FINAL REPORT

PRE-FEASIBILITY STUDY ON NON-MOTORISED TRANSPORT (NMT) IN THE FIFA WC™ 2010 HOST CITIES:
CITY OF TSHWANE

PREPARED FOR:
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in partnership with

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9. 2010 FIFA WC Host Cities: Tshwane

9.1. Brief Profile of Tshwane

The City of Tshwane (CoT) has a recorded population of 1,985,983 and 562,653 households according to the National 2001 Census Report (Census 2001, STATSSA). The population resides in an area of 2,198 km². It has about ten inhabitants per hectare. The level of unemployment is estimated at 19.8% (CoT Household Survey 2008).

The population of more than two million people has on average the highest educational level in the country, and the city is a national centre of research and learning with four universities and the headquarters of both the Council for Scientific and Industrial Research (CSIR) and the Human Sciences Research Council (HSRC).

Loftus Versfeld Stadium, situated in the heart of the City of Tshwane, is one of the oldest stadiums in the country. It has a seating capacity of 50,000 spectators.

For the purposes of this project, NMT (non-motorised transport) refers to walking and cycling modes only and disregards any other forms of NMT.

9.2. Existing Public Transport Systems

9.2.1. Bus Services

Major bus routes are from Mpumalanga (former KwaNdebele), Soshanguve and Hammanskraal to Pretoria. The distribution of bus routes within Pretoria is extensive. The services are operated from 14 depots, 23 major terminals, 25 major bus stops and a large number of normal bus stops.

The following ten operating entities provide the main commuter services within the CTMM area:

- PUTCO Soshanguve
- PUTCO Siyabuswa to Pretoria
- PUTCO Siyabuswa to Pretoria
- PUTCO Distribution from Belle Ombre
- PUTCO Ekangala from Mpumalanga
- PUTCO Mamelodi Bus Service
- Pretoria City Transport (CTMM municipal service)
- North West Star Batswana Gare in Mabopane, North-West
- North West Star Botlhaba from Hammanskraal
- North West Star Thari from Brits, North West
- Atteridgeville Bus Service (North West Star affiliate)

The main movement of people by bus is from areas to the north, north-west and north-east to the central area of Pretoria. These areas are the former KwaNdebele (in Mpumalanga), Soshanguve, Hammanskraal and Hebron. Other important movements are from Mamelodi and Atteridgeville to Pretoria Central and from Pretoria Central to Centurion.

Pretoria City Transport (PCT) is owned and operated by the City of Tshwane while the rest are currently managed by the Provincial Government and subsidised by the National Government. PCT provides services mainly within the area of the previously City Council of Pretoria. There are currently 298 buses in service, of which 232 are needed in the morning peak period and 195 in the afternoon peak. On a typical weekday PCT undertakes 1960 trips, of which 273 are for learners. PCT is currently transporting approximately 8 200 adults and 7 100 learners within the morning peak period. PCT is however managed and financed by the City of Tshwane.

9.2.2. Minibus Taxi Services

In general, taxi routes follow the same pattern as bus routes. The Land Transport Permit System (LTPS) data base of the Gauteng Permit Board indicates that there is 14 046 minibus-taxi and metered-taxi permits (active or pending) with either origins or destinations in the City of Tshwane Metropolitan Municipality (CTMM) area. However, during the recent CPTR (Current Public Transport Record) surveys, only 10 750 individual minibus taxis were identified. There are 43 taxi associations active in the CTMM. A few of these operate from external areas such as North West and Limpopo Province under agreement with the CTMM taxis. A total of 462 minibus taxi routes were identified in the 2003 CPTR update.

9.2.3. PRASA/Metrorail

The existing rail network of the Passenger Rail Agency of South Africa (PRASA)/Metrorail for the Gauteng North region consists of 106 route km (280 km of rail lines) that is connected to the 371 route km of the Gauteng South network with the double line between Pretoria and Germiston Stations. The network is shown diagrammatically on Figure 1. Currently, 47 train sets service the 56 suburban stations.

The rail network belongs to and is operated by PRASA. The busiest routes are the Mabopane/Soshanguve and the Mamelodi lines to the CBD. These main routes are
operating at near 100% capacity during the peak period, while the other lines generally operate below capacity.

Each train set comprises of 12 coaches (170 passengers per coach), with the Metro class coaches having a capacity of 1,500 passengers per train.

Utilisation of the rail system in the inter peak period (08:30 to 15:30) is only about 20% of the afternoon peak. Train frequencies during the inter peak period are about one train per direction per route. The current Metrorail services runs between 05h00 to 20h00.

No new rail links which are being planned or constructed will be operational by 2010.

The metro rail system connects Central Pretoria Main Station (transport hub) with Loftus Versfeld (Rissik Station), Johannesburg (Kempton Park and Germiston) and OR Tambo International Airport (Isando Station and new Rhodesfield Station that is currently planned for construction and which might be operational by WC2010). The metro rail services do not service the Rosebank and Sandton accommodation areas.

The Pretoria Main Station and Belle Ombre Station also serve the Pretoria Main Accommodation hub, i.e. the Pretoria CBD. Pretoria East is a secondary
accommodation hub, but has no rail network within the area. Centurion, another secondary accommodation hub is served by Irene Station and Centurion Station.

Tickets are bought at the station and fares vary according to the distance travelled. There are various ticket options: daily, weekly or monthly.

**9.2.4. PRASA/Shosholoza Meyl**

The main intercity services are provided by Shosholoza Meyl, which provides daily long distances services to north and south of CoT, bringing on average 1,000 passengers per day in and out of the CoT. The scheduled services provided by Shosholoza Meyl are diametrically shown on Figure 2 below.

![Figure 2: Diagrammatic layout of the Shosholoza Meyl services for the 2010 FIFA WC. (Source: Metrorail Operational Plans: Gauteng North)](image)
9.3. Upgrades to existing public transport systems and proposed new transport systems

9.3.1. The CoT Bus Rapid Transit System - Implementation of phase 1

The completed BRT system will eventually consist of 472 km of infrastructure. Tshwane's first-phase bus rapid system will run from Mapobane, past Wonderpark Shopping Centre on the Mabopane Freeway, the inner city, Brooklyn, Menlyn, Faerie Glen, and on to Mamelodi.

Busses will operate at two to four minute intervals during peak periods, and seven to ten minutes during off-peak periods. The system will be operational from five in the morning to midnight. The BRT busses will make use of dedicated median lanes (as opposed to kerbside lanes) to be developed on current road alignments, thereby minimising costs. This means a four-lane road (two lanes in each direction), will see one lane become a BRT lane, with the other then a mixed-traffic lane. BRT lanes will be separated from the normal traffic lanes by a semi-rigid structure, thereby allowing exclusive bus use. This will ensure the busses can travel at speed, without the constraints of peak-hour traffic.

The busses will stop at dedicated stations, placed at 750 m intervals along the route. Tickets will not be issued on the bus, but at the stations. The BRT stations will feature pedestrian access, bicycle parking, park-and-ride facilities (not all stations), and rail-road interfaces where applicable such as the Hatfield and Pretoria Gautrain stations, and the Pretoria Metrorail station.

Significant progress has been made with the planning of the Tshwane BRT project since the turn-around strategy was approved by the Mayoral Committee in September 2008. The environmental impact assessment is being finalised for submission to the Department of the Environment. Architects for the conceptual design of the BRT station will be appointed soon, as well as the professional team for the design of the infrastructure. Construction on line 1, from Mabopane to the city centre, is to commence early in 2010. Consultation with the stakeholders, including commuter organisations, is taking place. The City is part of the National Joint Working Committee, led by the Department of Transport, to find ways to accommodate the taxi industry in the BRT project.

9.3.2. Station Upgrades

The infrastructure upgrades which are in progress are directed at the main stations likely to be used for 2010 purposes, i.e.
• Pretoria Main Station – serving as the Regional Transport Hub (both local and inter-city passengers) as well as Loftus Versfeld Stadium;

• Mabopane Station / Interchange - a main intermodal terminal hub;

• Rissik Station – serving Loftus Versfeld Stadium;

• Belle Ombre Station – possibly serving as a secondary transport hub;

• Atteridgeville Station – serving the Mbolekwa Sports Grounds (public viewing area);

• Soshanguve Station – serving Giant Stadium (possible training venue); and

• Mamelodi Gardens Station – serving Moretele Park (possible public viewing area).

Other stations that could play a role include:

• Denneboom Station – serving the HM Pitje Stadium (possible training venue);

• Hartbeesspruit Station – serving the Hatfield Fan Mile and the UP Hostels Accommodation hub;

• Pretoria West Station – serving TEC and Pilditch Stadium;

• Eerste Fabrieke Station – serving the Moretele PVA;

• Schutte Street Station – serving TEC and Pilditch Stadium; and

• Centurion Station – serving Centurion Accommodation Hub and Supersport Stadium.

9.3.3. Gautrain

A new high-speed train system – known as the Gautrain – is currently being built to transport people between OR Tambo International Airport and the two mega-cities of Johannesburg and Tshwane.

The portion between Johannesburg and Tshwane will not be operational by 2010WC. The section between the airport and Sandton might be operational for the 2010.WC Gautrain/Bombela is currently investigating the possibility of expediting the construction process. Should the system be operational between OR Tambo international Airport and Sandton, the trains might not stop at Rhodesfield station to link the Gautrain with the PRASA/Metrail system. The Rhodesfield Metrorail station will be completed by 2010WC.
The Gautrain capacity between the airport and Sandton will be 1 train (consisting of 2 coaches with 62 passengers per coach) every 12 minutes, or an hourly capacity of 620 pax/hour/direction.

Construction work is well underway. Construction work at Pretoria Station, along the rail reserve along University Road and around Rissik Station will impact on the available space for transport facilities during the 2010 WC events.

9.4. Non-Motorised Transport

The City of Tshwane has recently appointed Nyeleti Consulting that will do the study to develop an implementation framework that will address the needs for the Non-motorised transport bicycle routes incorporated with the Department of Transport National Strategy and Environmental Department Policy. The service provider is expected to indicate the status quo of what has been implemented for the NMT bicycle route initiative in the Tshwane region.

A Pedestrian Safety Master plan that provides a comprehensive framework for improving pedestrian safety and mobility in the City of Tshwane regions is available. The objectives of the master plan is mainly focused on improved safety and efficiency for pedestrians by implementing traffic calming measures, provision of formal public transport facilities, road markings and road signage and pedestrian walkways.

The Department of Transport initiated the Shova Kalula (Pedal Easy) programme in 2000 to promote cycling as a low cost means of mobility. The programme aims to provide one million low cost bicycles nationally by 2010, targeting mainly scholars, rural women and farm-workers that have poor access to transport. The programme also promotes the establishment of micro business which support the maintenance and repair of the bicycles. As part of the programme, the City of Tshwane has built about three kilometres of cycle paths and walkways and sixteen pedestrian ramps in Atteridgeville. The proposed routes for construction in Atteridgeville are indicated in Figure 3 below. Click here for full report on Shova Kalula Bicycle Programme in the Atteridgeville area and here for the latest progress report of the programme.

The City of Tshwane also hosted the non-motorised workshop with the Bicycle Partnership Programme and the consultants from the Netherlands in November 2008.
9.5. NMT Demand Analysis

9.5.1. Mobility Patterns

Traffic counting on the majority of the arterials in the city was undertaken by Karabo Consulting (Pty) Ltd in March of 2004. The counted vehicles were divided into four classes of vehicles (cars, bus, taxi and truck). The city was subdivided into 11 zones.

The following conclusions can be drawn from the traffic surveys:

- Zone 5, which comprises the area bounded by the N1 to the east, Church Street to the north, Garstfontein Road to the south and the R55 to the west, has the highest inbound and outbound traffic in the peak period, followed by Tshwane CBD (Zone 11).

- Zone 7, which is located to the immediate south of Centurion business area, has the second lowest inbound and outbound traffic during the morning peak period. The phenomenon is expected to change in the medium term due to the residential, industrial and commercial rights and the expected development in that area.
Zone 9, which is the extreme south-westerly area of Tshwane, has the lowest inbound and outbound traffic. This conforms to the type of land use found in the zone, which is mainly agricultural.

Table 1 shows the most predominant modes of transport in Tshwane include travelling in private motor cars, walking and making use of a private minibus (used respectively by 19.7%, 16.5% and 12.2% of population in Tshwane)

<table>
<thead>
<tr>
<th>Mode of trip</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle</td>
<td>0.7</td>
</tr>
<tr>
<td>Private Motor Car</td>
<td>19.7</td>
</tr>
<tr>
<td>Lift Club – Private Motor Car</td>
<td>1.5</td>
</tr>
<tr>
<td>Company Car</td>
<td>1.3</td>
</tr>
<tr>
<td>Company Bus</td>
<td>0.2</td>
</tr>
<tr>
<td>Private Minibus</td>
<td>1.4</td>
</tr>
<tr>
<td>Taxi</td>
<td>12.2</td>
</tr>
<tr>
<td>Bus</td>
<td>6.2</td>
</tr>
<tr>
<td>Train</td>
<td>3.2</td>
</tr>
<tr>
<td>Walking</td>
<td>16.5</td>
</tr>
<tr>
<td>Motorcycle</td>
<td>0.1</td>
</tr>
<tr>
<td>N/A/Don’t Travel/Unspecified</td>
<td>37.9</td>
</tr>
</tbody>
</table>

Table 1: Mode Share 2008 Household and Travel Survey

The average distance and time spent travelling by each mode is estimated to be as shown on Table 2 below.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Average travel distance (km)</th>
<th>Average travel time (min)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Car</td>
<td>25</td>
<td>45</td>
</tr>
<tr>
<td>Minibus taxi and Bus</td>
<td>25</td>
<td>60</td>
</tr>
<tr>
<td>Rail</td>
<td>42</td>
<td>120</td>
</tr>
<tr>
<td>Walking</td>
<td>1.5</td>
<td>10</td>
</tr>
</tbody>
</table>

Table 2: Average Travel Distance and Time by Trip Mode (Source: 2008 Household and Travel Surveys)

9.5.2. Estimated NMT Demand

1. Commuter Demand

It is estimated that 30.3% of the population commutes to work. During the morning peak hour, 0.7% cycle and 16.5% walk (estimate includes Commuters and Students travelling before 09:00).

The current infrastructure between origins and destinations includes concrete/block paved walkways at an average width of 1.5m provided on the road reserve and pathways through parks. All implementations are in accordance with the Pedestrian Safety Master Plan. The implementation of the infrastructure is part of the Capital Projects which is ongoing with targets that are revised every 3 years with further
allocation on the operational budget for revised/improvements on studies including bicycle facilities. The implemented infrastructure (concrete/paved and surfaced sidewalks/cycle lanes) is managed by the asset management section of roads and storm water to ensure non-depreciation.

The pilot Shova Kalula project at Atteridgeville is supported by SARCC, and has built parking facilities in three stations linking to Super Stadium which is a training venue for the 2010 World Cup™. The NMT study (Shova Kalula) currently being conducted will inform of areas that needs to be allocated for parking.

The City of Tshwane estimates that there will be 479 new potential commuters cycling to work.

2. **Scholar Demand**

It is estimated that 26% of the population travels to schools/college/universities. During the morning peak hour, 0.7% cycle and 16.5% walk (estimate includes Commuters and Students travelling before 09:00).

The current infrastructure between origins and destinations includes concrete/block paved walkways at an average width of 1.5m provided on the road reserve and pathways through parks. All implementations are in accordance with the Pedestrian Safety Master Plan. All the facilities for scholars are shared with commuters as in the previous section.

The City of Tshwane estimates that there will be 479 new potential learners cycling to schools, universities and other learning centres.

3. **Tourist Demand**

The City of Tshwane did not provide any information on tourist demand.

9.6. **NMT and National Imperatives**

9.6.1. **Job Creation and Business Opportunities**

The Executive Mayor through the Mayoral Committee has established a task team comprising of Members of the Mayoral Committee to align and integrate all procurement policies of the council to the City’s 5 (five) year Strategic Objectives. The City of Tshwane has a clear mandate to redress the imbalances of the past, poverty alleviation, creation of employment and the achievement of economic growth. The local labour forces are involved in the implementation of the infrastructure and maintenance of the cycle and pedestrian paths.
All service/infrastructures implemented are for the benefit of the community at large. It is, therefore, important to involve relevant community groups in every stage of the infrastructure development and in the delivery of services. The planning, implementation and operation stages; the process of community participation at this stage benefits the project by ensuring that the needs and input of the community are taken into account, acceptability of service/infrastructure to the community and sustainability of the project, creating a sense of ownership and responsibility for the development. The proposed bicycle plans and interventions should be discussed with the community for stakeholders and community buy-in. Moreover, there are opportunities for entrepreneurs to operate the bicycle programme such as bicycle shops for repairs, rental stations, security, etc.

There is the intention to implement rent-a-bike programme but no plans are in place. The following training bike plans are available in the City:

A. The utilisation of an organisation (e.g. Bicycle Empowerment Network - BEN) to provide training at two levels:
   - Basic training to bike users ~ 3 days
   - More advanced training to Bike Empowerment Centre (BEC) operators ~3 weeks

B. The establishment of 3 BEC's before World Cup 2010

C. The Implementing Organisation will utilise the services of BEN to support the BEC's for the duration of the project.

D. The Implementing Organisation, in close association with each BEC, will create a corps of volunteers to work during World Cup 2010. These volunteers will work under the guidance of the BEC operator

The following cycling business opportunities are envisaged in the City of Tshwane:

* Partner with the Department of Transport's Shova Kalula programme to source bicycles for rental to 2010 World Cup visitors in one or more Host Cities. Guards on bicycles would patrol designated cycle routes to provide a greater measure of safety and reassurance for potential cyclists anxious for their safety. After the World Cup, those bicycles could be retained for ongoing rental - where viable - or they could be passed on to users through Shova Kalula’s distribution networks.
* Management of bicycle rental facilities would be labour intensive, and would seek to maximise job creation. This would differentiate them from existing automated credit-card based systems in Paris, Stockholm and elsewhere.

* Partner with the Department of Transport and Host City transport departments to construct and run bicycle park and ride facilities at designated points which support improved mobility, linking with public infrastructure provision. Parking facilities to secure and store bicycles would be developed, and manned continuously, thereby creating jobs.

* In line with FIFA requirements for NMT infrastructure and facilities in the Host Cities, work with DoT and identified Host Cities to utilise a portion of the Public Transport Infrastructure Fund (PTIF) to demarcate or develop cycle pathways and cycle routes to link transport junctions to 2010 stadia and identified parts of the Host City CBDs. The national Department of Transport is developing a guideline for municipalities for developing bicycle infrastructure, and NMT developments for 2010 could publicise and demonstrate implementation options.

* Partner with existing cycling advocacy and support organisations such as the Bicycle Empowerment Network (BEN), Afribike, Interface for Cycling Expertise (ICE), Qhubeka, the Institute for Transportation and Development Policy (ITDP) and others, to provide training and skills development courses and ongoing support to would-be bicycle spares and repair shop entrepreneurs and mechanics.

9.6.2. Administrative Capacity

The City of Tshwane didn’t provide any information on the administrative capacity of the city to manage the bicycle and pedestrian infrastructure construction programme.

9.6.3. Public Awareness Assessment

The City is involved in the following activities for the promotion of bicycle and pedestrian opportunities:

- Encouraging strategies (company policies, information and activities supporting bicycle commuting e.g. contests endorsed by riding clubs);

- Awareness programs through public participation e.g. distribution of bicycles to learners and commuters;

- Community workshops;

- Education and law enforcement e.g. community mobilising;
• Extramural school activities;

• Educational programs on traffic laws targeted at school, youth and elderly involving and infrastructure provision;

• Skills training targeting women and children.

With regard to NGO support and involvement:

• The Shova Kalula Bicycle Project is a national project, with Atteridgeville Shova Kalula Bicycle Pilot Project the three spheres of Government is involve in this project which is the City of Tshwane, Gauteng Province and Department of Transport;

• The City of Tshwane is also involving the Road Safety Officers from Gauteng Province to conduct Road Safety Programme at schools;

• The City of Tshwane Broad-Based Black Economic Empowerment (BBBEE) Strategy objectives of this program is to help increase the capacity of Black Economic Empowerment (BEE) companies businesses registered with Council also accommodate women, youth, disabled and Small Micro and Medium Enterprise SMME’s owned businesses in line with Supply Chain Management Policy Framework;

• Institute for Transportation and Development Policy (ITDP) has also given the City its support in terms of technical skills and planning and promotion of NMT;

• The City of Tshwane has signed a Memorandum of Understanding for a Bicycle Participant Programme (2008-2010) with a Netherlands Institution named Interface for Cycling Expertise (I-CE).

9.6.4. Safety and Security

The City of Tshwane plan to introduce education and enforcement programs to alert road users (drivers) about NMT users (cyclists and pedestrians). It will also design and built NMT facilities that are free of safety hazards. Awareness, education, law enforcement programmes and community workshops will be used as safety campaigns to alert cyclists about other NMT users.

The City of Tshwane plan to promote NMT usage and safety in the city through a safe, coherent network of direct walk and cycle routes, comfort and attractive
environment, economical recovery and employment generation, public health improvement, environmental sustainability and affordability and particularly a more independent role for women.

Due to their vulnerability, the city will aim to ensure that the public adheres to the rules of the road, bicycle routes and sidewalks by avoiding shared facilities in addition to awareness, education, law enforcement programs and community workshops.

Metrorail and Intersite are in the process of upgrading all their stations in terms of providing bicycle secure parking/storage, park and ride facilities and maintenance infrastructure with tight security. Secure parking will also be provided in school premises. Bicycle routes and sidewalks will be properly lit, clean, with tree cover and shade, attractive and with resting places and active environment. The South African Police will be patrolling areas identified as hotspots and in townships.

9.6.5. Accessibility

The City utilises the NDoT Pedestrian and Bicycle Facility Guidelines, and the SA Road Safety Manual. All the facilities provided will be convenient and comfortable for users. The criteria for comfort are actual average speed, travel speed, pavement smoothness, minimal traffic obstruction, delay and vulnerability to weather e.g. stops and gradients, physical barriers to cyclists e.g. rivers, hills, fences and highways. The facilities will also provide direct and convenient access to users. The criteria for directness are continuity, detour distance, easy to find routes, constant route quality and freedom of route choice to all regardless of age or ability. There are large intentions to accommodate mobility aids, continuous travel corridors along sidewalks, across driveways and roadways. Provisions will also be made for people with visual impairments.

9.6.6. Integration

The NMT study being conducted currently will consider existing/planned transport facilities (such as minibus taxi stations, bus stations, railway stations, BRT stations, airports/links to airports) and places of interest (schools, shopping centres, tourism infrastructure, stadiums and hotels).

9.6.7. Sustainability

To ensure the long term sustainability of NMT in the City of Tshwane, the city has signed a Memorandum of Understanding for a Bicycle Participant Programme – BPP (2008-2010) with a Netherlands institution named Interface for Cycling Expertise (Ice). According to the MoU, the participation is meant to add extra quality to the ongoing execution of cycling-intensive policies in the city, in order to maximize the effectiveness of the cities efforts.
The City of Tshwane Metropolitan Municipality's responsibilities, in this participation, will be:

- the execution of activities in order to meet the committed ambitions;
- subject to legislative requirements, the funding of these activities;
- regular local staffing;
- subject to legislative requirements any contracts with consultancies and advisors immediately related to the implementation activities;
- the appropriate involvement of Non-Governmental Organisations (NGO’s) (such as the Bicycle Empowerment Network (BEN) and other stakeholders;
- a proper documentation of experiences and results for exchange with the international partners of the program, including the delivery of half yearly reports; and
- participation in meetings with other partners of the programme.

The responsibilities of I-ce in this participation will be:

- to ensure the availability of international expertise (including the funding thereof) for:
  - professional coaching of city officers and providing peer-to-peer reviewing of plans and designs;
  - interactive training in workshops on relevant issues, including issues related to the proper involvement of stakeholders and such;
  - web-based learning by providing access to appropriate sources with peer-to-peer dialogue and distant tutoring; and
  - assistance in the drafting of context-specific guidelines and manuals.
- the engagement of related Bicycle Participants Programme (BPP) stakeholder networks such as universities, bicycle industry, and NGO’s;
- the involvement of politicians and the staff of Dutch local and regional authorities;
• organisation and funding of international meetings with other partners of the BPP; and

• fundraising activities in the Netherlands for the support of Civil Society Organisations (CSO) activities within the framework of this programme;

The City of Tshwane has also included the NMT projects on the Capital Budget for financial year 2006/2007 and this will continue to further sustain the initiative.

The planned NMT master plan will be revised and tested regularly to ensure efficiency. The implemented NMT projects form part of the City’s assets once in place and this is monitored by the Asset Management and Maintenance Section which is allocated a budget yearly.

9.7. Project Impacts on NMT in Host Cities

9.7.1. Impact of NMT on Traffic Congestion

Congestion and absence of adequate emissions standards and control systems have attributed to air pollution and noise levels, especially within the CBD’s limits. Moreover, local climatic patterns are becoming favourable for thermal inversion, thus creating potential transport related health hazards. Increased travel distance and time spent on daily trips for basic activities, caused by urban growth and restricted modal split options have resulted in increased car ownership and use.

Twenty percent of the population is using private cars as a mode of transport and the average car travel distance is estimated at 25 km. This percentage can drop significantly with the introduction of a comprehensive NMT system. With only 0.7% of population is estimated to be cycling as a mode of transport, there is a significant room to increase the numbers.

9.7.2. Impact of NMT on Environment

To date, no Environmental Impact Studies have been conducted.

Based on the requirements of the National Environmental Management: Air Quality Act, 2004 and the Tshwane Integrated Environmental Policy (TIEP), the Health Care Division initiated the development of an Air Quality Management Plan (AQMP) for the City of Tshwane. The plan was approved on 15 September 2006 by the Mayoral Committee. The AQMP is intended to be used as the management and performance-monitoring tool for air quality control and to provide a baseline assessment of air quality issues within the City of Tshwane. The purpose of the plan is to address various categories of air pollutants including: toxic and odoriferous substances, greenhouse gases and ozone depleting substances. Although greenhouse gas
emissions were included, these were not addressed in detail since it was assessed as part of the Energy Strategy Report developed by the city in parallel to the AQMP process.

The successful implementation of the Tshwane Integrated Environmental Policy will contribute to the environmental provisions in section 24 of the Bill of Rights which states that everyone has the right to a safe and healthy environment and to have the environment protected for current and future generations.

The proposed bicycle and pedestrian routes will be part of the overall objectives to keep the City clean. A strategy will be put in place to plan for receptacles and the cleaning thereof.

**9.7.3. Impact of NMT on Road Safety**

Most road accident fatalities in the city are among pedestrians. The accident statistics, including both cyclists and pedestrians, from 2007-2009 are as follows:

<table>
<thead>
<tr>
<th>Accident Type</th>
<th>Number of Accidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fatal</td>
<td>783</td>
</tr>
<tr>
<td>Serious</td>
<td>9,265</td>
</tr>
<tr>
<td>Slight</td>
<td>33,261</td>
</tr>
<tr>
<td>Injured</td>
<td>215,497</td>
</tr>
<tr>
<td>Total</td>
<td>258,806</td>
</tr>
</tbody>
</table>

Table 3: Road Accident 2007-2009

The NMT initiative will assist in reducing the conflicts between modes of transport which is mainly caused by lack of facilities resulting in accidents. It will also assist in creating efficient transport systems, reducing travel times thereby reducing the frustration and intolerance of the roads.

**9.8. Economic Feasibility of NMT Project**

**9.8.1. Estimated NMT Facility Costs**
A total of 7 km of bicycle lanes are planned for the 2010 World Cup™. Additional kilometres of bicycle lanes and pedestrian sidewalks are also planned on an ongoing capital programme. These will link the stadiums, BRT systems, railway stations, schools and commercial services. The main expected users are the public, tourists and spectators for the 2010 FIFA World Cup™.

The lengths of proposed bicycle routes and sidewalks planned for 2010 FIFA World Cup™ are:

- Bicycle routes: 3 km
- Sidewalks: 3 km

The cost breakdown is provided in Table 3 below.

<table>
<thead>
<tr>
<th>NMT Facility</th>
<th>Proposed Length (Km)</th>
<th>Est. Route Determination costs (R)</th>
<th>Est. Geometric Design costs (R)</th>
<th>Est. Construction costs (R)</th>
<th>Total (R)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bicycle route</td>
<td>3</td>
<td>150,000</td>
<td>520,000</td>
<td>4,800,000</td>
<td>5.47 million</td>
</tr>
<tr>
<td>Sidewalks</td>
<td>3</td>
<td>150,000</td>
<td>260,000</td>
<td>2,400,000</td>
<td>2.81 million</td>
</tr>
<tr>
<td>Markings and Signage…etc</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.72 million</td>
</tr>
</tbody>
</table>

Table 4: Cost Breakdown of NMT facilities planned for 2010 FIFA World Cup

No estimated cost of maintenance and operation costs of NMT facilities or cost for storage facilities has been given by the City of Tshwane.
9.9. References

1. Census 2001, Statistics South Africa
   http://www.statssa.gov.za/

2. City of Tshwane Household Survey 2008
   http://www.tshwane.gov.za/

3. City of Tshwane, 2009. NMT in the 2010 FIFA World Cup™ Host Cities
   [Email] (Questionnaire, July, 2009)

4. FIFA World Cup South Africa™