walkways, thereby hindering the efficient and speedy loading/offloading of heavy vehicles.

(c) BRT Trunk Stations

Despite the fact that on-street parking and associated activities (loading/offloading) have been removed alongside BRT trunk stations, disrespect for the law is noted in picture X below. Picture X shows the offloading of a goods vehicle in a vehicle lane at the Chancellor House Trunk Station.

Photo 7. Informal Trade opposite a Goods Vehicle Loading Bay

Photo 8. Illegal parking adjacent to BRT, for goods loading/off-loading

Picture 9: Private Vehicle Flows in BRT Lanes

Picture 10: Heavy Vehicle Movement in BRT Lane

Summary of Findings and Conclusions

- Since dedicated BRT lanes have reduced the flexibility of vehicle movements on BRT streets, it is possible to assume that the BRT system will have a negative impact on heavy vehicle flows on BRT streets;
- In order to relieve traffic pressure in Market and Commissioner streets, the following options should be explored:
  - **Option 1**
    - Redirect heavy vehicle movements from Market and Commissioner onto the following one-way streets:
      - From Commissioner to Anderson and/or Jeppe streets (these streets follow the same east-westerly flow as Commissioner);
      - From Market to President and/or Marshall stets (both streets follow the same west-easterly flow as Market).
  - **Option 2**
    - Remove all on-street parking along Market and Commissioner to improve the flow of traffic.
- Anderson, Jeppe, President and Marshall streets are not earmarked as trunk BRT streets which implies that no vehicle lanes along these streets will be reserved for the exclusive use of BRT buses;
- Law enforcement has to be tightened to ensure that illegal practices are addressed;
- The possibility of reserving off-street parking space in existing parking facilities/parkades and malls (e.g. Small Street Mall) should be investigated.

Road Freight Transport Solutions – Inner City

A number of freight transport issues and problems that are applicable to Johannesburg's inner city were identified and discussed in section 9.7 of this report. In order to address these freight transport issues, appropriate solutions are required. These solutions are based on acceptable international approaches that are applied to urban transport problems. Approaches to heavy vehicle problem areas in the inner city are set out in table 9.10 below.

Table 9.10: Road Freight Transport Solutions – Inner City

Freight Issue	Problem Description	Objective of Solution	Typical Solution	Applicability to Jozi
1. Network Management Problem	BRT buses constrain the movement of freight vehicle flows	Improving journey time	• Road restrictions; • Time restrictions; • Dedicated freight lanes/streets	Road and time restrictions seem applicable to Jozi but require further investigation. The low percentage of heavy vehicles in the traffic stream does not justify dedicated freight lanes/streets at present.
		Redirect freight traffic through alternative streets	• Identify alternative freight streets	This approach seems applicable to Jozi
		Improve traffic flows	• Remove all on-street parking bays along trunk BRT streets to improve vehicle flows	This approach seems applicable to Jozi but has the potential to further limit the offloading of heavy vehicles

Table 9.10: Road Freight Transport Solutions – Inner City (cont)

Freight Issue	Problem Description	Objective of Solution	Typical Solution	Applicability to Jozi
2. Insufficient parking provision	Insufficient number of on and off-street goods vehicle loading/offloading bays and uncoordinated parking and deliveries	Improve the efficiency of heavy vehicle loading/offloading	• Increase/expand the number and width of on and off-street loading bays for freight vehicles	Although applicable, a lack of space in the CBD would hinder the implementation of this solution
		Improve parking control	• Improved law enforcement	Applicable, the enforcement of regulations applicable to parking, could be a low cost, quick win solution
		Assist relevant stakeholders with coordination of deliveries and collections	• Urban consolidation centers or logistics hubs	Not applicable to the inner city situation
		Relocation of retail outlets	• Shift retail outlets to less congested areas	This is a long-term and costly approach – not applicable to the inner city, contrary to the current urban regeneration initiatives

Table 9.10: Road Freight Transport Solutions – Inner City (cont)

Freight Issue	Problem Description	Objective of Solution	Typical Solution	Applicability to Jozi
3. Law enforcement	Disrespect for the law in terms of parking violations, illegal placement of informal trading stands and street damage as a result of overloading	Reduce street maintenance costs	• Overload control • Road restrictions	These approaches are applicable to Jozi, any improvement on outer city overload control will have a positive effect on inner city street maintenance costs
		Reduce damage to transport infrastructure	• Road restrictions	Are applicable to the inner city, especially to certain classes of heavy vehicles. This issue require further investigation
		Increase law enforcement	• Construct overload control facilities (HSWIM stations)	Highly applicable to Jozi but the installation of overload control facilities may be costly

Table 9.10: Road Freight Transport Solutions – Inner City (cont)

Freight Issue	Problem Description	Objective of Solution	Typical Solution	Applicability to Jozi
4. Stakeholder consultation	Uncoordinated stakeholder engagement	Gaining freight industry support for freight strategies and initiatives	• Freight transport partnerships	Applicable, this initiative should be linked to the current initiative of establishing a Provincial Freight Forum
		Intergovernmental coordination	• Freight transport partnerships	Refer to the above

Table 9.10: Road Freight Transport Solutions – Inner City (cont)

Freight Issue	Problem Description	Objective of Solution	Typical Solution	Applicability to Jozi
5. Traffic Management	Constrained movement of freight vehicle flows	Improve freight vehicle flows	• Road restrictions •Time restrictions for heavy vehicles • Night deliveries	Street restrictions require further investigation. The issue of night deliveries is probably not a viable option for the foreseeable future
	Scarcity of signage directing heavy vehicle movements	Improving journey time reliability of freight vehicles	• Dedicated freight streets/lanes	At present freight volumes in the inner city do not justify designated streets or lanes for freight vehicle movements
6. Planning and Financing Issues	Funding constraints	Increased funding available for street infrastructure improvements	• Reprioritize capital budget allocations • Revisit IDP/ITP •Alternative sources of funding	Applicable, but require further investigation

From table 9.10 it is deduced that some of the typical solutions to the freight problems are more applicable to Jozi than others, while other approaches require further investigation.

Conclusions

This report addresses freight-related problems in the inner city of Johannesburg from which the following is concluded:

- All goods moving into and from the inner city are road-based;
- Rail movements are limited to the City Deep area only. Rail has no role to play in alleviating the freight-related problems in the inner city, which limits possible solutions (e.g. intermodal) to road-based solutions only;
- The layout of the inner city (narrow streets, closely spaced intersections) adds to traffic flow problems more so with the increase in traffic volumes experienced in the inner city over a period of several decades;
- According to freight demand forecast estimates, approximately sixteen percent of projected Gauteng freight volumes is destined for the Johannesburg inner city;
- The abovementioned volumes include freight originating from and destined for City Deep;
- Based on the projected volumes alone, the potential for freight-related traffic problems in the inner city is obvious, especially given the layout situation;
- Traffic counts indicate that heavy vehicles account for less than three percent of all vehicle movements in the inner city;
- The above finding implies that freight-related problems experienced in the inner city are not primarily caused by heavy vehicles;
- It seems as if heavy vehicles do not use the inner city streets as a thoroughfare;
- LDV's have a more marked influence on the traffic flows in the inner city and are used for the majority of deliveries in the inner city;
- Given the situation that private vehicles tend to park on street loading zones, coupled with the relatively low provision of loading zones, LDV's have actually not choice but to engage in traffic flow obstruction practices;
- While it is contended that LDV's are the main cause of freight-related traffic problems, their impact is exacerbated by the unavailability of on-street and off-street loading and unloading facilities,
- The situation may be worse in those streets where the BRT system has been implemented as there is a reduction in vehicle lanes.

Recommendations

Recommendations pertaining to the inner city freight issues are summarized in table 9.11.

Table 9.11 provides for two categories of freight interventions namely:

•Quick Wins and;

•Longer term solutions/projects

Quick win projects deal with those aspects that can be implemented with relative ease over a short period of time and in some cases with a minimal budget whereas long term solutions deal with more cost intensive projects that need to be designed over a longer period. Greater priority should be given to quick win projects that can yield results over the short term.

Table 9.11: Intervention Plan for Inner City Freight Problems

		Freight Intervention/Solution	
Category	**Freight Problem**	**Quick Win (Short-term)**	**Medium/Long-term**
Road Network	BRT buses constrain the movement of freight vehicles	• Road restrictions (freight street bans)	• Dedicated freight streets • Remove all on-street parking bays along trunk BRT streets
Parking	Insufficient number of on and off-street loading/offloading bays for goods vehicles	• Re-allocation of private vehicle parking bays to goods vehicle loading bays • Allocate more resources to JMPD • Enforce parking regulations, especially regarding the parking of private vehicles on loading zones	• Securing off-street loading space in existing parking facilities and retail malls •Develop a comprehensive parking policy/strategy
Law enforcement	Disrespect for the law	• Allocate more resources to JMPD • Launch a law enforcement campaign to ensure compliance with parking regulations	• Road restrictions • Construct overload control facilities

Table 9.11: Intervention Plan for Inner City Freight Problems (cont)

		Freight Intervention/Solution	
Category	**Freight Problem**	**Quick Win (Short-term)**	**Medium/Long-term**
Stakeholder consultation	Uncoordinated stakeholders engagement	• Establish Freight Transport Partnerships	
Traffic Management	Heavy vehicle flow problems, scarcity of signage to direct heavy vehicle flows	• Signage directing heavy vehicle movements • Law enforcement	• Road restrictions • Time restrictions for heavy vehicles
Planning and financing issues	Funding constraints		• Secure alternative sources of funding