LIMPOPO
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REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF
ROADS & TRANSPORT

Travel Demand Management Study

Business Plan: NMT Planning

Mopani District Municipality

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1. Introduction

The Department of Roads and Transport: Limpopo Province has undertaken an overall Travel Demand Management (TDM) Study covering Mopani and Capricorn District Municipalities. This business plan focuses on the Mopani District Municipality. As described in the District Municipality's TDM report, five pilot programmes were listed in which feasible pilot projects could be identified for short-term implementation. The TDM programmes identified for further investigation included the following:

- Maintain a Road Network Management System (RNMS)
- Undertake a public transport demand study
- ***Undertake NMT Planning***
- Undertake a traffic signals study
- Undertake a road safety study

This document covers the business plan for the implementation and promotion of NMT Planning in Mopani District Municipality and is also applicable to the various local municipalities (Greater Giyani, Greater Letaba, Ba-Phalaborwa, Greater Tzaneen and Maruleng). The purpose of this business plan is not to forward an argument for NMT, but to provide a plan to implement an NMT Plan in the whole of Mopani and on a more detailed level in the local municipalities. This business plan fits into the larger TDM Policy of the District Municipality as well as all the other relevant frameworks and policies.

2. Definition of NMT

For the purposes of this planning exercise, NMT is defined as follows: All forms of movement that are not propelled by battery and / or fuel combustion driven mechanisms. Examples in this area include walking, cycling as well as movement undertaken by those pushing and pulling carts, prams, wheelbarrows, trolleys etc. It also includes animal drawn carts and wheelchairs. While some wheelchairs are powered by batteries, they are also included in the list to be provided for.

3. Why NMT is important

Non-motorised Transport (NMT) as an essential daily transportation mode needs to be supported, developed and promoted in all environments to provide safe, direct, convenient and sustainable access to all destinations. Within the current social and economical environment there is an urgent need to reduce our dependence on the usage of private vehicles as main transport mode to one that is conducive to walking, cycling and other forms of NMT.

NMT has a range of benefits which include the following:

- A cheap mode of transport.
- Increased road safety – fewer short trip collisions.
- A wide range of health advantages.
- Shared road space opportunities in low speed streets.
- Decrease in the demand for parking with a subsequent increase in NMT road space.
- Support access to public transport.

- An investment in the youth, poor, elderly and persons with special needs through the promotion of NMT to improve their accessibility.
- NMT generates no air pollution, no greenhouse gases and little noise.
- NMT users are more efficient users of scarce road space than private vehicles and therefore combating congestion.
- NMT is the most efficient and environmentally sustainable way for making short trips.

The focus of the development of the NMT Planning projects for Mopani District Municipality is to enhance the movement of traffic in the rural areas and increase NMT usage through the provision of proper NMT facilities.

4. Objectives of NMT planning

It is proposed to look into a regional NMT planning project for Mopani District Municipality and at a local level for the local municipalities. These projects will differ in their extent, objectives and deliverables.

The concept of liveable communities typically includes public spaces and people, their comfort and convenience and activities that would attract them. It places greater priority on the quality of the public realm than the private realm.

Liveable streets are key components of liveable communities. However, from a transportation planning and traffic engineering perspective, the presence of people in the street environment is often overlooked when it comes to developing liveable streets and communities. In the transport system historically, the needs of the private car user have priority over the public transport system.

NMT is a common element in developing liveable streets and communities. NMT planning has to take cognisance of the transportation system requirements, the public space realm and quality of life requirements and ensure that a socially just balance is achieved.

4.1 Local Municipality NMT

For the local municipalities a comprehensive NMT system will create safer and easier ways to walk and cycle whilst promoting NMT as an alternative and complementary means of transport. NMT includes all forms of movement that do not rely on an engine or motor for mobility. NMT is represented mainly by walking and to a certain extent cycling. Other examples are: wheelchairs, animal/human-drawn carts, rickshaws, wheel barrows, skating etc.

NMT Planning should guide the planning and implementation of programmes and facilities to respond to the needs of NMT users.

The primary objectives of the project would be as follows:

- To create a safe pedestrian and cycling environment.
- To develop high quality, attractive NMT facilities.
- To promote cycling and walking as viable, complementary and alternative modes of transport.
- To develop safer streets that allows NMT users their share of the available public space in the mobility network environment.

- To compile an action plan to guide the roll-out of NMT facilities in the municipality.

4.2 District Municipality NMT

For the Mopani District Municipality, the NMT Plan can provide the following:

- A vision for the district based on the contextual realities of the area;
- Policies to guide decision making towards reaching the vision;
- Strategies to guide implementation of programmes and projects;
- A set of strategies to ensure education, enforcement, safety and promotion of NMT is addressed by the relevant level of authority within the district;
- Strategies to indicate how the NMT Plan will be administered including Mopani District Municipality and local municipal responsibilities, financing, risk management, staff resources, organisation, maintenance and liability;
- A conceptual NMT Network Plan for the District based on the vision. This will include proposals that would facilitate improved network connectivity by expansion of the local transport systems; and
- A short-, medium-, and long-term capital works plan for the recommended network and programme, within context of the potential financial, legal, and liability implications.

5. The South African context

The National Household Travel Survey (SSI Engineers, NMT Master Plan Framework CWDM, 2009) suggests the following:

- 80% of South Africans depend on public transport;
- 50% of South Africa's population live in rural areas of whom 72% are poor;
- over 60% of rural households in South Africa say that public transport is not available to them or is too far away;
- 550 000 children spend more than two hours a day walking to and from school.

Dr Hubrecht Ribbens (SSI Engineers, NMT Master Plan Framework CWDM, 2009) indicates that the 2003 National Household Travel Survey showed that 90.6% of the 7.5 million learners and students in rural areas walk to schools and educational centres.

From the above statistics it is clear that there is a role for an affordable mode of transport in the form of non-motorised transport (NMT) and specifically in the more rural parts of the country where a large majority of the less well-resourced communities reside. Communities in the rural areas suffer from severe levels of isolation from the broader economic and social systems. To empower an individual in this context requires intervention that allows their horizons to be broadened. Increasing levels of mobility is seen as one of the key means of facilitating this.

However it is important to understand that NMT offers opportunities for all sectors of the population. Spending time outside in a qualitative environment and/or space can potentially uplift the human spirit and add value to the quality and comfort of public life. In particular, people with limited resources and opportunities can engage their milieu beyond a survivalist and internalised mode of existence. Moreover, the wealthy sectors of society can be

encouraged to engage with the environment as a place and a broader community using the most basic levels and forms of transport. Visitors to the region can similarly engage with the local environment and the socio-cultural aspects that are so intimately associated with particular places.

The National Land Transport Strategic Framework (NLTSF) states that: "Land transport planning and provision must pay greater attention to promoting the safe and efficient use of non-motorised transport modes such as walking and cycling". It is this context that the Mopani District Municipality and local municipalities support to improve public travel choices and to provide users with a comprehensive transport system with a balanced range of transport alternatives. NMT in the Mopani District Municipality and local municipalities refers to bicycles and pedestrians and few animal drawn carts, it does not exclude other modes like person drawn carts.

6. NMT in Mopani District Municipality

Until recently, NMT in the Mopani District Municipality and the local municipalities have not received the attention it deserves. This focus is however changing given the shift at a global and national level towards more affordable, equitable and more environmentally sustainable transport solutions.

The context of the Mopani District Municipality is particularly complex in that it includes both rural areas and towns. These systems connect and relate at some level but in some instances are not sufficiently connected to be meaningful for those on foot especially. Bridging the distance between people and essential services, health and education opportunities in particular is one of the major challenges to address through this study. Other key aspects which affect the friction or resistance levels within the region are topography, affordability levels, disabilities, lack of support infrastructure and the attitude of other road users to NMT.

Farm worker communities that reside within the agricultural lands in South Africa are often trapped. Their situations offer little opportunity to engage with a social world or economic system beyond that of the farm. While people can subsist independently of the larger urban system by growing food and keeping livestock, the constitution protects the rights of those who were previously deprived of their land and protects the rights of access for all, to basic levels of education, health and social support. Without access to land (or another form of secure land tenure), education, health and exposure to external social networks and economic markets, these communities are trapped in a cycle of poverty.

Farm workers are often reliant on farm owners to access towns where social support in the form of pensions, child and disability grants are paid out, where post offices offer opportunities for communication and banking, where hospitals and clinics provide medical support, schools and recreation facilities offer development opportunities. More often than not, schools are located closer to farming communities and access is less reliant on farmers. However with low population densities it is impossible to locate schools close to everyone and young children are often required to travel very large distances to access school on a daily basis by foot. Intra-farm movement between communities living on different farms is also common and opportunities for safe NMT trips are not provided for on the present road network.

7. NMT for Local Municipalities

The built-up areas are typically more wealthy and attractive in terms of what they can offer as support but provide their own set of challenges. Regional scale settlements are car orientated although the scale of their central business districts typically still allows comfortable movement on foot. More recent development trends which see commercial developments springing up out of the town on the national and regional routes that bypass the towns is however a threat to the livelihood of the inner commercial zones and the towns' ability to service those on foot, in particular.

Past planning practises which resulted in the poorer residents living in dormitory suburbs away from the urban core provides the biggest challenge of all. In many cases the distance can be covered by those on foot or bicycle but the condition of the existing infrastructure and quality of the environment is such that it is impossible or at the least, extremely uncomfortable and unsafe. Some of these suburbs are located beyond the reasonable NMT range and can only be served by public transport, however short NMT trips will still form part of the public transport trip accompanied by the required NMT facilities.

As part of an NMT Plan for a Local Municipality, the following methodology can be followed:

- Gather all land uses extensively in the area and indicate on a map
- Determine where NMT facilities are required, focus on specific trip purposes i.e. predominantly to and from work (influenced by the nature of the study)
- Interact with stakeholders to check the land use and the required NMT facilities
- Determine the existing NMT facilities
- Determine the missing NMT facilities
- Decide on the criteria to compare (i.e. beneficiaries, accessibility, safety, economic development, location and cost)
- Prioritise the NMT facilities by i.e. using the EVAMIX method for multi-criteria analysis

Upon completion the NMT plan for a Local Municipality will then have a list of prioritised NMT projects that can be developed to build the NMT infrastructure as financial resources become available. See Appendix A for an example of proposed pedestrian routes as part of Stellenbosch's NMT Network Plan.

8. NMT Guidelines

According to the Pedestrian and Bicycle Facility Guidelines (2003), pedestrian and bicycle ways can be provided in various forms and types. The ways can be provided on the roadway pavement, or as separate walk and cycle ways. Pedestrian and bicycle ways can also be shared, although this is not normally recommended. The types of pedestrian and bicycle ways are as follows:

a) Pedestrian ways (footpaths)

    i) Sidewalks, provided parallel to a street or road within the road reserve.

ii) Walkways, which are independently aligned and not typically provided in the road reserve.

b) Bicycle ways

i) Bicycle lanes (Class III cycle way), that are specifically marked on the roadway pavement. When the lanes are not specifically marked and a road or street is shared with other traffic, the bicycle way is designated as a Class IV cycle way.

ii) Bicycle roads (Classes I and II cycle ways), which are provided for the exclusive use of cyclists. Bicycle roads can further be subdivided as follows:

- Bicycle roads within the road reserve, provided parallel to a street or road (Class II cycle way).
- Bicycle roads which are independently aligned and not typically provided in the road reserve (Class I cycle way).

The different types of pedestrian and bicycle ways are shown in **Figure 8.1**.

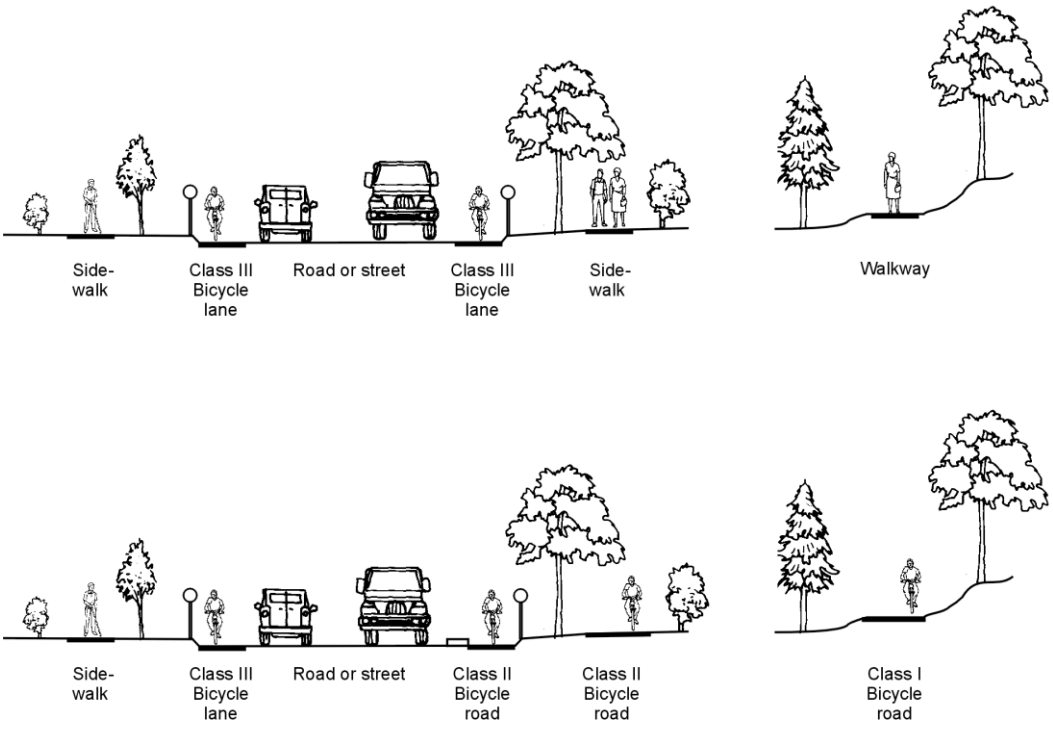

Figure 8.1: Types of pedestrian and bicycle ways

According to the Pedestrian and Bicycle Facility Guidelines (2003) many sidewalks have been constructed to a width of 1,2 m. This width is not adequate for two pedestrians to walk side-by-side, or to allow one person to pass another. A minimum width of 1,5 m is required for these purposes, although 1,8 m would be more desirable.

The following sidewalk and walkway widths are adequate for persons with disabilities (Wider widths are required to provide greater capacity in areas with high pedestrian volumes, such as central business areas):

- 1,5 m Width is desirable under normal operations. This width allows two wheelchairs to pass and a wheelchair to make a U-turn.
- 1,8 m Width is more desirable in areas with relatively high volumes of persons with disabilities.
- 1,2 m Width can be accepted over short distances where inadequate space is available, or across a driveway where it is difficult to maintain the desirable cross fall on the sidewalk and walkway.

When providing bicycle lanes, it is particularly important that the lanes should not be too narrow and that the available lane width should be free of all obstructions (including drainage structures).

According to the Pedestrian and Bicycle Facility Guidelines (2003) the recommended minimum bicycle lane widths are shown in **Figure 8.2** and are as follows:

- A minimum width of 1,2 m is recommended on roads where parking is prohibited and where a paved shoulder or a kerb and gutter is provided. The 1,2 m width excludes the width of the shoulder or gutter.
- A minimum width of 1,5 m is recommended on roads where unpaved shoulders are provided, or where there is a drop-off between the roadway and the shoulder.
- Bicycle lanes adjacent to on-street parking are generally not recommended because of the danger of car doors being opened in front of oncoming cyclists. Where such bicycle lanes are provided, the width should be increased to a minimum of 1,8 m.
- A minimum width of 1,5 m should be provided at junctions, although a width of 1,8 m would be preferred. The wider width is required to accommodate two cyclists who stop side-by-side at the junction. The width of bicycle lanes at a junction should not be wider than 2 m to prevent vehicles using them.

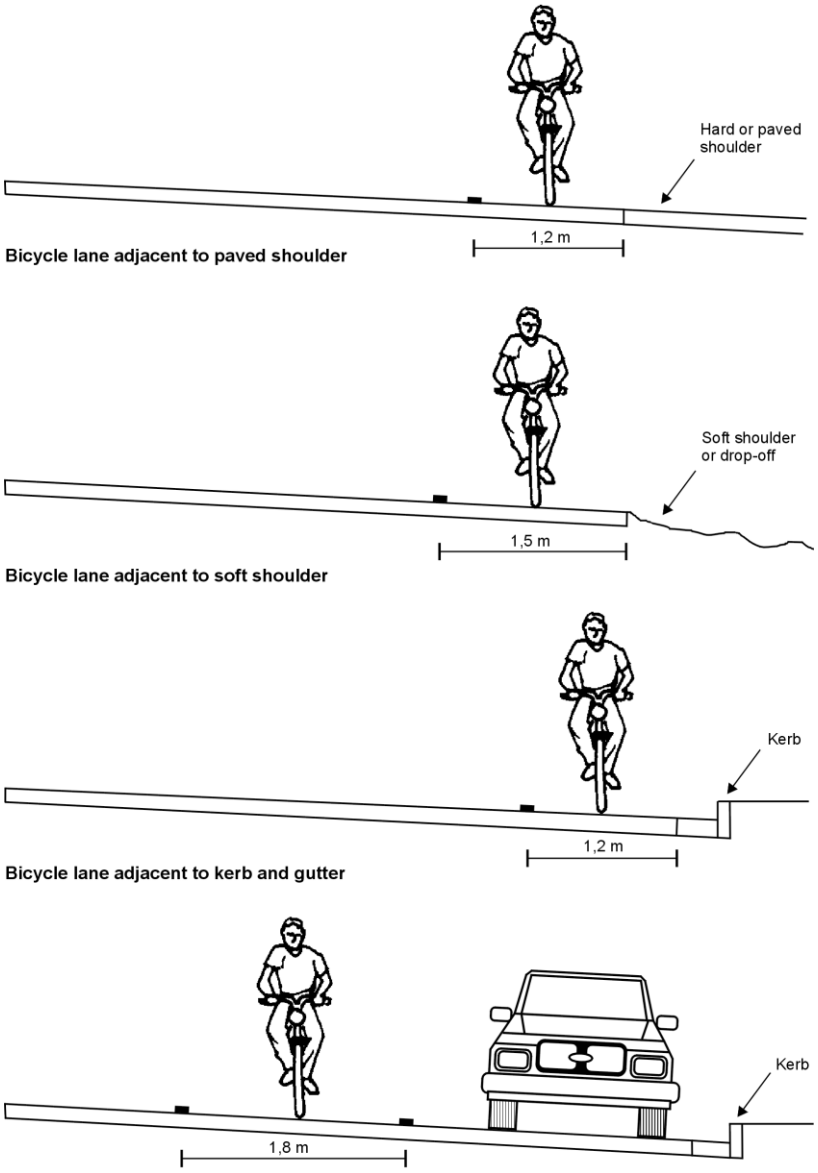

Figure 8.2: Minimum bicycle lane widths (one-way lanes)

9. NMT integration with public and private transport

The importance of the integration of NMT with all the other modes of transport can not be highlighted enough with emphasis on the priority treatment of NMT. NMT is the most flexible mode of transport and can therefore easily be integrated with other modes especially if these modes allow for this to happen.

The integration between NMT and public transport is by far seen as vitally important. The ease and convenience with which NMT users can access and use the public transport system will promote and enhance the usage of both modes at the same time. NMT should act as the feeder system to public transport. With high traffic congestion levels in the built-up areas it is unavoidable that an effective and efficient public transport system will have to be implemented in a structured way sooner rather than later. The NMT network must take cognisance of existing and future public transport systems. NMT routes need to support and integrate with the existing commuter rail system, although limited commuter rail operations exist in the area. These NMT routes also need to follow existing and future predicted public transport routes which would minimise walking and cycling distances to associated facilities. Incorporated into all of this is universal access to ensure easy access for Special Needs People.

NMT needs special attention around public transport stops. This would include the NMT links between stops, the area around stops and the area inside stops. The NMT network therefore need to take cognisance of the NMT desire lines, activities along the routes, origin and destinations, public transport movement patterns as well as land use. Public transport nodes require aesthetically pleasing environment and a design that provides functional platforms, forecourts and shelters with easy NMT access.

NMT infrastructure should consider the following elements to embrace integration:

- Class of NMT facility
- Width of facilities
- Signage and road markings
- Universal access design
- Street lighting
- Traffic calming
- Traffic signals
- Landscaping
- Street furniture
- Information

NMT support services are also required to enhance the NMT environment and to promote the use of NMT. Parking for cyclists is a neglected area which needs to be implemented as part of the development of a NMT network upfront. The location, functionality, extent, and security of these parking areas need to be addressed before implementation. Other NMT support services can include Pedi cabs, bicycle rental as well as repair and maintenance facilities.

The integration of NMT into the system as a whole requires a strategic approach towards NMT. Items that would assist in this are:

- Legibility of NMT within the transport and land use environment

- Cross subsidisation of NMT (e.g. NMT part of the construction cost of a road or public transport facility)
- Indirect payment for NMT facilities via levies, etc.
- Bicycle access onto public transport
- Share road space where appropriate – pedestrianisation
- Integrate NMT facility management, maintenance, safety and security with other facilities
- Future business models to include NMT as a vital component

10. Promote NMT

It is imperative that there are programmes and campaigns and projects that promote NMT but it is necessary that these are targeted to acknowledge the needs of different user groups. Strategies to promote NMT should focus on the following groups:

- Rural scholars;
- Farm dwellers;
- Tourists;
- Urban scholars (applicable to towns);
- Urban students (applicable to towns);
- Urban commuters (applicable to towns); and
- Service providers.

While the NMT Plan for the District Municipality focuses on the needs of the rural areas, the District Authority is expected to play an indirect support role to the local municipalities which have less capacity to deal with such issues. The focus is therefore on rural and, in selected cases, urban (applicable to towns) user groups.

Targeted Strategies (The following aim to target groups listed above):

Rural scholars:

- It should be noted that bicycle supply programmes funded by the NDoT (Shova Kalula Programme), already do work with rural scholars (between the age of 12 and 16). The District should endeavour to help with the selection process to ensure co-ordination with other spatial initiatives, infrastructure roll out programmes and other funding streams. Reviews of demand (optimally on an annual basis co-ordinated with the new intake at schools) should guide the district in terms of where it would be more appropriate to provide additional bus services and where it would be more appropriate to provide bicycles with the necessary infrastructure and training. These proposals would contribute to decreased travel times for school children. Where scholar *communities* are located within a 2km distance of the school, pedestrian infrastructure should be considered.

Farm dwellers:

- Encourage businesses / co-ops / factories / farmers etc to provide bicycles, bicycle parking and storage.

Tourists:

- Initiate formation of NMT forums/interest groups in local areas to put together local NMT friendly tourism routes.
- Encourage guest houses, through local tourism forums/interest groups, to supply free bikes for the duration of the stay to encourage cycling around local areas.
- Establish a programme to train local guides that can run bicycle tours.

Urban scholars (applicable to towns):

- Promote cycling to school and initiate safety awareness training modules at schools.
- Support local municipality officials to respond to the need to provide appropriate infrastructure where required (a range of paths making up a continuous network linking schools and sports fields and rail stations where applicable, priority signalling systems, road crossing facilities and safe parking).

Urban students (applicable to towns):

- Support local municipality officials to respond to the need to provide appropriate infrastructure where required (including pedestrianised zones, NMT links from rail stations, road crossing facilities, priority signalling, parking, storage and showers).
- Discourage University and College planners from providing vehicle parking and rather encourage planners to create pedestrianised campuses. This will require promotion of the use of a more appropriate parking ratio by the relevant Local Authority land use departments who generally encourage the use of vehicles by using outdated zoning scheme parking standards.
- Ensure future student accommodation is located within easy access of public transport and NMT facilities.

Urban commuters (applicable to towns):

- Promote cycle subsidisation programmes with large employers - businesses / co-ops / factories etc.
- Encourage businesses / co-ops / factories etc to provide showers, bicycle parking and storage facilities.
- Discourage planners from providing excess vehicle parking and rather encourage the creation of NMT friendly environments in the city centres in particular. This will require promotion of the use of a more appropriate parking ratio by the relevant Local Authority land use departments who generally encourage the use of vehicles by using outdated zoning scheme parking standards.
- Ensure future residential, employment and service nodes are located within easy access of public transport and NMT facilities.

Service providers:

- Promote the use of bicycles by employees of the public service providers such as the Health Department, Social Welfare and Development Department and the South African Police Service who would benefit from being able to access a wider catchment area through the use of bicycles or Non-motorised vehicles (NMV). This will require engagement with management of these departments to discuss not only means to provide appropriate vehicles but ways to ensure that these can be maintained.

General strategies:

- Appoint specialists to prepare and implement a marketing strategy that promotes NMT as a healthy, cost effective, environmentally responsible and economically and socially empowering form of movement. The campaign should focus not only on the general public but politicians, government officials, the business sector, farming associations, tourism sector and bicycle retail and service sector.

11. Team of Professionals

In order to conduct successful NMT Planning, it is proposed to include certain key positions as part of the professional team. These positions include amongst others the following:

- A project leader with similar experience and a technical background in this particular field
- A transportation engineer with expertise in the NMT field
- An urban planner who has done NMT projects before
- A landscape architect who knows about NMT facilities
- A public participation specialist who can assist with public participation meetings and knows the local conditions

12. Advisory group

The most effective means of public participation will be to form an Advisory Group with members representing the broadest segment of the community who will be committed to the project from beginning to end. To assist the consultants, it is proposed for either the District Municipality or the Local Municipality to set up this group prior to the NMT Planning projects kicking off. Selected technical staff from the District Municipality or Local Municipality should also form part of the group.

In addition to those obviously affected by the project, it should also be considered to extend committee representation to broader community groups, chambers of commerce, district level officials and others who are not directly impacted but have a clear interest in the outcome. Care should be taken not to have a too large group because it will slow the decision-making process down. The Advisory Group should not be dominated by a small interest group, such as residents of a single street or those interested in a single, narrow issue. A wide variety of representation is necessary and this includes critics as well – it is better to give critics a voice throughout the process than wait to be confronted with opposition at the end.

To name some of the duties of the Advisory Group:

- Assist with checking identified land uses
- Assist with identifying appropriate NMT routes
- Can also be used to assist with data collection
- Assist with reviewing materials intended for distribution to the community
- Reach a quality final product together with the professional team

13. Timeframe

The NMT Planning process's duration will depend on the size of the study area. Duration of approximately six months should be adequate for a District Municipality NMT Plan and similar for a Local Municipality NMT Plan. The context of the study area can influence the duration of the NMT Plan, for instance in a large study area it might take more time to travel to far-off destinations. An example of an NMT Plan's project schedule is attached as **Figure 13.1**. Note that the tasks' order is not fixed and can be adjusted to suit the particular conditions.

NMT Plan Development	Month 1				Month 2				Month 3				Month 4				Month 5				Month 6			
	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4	W 1	W 2	W 3	W 4
Land use identification of study area	■	■																						
Identify NMT trip generators and attractions			■																					
Develop NMT routes				■	■	■	■																	
Fieldwork and investigations								■	■	■	■													
Technical discussion about NMT criteria and infrastructure												◆												
Discussion with Advisory group on proposed NMT routes													◆											
Draft NMT Network Plan distributed (figures)														◆										
NMT report and drawings															■	■	■	■						
Hand in NMT report																			◆					
Review NMT report																				■	■			
Discussion with Advisory group on NMT report																						◆		
Include comments																							■	
Conclude NMT Plan																								■

Figure 13.1: Project Schedule

14. Budget

It is difficult to give an indication of the budget that will be required for a District Municipality NMT Plan and for a Local Municipality NMT Plan. Past experience indicated budgets ranging between R400 000 and R1.2 million in South Africa.

15. References

- CSIR, Pedestrian and Bicycle Facility Guidelines: Engineering manual to plan and design safe pedestrian and bicycle facilities, National Department of Transport, Pretoria, 2003.
- SSI Engineers, NMT Master Plan Framework, Cape Winelands District Municipality, 2009.
- ITS Engineers, Towards a Travel Demand Management Strategy, City of Cape Town, 2006.