CITY OF CAPE TOWN
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POLICY

TRAVEL DEMAND MANAGEMENT STRATEGY FOR THE CITY OF CAPE TOWN (POLICY NUMBER 53760)

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TRAVEL DEMAND MANAGEMENT STRATEGY FOR THE CITY OF CAPE TOWN

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TDA CAPE TOWN
The City of Cape Town's Transport and Urban Development Authority

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Abbreviations / Acronyms

2013 HHTS	2013 Household Travel Survey
BMT	Bus & Minibus Taxi
BRT	Bus Rapid Transit
CBD	Central Business District
CITP	Comprehensive Integrated Transport Plan: 2013 - 2018
CWW	Compressed Work Week
DoE	Department of Education
ETRP	Employee Trip Reduction Programme
FWC	FIFA World Cup
FWP	Flexible Working Programme
GTP	Green Travel Plan
HH	Household
HOV	High Occupancy Vehicle
HR	Human Resources
IDP	Integrated Development Plan
IPTN	Integrated Public Transport Network
ITS	Intelligent Transport Systems
IZS	Integrated Zoning Scheme
KPA	Key Performance Area
NLTA	National Land Transport Act (Act 5 of 2009)
NMT	Non-Motorised Transport
P&R	Park and Ride
PT	Public Transport
PTS	Public Transport System
SOV	Single Occupant Vehicles
SPUD	Spatial Planning & Urban Design
TAZ	Transport Analysis Zone
TBCF	Travel Behaviour Change Framework
TCT	Transport for Cape Town
TDA	Transport and Urban Development Authority
TDI	Transport Development Index
TDM	Travel Demand Management
TIC	Transport Information Centre
TMC	Transport Management Centre
TOD	Transit Oriented Development
VKT	Vehicle Kilometres Travelled
WCG	Western Cape Government

EXECUTIVE SUMMARY

Historically, central business districts and urban agglomerations in general became necessary to bring people together in the same physical space to work and to do business together. This modus operandi persists today despite immense changes in technology and the way business is conducted. Because of the nature of these areas, rapid motorisation and growth in population, and a lack of substantial investment in the capacity of the public transport system in the majority of South African cities like Cape Town are experiencing levels of congestion to such an extent that in 2013, the TomTom global traffic index revealed that Cape Town is the most congested city in South Africa, with a global ranking at 55th place. The survey also revealed that motorists are spending 71% more time than they would do in free-flowing traffic in the peak period.

The time spent in our twice daily commute and expense incurred is therefore a luxury we can ill-afford – it is stressful, and results in levels of harmful emissions that contribute both to local air pollution and climate change.

In recognition of these issues, a study to develop a congestion management programme was undertaken by the Transport and Urban Development Authority for Cape Town (TDA) to identify 'hot-spots' and to determine the level and extent of congestion in the city and funding required for infrastructural interventions to address key problem areas. A summary of the study and its findings were presented at a Congestion Summit hosted by the Executive Mayor of the City of Cape Town (hereafter referred to as the City) on 4 November 2015. The aim of the Summit was to discuss and identify integrated and collaborative approaches to congestion in Cape Town. Delegates that attended identified three main approaches to tackle congestion: infrastructural; behavioural and operational and provided their thoughts on appropriate tools that could be used by the City within these categories to assist in relieving the congestion problems currently being experienced in Cape Town. Particular outcomes from these conclusions have been incorporated herein as follows.

Travel Demand Management, or TDM as it is commonly referred to, encompasses a range of techniques that (normally working in conjunction with each other) aim to manage the movement of people to better make use of existing capacity and infrastructure and promote more sustainable choices rather than building new infrastructure primarily to accommodate private vehicles at great cost.

The focus of this TDM Strategy is therefore on the 'Behaviour' component of the congestion management approaches identified in the Congestion Summit. It is aimed at the adaption of travel behaviour and habits to achieve modal shift and to better utilise the available capacity in our overall transport system.

TDM is a core component of the City's Comprehensive Integrated Transport Plan 2013-2018 (CITP) as it describes how to balance demand for travel with the supply of transport infrastructure and operational capacity of all modes, which is essential to reaching the objectives of an integrated transport system.

Historically, in 2006, an approach to TDM was adopted by the City. It laid the groundwork for projects relating to the promotion of public transport and higher occupancy in vehicles. This included the implementation of rail park and ride facilities, the development of an Employee Trip Reduction Programme (ETRP) and raising awareness of TDM. The work undertaken led to several successes and lessons learnt which have been incorporated into this Strategy.

Guided by theory and the lessons learnt, the strategic framework for this Strategy has been developed using decision elements associated with behaviour change, an indication of decision enablers to target and from these, which decisions require targeting.

The need for, and due cognisance of, sustainability of the transport system is ingrained within all of TDA's work and therefore this Strategy is not alone in its aim of achieving a more sustainable transport system - many other related and synergetic programmes are already underway in TDA and are captured in the CITP 2016 Review. The decision to adopt the interventions proposed therefore excludes these programmes and is based on the following.

TDM measures and interventions that are aimed at changing an individual's travel behaviour, usually from the use of single occupancy vehicle's (SOV) to more sustainable modes of transport, reduce travel demand, especially in the peak, are therefore promoted in this strategy. The success of these actions will reduce the demand for additional road space, make the use of existing infrastructure more efficient as well as reduce transport's energy usage and thus emissions due to transport. From the mandate set by the CITP, this TDM Strategy proposes the detailed consideration of five key strategies namely: Flexible Working Programme; High Occupant Vehicle Priority Strategy; expanded Park and Ride at Rail and Bus Station programme; Parking Cash-out Strategy and a more Comprehensive Marketing and Communications Campaign.

The proposed Strategy will be executed by following the actions proposed under each main intervention. The approach to be undertaken is to implement all possible actions simultaneously as the published literature indicates that TDM measures are not mutually exclusive and that they are more effective when implemented in conjunction with other measures and as part of an integrated package. Further, certain measures need to be supported by others to be effective, or to help 'lock-in' benefits achieved. This appreciation is incorporated in the Action and Implementation Plan which, although developed through a prioritisation model, allows for a more detailed consideration and delivery of the proposals within time frames aligned to TDA's long term strategy.

In terms of the anticipated levels of success of the strategies proposed, the literature and experience of the previous TDM programmes indicates that there is a degree of variability in the relative successes of each strategy and even individual measures because baseline conditions, socio-economic factors, enforcement levels/type and other conditions influence outcomes and results. It is therefore essential that this Strategy is heuristic in nature and therefore reviewed regularly - a five-year review and update is proposed to keep it in line with the CITP.

Appropriate metrics and data collection regimes are therefore important in measuring outcomes and are proposed in the monitoring and evaluation plan.

1 INTRODUCTION

1.1 Background

Historically, central business districts and urban agglomerations in general became necessary to bring people together in the same physical space to work and to do business together. This modus operando persists today despite immense changes in technology and the way business is conducted. Because of the nature of these areas, rapid motorisation and growth in population, and a lack of substantial investment in the capacity of the public transport system over the last few decades, the majority of South African cities have suffered from a lack of substantial investment in the capacity of the public transport system. This has resulted in an overreliance on the private car and, allied with a rapid growth in its population, cities like Cape Town are have experiencing a rapid increase in levels of car ownership and rising levels of congestion[1] to such an extent that - in 2013, the TomTom global traffic index revealed that Cape Town is the most congested city in South Africa, with a global ranking at 55th place. The survey also revealed that motorists are spending an extra 71% more time than they would do of their time in free-flowing traffic in the peak period.

The time spent in our twice daily commute and expense incurred is therefore a luxury we can ill-afford – it is stressful, and majority of this congestion is caused by vehicles with single occupants (approximately 80% of the total in the peak travelling to the CBD) and results in increased levels of harmful emissions that contribute both to local air pollution and climate change.

In recognition of these issues, a Congestion Study to develop a congestion management programme was undertaken by the City in order to identify 'hot-spots' and to determine the level and extent of congestion in the city and funding required. This process led to an initial allocation of funds to infrastructural interventions to address key problem areas. A summary of the study and its findings were presented at the Congestion Summit which was hosted by the Executive Mayor of the City of Cape Town on 4 November 2015. The aim of the Summit was to discuss and to identify integrated and collaborative approaches to address congestion in Cape Town. Delegates that attended identified three main approaches available to tackle congestion - infrastructural; behavioural and operational (illustrated in Figure 1-1) and provided their thoughts on appropriate tools that could be used by the City within these categories to assist in relieving the congestion problems currently being experienced in Cape Town. Particular outcomes from these conclusions have been incorporated herein as follows.

[1] Traffic congestion is defined as a state when vehicles travel at slower speeds than posted limits on transport networks because there are more vehicles than the network can handle

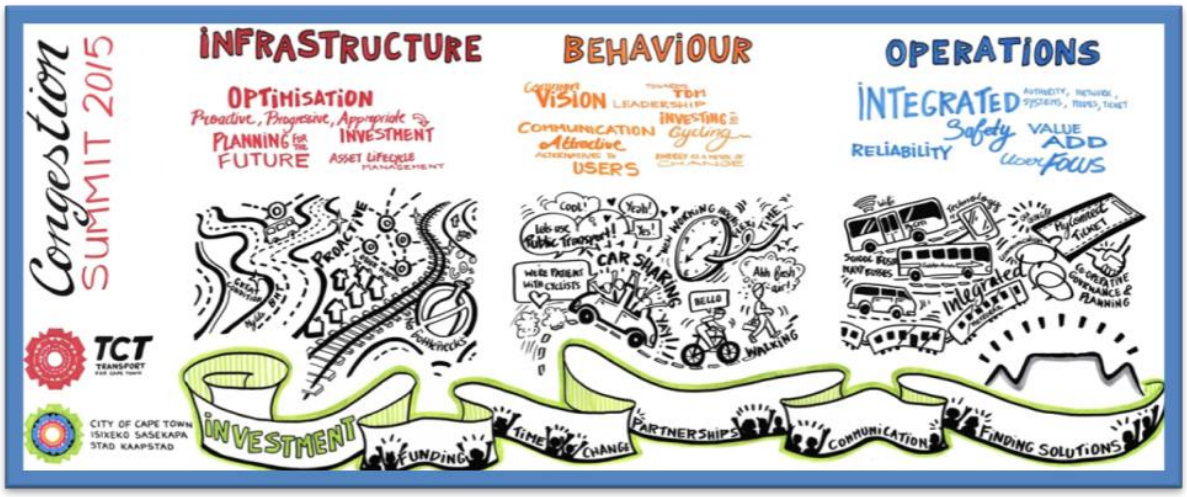

Figure 1-1: Schematic of the streams related to Congestion Management

As well as raising the public's awareness of the transport issues faced in and by the city, the key outcome from the Summit were the confirmation of the direction undertaken by the Congestion Management Programme developed though the Study – that dealing with congestion required a multi-facetted approach including actively managing travel demand by implementing programmes that improve occupant efficiency, reduce the number and/or length of trips and optimise the use of existing transport assets (see reference 18).

Travel Demand Management, or TDM as it is commonly referred to, encompasses a range of techniques that (work individually or in conjunction with each other) aim to manage the movement of people to better make use of existing capacity and infrastructure and promote more sustainable choices rather than building new infrastructure primarily to accommodate private vehicles at great cost. As implied in the diagram below, TDM is about trying to change people's mind-set from thinking the car is the only available option to better understanding and considering their other options. TDM is therefore one of the solutions that is key to sustainable growth in, and management of the city.

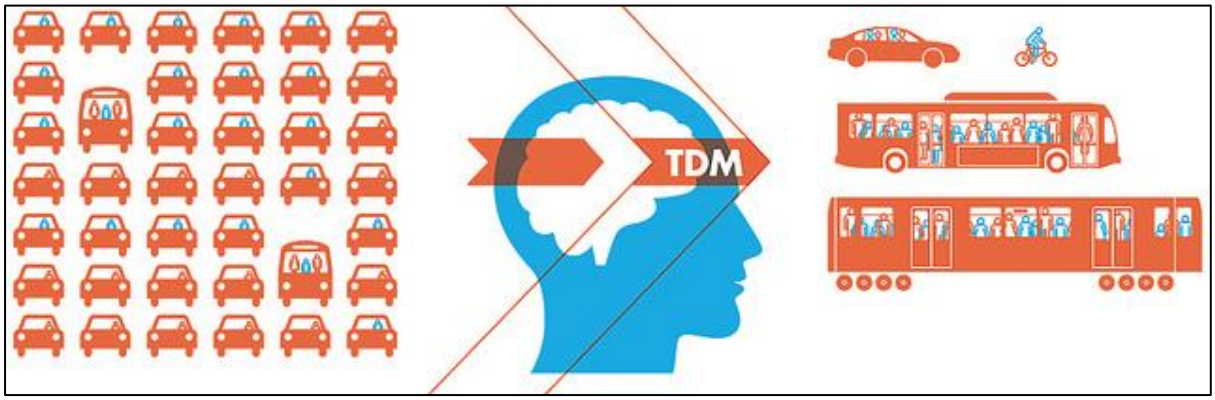

Figure 1-2: TDM Infographic

(Source: Metropolitan Planning Council)

The focus of this TDM Strategy is on the 'Behaviour' component of the Congestion Summit.

1.2 Problem Statement

Like in many other parts of the world Cape Town developed transport systems in favour of the car. Road and parking space was created to meet demand for travel, but at a price to users that was well below the long term environmental and economic cost of the transport

system. Micro-economic theory describes how demand will soar in an over-supply or low cost environment. The same period saw a substantial lack of investment in capacity of the public transport system, which resulted in an under-supply for travel in this mode. In addition, the spatial development of Cape Town is characterised by highly segregated land uses developed at exceedingly long distances from each other, which in many cases renders non-motorised modes ineffective for the vast majority of trips, as well as created a one-way tidal flow of traffic in peak periods.

This spatially inefficient city is also faced with increasing levels of car ownership[2] and use (mostly single or low occupancy uses in one direction in the peak), while road capacity has remained relatively constant in recent years, mainly due to physical and financial constraints. This imbalance between growth in travel demand and infrastructure supply has caused deterioration in congestion levels in the peak periods of working days, especially on the City's arterial routes, to between 2-4 hours. Consequently, travel times are long and at low speeds during the peaks.

Largely because of the spatial challenges (in terms of work opportunities) Cape Town experiences a high degree of peaking on its network, with many public transport services suffering from very low patronage during off peak periods. These spatial patterns show little signs of changing despite the adoption of many policies to address its challenges; such as: densification and Transit Oriented Development (TOD) strategies. Further, mostly historic and somewhat inflexible working practices that require employees to start and finish work between 8 a.m. and 5 p.m. also contribute to the nature of the peak period travel. There is little or no adoption of global changes to working practices such as tele-commuting, shared workspaces etc. made possible by more flexible, cheaper and readily available communications channels and the internet[3].

The general trend of travelling toward the centres of employment by mostly single-occupant vehicles will therefore continue over the foreseeable future unless some radical changes are made. The energy consumption of this pattern of travel has been captured in the City's 2015 State of Energy Report for Cape Town – it shows that in spite of the absolute decline in electricity demand, energy demand has grown in Cape Town, driven by transport which now stands at 64% of the total energy consumed by sector. The resultant air pollution and climate change impacts are apparent form this statistic.

1.3 Strategic Intent

The City, through its Integrated Development Plan (IDP), Comprehensive Integrated Transport Plan 2013-2018 (CITP) and Integrated Public Transport Network (IPTN), adopted a policy position towards the development of a sustainable city. This will be characterised by a more compact urban form supported by a public transport system that is competitive with the private car in all respects. This policy shift will lead to structural changes over time that should result in a substantially different, and more sustainable, profile of travel demand.

The intention of this Strategy is to encourage, facilitate and then enable changes in travel patterns that, along with other strategies, will assist in the development of a more sustainable city (in line with the overall objectives of the City) through the opportunities presented by, for

[2] Approximately 2% per annum (Source: eNATIS)

[3] This could also be because of the monopolistic situation in relation to fixed line communication. However, ADSL Broadband prices have dropped significantly from R29/GB in 2009 to R1.50/GB in 2014 (source Wikipedia)

example, the increased roll-out of the MyCiTi bus system, technological advances which can allow different working practices, greater consciousness of the environment and so on.

TDM measures and interventions that are aimed at changing an individual's travel behaviour, usually from the use of single occupancy vehicle's (SOV) to more sustainable modes of transport, reduce travel demand, especially in the peak, are therefore promoted in this strategy[4]. The success of these actions will reduce the demand for additional road space, make the use of existing infrastructure more efficient as well as reduce transport's energy usage and thus emissions due to transport.

1.4 Scope

This Strategy recognises that a number of interventions which assist in the reduction of travel demand are either underway or are being developed by other departments in TDA. The interventions that are supportive of this Strategy are listed in chapter 5 along with their intended impact in terms of TDM. The focus of this strategy therefore does not encompass these impacts, but is rather on the behavioural aspects of travel, informed largely by detailed studies on travel behaviour change and flexible working.

And whilst it is clear that travel patterns in the city are increasingly influenced by its surrounding regions and municipalities, and that the purpose and intent of this Strategy will be communicated to the relevant bodies in Cape Town as well as through appropriate functional area forums, the principles and effect of the proposed interventions may not be fully encompassed or adopted in the functional regional area (see figure 1-3).

[4] The future roll-out of the MyCiTi bus service is identified in the City's Integrated Public Transport network Implementation Plan

Figure 1-3: Functional Regional Area

1.5 Desired Outcomes

The purpose of this TDM Strategy is to promote interventions and measures that would lead individuals to make different travel decisions, which in turn would reduce the negative impact currently experienced from private vehicle travel, particularly SOV.

The overall outcome desired from implementing this Strategy is to give effect to changes in behaviour which will give rise to:

- Reduced demand for additional road space
- More efficient use of existing infrastructure
- Reduced peak period car travel and congestion levels
- Reduced travel time
- Shift modal share towards public transport and NMT
- Reduced vehicle energy consumption and emissions
- Reduced need to make certain trips

1.6 Methodology

The development of this Strategy involved an analysis of relevant national and local governmental regulations and legislation, literature review and determination of best practice inclusive of successes and failures elsewhere. It also draws on detailed studies undertaken on travel behaviour change theory, transport user characteristics and flexible working programmes. Key TDM measures and proposed interventions were drawn from these studies and, from these, a proposed implementation and action plan, along with a method to review the effectiveness of the interventions, were developed.

The proposed Strategy will be executed by following the actions proposed under each main intervention. The approach to be undertaken is to implement all possible actions simultaneously as the published literature indicates that TDM measures are not mutually exclusive and that they are more effective when implemented in conjunction with other measures and as part of an integrated package. Further, certain measures need to be supported by others to be effective, or to help 'lock-in' benefits achieved. This appreciation is incorporated in the Action and Implementation Plan which, although developed through a prioritisation model, allows for a more detailed consideration and delivery of the proposals within time frames aligned to TDA's long term strategy (as set out in the CITP).

The effectiveness of the interventions proposed will be guided by metrics developed appropriate to some intervention although it is likely that benefits may accrue as a result of a combination of this strategy along with other TDA programmes.

2 REGULATORY CONTEXT AND STRATEGY INFORMANTS

A range of legislation, by-laws, policies and strategies provide TDA with the mandate to integrate the transport system in Cape Town and give effect to the proposals in this Strategy and are summarised in Table 2-1 below.

Table 2-1: Summary of key informants and their relevance to the TDM Strategy

Informant	Relevance to TDM
National Land Transport Act (NLTA) (Act No. 5 of 2009)	Requires that municipal spheres of government formulate and apply TDM measures in their functional area (*Section 2, c, xxii)*.
Integrated Development Plan (IDP) (City of Cape Town)	TDM is included as one of the key transport programmes in the IDP under strategic focus area 1: The opportunity city.
Constitution of Transport and Urban Development for Cape Town By-law, 2016 (City of Cape Town)	TDM is one of the strategies that fall under the function of Planning and is aligned to the objectives of the By-law as it manages travel demand to optimise utilisation of existing capacity and investment in new capacity.
Long Term TDA Strategy, 2017 (City of Cape Town)	TDM is located in Strategy C, which provides for an integrated transport system within a 10-year time period. "*Rollout of the integrated road and rail methodology with the focus on one brand and ticket and one integrated timetable*".
Comprehensive Integrated Transport Plan, 2013-2018 (City of Cape Town)	TDM is identified as a key Strategy in the CITP in order to address the following TDA objectives: • Efficient and viable relationship between land use, supporting infrastructure and transport for the sustainable development of the City. • Integrated, intermodal, interoperable, responsive and car competitive public transport for the benefit of the community. • Economically viable transport system by balancing service provision with demand and through transparent regulation.
Integrated Public Transport Network 2032 (City of Cape Town)	TDM is a mechanism to give effect to the IPTN, which is built on the vision of intermodal, integrated and interoperable transport, by reducing the peak demand, and leading to a more optimal use of the public transport fleet.
Transport Development Index, 2015 (TDI)	TDI provides a quantitative tool to analyse data of the different user groups travel patterns in order to create a baseline of the state of transport in Cape Town. The TDI is the primary data source for the

Informant	Relevance to TDM
(City of Cape Town)	TDM Strategy. The TDM Strategy will assist TDA in its ultimate goal of reducing the user's access priority cost in terms of travel time (savings and actual); congestion; and flexibility.
City of Cape Town Parking Policy, 2014	The policy aims to manage parking supply and demand in high parking demand areas efficiently, and to reduce the use of private cars (for at least part of the journey). The policy is a key informant in parking related TDM measures.
Towards a Travel Demand Management Strategy, 2006 (City of Cape Town)	TDM was initiated in the City in 2006 by the development of a framework for a TDM Strategy. It included an overview of TDM; a policy framework as well as the identification of TDM projects for implementation in the short, medium and long term.
Travel Behavioural Change Framework, 2014 (City of Cape Town)	The Framework, which is based on a detailed review of travel behavioural change theory and meta-analysis of empirical evidence, aims to guide the formulation, implementation and monitoring of the TDM Strategy.
Transport User Analysis, 2014 (City of Cape Town)	An analysis of specific user groups, their geographical location and transport uses relating to the decision making elements described in chapter 4.
Transit Oriented Development Strategic Framework, 2016 (City of Cape Town)	Aims at addressing the spatial challenges of the City's current land-use patterns, especially work opportunities and residential locations by encouraging new development forms in more appropriate areas of the city. Any changes implemented will lead to different travel patterns and behaviour.
Draft Cycling Strategy for the City of Cape Town, 2016	Aims at ensuring that cycling will become recognised and accepted as a safe, viable and attractive means of travel for all.
City of Cape Town, State of Energy Report, 2015	Energy consumption and carbon emissions by source and by sector in Cape Town.
MyCiTi Business Plan – Phase 1A, 1B and N2 Express (2014) (City of Cape Town)	Supports the progressive implementation of TDM measures including: flexible work programmes and engagement with the education sector of government and the private sector to consider staggered school start hours.
Cape Town Spatial Development	Developed under the Local Government: Municipal Systems Act, 2000 (Act 32 of 2000), as an integral component of the Council-approved IDP, it serves as the principal strategic planning instrument

Informant	Relevance to TDM
Framework, 2012 (City of Cape Town)	to guide and inform the long term spatial vision, policy parameters and development priorities that supports a future spatial form and structure of Cape Town. It is the principal policy tool for evaluating applications for new or enhanced land use rights, and to support and inform different spheres of public and private investment decisions that impact on the spatial form of the City. It supports more compact development, environments conducive to walkability, mixed land uses and incomes in well-located areas.
District Spatial Plans, 2012 (City of Cape Town)	While the district plans do not enjoy the same legal status as the CTSDF, they do "translate" it down to a local scale, as guideline documents. They incorporate the Environmental Management Framework in terms of the National Environmental Management Act, 1998 (Act 107 of 1998). They recognise the need to reduce travel through intensification and densification of land uses, particularly around public transport (TOD).
Cape Town Densification Policy, 2012 (City of Cape Town)	Its purpose is to achieve a city that is efficient, safe and sustainable through dense and compact development, enabling shorter trips and generating passenger densities which support public transport.

3 REVIEW OF THE CITY'S 2006 TDM FRAMEWORK

The TDM framework that was adopted in 2006 laid the groundwork for projects relating to the promotion of public transport and higher occupancy in vehicles. This included the implementation of rail park and ride facilities, the development of an Employee Trip Reduction Programme (ETRP) referred to as Travel SMART, and raising awareness of TDM. Some achievements to date, which have some TDM aspects include:

- Roll-out of the MyCiTi system;
- N2 BMT lanes;
- Investment of R50m at 12 rail stations for park-and-ride facilities; and
- Roll-out of a pilot Travel SMART Programme in partnership with Western Cape Government (WCG) and 5 private organisations.

Various institutional, multiagency and managerial aspects influenced the measure of success of the respective programs.

Some key lessons learnt through the roll-out of these processes, detailed below, have been taken into account in this 2016 TDM Strategy:

- Need a long term perspective on a TDM Strategy to understand influences and show change in user behaviour.
- High-level buy-in and tactical commitment from all participating organisations is essential for the identified programmes so as to achieve sustainable success.
- Inter-agency cooperation and buy-in is essential.
- Participating organisations illustrated concern over the lack of available and viable public transport.
- It was observed that a lack of incentives for key role-players in programs, influenced levels of commitment and related success.
- Developing databases and securing credible data on a regular basis was lacking.
- Continual monitoring, evaluation and reporting are essential to assist in sustaining momentum and interest.
- Management of spaces where there were multiple owners require complex institutional management processes.
- City has to play a lead role in specific programmes and to "lead by example", in order to be able to achieve the required behavioural change,
- Projects must be costed and focussed on achieving real and sustainable change.

4 THEORETICAL FRAMEWORK FOR THE TDM STRATEGY

This Strategy is based on the premise that the transport system plays a critical role in enabling the socio-economic functioning of the city. The aim is to ensure that productive trips will increasingly be made using more efficient modes through changing the behaviour of the users of the transport system.

Based on theory, key aspects to effective TDM interventions are:

- Identifying which trip decision elements should be targeted in the short and long term;
- Recognising which TDM measures are likely to have the greatest impact upon these decision elements;
- Understanding the triggers which lead individuals to deliberately reappraise their travel decisions;
- Understanding which groups are most susceptible to change so that TDM measures might be targeted strategically;
- Influencing the variables that create the necessary circumstances that prompt decisions leading to the desired pattern of asymmetry; and
- Locking-in of the vehicle kilometres travelled (VKT) and other benefits, when they accrue.

The strategic framework for this TDM Strategy is based on the premise that observed travel demand is the manifestation of the collective trip decisions taken by all transport users. TDM measures are employed to target specific categories of users to make different choices relating to each of the five decision elements (Table 4-1). It is recognised that trip decisions depend on three broad enabling areas. These are: the user's household characteristics; external factors such as employment conditions; and, the characteristics of the transport system. Many decisions are also influenced by the geographical reality of the trip, which are often defined by the characteristics of the transport system available to make a trip in that area.

4.1 Decision elements

Five decision elements will be targeted to achieve the desired TDM objectives. The desired change that is targeted with each decision element is shown in Table 4-1. The decision elements can be defined as those components of a trip that a user makes a decision on. Some or all of the decisions can be made consciously or sub-consciously, and as often as before each trip or very infrequently.

Each decision depends of three areas of influence:

- The person's autonomy to choose, which depends on individual, household and peers
- The business and education system requirements to travel at certain times
- The characteristics and accessibility of the transport system

Table 4-1: Decision elements and associated behaviour change

Decision element	Current behaviour	Desired behaviour
Trip generation	Travel in peak 5 days /week	Travel in peak fewer than 5 days per week
Trip timing	Start time of trip in peak	Still make trips 5 days a week, but start trip outside normal peak (earlier / later)
Vehicle Occupancy	Single occupant in peak, 5 days per week	More occupants in car = fewer cars for the same number of person trips
Mode choice	Own car in peak	Other modes, including walk and cycle for short trips and Public Transport for longer trips
Route choice	Use the same route as others	Choose another route to same destination, or choose other destinations to travel to

The objective is not to expect, or even to plan for, different trip decision by all people for all trips, or even one different trip decision for all trips. The aim is to break habitual car use decisions, and to influence some trips usually made by car to be made by alternative modes by making people aware of the alternatives available to them; then to entice further consideration by highlighting or enabling benefits (voluntary measures) or discouraging or limiting current behaviour (regulatory measures). This should be done by combining measures in a manner that result in the same or lower generalised cost to the user.

It should be noted that these behavioural decision changes have an interdependency of the availability of alternatives in public transport so that modal shift can occur. The Transport Development Index (TDI) developed by TDA has revealed that there is not enough public transport. Therefore, these TDM interventions will be coupled with the infrastructural interventions as well as operational extensions.

4.2 Targeting Decisions

From a detailed analysis of travel behaviour, it is apparent that in order to influence a different trip decision to optimise benefits of a TDM programme, it needs to address the individual, the community and the transport system. A summary of the constraints related to the above decision elements is included in Table 4-2. These are taken forward to inform the development of the proposed implementation programme. Clearly though, many of the decision elements are also dependent upon geographical location due to the nature of the city. A further refinement of a TDM Strategy can be considered using location specific interventions which, for TDA, may assist in reaching the targets set in its TDI objectives.

While this Strategy applies to the entire metro, certain measures would clearly have a greater impact on certain geographical areas than on others. The Cape Town CBD, or inner city, remains the single biggest employment zone, and attracts the largest number of cars per hectare in the metropolitan area. It is therefore an area where substantial benefit would be derived through successful implementation of TDM measures.

The Cape Town Functional Area is largely defined by the level of daily activity that takes place between the City and its closest neighbouring municipalities. This activity is predominantly road based, and would benefit from TDM interventions. However, TDM measures need to be applied across the City's boundary and throughout the Functional Area to be fully effective.

Table 4-2: Summary of travel change decision constraints

Decision element	Enabling area	Decision dependent on
Trip timing (shift in time)	Individual / Household	Must choose / be allowed to rise early / return late due to family responsibilities; may be more or less sensitivity to incentives, can remain in car
	Community	Employer allows flexible start / end time
	System	System constraints - i.e. not effective if peak spread very wide
Trip generation (avoid trip)	Individual / Household	Able to work from home (home condition, personality) or longer days
	Community	Type of work (prof, customer interface); job allows working (e.g.) 4/9 long vs. 5/10 rig days
	System	None
Vehicle occupancy (shift to more sustainable mode)	Individual / Household	Sensitivity to incentives (own parking); flexibility to align with others; trip timing; geographic proximity; trip chains)
	Community	Preferential parking, flexible hours
	System	Regulation / legal system, ease of arrange (technology)
Mode use (modal shift)	Individual / Household	Need car during office hours; alternatives to own car; trip chains; characteristic of transport user[5]
	Community	Perception / adaptation of mode; peer pressure (use or not), relative safety of own car vs walk & Public Transport
	System	LOS of alternative modes
Route choice (avoid trip)	Individual / Household	Knowledge of alternatives (GPS info)
	Community	Location of employment / destination
	System	Regulated restrictions (parking, congestion charge)

[5] See Moving South Africa, 1999 for definition of 6 x 'S' categories

The objective is not to expect, or even to plan for, different trip decision by all people for all trips, or even one different trip decision for all trips. The aim is to effect asymmetric churn, to ensure that habitual car use decisions are broken, and to influence the shift of some car trips to alternative modes.

The aim of the Strategy is therefore to break old habits by making people aware of the alternatives available to them; then to entice further consideration by highlighting or enabling benefits (voluntary measures) or discouraging or limiting current behaviour (regulatory measures). This should be done by combining measures in a manner that results in the same or lower generalised cost to the user.

5 TDM MEASURES

5.1 Introduction

From the detailed studies undertaken by TDA, it is clear that there are a number of TDM measures available which use various approaches to influence travel decisions. Their decision elements and potential areas of influence have been discussed in the preceding chapters and/or are contained in the detailed studies undertaken by TDA. A range of options considered suitable for Cape Town are presented in Table 5-1 below indicating which interventions the City has an influence over and is able to influence.

Table 5-1: TDM decision category

Decision Element	Intervention	City jurisdiction/ability to influence
Trip Generation	Parking management	City staff parking; managed on-street parking; private parking levy
	Flexible Working Programme (telecommuting; working remotely or at home options)	City staff only; can encourage change through example
Trip Timing	Fare Management	MyCiTi buses
	Congestion Management Programme	City initiative
	Freight Transport Management	City can propose restrictions on roads
	Staggered school starting times	DoE ambit
	Flexible Working Programme (flexi-time option)	City staff only; can encourage change through example
Vehicle Occupancy	Carpooling	Can encourage only
	Car sharing	Can encourage only
	Green Travel Plans	Can request/ could form part of future strategy
	BMT and HOV Lanes	City jurisdiction
Mode Use	NMT & Cycling Strategies	City strategies
	Park & Ride	PRASA/ City strategies
	Parking cash-outs	For City staff
	Private Parking Levy	City strategy
	Learner transport services	DoE ambit
	Bikeshare Initiative	City initiative; private promotion
	Marketing and Communication	City strategy
	All Mode Business Travel Reimbursement	For City staff; can be adopted by others
	Definitions under the Land Use Zoning	City ambit
Route Choice	Transit Orientated Development	City strategy
	Area entry restriction	City ambit
	Congestion charging	City ambit

The need for and due cognisance of sustainability of the transport system is ingrained within all of TDA's work and therefore, this Strategy is not alone in its aim of achieving a more sustainable transport system - many other related and synergetic programmes are already underway in TDA. All of these programmes that have a TDM related impact are unpacked in

Table 5-2. The decision to adopt the interventions proposed therefore excludes these programmes and is based on the following. However, it should be recognised that the impact of some of these programmes will be broad and citywide and that they may well influence the outcomes and potential rationalisation of the interventions adopted here.

Table 5-2: Existing TDA Programmes with a TDM impact

Programme	Potential Impact in terms of TDM
Parking Management	Encourages mode shift
Fare Management	Encourages a shift to more off-peak travel
Expansion of Park & Ride at Rail Stations	Encourages greater use of public transport, shorter vehicular trips
Congestion Management Programme	Wide ranging programme aimed at reducing infrastructural, operational and behavioural impacts
Scholar Transport	Currently limited but TDA is planning to expand its scope to assist in the reduction of the impact of scholar trips
Integrated Public Transport Network Plan	Encourages a shift to more sustainable/ efficient modes of transport
NMT and Cycling Strategies	Encourages more sustainable modes of transport
Bikeshare Initiative	Encourages use of more sustainable modes of transport
Definitions under Land-use Zoning Scheme	Definition of land-use zoning to encourage reduced parking provision
Transit Oriented Development	Encourages reduced trip making, shorter trips and use of more sustainable modes of transport
Freight Management Strategy	Encourages reduced freight trip making, shorter trips and use of more sustainable modes of transport for freight
Memorandum of Understanding entered between TDA and the Safety and Social Services Directorate	Aims to ensure the safety and security of public transport and other transport systems
Memorandum of Agreement between PRASA and TCT	A partnership to facilitate the delivery of priority projects, programmes and interventions including an agreement to develop an integrated transport enforcement system (in terms of safety and security)

The premise of this TDM Strategy needs to be that the transport system plays a critical role in enabling the socio-economic functioning of the city and its aim to ensure that productive and/or essential trips will increasingly be made more efficiently and by using more efficient modes.

In addition to the above, Table 5-3 summarises TDM interventions proposed in the CITP 2016 Review. The MyCiTi Business Plan – Phase 1A, 1B and N2 Express also proposes a set of TDM interventions to assist the financial viability of MyCiTi bus operations. These include the consideration of staggered school start hours to reduce the impact on peak travel in conjunction with government and private institutions. This is clearly desirable but is considered a longer term strategy that will flow from the Flexible Working Programme proposed in Section 5.1.

Table 5-3: TDM initiatives for Cape Town: 2015-2018, extracted from the CITP 2016 Review

No.	TDM Measure	Detailed Actions
1.	BMT Lanes and Explore HOV Lanes	• Extend the BMT Lane on the N2 to the R300 to allow for the N2 Express to flow more smoothly. • Investigate how a BMT lane for outbound traffic can be effected on the N2 • Explore the implementation of a high occupancy vehicle programme on BMT Lanes and linkage to an enforcement programme. This should also explore funding sources for enforcement • Determine car sharing / lift club incentive schemes and best practices internationally
2.	Park and Ride and Parking Management	• Expedite the development of the park and ride infrastructure initiatives • Develop a security programme for identified park and ride facilities with related payment mechanisms linked to the MyConnect Card • Park and Ride programme for the alleviation of congestion to be explored further. • Parking pricing and parking management tender to be concluded and managed
3.	Transit Orientated Development	• Finalisation of the TOD Strategy for the City of Cape Town • Explore land value capture mechanisms • Location efficiency mechanisms • Public projects to be initiated especially around BRT and Rail Stations • Commuter Trip Reduction (without financial incentives)
4.	Congestion Management Programme	Traffic congestion is a problem that is not going to be completely removed. In fact, congestion can be seen as a product of successful cities since all the activities that make living in urban areas so attractive are also the reasons why we need to travel. It is important how we plan our Cities in future and how we manage their growth. Whilst the focus is on providing increased travel capacity through improved public transport, there must be a fundamental mind-shift away from reliance on the private vehicle as the chosen mode of travel by high-income commuters. It is essential that other reliable and attractive travel alternatives are on offer to give people realistic choices. The extent and classification of the road network was reviewed and updated for the drafting of this plan, and is now known as the Public Right of Way Plan, as discussed in this document. This plan not only indicates the extent and classification of the road network within the Cape Town Metropolitan Area, as is currently the case, but also includes existing and future planning of the rail network, road-based public transport network and the NMT network (cycle network). All data is captured in GIS in order to improve the accuracy of existing and future road and rail alignments in accordance with 2012 aerial photography.

No.	TDM Measure	Detailed Actions

		Cape Town's current growth trends, supported by international precedent, indicates that private vehicle ownership, demand for travel and its associated congestion frustrations seems to be inevitable for our future. The relatively high current public transport mode share, by international standards, cannot be assumed to be a certainty for the future. International precedent in fact shows a distinct decline in public transport usage with increasing income levels. TDA will need to intervene purposefully and deliberately with an integrated Congestion Management Framework if we are to successfully maintain current modal split and try and shift it further towards the public transport modes.
		
		We cannot simply build our way out of traffic congestion by widening roads, since this will only attract more vehicles and is not sustainable. It is therefore important to strategically manage the situation and ensure that our actions are holistic and attack the problem in an integrated manner. The actions starting in 2015/16 are:
		
		• Congestion Summit 2015/16
		• Congestion Strategy and Infrastructure Plan for the next 6 years including a financial commitment of the following amounts annually starting in 2015/16 (R45m, R125m, R250m, R210m, R210m and R120m)
		• Focus on the following priority areas:
		  • Marine Drive (R27)
		  • N1 from Marine Drive to N7, and between Durban Road and Okavango Road
		  • N2 from Modderdam Road to Cape Town CBD, and between Borchards Quarry Road and R300
		  • M5 from Racecourse Road to Koeberg Interchange
		  • M3 from Wynberg Hill
		  • N2 through to Somerset West
		  • Kommetjie
		  • Kuilsriver
		  • Parklands
		  • Waterfront and surrounds
		• Explore the possibilities and parameters of a congestion charge coupled with the public transport improvement programme in the same areas

5.	Flexitime Programme	• Develop a flexitime programme for the City of Cape Town and a rollout strategy that starts with implementation of the 27000 staff of the City and the Provincial Administration staff • Engage with Business in Cape Town • Development of an incentives and disincentives scheme related to flexitime • School and Student alternatives related to TDM
6.	Fare Management and Management of the Peak	• Introduction of TDM measures in the fares for public transport • Parking management fares related to TDM

No.	TDM Measure	Detailed Actions
7.	Freight Transport Management	• Explore time management for freight • Develop a TDM strategy for freight related to the TDI baseline
8.	Bikeshare Initiative	Not only can Bikeshare be seen as a major TDM initiative but is also seen by TDA as an investment opportunity. From the experience of many countries, bike share projects are a proven concept. As a form of public transport, they: • cater for the smallest distances • promote a healthy lifestyle • are engaging for tourists • provide transport for the last mile of travel • represent an important component of integrated transport Cape Town is renowned as the most bike friendly city in Africa. It received an award in 2012 for the longest continuous cycle lane in Africa. The lane is 16.4 kilometres long. In order to build on the City's already established cycling culture, TDA will shortly be launching Cape Town's first bike share project. TDA intends to tender the bike share project and is keen to hear from all interested parties, including both domestic and international bidders. TDA envisages that its bike share project should have the following features: • it must be well run, attractive and easily accessible to users so as to befit such a high profile project within the City • the routes may be determined by bidders but TDA considers that they might run from Woodstock through the Central Business District and the Waterfront, and then on to Sea Point • it must be integrated with other modes of transport (such as being located near railway stations) so as to promote intermodal transport • the number of bikes to be provided must be capable of supporting an efficient and effective service • it must provide local employment opportunities TDA is prepared to award a contract of up to 20 years to ensure that the successful bidder will be able to make an attractive return on its investment through the revenues generated by the project. In accordance with TDA's ethos, this contract will be performance based to ensure that the bike share provider delivers an excellent service. To support its investments in integrated transport, TDA would like to share in some of the revenue of the project. In addition, TDA would like to be able to use some of the advertising space on the bikes for its own use.

No.	TDM Measure	Detailed Actions
9.	Definitions under the Land Use Zoning	The on-going debate about road tolling, and specifically e-tolling of the Gauteng Freeway system to fund the roads improvement programme is also important for Cape Town. An interdict was issued in favour of the City of Cape Town and the Western Cape Province to prevent SANRAL to implement a similar toll project to upgrade and extend the freeway network around Cape Town. The imposition of toll roads will have the following negative impacts: • A substantial extra cost on the City of having to upgrade and maintain its roads that will inevitably be placed under strain by motorists diverting off the N1 and N2 to escape the tolls • Add an additional financial burden on the many disadvantaged communities along these routes • A substantially increased environmental impact as a result of the stop-start nature of the toll booth operations • The ecological impact of the land required for the toll booths. While a well maintained road network, including the freeway system is critical for the successful functioning of Cape Town, the City's Policy on Tolling (City of Cape Town, 2001) calls for appropriate funding sources for road infrastructure upgrades. While it does not support tolling as a means to fund roads, it does support a congestion charge or fuel levy that can be used to cross-subsidise the appropriate modes, and influence travel behaviour. TDA has recommended that the zoning categories of TR1 and TR2 be streamlined so as to accommodate the more appropriate management of the road infrastructure and the economic activities that can be assigned to them. This is to be actioned in the 2015/16 financial year.

Given the above, a set of reduced, but prioritised TDM Strategies drawn from both Tables 5-2 and 5-3 are proposed as interventions that the City will embark upon within the ambit of this Strategy as described in detail below.

5.2 Flexible Working Programme (FWP)

5.2.1 Background

Surveys conducted for TDA's Congestion Management Programme, indicate that the morning peak-hour period on the city's major arterials has increased from 07:00 to 09:00 (two hours) to the current 06:00 to 10:00 (four hours) over the last two years coupled with the collapse of the rail system, meaning that some residents leave home at 05:00 to avoid traffic congestion for their commute to work. Much of this peak period travel is driven by rigid working practices or policies of the majority of employers. These practices sometimes deter highly skilled and talented people from accepting formal employment at these organisations. Further, the tendency for large numbers of commuters to travel to similar destinations at the same time comes with a large social and environmental cost as well as a more direct cost on transport investment and additional operational expenditure.

A Flexible Working Programme (FWP) (or an Alternative Work Schedule) has been applied successfully in many countries to assist in the reduction of peak period travel (and therefore to reduce congestion); to make ridesharing and transit use more feasible; and, to support the attraction and retention of human resources as such programmes are highly valued by employees and can increase their productivity and job satisfaction. The literature also shows that flexible work programmes help employees meet other household scheduling requirements, reduce commuting time and stress, reduce fears about being tardy, use ridesharing options and transit for commuting and work when they are most productive (some employees are most productive in the morning, others are not). Since such programmes are usually implemented as an employee option, those who participate are almost always better off, or they would not choose it.

Options usually considered under a FWP include flexi-time, compressed work weeks, staggered shifts and telecommuting/ remote working. Of these, flexi-time and staggered shifts target trip timing; telecommuting/remote working targets trip substitution/ generation (in other words, reduce the number of trips); while compressed work weeks' targets both trip timing and trip generation.

Flexi-time allows employees to begin and end work at nonstandard times within limits set by management. There is a range of variations within this option.

- Core hours within a variable schedule: Employees must be present during specified core business hours, but may adjust their arrival and departure times each day (e.g. to be present between 10:00 – 14:00 every day, but the other four hours per day vary). It is expected that the employee will work a set number of hours each week.
- Variable day: Employees may work a consistent schedule of a different number of hours each day as long as they achieve the expected number of hours within the week. This could be subject to guidelines that may require a once-off agreement to be reached between employer and employee or merely that agreement be reached beforehand.
- Staggered Working Hours: Staggered work hours are similar to flexible working hours, although they are within a fixed schedule and the starting times are determined by the employer and not by the employees. The starting and ending times differ from the company's standard times, but the same schedule is kept each day.

A **Compressed Work Week** allows employees to work full-time hours in fewer than five days per week, and is therefore able to influence trip generation (reduce the number of trips).

Remote working or telecommuting is able to influence trip generation (reduce the number of trips). The proposal for the City is that employees are either able to replace a peak-hour commute by working from home during peak, then travelling to their normal place of work, or are able to work at a satellite City of Cape Town office for a specified number of days or hours a week. Normal information communication technologies (ICT) to communicate with their usual place of work/colleagues etc. and meeting and reporting requirements would need to be met.

This option has the most potential for reducing pressure on the peak period, though it would require a higher level of management system to protect the integrity of the system.

5.2.2 Motivation

The CITP 2013-2018 proposed the expansion of TDA's travel behavioural change programme (Travel SMART) through the inclusion of Flexible Working Programmes as part of its commitment with TDA leading by example. In this regard a detailed study into the feasibility

of implementing FWPs within the City has been undertaken and is used as a key informant to this work.

Further, in addressing key stakeholders at TDA's Congestion Summit in November 2015, the executive mayor of Cape Town endorsed flexi-time and new working hours as key interventions that the City will unpack and implement.

A number of City of Cape Town departments already offer a form of flexi-time (in the form of a selection of start an end times, between 07:00 and 08:30) in accordance with its Time and Attendance Management Policy (2009). These interventions are, however, not adequate as they allow limited individual choice and, further, the administration does not accommodate the flexitime in its operations. The implementation of further elements of a Flexible Working Programme would therefore not directly contradict or contravene this Policy but would require adjustments to enable the formalisation of additional flexible working conditions/hours.

Given the strong political support of a FWP the commitment made in the CITP and the reported cases of the successes of FWPs, it is proposed that a set of focused, structured and formal flexible working arrangements in the form of flexi-time, compressed working weeks and remote working interventions are investigated. These will address the impact of employment work policies on peak period travel, trip reduction and assist and support human resource development and retention are proposed as part of this programme.

The City will act as a catalyst for other employers in Cape Town. The introduction of the City's recent Area-based Service Management Model will assist in decreasing the number of employees to be located in centralised areas and the consideration of devolved or satellite office may result.

The City and government in general needs to lead the way in de-centralising office space and through a more cohesive approach with business begin to create the concept of shared, high-tech, easily accessed and convenient offices closer to homes, schools or shopping centres. Large numbers of employees could easily work from one of many offices situated in these areas. TDA has already initiated dialogue in this regard through its previous programmes and will continue to do so.

5.2.3 Analysis

Table 5-4: Principles Analysis- Flexible Working Programme (FWP)

Motivation	Costs/Constraints
• Reduction in peak period travel • Reduction in vehicle kilometres travelled • To make ridesharing and transit use more feasible • To reduce the environmental impact of transport (social, carbon emissions, • To support the attraction and retention of human resources • Can help to achieve equity objectives (especially for the physically or economically disadvantaged) • Reduction in parking requirements • The City's proposed Area-based	• Increased administrative and management responsibilities • More difficult evaluation of employee productivity (requires more flexible outcomes orientated management) • Need to change existing institutional practices • Possible increase in IT costs

Service Management Model	
Potential Impact • The creation of a more equitable city • Facilitating greater access to public transport • Reduced peak hour congestion and thus travel times • Reduced vehicle kilometres travelled • Reduced social and environmental impact • Increased efficiency, productivity and better use of existing resources • Reduced infrastructure costs • Enhancing quality of life • May assist in the creation of sustenance of TOD style developments or 'pods' • Increase land available for development in lieu of parking, options to promote better access to sustainable modes	**Risks** • Funding for technological improvements required • Limits imposed by internet bandwidth availability • Minimal uptake by large employers and employees • Union opposition • May reduce staff coverage and interaction, and make meetings difficult to schedule • Compressed Work Weeks may reduce productivity and may lead to low levels of staffing on certain days • Safety and security risks

5.2.4 Actions Proposed: Flexible Working Programme

This Flexible Working Programme proposes the following actions to realise TDM. The first step is for the Council to resolve that the Flexible Working Programme will be implemented across the City of Cape Town's administration.

a) Establish City-wide baseline data for the study.
b) Develop guideline document outlining application and assessment process.
c) Review legal and financial implications related to the implementation of the FWP.
d) Review the City's Office Accommodation Policy in order to:
   - Take into account shared offices or workspace; virtual offices (public spaces with network infrastructure); and working from home; and.
   - Align the Policy with the City's new Area Service Management Model.
e) Identify and ensure that the necessary IS&T tools are available to accommodate officials working remotely.
f) Identify and ensure that the necessary tools to monitor the individual's performance are in place.
g) Organise and facilitate a series of change management workshops for managers and staff.
h) Develop a communication's plan for the roll-out of the programme.
i) Engage with Unions regarding FWP.
j) Roll-out the Programme.
k) Monitor and evaluate.
l) Engage with other large employers, including WCG to implement FWPs within their organisation.
m) Engage with the Western Cape Department of Education regarding school starting times and scholar transport.

5.3 High Occupant Vehicle Priority Strategies

5.3.1 Background

High Occupant Vehicle Priority Strategies refer to strategies that give priority to High Occupant Vehicles (HOV) which include ride share vehicles, public transport buses and carpools.

Priorities provided include: HOV highway and arterial lanes; High Occupancy Toll lanes; Bus/Minibus Taxi lanes; queue jumping lanes; and HOV priorities given at intersections, on streets, in terms of parking and as part of Employee Trip Reduction Programmes (ETRP). The focus here is on carpooling and car sharing as the other priorities are being addressed under programmes driven by other TDA Departments and ETRP will be further considered under TDA's Travel SMART programme (see section 5.5).

- Carpooling

Carpooling is a ridesharing system in which commuters' trip characteristics are matched to enable individuals to travel together in one car. This could be through an electronic system (website or mobile application) or just organised between commuters themselves. The cars used are usually privately owned. Sharing rides has minimal incremental costs because it makes use of seats that would otherwise be unoccupied. It tends to have lower cost than public transport because it does not need a paid driver and return trips are generally filled.

Carpooling is more popular for people who work in places where there is a high density of jobs (such as a CBD), who live in places with high residential densities and/or where there is poor public transport. Carpooling can also be considered as an option for scholar 'lift-clubs'.

- Car Sharing

Car Sharing or Car clubs (UK) is a model of car rental where people rent cars for short periods of time, often by the hour. They are attractive to customers who make only occasional use of a vehicle, as well as others who would like occasional access to a vehicle of a different type than they use day-to-day. The organization renting the cars may be a commercial business or the users may be organized as a company, public agency, cooperative, or ad hoc grouping. Vehicles are generally located in residential areas, priced by the hour with convenient (generally automated) pick-up and drop-off procedures. This makes the occasional use of a vehicle more affordable, even for the lower income households, and by allowing households to reduce their vehicle ownership it provides an incentive to reduce driving and rely more on alternative modes. To be a viable proposition, each vehicle would require a high occupancy rate.

The main factors driving the growth of car sharing are the rising levels of congestion faced by city dwellers; shifting generational mind-sets about car ownership; the increasing costs of personal vehicle ownership; and a convergence of business models.

5.3.2 Motivation

HOV Priority can provide travel time savings, operating cost savings and increased travel reliability to space efficient modes in congested areas.

Carpooling can reduce peak period vehicle trips and increase commuter travel choices. It reduces congestion, road and parking facility cost, crash risk, pollution emissions and is even reputed to increase the levels of well-being through social interaction.

Most international studies suggest that Car Sharing typically results in a net reduction in per capita driving among participants that averages 40-60% but that this varies depending on

the demographics of participants and the quality of travel options available in the community.

5.3.3 Analysis

Table 5-5: Principles Analysis- High Occupant Vehicle Priority Strategies

Motivation	Costs/Constraints
• Reduction in peak period travel • Increases commuter travel choices • Reduces requirement for road and parking spaces • Reduced environmental impact of transport (crash risk, social, carbon emissions etc.) • Reduces per capita driving • Significant cost benefits • Open to all in a particular area • Reduces levels of frustration	• Increased administrative and management responsibilities • Costs in setting up a ride match service • Cost of membership/joining fee • Effectiveness depends on appropriate incentives • Marketing may be needed to inform about options • Car sharing needs a critical mass, may require seed money • Trip chaining needs • Scholar transport needs to be delinked from commuting • Comprehension of concept
Potential Impact	**Risks**
• Reduced peak hour congestion and thus travel times • Reduced total vehicle kilometres travelled • Reduced vehicle ownership and use • Makes driving more affordable • Reduced social and environmental impact • Increased efficiency, productivity and better use of existing resources including land • Reduced infrastructure costs • Reduced peak period travel • Provides consumer savings	• Minimal uptake by potential users • May encourage longer distance commutes/ sprawl • Insurance issues (carpooling) • Lack of appropriate incentives • Driver behaviour, status, state of vehicle, fraud etc. • Time to success may be too expensive

5.3.4 Actions Proposed: Car Pooling/ Car Sharing Strategy

Actions proposed under this intervention are:

a) Review and clarify the legal opinion obtained to determine legal and insurance risks and requirements associated with carpools.
b) Investigate and add ridesharing phone-in information services at TDA's TIC
c) Investigate the feasibility of either:
    - Developing a customised ridesharing website or mobile app for the City, or
    - Collaborating with and promoting existing ridesharing websites and mobile app initiatives.
d) Develop a plan to encourage and facilitate the use of carpooling.
e) Establish preferential/ dedicated parking for carpool vehicles.

f) Investigate options for establishing and implementing 'guaranteed ride home' schemes for carpool users.
g) Investigate the possibility of allowing registered carpool users to use HOV lanes.
h) Investigate legal issues and implications associated with carsharing.
i) Identify feasible carsharing options for organisations and the public and incentives therefor.

5.4 Expand Park & Ride at Rail and BRT Stations

5.4.1 Background

Park & Ride facilities reduce urban traffic congestion and worksite parking demand by encouraging shifts to public transport and ridesharing. Benefits can be significant at destinations, however, local road traffic, pollution, energy use and consumer costs are unaffected since local (car) trips are still made. Bicycle Park & Ride facilities on the other hand can provide greater economic and environmental benefits. Further, shopping centres adjacent to Park & Ride facilities tend to benefit from additional passing commuter trade.

Costs of provision are primarily associated with facility construction and operation. Average construction costs are typically lower than the costs of providing parking at city centers due to lower land values.

On the down side, extensive provision of Park & Ride facilities around transit stations, especially surface parking, contradicts efforts to create TOD (and therefore the reduction of commuter travel). Also, in some circumstances, Park & Ride facilities may encourage urban sprawl by facilitating long distance commutes. Careful consideration is therefore needed in the roll-out of any future facilities.

5.4.2 2006 TDM Park-and-Ride Programme

The 2006 TDM Strategy in conjunction with the Rail Framework (2006) supported the development of a park-and-ride programme development along the Simon's Town line and the Monte Vista line as phase 1 and phase 2 respectively.

The criteria for choosing these rail lines included: sufficient spare capacities on the rail lines and residential densities around the line which should support park-and-ride. Both lines run parallel to important road corridors – the M3, M5 and N1.

The Rail Framework's high priority Khayelitsha/Mitchells Plain – CBD line was not selected due to the lack of capacity on trains and lower car ownership rates. This line needs to be re-evaluated once the proposed Blue Downs Rail Corridor is in operation and the PRASA modernisation projects have been implemented.

The criteria for station selection was determined using current data available in terms of passenger volumes, parking bays at the station, train frequencies and service times, access to the station and proximity of other stations.

Based on the evaluation the following eight stations were selected for further development: Fish Hoek; Heathfield; Steurhof; Claremont (only expansion); Lansdowne; Monte Vista; De Grendel and Avondale.

The implementation plan for these stations covered

- Minor civil works to improve the parking areas, sidewalks and walkways but mostly to install signage and line markings.
- Design and construction of shelters and sheltered walkways where necessary.
- Installation of lighting in the parking area and along sidewalks and walkways.

- Letting of contracts to provide security at the areas.
- Discussions with the South African Rail Commuter Corporation (SARCC) to inform them about the initiative and to garner support and possible improvements at the stations.
- Launching and maintaining an advertisement campaign.
- Monitoring and measuring of operations.

5.4.3 Upgraded Park-and-Ride facilities

Figure 5-1 shows the upgraded Park-and-Ride facilities that were undertaken in preparation for the 2010 FWC operations as well as the 2012/13 upgrades.

A programme of upgrading of public transport interchanges is also being undertaken by TDA: Infrastructure Department, including establishing new Park-and-Ride facilities within the short term. The proposed action plan for this work stream accommodates these plans and will ensure that, where appropriate, the principles in this Strategy are incorporated into the proposed work to be undertaken.

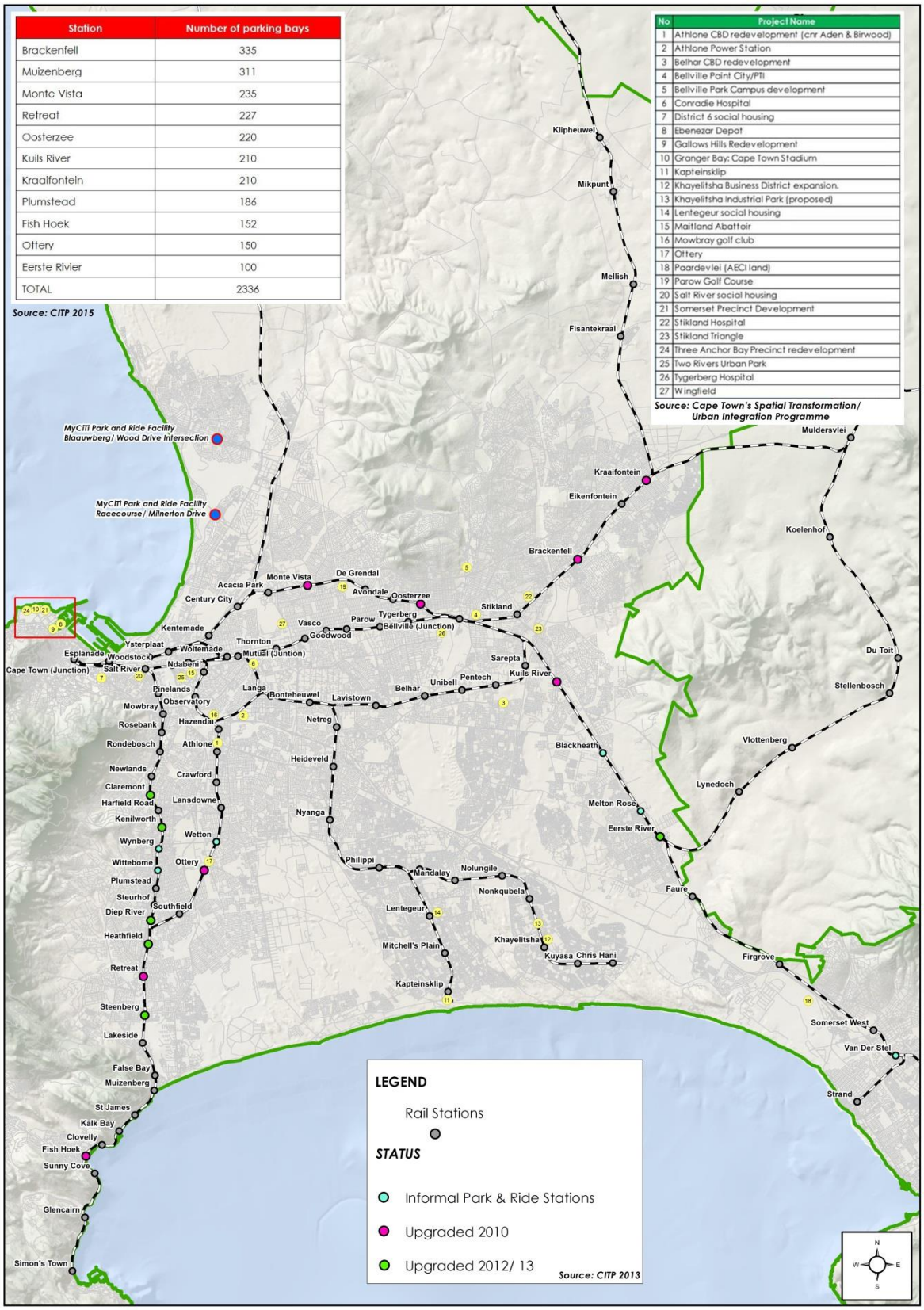

Figure 5-1: Rail Station Park-and-Ride Upgrades

5.4.4 Motivation

Surveys undertaken by TDA of all rail stations to assist in the determination of a future programme indicate that the facilities, where provided, are extensively used and, in fact in some locations (such as Kuilsriver Station) it can be observed that demand exceeds supply. Further, a 2011 study by University of Cape Town (Van Rensburg and Behrens) which measured the impacts of rail-based park-and-ride facilities on commuting behaviour in Cape Town before and after upgrades for 3 stations concluded that:

- Two of the three affected rail stations showed improved utilisation which could be attributed to facility expansion or upgrade.
- With regards to altered travel patterns, it was found that most new users reported positive impacts on their travel time and cost.
- The reasons for switching to park-and-ride use were found to be: a desire to reduce travel costs and that switching often included a lifestyle change like moving house.

This study also proposes the following suggestions for further work and improvements on park-and-ride facilities:

- Improved security at the facilities should be included in the next phase.
- Ideally park-and-ride strategies should be closely linked to innovative strategies to improve public transport service quality.
- Extended longitudinal before-and-after data collection in TDM assessment enable better understanding of unstable impacts.

5.4.5 Analysis

Table 5-6: Principles Analysis- Expand Park-and-Ride at Rail and BRT Stations

Motivation	**Costs/Constraints**
• Increase the use of public transport commuters • Improve the operational viability of the City's IRT investment • Reduction in parking requirements in the CBD • Link to innovative strategies to improve public transport service quality (i.e. "next-bus" electronic signage)	• Poor reliability of Rail • The provision of security personnel at Park-and-Ride site has a cost and human resource impact. • Possible increase in IT costs at the Park-and-Ride sites • Possible operational costs at extensive Park-and-Rides sites
Potential Impact	**Risks**
• The creation of a more equitable city • Facilitating greater access to public transport • Reduced peak hour congestion and thus travel times • Reduced vehicle kilometres travelled • Reduced social and environmental impact • Enhancing quality of life	• Minimal uptake by commuters due to factors such as poor reliability of services • Safety and security not properly addressed • Changes required as a result of changes to future land use or transport supply (such as feeder buses)

5.4.6 Actions Proposed: Park-and-Ride Strategy

Immediate actions to improve Parking -and-Riding at stations include:

a) Undertake a detailed study to evaluate existing Park-and-Ride upgrades and to investigate and assess a further roll-out programme (all PTI's). This will also include development of costed lighting and security interventions that will enable and enhance the attractiveness of evening train services.
b) Focus on the existing MyCiTi trunk routes to identify possible improvement to park-and-ride facilities along these corridors.
c) Investigate and consider Bicycle Park-and-Ride, rideshare and kiss & ride as part of the options at the park-and-ride sites along MyCiTi and rail trunk corridors.
d) Develop a management strategy to ensure that facilities are managed effectively; security provided and access prioritised.
e) Develop a marketing and communication campaign specifically for the existing and planned park-and-ride sites.
f) Develop an implementation roll-out plan.

5.5 Parking Cash-out Strategy

5.5.1 Background

For the era when cities around the world were built for access by the private car, it was the norm to provide surplus parking to the anticipated demand. Under a TDM regime, increasing the cost of parking, and ultimately reducing the availability of parking bays, are therefore logical measures to reduce the attractiveness of private car travel to some areas. The City's Parking Policy already allows for differential parking pricing in high demand areas, as well as a reduced requirement for parking where public transport is promoted.

However, more dynamic variation of parking pricing should be considered in nodes like the CBD where it is clear that a zero parking requirement in the CBD has not resulted in a reduced supply of parking.

Financial incentives such as parking cash-outs for large employers (starting with the City) can be used to encourage more efficient commute modes. Parking cash-outs involve the offering of cash equivalent of the parking cost to commuters who are provided subsidised parking (where it is part of their package) or to use alternative modes of transport. However, the success of such schemes is highly dependent on the level of the cash-out or subsidy provided. For example, studies in the US show that the reduction in the number of SOV travel varies but can be reduced by as much as 40% for a $160/month travel allowance. Another study (see below) indicates a significant shift in the type of mode used.

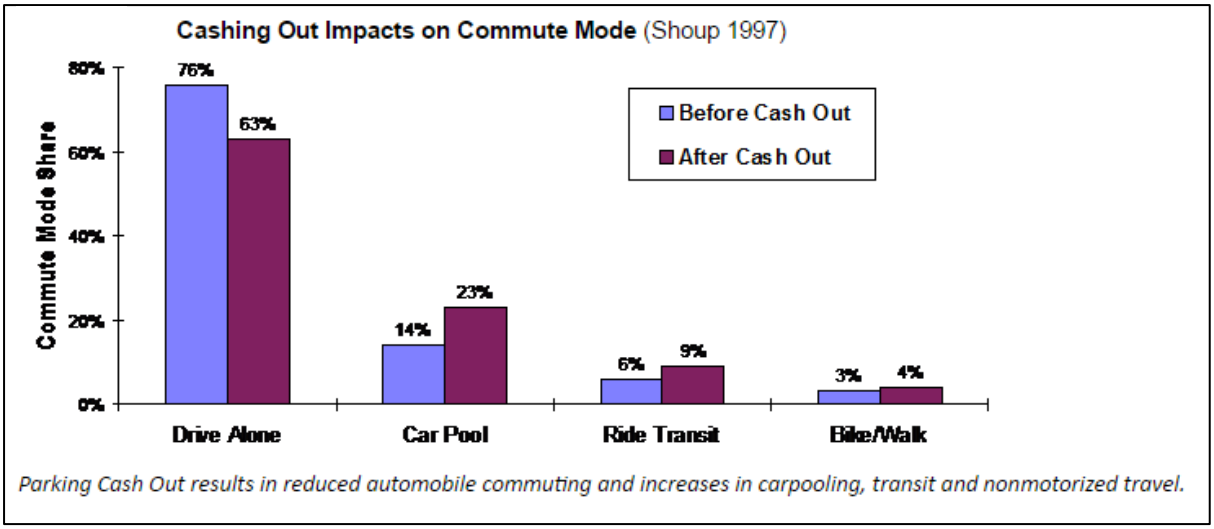

Figure 5-2: Cashing Out Impacts on Commute Mode

It should be noted that mode shifts tend to be greatest where current use of alternative modes (to SOV) is low.

5.5.2 Motivation

From a TDM perspective, the beneficiaries of such a subsidy will have to include the cost and likelihood of finding parking into their decision of whether, when or how to use a car for a particular trip. Employers could increase the utilisation of their existing parking bays by changing its form, allocation, priority and permanence.

Mixed-use Nodes, with varying parking demands through the day, can be clustered to encourage shared parking as opposed to exclusive ownership and exclusive use parking thereby reducing the need for parking space.

The City already has an on-line parking booking system within its major facilities for ad-hoc users. This could easily be extended to allow for occasional parking by staff that opt out of its current parking provision system. It could also be extended to allow parking by private user (at an appropriate rate) and would increase the number of available bays for other staff and, importantly the City could use available bays to allow registered carpool users to park for free.

5.5.3 Analysis

Table 5-7: Principles Analysis- Parking Cash-outs

Motivation	Costs/Constraints
• Decreasing the demand for parking bays in urban areas • Increasing the use of alternative modes of transport, car-pooling, car sharing etc. • To increase the viability and provision of public transport • Reduce the environmental impact of single occupancy vehicle travel • The ability for owners to sell/lease additional parking to generate revenue or accommodate growth	• Additional administrative burden and costs to extend and run an on-line system of booking • Reimbursement costs may not be adequately cover by any revenue generated • Sharing of unused spaces may not be appropriate or allowed • Travel impacts depend on availability of alternative choices

• Reduce the amount of parking levy imposed on business or individuals • An on-line system of booking parking in municipal buildings is already available	
Potential Impact • Increased public transport and NMT usage • Reduced peak hour congestion and thus travel times • Reduced vehicle kilometres travelled • Reduced social and environmental impact	**Risks** • Minimal uptake by commuters • Safety and security risk of travelling on alternative modes, especially to some areas of the City & of alternative parking • Funding issues – funding shortfall or not enough incentive to encourage uptake • Conditions of employment

5.5.4 Actions Proposed: Parking Cash-out Strategy

The following actions are proposed to implement this intervention:

a) Set up transversal PMT to agree scope, type etc.
b) Investigate the feasibility of providing reimbursement to City employees through various means.
c) Investigate HR and conditions of employment issues.
d) Investigate and calculate any personal tax liabilities.
e) Investigate scope and feasibility of extending the City's current on-line parking booking system to allow for ad-hoc and private booking of available bays and use by registered carpoolers.
f) Encourage other large employers/ WCG to consider a similar approach.

5.6 Municipal Managed Parking Bays

5.6.1 Background

Tariffs imposed on municipal owned (public) parking can be used as a tool to reduce car dependency and achieve greater modal share. Appropriately priced tariffs, accompanied by an effective parking management regime can therefore be used as a mobility management strategy, to recover parking facility costs or to raise revenue for other transport programmes.

Currently, parking is insufficiently, inefficiently priced or significantly subsidised or provided free. The direct payment of tariffs for parking provides the incentive to use alternative modes. The City currently uses this mechanism to regulate demand for spaces within the inner city region, and given the perceived benefits, it is important to further enhance the management of parking bays across the City. In recognition of this shortcoming and to explore the travel demand benefits of increased managed parking and tariffs, TDA is undertaking a Parking Management study. Its main objectives are to consider the following:

- The current tariffs at which public parking has been set has not been tested against the market/commercial value of parking in the City. As a result, it is not known if the City is undercharging motorists for use of its bays.
- Furthermore, a significant proportion of public parking areas in the metro are unmanaged. No investigation has been undertaken to determine if the demand in

these areas warrants management by the City. It may therefore be likely that the City is indirectly incentivising car usage by providing free parking.

5.6.2 Motivation

The proposed review of tariffs and extension of managed areas is intended to improve sustainable travel choices, support desirable parking behaviour in business districts and maximise the value derived from parking. The desired impact should be achieved incrementally as tariffs are increased over time, and as parallel mechanisms and strategies begin to take effect. Parking tariffs have been structured to support TDM and are aligned to the Parking Policy and reinforced by the TOD Strategic Framework adopted by Council.

Parking rates need to be set at values to optimise usage – typically 15% of parking spaces should be vacant and available at any time. At these occupancy rates, international literature suggests that appropriately priced parking should achieve around a 10-30% reduction in the amount of parking required and a commensurate reduction in vehicle traffic and externalities.

5.6.3 Analysis

Table 5-8: Principle Analysis - Increase Public Parking Tariffs and Extend Managed Parking Bays

Motivation	**Costs/Constraints**
• Encouraging turn-over of parking bays, thereby maximising economic benefit of parking • Discouraging private car use and reduce congestion • Encouraging the use of Public Transport Services (PTS) • Increasing revenues, to be used for improved PTS and other TDA services.	• Travel impacts depend on availability of alternative choices. • Cost of new Parking Management may not be adequately covered by the revenue generated during the initial years of the contract period.
Potential Impact	**Risks**
• Increased public transport and NMT usage • Reduced peak hour congestion and thus travel times • Reduced vehicle kilometres travelled • Reduced environmental impact • May increase diversification of businesses	• Impact on businesses in areas where tariffs exceeds what customers are willing to pay. • Discourage travel to areas with poor public transport alternatives for recreational (or non-business) purposes due to increased costs. • Discourage people, who cannot afford parking, from use of an area if public transport or NMT alternatives are not in place. • Push-back from the private sector.

5.6.4 Actions Proposed

The following actions are proposed to implement this intervention:

a) Investigate and establish appropriate parking tariffs for the city's managed parking areas.
b) Obtain approval for agreed tariffs and managed parking area changes through the City processes.

5.7 Private Parking Levies

5.7.1 Background

The implementation of levies on private parking bays in core business districts is a lower cost method of achieving essentially the same objectives as a congestion charge. The City of Nottingham in the UK introduced such a scheme in 2012 which requires employers to pay £375 (R8,300) per annum for each parking space they provide to their employees. The Nottingham Workplace Parking Levy raised £7 million (R155 million) in net revenue in its first year of operation which was ring fenced for transport improvements.

It is envisaged that the City of Cape Town could implement a similar scheme to that implemented by Nottingham whereby a set fee would be charged on each private parking bay in the City (potentially excluding bays for certain uses, such as residential) which would be collected from the property owner via its municipal bill. The property owner could then seek to recover the user charges from the building's tenants or parking bay users.

5.7.2 Motivation

The introduction of private parking levies represents an opportunity to promote the use of public transport by discouraging private parking in areas with high or medium quality public transport. It can also help to disincentivise sprawling development and generate funding for public transport. The City may implement levies on private parking bays in accordance with Section 28(1) of the National Land Transport Act, which allows municipalities that have established municipal land transport funds (MLTF), to implement direct or indirect user charges in respect of the parking of motor vehicles in specified portions of its area.

5.7.3 Analysis

Table 5-9: Principles analysis – Private Parking Levies

Motivation	**Costs/Constraints**
• Disincentivise private car usage through increasing the price of, and potentially reducing the supply of private sector parking. • Encouraging the use of alternative modes of transport, car-pooling, car sharing etc. • Providing a source of income to the City to offset the high cost of operating high quality public transport. • Reducing parking improves densification/intensification of land use. • It is within the City's remit.	• Additional administrative burden on the City • Multiple functionality of the levy makes it difficult to set an appropriate rate per region and / or use.
Potential impact	**Risks**
• Increased public transport and NMT usage • Improved (compact) urban form • Reduced congestion • Reduced vehicle kilometres travelled • Reduced social and environmental impact	• Private sector push-back • If the levy is set too high, it may: o displace development from core business districts or to other cities; o and in terms of residential development, prevent people with limited affordability, the

	opportunity to rent properties in places with inadequate transport alternatives. • Safety and security concerns of alternatives

5.7.4 Actions Proposed: Private Parking Levy Investigation

The following actions are proposed to implement this intervention:

(a) Establish the legal basis and motivation for levies on private parking.
(b) Undertake a detailed study to establish appropriate scales of levies per region, potential benefits, risks and implementation and administration method.

5.8 Marketing and Communication Campaign

5.8.1 Background

Marketing involves determining consumer needs and preferences, creating appropriate products, providing useful information about products and promoting their use.

A significant driver of travel behaviour is the knowledge of available alternatives and attitudes and influences on decision elements. It is therefore an important component of TDM implementation.

Marketing is more than simply advertising to promote a product or activity. It is an on-going dialogue between producers and consumers. It involves Change Management - an effort to change the way problems are defined and solutions evaluated. The most effective TDM marketing programs involve a variety of partners, including public officials, community organizations and individuals who support transportation alternatives.

Examples of specific marketing campaigns include: surveys of users, targeted marketing campaigns in relation to mode change, programmes oriented at households, highlighting benefits of change, the production of a multi-modal access guide (or app), improved way finding, overcoming barriers to use of alternative modes and so on.

Given adequate resources, marketing programs can significantly increase use of alternative modes and reduce car travel, although there are limits to what marketing can accomplish by itself. Marketing cannot change every person or every trip, and can be counterproductive if alternative modes are inadequate.

Effective marketing often requires delivering different messages to different types of people, with special emphasis on people who are most ready to change.

5.8.2 Motivation

A marketing campaign under the Transport Authority umbrella that introduces new transport infrastructure or public transport services can attract substantial public interest. However, accurate and timely information about small changes to different parts of the transport system could influence many small decisions on a daily basis. Communicating detailed information about the availability of public transport capacity and speed, utilisation of P&R facilities and road congestion that can be circumvented by using alternative modes can play a significant role in achieving travel churn towards greater public transport use.

As part of its function, the Transport Management Centre (TMC) is already collecting and disseminating much of the necessary data to inform decisions in relation to local travel. The operations at TMC and through further determination of user needs, choices and

preferences should be expanded to provide all transport users information to enable the choice of alternative modes of transport, make different trip choices and thereby to change their behaviour.

Studies conducted internationally show that marketing programmes typically provide a financial payback after one or two years indicating an excellent return on investment (plus the additional benefits to society).

5.8.3 Analysis

Table 5-10: Principles Analysis- Marketing and Communication Campaign

Motivation	Costs/Constraints
• Awareness is a significant driver of change in terms of transport mode choice, trip reduction and behaviour • Communication of timely and accurate information to support commute decisions • Data is already collected by TDA • Investment in campaigns is likely to yield quick returns • Can be used to address safety and security concerns/ raise awareness of safe options	• Costs of communications campaigns can be significant • Campaigns must be effective and need to be tailored to different communities and at different levels • People tend to rationalise their current behaviour • Opportunities need to be shown to be at least as attractive as current choice(s)
Potential Impact	**Risks**
• Increased understanding of options available • Increased support of TDM initiatives and effectiveness of programmes • Potential mode shift • The creation of a more equitable city • Facilitating greater access to public transport • Reduced peak hour congestion and thus travel times • Reduced vehicle kilometres travelled • Reduced social and environmental impact • Enhancing quality of life	• Lack of or limited funding for campaigns • Minimal uptake by commuters • Will require 'trials' and/or encouragement programmes • Will require 'social marketing'

5.8.4 Actions Proposed

The following actions are proposed under this intervention:

a) Rebrand the Travel SMART programme under the TDA banner and link to the City website.
b) Develop and implement targeted communication and awareness campaigns to raise the profile of and encourage the use of alternative transport modes and other TDM measures.

c) Provide high quality information to existing and potential market segments for alternative modes on a regular basis.
d) Engage with NGO's and other support groups to assist with awareness campaigns, workshops and surveys.
e) Develop user friendly web based applications, YOUTube or other video clips, and infographics for inclusion on TDA website and the City's main website.

6 IMPLEMENTATION AND ACTION PLAN

6.1 Implementation Plan

The Implementation Framework is informed by TDA's long term strategic objectives and timelines (see Table 6-1).

Table 6-1: TDA Long Term Strategy Description

Strategy	Timeline for Completion	Description
A	3 year	Consolidation of the TDA transport authority model with the focus on performance orientated service delivery
B	5 year	Consolidation of the TDA transport authority financial management strategy and investment logic under the MLTF
C	10 year	Rollout of the integrated road and rail methodology with the focus on one brand and ticket and one integrated timetable
D	15 year	Ensure that costs of key user groups' Access Priorities are halved for the benefit of the citizens of and visitors to Cape Town

Implementation of the TDM measures and actions will be led by various TDA departments, however, close collaboration with other key City directorates as well as key external stakeholders is essential in achieving the objective of this strategy. Lead (L) and Supporting (S) City departments are identified in Table 6-2 to ensure transversal buy-in and an acceptability of allocated responsibilities.

A central premise of the TDM Strategy is the reliance on coordinated implementation of interventions/measures to lock-in the benefits of TDM. The Strategy timelines proposed reflect this premise.

Table 6-2: Implementation of TDM Strategies

	TDM Measure	Actions	Strategy	Lead/ Support Department
1.	Flexible Working Programme			
1.1	Flexi-time Strategy	a) Establish city-wide baseline data for the study b) Develop guideline document outlining application and assessment process c) Review legal and financial implications related to the implementation of the FWP d) Review the City's Office Accommodation Policy in order to: - Take into account shared offices or workspace; virtual offices (public spaces with network infrastructure); and working from home; and. - Align the Policy with the City's new Area Service Management Model. e) Identify and ensure that the necessary IS&T tools are available to accommodate officials working remotely f) Identify and ensure that the necessary tools to monitor the individual's performance are in place g) Organise and facilitate a series of change management workshops for managers and staff h) Develop a communication's plan for the roll-out of the programme i) Engage with Unions regarding FWP j) Roll-out the Programme k) Monitor and evaluate l) Engage with other large employers, including WCG to implement FWPs within their organisation. m) Engage with the Western Cape Department of Education regarding school starting times and scholar transport	A	L: Corporate Services (HR) S: TDA Transport Planning, Business Support

	TDM Measure	Actions	Strategy	Lead/ Support Department
2.	HOV			
2.1	Carpooling	Update the legal opinion obtained to determine and clarify legal and insurance risks and requirements associated with carpools.	C	L: TDA Transport Planning
		Establish the feasibility of providing a ridesharing phone-in service/desk at TDA's TIC.	C,D	L: TDA Transport Planning S: TDA Business Support
		Investigate the feasibility of either 1) developing a customised ridesharing website or mobile app for the City, or 2) collaborating with existing ridesharing website and mobile app initiatives.	C,D	L: TDA Transport Planning S: TDA Business Support
		Develop a plan to encourage and facilitate the use of carpooling: - Determine the extent of carpooling at present, the target market and the geographic areas where this measure is used. - Establish preferential/ dedicated parking areas for carpool vehicles. - Investigate options for establishing and imiplementing 'guaranteed ride home' schemes for carpool users. - Investigate allowing registered carpool users to use HOV lanes.	C,D	L: TDA Transport Planning S: Corporate Services S: TDA Network Management
2.2	Carsharing	Investigate legal issues and implications associated with carsharing.	C,D	L: TDA Transport Planning
		Identify feasible carsharing options for organisations and the public and prepare business plan for roll-out.	C,D	L: TDA Transport Planning
3	Park & Ride	Undertake a detailed study to evaluate existing P&R upgrades and to investigate and assess a further roll-out programme (all PTI's) . This includes costed lighting and security interventions.	C	L: TDA Transport Planning

	TDM Measure	Actions	Strategy	Lead/ Support Department
		Focus on the existing MyCiTi trunk routes to identify possible improvement to park-and-ride facilities along these corridors.	C	L: TDA Transport Planning
		Investigate and consider Bicycle Park-and-Ride, rideshare and kiss & ride as part of the options at the park-and-ride sites along MyCiTi and Rail trunks.	C	L: TDA Transport Planning
		Develop a management strategy to ensure that: facilities are managed effectively; security is provided, access is prioritised, links to other services are provided (including night services).	C	L: TDA Infrastructure
		Develop and implement a monitoring and evaluation system.	C	L: TDA Transport Planning, Business Support
		Develop a targeted marketing and communication's campaign to promote P&R facilities.	B-D	L: TDA Business Support
		Develop an implementation roll-out plan.	B-D	L: TDA Infrastructure, Network Management, Regulations (intervention dependent)
4	Parking Cash-out	Investigate the feasibility of providing a reimbursement to City employees through various means.	B-D	L: TDA Transport Planning S: TDA Business Support, Corporate Services (HR)
		Investigate HR and conditions of employment issues.	B-D	L: TDA Transport Planning S: TDA Business Support S: Corporate Services (HR)
		Investigate and calculate any personal tax liabilities.	B-D	L: TDA Transport Planning S: TDA Business Support S: Corporate Services (HR)

	TDM Measure	Actions	Strategy	Lead/ Support Department
		Set up transversal PMT to agree scope, type etc.	B-D	L: TDA Transport Planning S: TDA Business Support S: Corporate Services (HR)
		Investigate scope and feasibility of extending the City's current on-line parking booking system to allow for ad-hoc and private booking of available bays and registered carpoolers.	B-D	L: TDA Transport Planning S: TDA Business Support S: Corporate Services (HR), Finance
		Encourage other large employers/ WCG to consider a similar approach.	B-D	L: TDA Transport Planning S: TDA Business Support S: Corporate Services (HR) S: City Enterprise and Investment
5	Municipal Managed Parking Bays	Investigate and establish appropriate parking tariffs for the City's managed parking areas.	A-B	L: TDA Business Planning S: TDA Network Management S: TDA Business Resource Management S: TDA Transport Planning
		Obtain approval for agreed tariffs and managed parking area changes through the City processes.	A-B	L: TDA Business Planning S: TDA Business Resource Management S: TDA Network Management S: TDA Transport Planning
6	Private Parking Levies	Establish the legal basis and motivation for levies on private parking.	A-B	L: TDA Business Planning S: Corporate Finance S: TDA Finance S: TDA Transport Planning
		Undertake a detailed study to establish appropriate scales of levies per region, potential benefits, risks and implementation and administration method.	A-B	L: TDA Business Planning S: TDA Transport Planning
7	Marketing and	Rebrand the Travel SMART programme under the TDA banner and link to the City website.	B-D	L: TDA Business Support S: TDA Transport Planning S: City Integrated Strategic Communication and Branding Department

	TDM Measure	Actions	Strategy	Lead/ Support Department
	Communication Campaign	Develop and implement targeted communication and awareness campaigns to raise the profile of and encourage the use of alternative transport modes and other TDM measures.	B-D	L: TDA Business Support S: TDA Transport Planning S: City Integrated Strategic Communication and Branding Department
		Provide high quality information to existing and potential market segments for alternative modes on a regular basis.	B-D	L: TDA Business Support S: TDA Transport Planning S: City Integrated Strategic Communication and Branding Department S: City Enterprise and Investment
		Engage with NGO's and other support groups to assist with awareness campaigns, workshops and surveys.	C	L: TDA Transport Planning S: TDA Business Support
		Develop user friendly web based applications, YOUTube and other video clips, and infographics for inclusion on the TDA website and the City's main web site.	B-D	L: TDA Business Support S: TDA Transport Planning S: City Integrated Strategic Communication and Branding Department

7 MONITORING, EVALUATION AND REVIEW

7.1 General

Performance evaluation is particularly important for innovative solutions such as TDM because its impacts and measurements will be felt at, and measured at an organisational level. Further, TDM measures will only show measurable progress in the medium to long term because, while shifts within and between mode types occur on a daily basis, the intention is to influence a gradual shift towards more efficient modes and lock-in the benefits reaped. Evaluation of performance will identify potential problems and provide guidance for policy or planning change.

At this stage, with the exception of the performance of the existing Park and Ride upgrades, the Strategy is in a planning and developmental phase. The proposed performance indicators provided below may therefore need to change to suit the actual programme developed.

It should also be noted that although there have been numerous TDM measures implemented internationally, there is a degree of variability in reported benefits which suggests a difficulty in the measurement of benefits as a result of such planning policies. It is also apparent that positive benefits are more likely as a result of a combination of measures rather than individual ones. Furthermore (and possibly the reason for the variability in reporting), the metrics commonly used for benefits will be affected by other transport policies or programmes - i.e. positive benefits will not solely be as a result of TDM interventions.

In recognition of the above, and given the nature of this Strategy, a set of longer term indicators are proposed to compliment any measurable benefits of individual interventions.

The measures and interventions proposed in this Strategy will assist in TDA's Transport Development Index objective – it has been developed to create a baseline of the state of transport and to quantify the problem as related to user groups; the aim being to redirect TDA's service delivery to reduce the costs of various groups' access priority - although their individual impacts cannot be directly correlated to the Index.

7.2 Long term indicators

Leading indicators will not show whether a measure is successful in achieving the TDM objectives, but will indicate whether it contributes in the expected manner. The result of sustained shift from one mode to another will only become visible once the cumulative incremental change is substantially different from the original state. Metrics are therefore required to evaluate the state of travel patterns at the metropolitan scale in 5 to 10-year intervals. These indicators are also used to benchmark Cape Town against its long term goals, and to benchmark it against similar global cities. Key Performance Areas (KPA) and associated indicators are provided in Table 7-1.

Table 7-1: KPA and Indicators to measure the effectiveness of strategies with a TDM Impact

KPA	Indicators
Energy consumption	% energy used by the Transport Sector (reported annually) 2015 Indicator – 64% of Cape Town's enregy consumption is by Transport
Levels of harmful emissions	CO_2 emissions per annum Baseline indicator for 2012 – 33% by Transport
Modal share	% trips per peak & off-peak (per mode) 2015 indicator s (metropolitan all day): NMT – 4% Private motorised transport – 60% Public Transport – 36%
Congestion levels	Volume over Road capacity, peak period time, % public transport trips

7.3 Proposed indicators for specific measures and interventions

As stated, TDM strategies need to be contextually sensitive, appropriate and ideally strategies need to be implemented together are phased and heuristic in nature. The evaluation of success factors requires appropriate measurement approaches, methodologies and data collection and subsequent monitoring.

Metrics and associated data requirements for respective TDM measures are outlined in Table 7-2. The method of measuring and adopting a baseline for each indicator will be determined during the execution of each measure. Indicators will be tracked longitudinally to review and assess the efficacy of the TDM strategy.

It should be noted that the success of the elements in this strategy, hence, changes in travel behaviour is highly dependent on the roll-out of other TDA programmes which are identified in Table 5-2. For instance, a key concern expressed in the public engagement responses received regarding cycling and the use of rail, was the issue of safety and security. Should safety and security of both these modes not be adequately addressed, a behavioural change to use these modes will be less likely.

Table 7-2: Performance Indicators for TDM measures

TDM Measure	Indicators
FWP	% workers arriving in by car in the peak period (7a.m. to 9 a.m.) at key facilites % workers working remotely % workers working a CWW
Carpooling	Registered users that apply for employer benefits such as preferential parking
Carsharing	Number of options available, usage statistics
Park & Ride	% Increase in utilisation from baseline for each facility
Parking cash-out	No. of additional parking bays available
Municipal managed parking bays	Changes in revenue collected
Private parking levies	Revenue collected, change in parking space provided in developemnts over time
Marketing & communication	Qualitative surveys of Public awareness, user acceptances etc.

7.4 Monitoring, evaluation and review plan

The monitoring, evaluation and a review of the plan that needs to take place requires the responsible branch of TDA to ensure that the design of appropriate evaluation techniques, data collection and analysis is on-going.

The Strategy will be updated every 5 years in line with the revision of the CITP, and in order to incorporate findings from this monitoring and evaluation process.

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