

# MyCiTi Integrated Rapid Transit System it is not just about the bus




## BACKGROUND

The City of Cape Town has entered an exciting era of public transport. Not only has it successfully launched a Transport Authority, known as Transport for Cape Town (TCT), but its flagship project, the Cape Town MyCiTi Integrated Rapid Transit (IRT) System, is growing from strength to strength.

The MyCiTi bus service is a component of the bigger IRT System which brings together all modes of transport, including rail, bus, taxis and non-motorised transport (NMT) in a coordinated fashion. It was launched as a pilot project in May 2010 for the 2010 FIFA World Cup to provide services such as the Civic Centre to Stadium shuttle service, the Airport to City express service and the Inner City Gardens to Waterfront service for World Cup spectators and visitors. The system has grown since then, and, supported by its ever increasing infrastructure footprint, provides safe, efficient, affordable and reliable public transport services for the residents of Cape Town.

The City is aiming to significantly expand the services from the present provision of seven feeder and trunk routes by introducing an additional 31 feeder and trunk routes in the foreseeable future (known as Phases 1a and 1b). A trunk route is classified as an arterial route on dedicated bus lanes, whereas a feeder route is a more penetrative route that operates in mixed traffic in mainly suburban areas.

The continuing success of the service is, however, not just about buses, but is dependent on a number of parts that contribute equally to the success of the system. This article gives some insight into how all these parts contribute to ensuring that the buses are kept on the road and the passenger journey is kept as enjoyable and stress-free as possible.

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## THE SUM OF THE PARTS

Transporting a passenger from A to B involves a system of well-coordinated and integrated parts. Each of these parts play an important role in ensuring that passengers are able get to their destination with the objective of ensuring they enjoy the ride as well. A typical passenger experience will involve:

- The Transport Information Centre (TIC) and communications teams who aim to give the passenger up-to-date information on bus schedules, route maps and interruptions to the service via telephone, web site and social media, etc.
- The directional and information signage at all stops, shelters and stations.

- The infrastructure with its dedicated roadways and stations to ensure a quick and congestion-free journey to work and school.
  - The world-class Automatic Fare Collection (AFC) system to ensure ease of payment and access.
  - The operators who drive the buses and operate the stations.
  - The low emission buses with wheelchair and bicycle access.
  - The law enforcement officers who uphold passenger safety.
- These key parts are described in more detail below.

**Transport Information Centre and Communications**

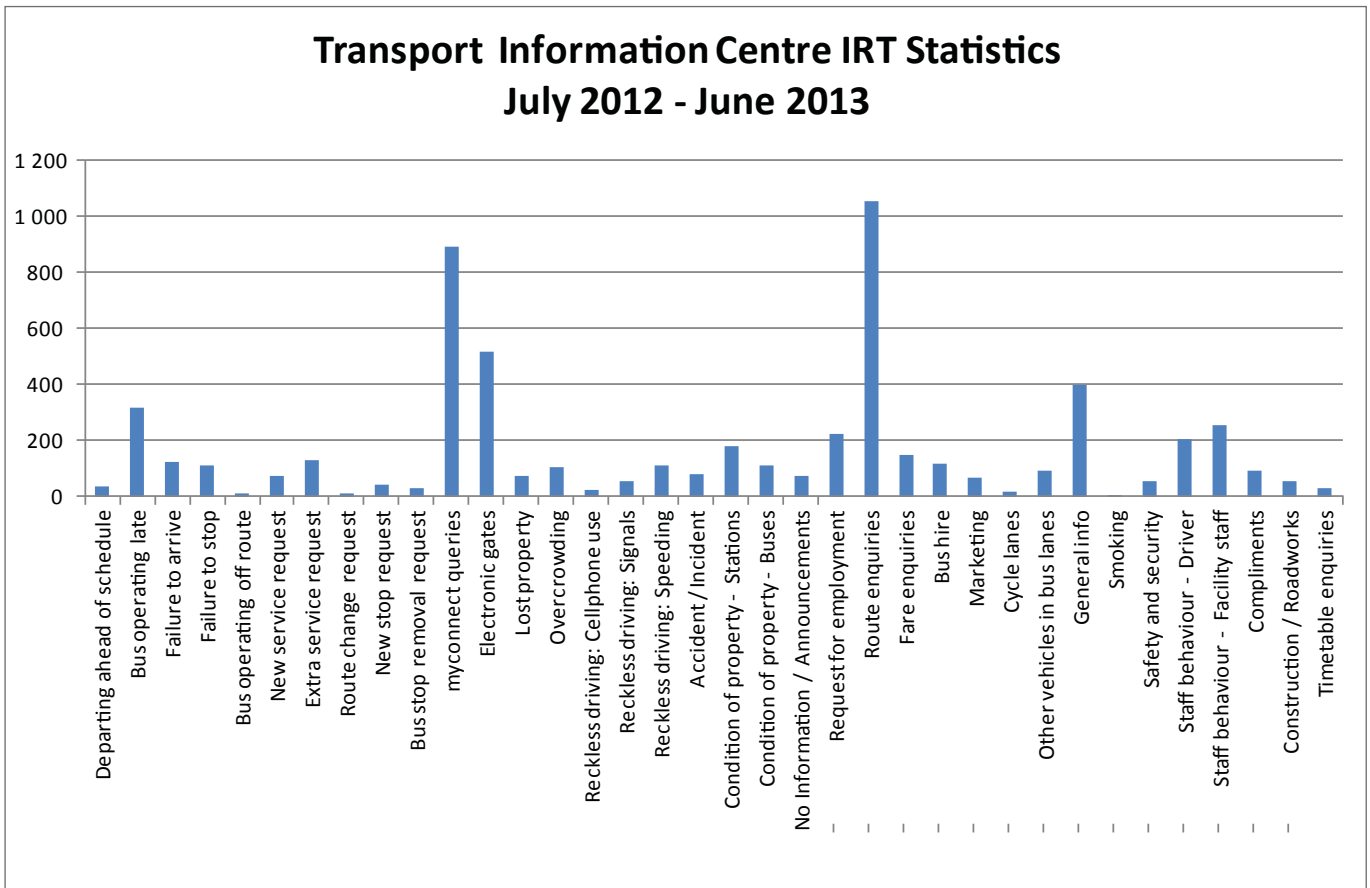
The TIC acts as the central point of contact for all public queries. With one toll-free number (0800 65 64 63) passengers can access a wide range of information about MyCiTi and lodge complaints or queries. These include questions relating to how the myconnect (AFC) card works, bus departure / arrival times, future routes, lost property and fare enquiries.

The system also relies on continual feedback from the general public to ensure that the highest standards are maintained. The TIC refers any serious or special issues directly to the City operational team to ensure that a personal touch is provided and to ensure rectifications are put in place.

Graph 1 gives an indication of the number of calls and the type of feedback received from the public over the past year. It clearly indicates the enthusiasm of the public by the number of enquiries regarding when routes are coming to their area.

The communications team has developed a brand everyone can relate to. The MyCiTi mascot, Marvin, is the product of a competition among passengers. He can be found mingling with the crowd at special events and has become an interactive show-piece for representing the brand.

The Mobi Website is accessible from all forms of mobile phones and provides the passenger with 'live' real-time information on bus departure times per route for every stop. On smart-



**Graph 1: Transport Information Centre IRT Statistics, July 2012 – June 2013**

phones the mobi site (mycitibus.mobi) can be used, and on older phones the site can be accessed via the SMS code \*120\*1040#. All times reflected include any delays experienced on the route, which are also indicated on the electronic Passenger Information Displays (PIDs) in all of the stations.

In addition to these options, QR codes are incorporated into all passenger information posters at stops. This enables smart-phone users to scan and obtain quick and easy access to MyCiTi information pertaining to that particular stop.

A dedicated and fully interactive website (www.myciti.org.za) has recently been launched, which provides a wide range of information, including a trip planner, route maps, timetables and information on fares, etc.

### Signage

For passengers who do not have access to the internet or smart-phones, passenger information signs at all stops and stations are an integral part of the system to keep passengers informed. The signage comprises static information signs, way-finding signs, electronic PIDs in stations and electronic destination displays (EDDs) on buses. A dedicated team of graphic designers and operational signage staff ensures that the information is updated continually.

### Infrastructure

The bulk of the investment in this service is in the infrastructure, which differentiates the MyCiTi system from other modes of transport. Reducing the cycle times of buses by



Typical cantilever bus stop

using appropriate infrastructure means fewer buses need to be procured, less kilometres need to be travelled, as well as faster journey times for passengers. Some of these time savers include:

- The 'red' road, a dedicated concrete bus lane enabling the buses to travel independently of mixed traffic, especially significant in peak periods.



Access gates in the closed stations



Bus validator used at open feeder stops

- The stops and closed stations with high-level boarding through multiple doors enabling faster boarding and alighting times.
- Inductive loops at traffic light intersections enabling pre-selection signal control to give the bus priority.
- Kassel kerbs that control the bus wheel movement when docking, allowing for more accurate station alignment.



Bicycle access onto a bus – note the level boarding and extended ramp for easy access



18 m articulated bus

- Cameras linked to the centrally located Transport Management Centre (TMC), enabling queues to be analysed inside the stations and bus requirements managed accordingly.
- Pre-paid gate access with the AFC system using the Euro Mistro Visa (EMV) cards, reducing delays to bus departure times as bus drivers do not have to deal with money or tickets.

The stations are managed by an independent contractor who tendered for the services and who operates them under a Service Level Agreement (SLA) with the City.

### **The Automatic Fare Collection (AFC) system**

The EMV or **myconnect** card has become synonymous with the MyCiTi system and has replaced the paper ticket system. This world-class payment system not only acts as a debit card, but enables quick 'tapping on' and 'tapping off' while using the buses and stations.

When the system commenced, a flat fare was charged depending on what service the passenger used. On 3 August 2013 the distance-based fare structure was launched, which allows for more accurate fares linked to distance travelled, the charging of peak and off-peak fares and the option of buying cheaper bulk packages.

Myconnect cards can be purchased and value added at MyCiTi stations or at selected retailers in the vicinity of the service. To date, approximately 125 000 cards have been sold.

### **Vehicle operating companies and station management services**

The City has partnered with taxi associations and bus companies who presently operate in the planned MyCiTi areas. These associations have formed companies who now operate the buses. Three companies presently operate the service – Golden Arrow Bus Services (GABS), Kidrogen and TransPeninsula Investments.

These companies have risen to the challenge of managing these new bus companies, providing the drivers, and technical and management staff necessary to keep the buses on the road.

### **The fleet**

The MyCiTi fleet presently consists of three vehicle types. The vehicle types are used according to the route or area in which they are operating which is influenced by the passenger demand, the terrain and the station/stop configuration.

At present the fleet comprises 8 x 18 m, 44 x 12 m and 31 x 9 m buses. As the future routes and services roll out for Phase 1a, an additional 24 x 18 m, 24 x 12 m and 190 x 9 m vehicles are due to enter the service. All these buses are wheelchair- and bicycle-friendly.

#### **■ 18 m articulated buses**

These high-floor buses operate mainly on the dedicated bus ways. They can accommodate up to 131 passengers (59 seated, 72 standing and two wheelchairs).

#### **■ 12 m rigid buses**

These high-floor buses also operate mainly on the dedicated bus ways and can accommodate up to 86 passengers (45 seated, 41 standing and one wheelchair).

#### **■ 9 m buses**

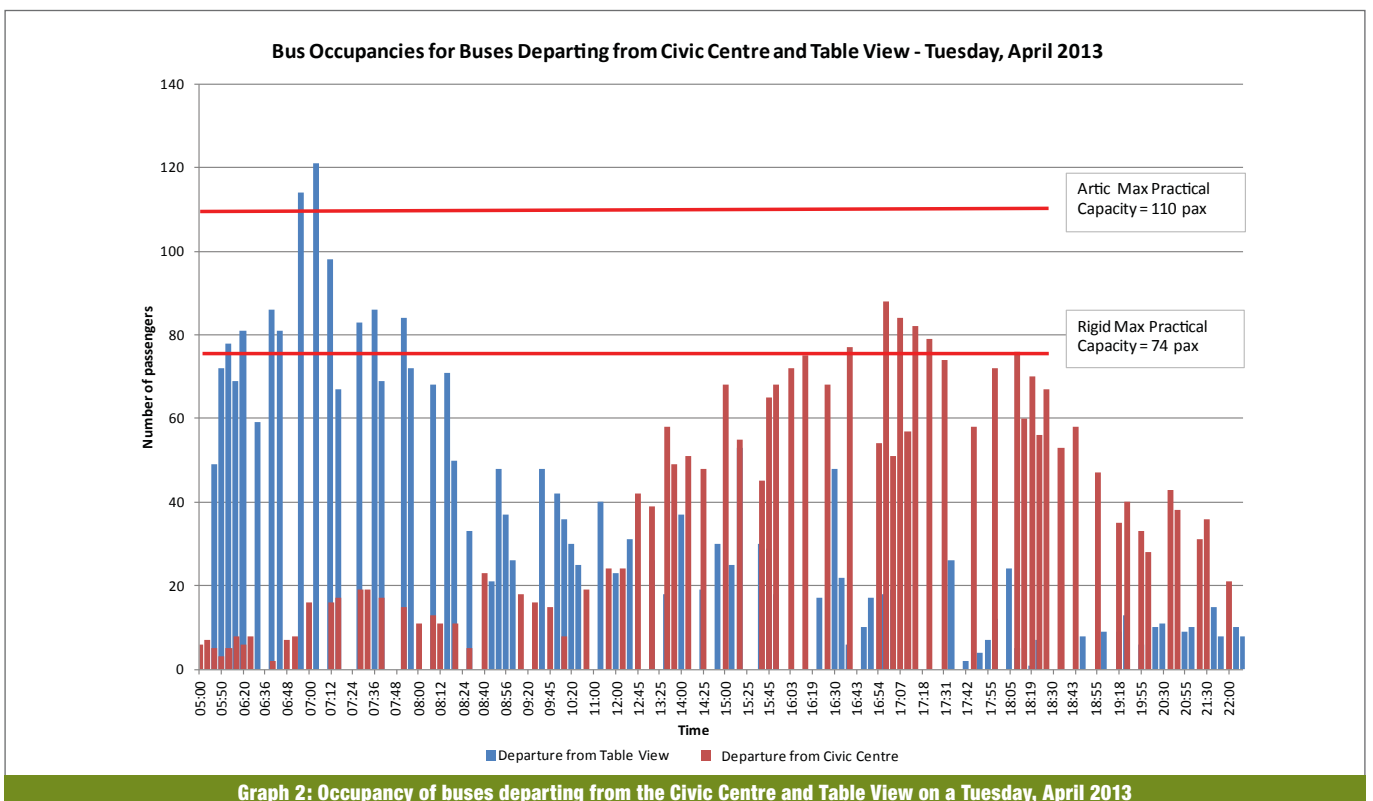
These buses are currently being assembled in Cape Town and have been operating on three of the feeder routes since March 2013. With low floors, they are designed to travel efficiently in mixed traffic and on the steep and narrow roads found in many areas of Cape Town. These medium-sized buses can

accommodate up to 50 passengers (25 seated, 25 standing) and have a demarcated area for a wheelchair. Level boarding is achieved via a retractable ramp.

The current passenger occupancies on the trunk route from the Civic Centre to Table View are indicated in Graph 2. The typical concentrated morning peak period can be noted in

blue in comparison to the extended afternoon peak as indicated in red.

The recommended maximum standing density in South African is 4.5 standees per m<sup>2</sup> of available standing area, which compares favourably to the European and USA standards of 4 pax/m<sup>2</sup> and 5 pax/m<sup>2</sup> respectively.



The MyCiTi Volvo buses are currently specified for a maximum standing density of 4.2 pax/m<sup>2</sup>, but the present actual peak standing densities achieved on the trunk tend to be closer to 2.0 pax/m<sup>2</sup>. There is a general reluctance by pas-

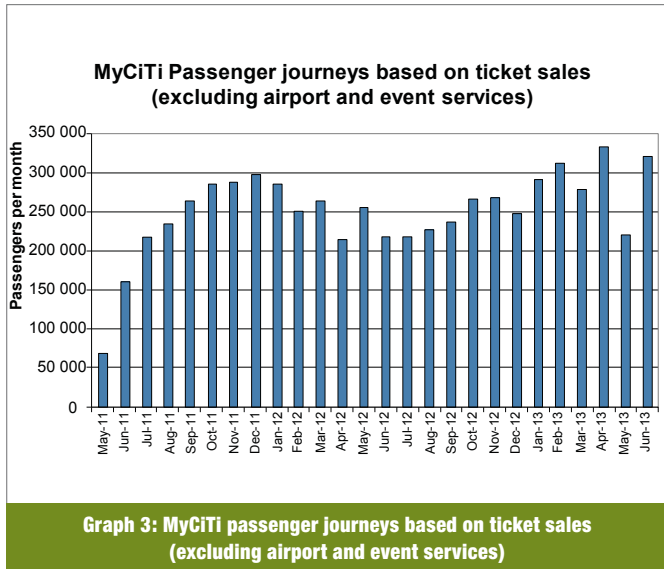
sengers to exceed this density, which results in the practical capacity (85% of legal capacity) of the buses rarely being exceeded, as is evident from Graph 2.

In order to keep the standing densities as high as possible in peaks, the current operational approach is to first fill the seated capacity of the peak buses and then allow those who are willing to stand for the journey to jump the queue. This improves the sustainability of the service whilst ensuring that passengers are not deterred from using the system.

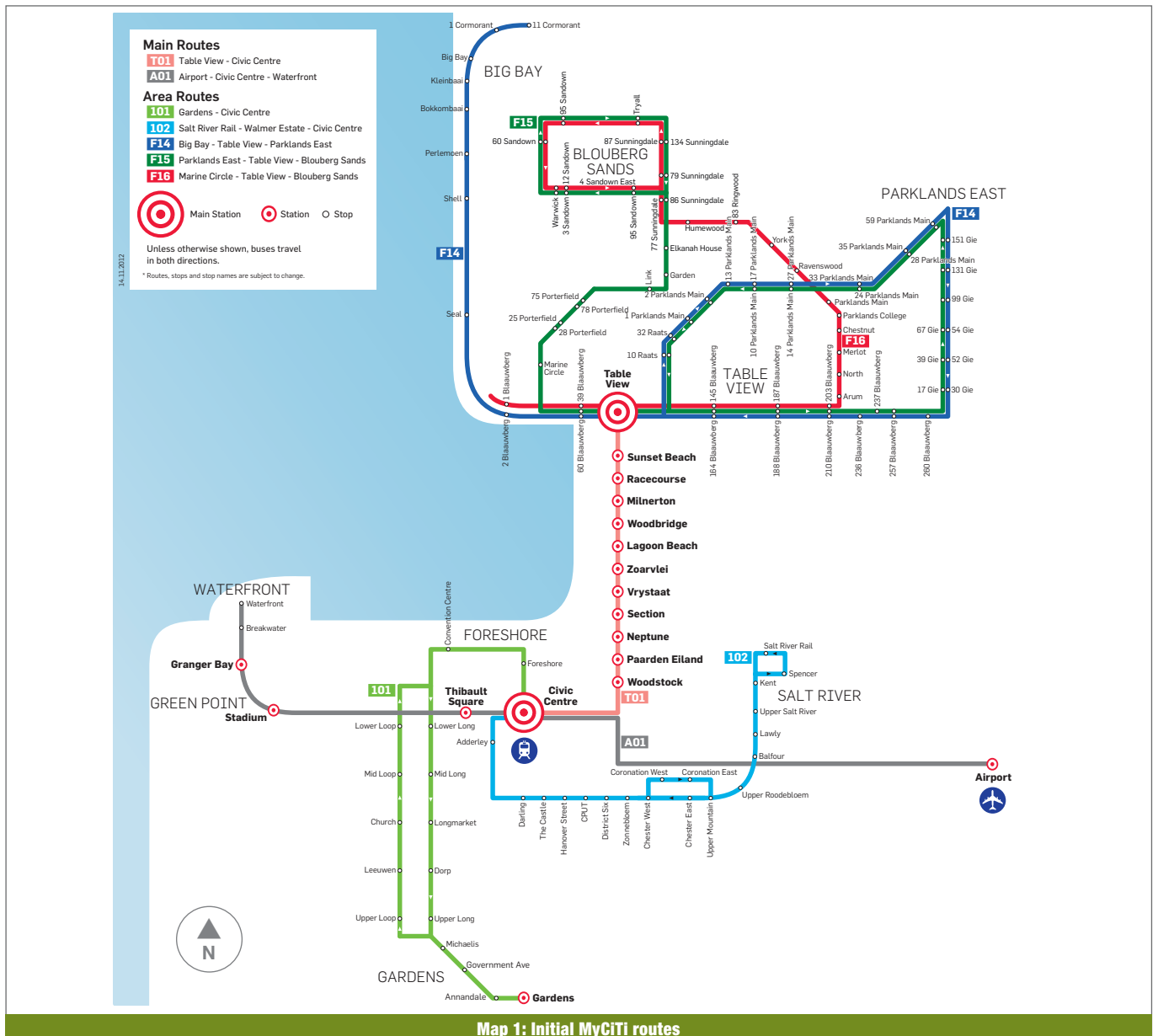
**Law enforcement**

Law enforcement officers are an integral part of the system in order to ensure public safety and prevent fare evasion. These full-time members on the ground are supported by the City's Strategic Surveillance Unit based in the TMC, who monitor security cameras which cover the stations, stops, bus lanes and the inside of the buses.

In combination with ensuring passenger safety, the unit also records and fines any unauthorised vehicles observed on the CCTV cameras using the bus lanes, which have resulted in a marked drop in misuse over the past year. In addition, the buses are fitted with 'drive cam'



**Graph 3: MyCiTi passenger journeys based on ticket sales (excluding airport and event services)**



**Map 1: Initial MyCiTi routes**

cameras which monitor the bus drivers to ensure that they behave in accordance with the code of conduct.

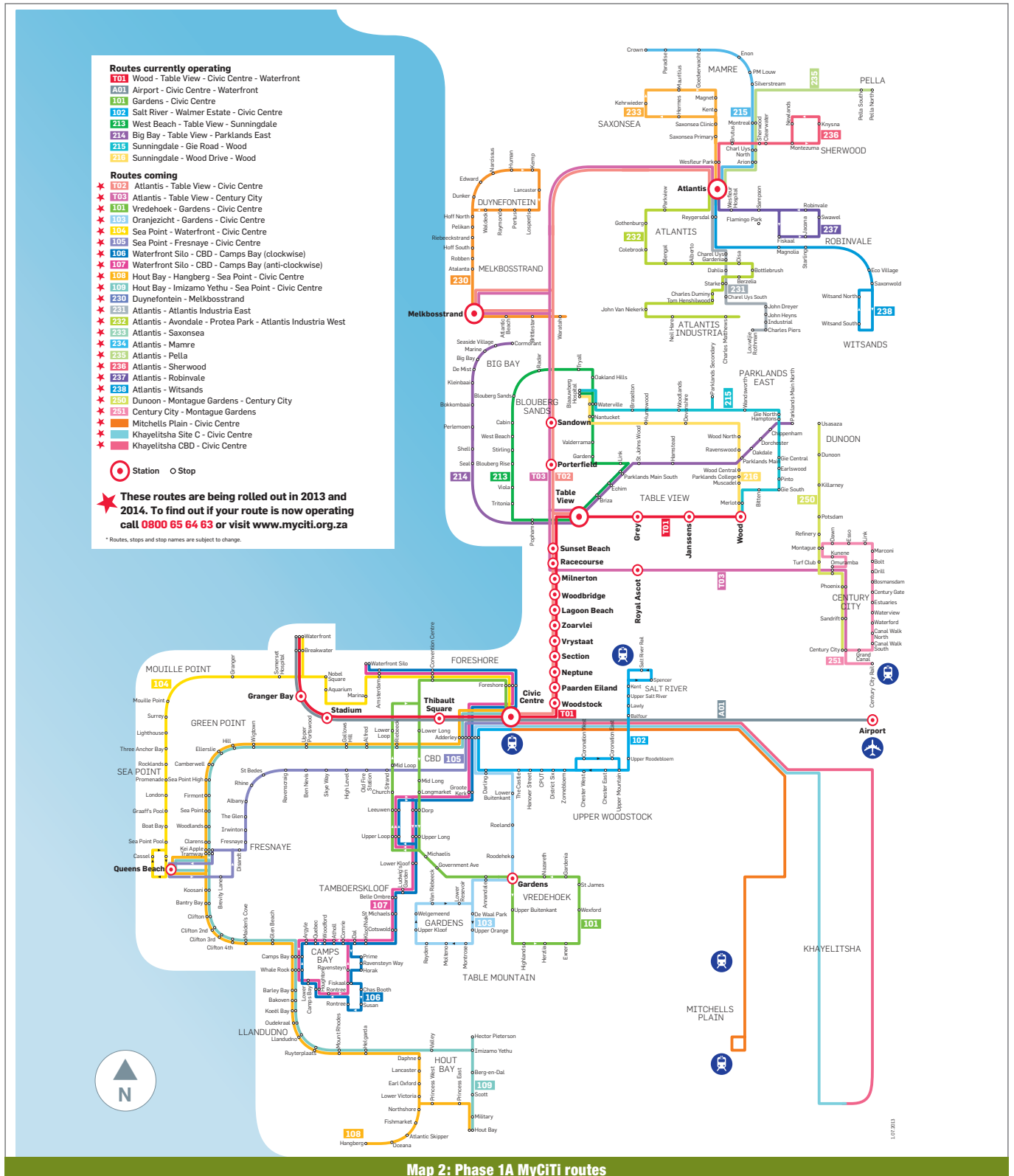
### MYCITI STATISTICS

Since the launch in May 2010, approximately 7.2 million passenger journeys have been made on the MyCiTi rapid transit system. In addition to daily commuter travel, it includes transport services provided during the 2010 FIFA World Cup and subsequent events held at the Cape Town Stadium.

The number of passenger trips made on a monthly basis is shown in Graph 3. The sharp decrease in the number of passen-

gers in May 2013 was as a result of the national bus strike. A general seasonal trend is emerging as potential passengers choose to use their cars over the Cape Town winter months.

Table 1 indicates the present on-time buses against the set schedules for the main trunk routes (T01/A01), the inner city feeder routes (F1/101/102) and the Table View feeder routes (F14/F15/F16). These results compare very favourably with the Transport for London (TfL) standard of 85% on-time buses. The results clearly indicate how the Table View feeder routes, which do not have their own dedicated lanes, have lower schedule adherence results as they operate in mixed traffic.





## PROJECT STATUS

Maps 1, 2 and 3 indicate the present and future roll-out plans for MyCiTi. The first two maps show the pilot routes followed by the full Phase 1a system map, while the third map indicates the future planned roll-out phases.

## PROJECT TEAM

Since 2007 two departments within the City of Cape Town have been working on the implementation of the MyCiTi IRT service. The Implementation Department is responsible for the planning, design and implementation of the infrastructure; and planning of routes, timetables and bus requirements. The Operations Department is responsible for the day-to-day operation of the service and includes sections such as:

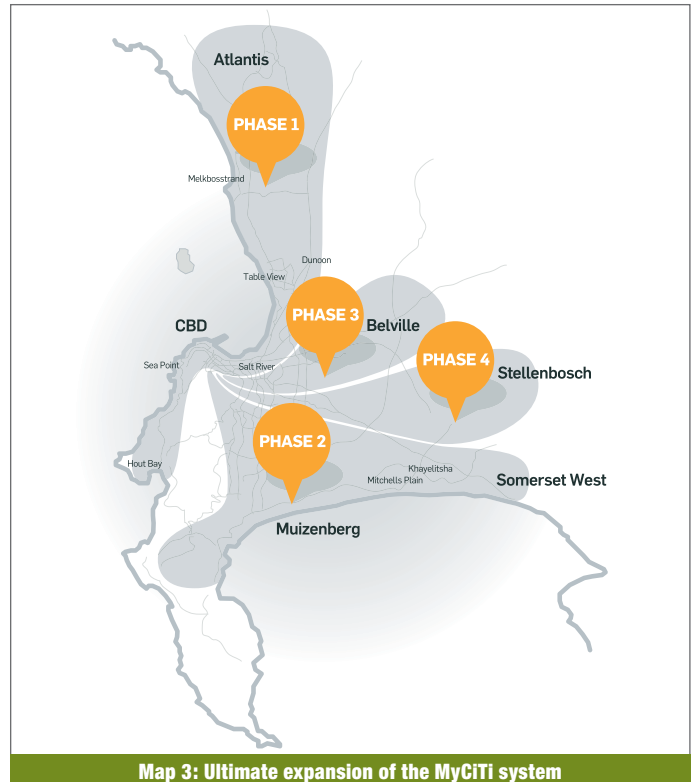
- Business Management, who manages the finance models and complex negotiations with interested and affected parties, as well as setting up the contracts with all contracting parties
- Industry Transition, who engages with the taxi associations who will be affected by the implementation of the services
- Pure Operations, who deal with the timetables, bus operations and maintenance on the ground
- Control Centre, who manages the regulation of the buses and reports on the performance of the system
- Information Management, who keeps the website and signage, etc, updated.

## CONCLUSION

While the operational success of such a complex and important operation is dependent on all the parts functioning together in an efficient manner, the whole of the parts relies on a few hard-learned principles:

- Operations are about relationships and being able to work as a team under 'just in time' circumstances.

- Constantly keeping communication channels open both internally to the operators and their employees, and to operational staff, AND to the public.
- Being able to empower people to do their jobs – operational processes require quick decisions.
- Having people capable of doing the job and defining their roles and responsibilities within an ordered reporting structure.
- Having efficient systems in place to enable constant monitoring for constant improvement.
- Unwavering political support is essential. □



Map 3: Ultimate expansion of the MyCiTi system

**Table 1** On-time buses against the set schedules

% On-Time (2 min early to 5 min late vs timetable time)								
	T1	Airport		F1		F14	F15	F16
July to December 2011								
Averages	87%	98%		90%		77%	64%	73%
January to December 2012								
Averages	89%	97%		92%		79%	86%	81%
January 2013								
Averages	91%	97%		90%		80%	87%	81%
February 2013								
Averages	87%	93%		84%		79%	83%	77%
	T1	A01 Airport	A01a	101	102	F14	F15	F16
March 2013								
Averages	88%	90%		85%	84%	69%	83%	75%
April 2013								
Averages	83%	90%		76%	87%	68%	84%	79%
May 2013								
Averages	83%	87%	88%	88%	87%	76%	85%	76%
June 2013								
Averages	86%	95%	93%	84%	93%	79%	82%	81%

Source:

[http://www.saice.org.za/downloads/monthly\\_publications/2013/2013-Civil-Engineering-September/files/res/downloads/book.pdf](http://www.saice.org.za/downloads/monthly_publications/2013/2013-Civil-Engineering-September/files/res/downloads/book.pdf)