NMT Policy and Strategy

Volume 2: Policy Framework

City of Cape Town

29 May 2014

TCT TRANSPORT FOR CAPE TOWN

The City of Cape Town's Transport Authority

Executive summary

Introduction

Non-motorised transport (NMT) includes all forms of movement that do not rely on an engine or motor for movement. This includes walking, cycling, rickshaws, animal-drawn carts (especially in rural areas) and rollerblading or skating for recreational purposes. Ultimately, NMT grows liveable communities - it is the most basic part of the transportation system and pedestrians in particular contribute to the vibrancy of a community.

NMT is generally recognised as a valuable component of the transportation system and the environment we live in due to the various benefits it holds. These benefits include environmental benefits, increased liveability, improved health, economic gains and transportation benefits.

NMT can address a large range of transportation needs ranging from regional mobility to neighbourhood access. There are various types of trips where NMT may be used as part of or for the entire journey, whether by choice or out of necessity. People who commonly use NMT are commuters (trips to and from work), learners (trips to and from educational institutions, including libraries and sports fields), service users (these include trips to shops, markets and other service destinations) and recreational users (trips by locals or tourists to recreational destinations).

In the Cape Town context, NMT is represented mainly by walking and cycling. As such, the policies and strategies are mostly developed around the needs of these users. However, the policies, strategies and resulting design and implementation projects should strive for improved universal access that also takes into consideration the needs of other users such as the special needs people that include the disabled, women with perambulators, shopping trolleys, etc.

The City of Cape Town has until now not had a comprehensive plan guiding the planning and implementation of programmes and facilities to respond to the multiple needs of NMT users. The Mobility Strategy of the City of Cape Town responded to this critical short-coming and identified it as one of the key elements in an improved transport system for Cape Town.

The NMT Strategy for the City of Cape Town aims to address this critical shortcoming in two ways. Firstly, it presents a policy, accompanied by a set of objectives and strategies to realise an improved NMT environment and culture in Cape Town. Secondly, it develops a Strategic NMT Plan for Cape Town that would identify areas and routes that should be considered as key NMT routes and places in Cape Town where NMT users would receive a certain degree of consideration, if not priority.

City of Cape Town NMT vision and objectives

The City's response in recognising the needs of NMT users in Cape Town is addressed in the following vision statement for NMT:

"Cape Town will be a city where all people feel safe and secure to walk and cycle, NMT is part of the transport system, public space is shared between all users (NMT, special needs people and motorised users) and everyone has access to urban opportunities and mobility."

An important goal in realising this vision, as set out by the City, is to:

"Increase cycling and encourage walking by creating a safe and pleasant bicycle and pedestrian network of paths to serve all the citizens in the Cape Town Area."

The primary objectives of this goal are as follows:

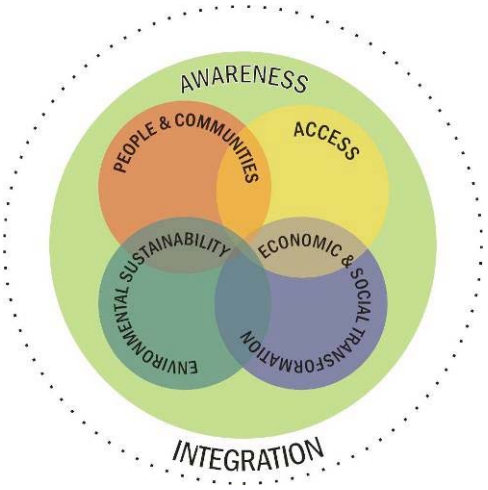
- Increase cycling and enable walking as modes of travel;
- Create safe pedestrian and cycling environments
- Develop a quality, attractive and dignified environment; and
- Promote a changed culture that accepts the use of cycling and walking as acceptable means to move around in the city and elicit more responsible NMT behaviour.

Further secondary objectives of the policy that could be achieved though the successful implementation of the policy, are:

- Integrated land use development appropriately suited for non-motorised transport.
- The social and economic empowerment that non-motorised transport can affect through improved low-cost mobility.
- The development of a safer streetscape that allows non-motorised transport users their fair share of the available public space in the mobility network environment.

Key Strategic Themes

Based on the priorities and strategic direction identified by the City of Cape Town in its Integrated Development Plan and a review of current NMT problems areas, key themes have been identified to guide the required interventions. Interventions are required that emphasise **access** for all, the importance of **people and communities**, the role of **economic and social transformation, environmental sustainability, integration** and **awareness**. These themes re intrinsically linked and cannot be viewed in isolation.



Contextual Analysis and Problem Statement

The contextual analysis has been used to develop a comprehensive problem statement for NMT in the City of Cape. The issues have been described according to the strategic themes.

Access

Owing to historical reasons, access for all citizens of Cape Town is becoming more problematic and is fundamentally a result of inequity on various levels. These trends are continuing and exacerbated with the development of low-cost housing and informal settlements on the outskirts of the cities, removed from employment opportunities and public amenities, thus increasing the demand for travel, especially the demand for public transport. Where public transport cannot be afforded or communities do not have access or have limited access to public transport, people and learners have to walk long distances to their destinations.

On more local levels, access across railway lines, freeways and major arterials create major barriers for NMT users. This leads to unsafe NMT environments when people are forced to either cross these physical obstacles in an unsafe and invariable high risk manner or to follow long paths to safe crossing points.

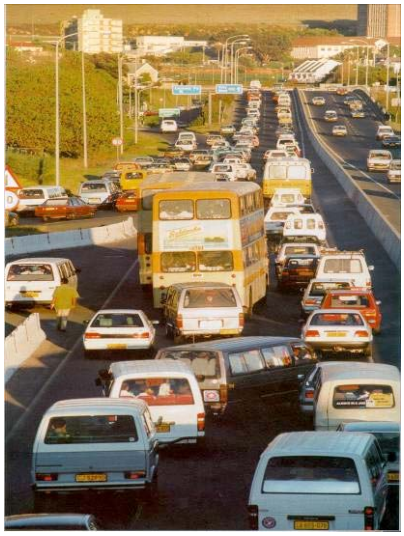
People and communities

The NMT environment in Cape Town is generally characterised as a poor quality environment, with the standards of NMT environments being lower in poorer communities. Public spaces, including NMT routes within road environments, are often not sociable, are poorly maintained, seldom used and suffer from the infiltration of crime. This is often due to poor infrastructural planning, lack of integrated design approach, and difficulties experienced in operation and marketing of public spaces.

Social and economic transformation

Although the economy for the City of Cape Town has significantly improved over the past decade, social and economic conditions continue to be greatly disparate. There are many that have increased their income and living conditions, but for a majority, unemployment, lack of housing and poor social services remains a reality. This disparity in conditions is also reflected spatially, with the poor continuing to live on the outskirts of the City. They are required to travel long distances and are captured public transport riders because they cannot afford private vehicles. NMT has the potential to contribute to economic transformation by providing opportunities for small businesses linked to NMT support services, as well as through the promotion of NMT activities in the tourism and local economic development sectors. NMT infrastructure can also provide quality environments to support social transformation.

Environmental sustainability



The State of Energy report for Cape Town[5] listed some of the issues facing the transport sector in Cape Town and stated that "*urban sprawl causes long commutes, which result in higher transport energy consumption and a corresponding high release of carbon and other emissions*". Long commutes also require longer days away from home, less productive time which decreases quality of life, primarily for the poor. These current levels cannot be sustained by the City in the future and remedial measures have to be implemented to arrest the current trends. NMT is a form of sustainable transport that is currently not receiving the necessary recognition in transport planning.

Awareness

NMT is still not recognised as a mode of transport. This lack of recognition is manifested in a general lack of consideration for pedestrians by motorists and lawless and reckless attitudes of pedestrians. This lack of consideration for NMT needs is also inherent in infrastructural planning and design of transport elements and the conscious introduction of the culture of walking, cycling and NMT in the mobility environment and the respect towards NMT users in the streetscape environments, are required.

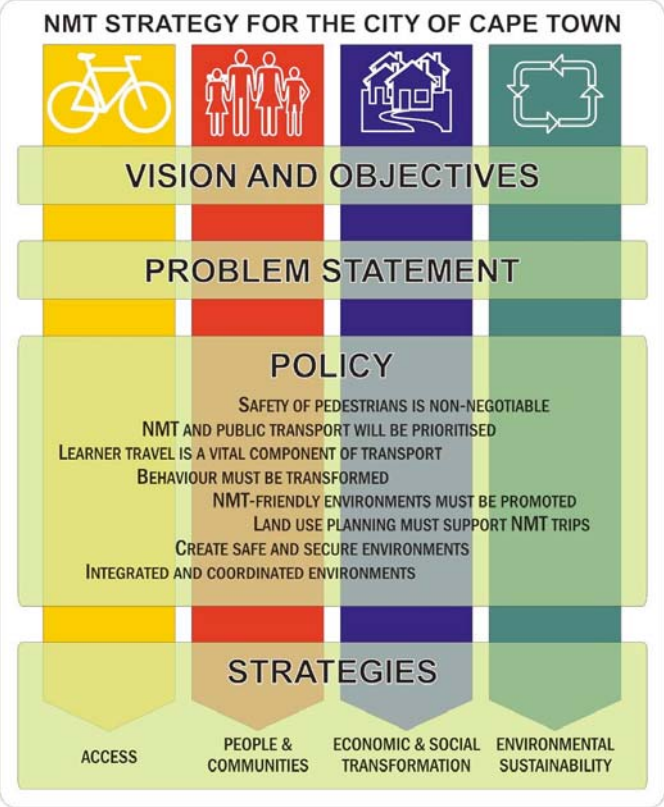
The lack of NMT awareness is also resulting in a culture/ societal behaviour in Cape Town that NMT use is negative, not desired and only for the poor.

Integration

The lack of an integrated planning approach is viewed as the most significant contributor to the poor NMT environment Cape Town is currently experiencing. The lack of integrated planning has also resulted in the development of unsustainable and hostile residential environments with inadequate transport, civil services, shops, work opportunities, etc.

The lack of NMT consideration is also displayed in development planning where NMT is not given sufficient attention in the design of buildings, traffic impact assessments, etc. The lack of institutional integration, project coordination and non-alignment of budgets are also impacting negatively on the quality of the NMT environments and the implementation of NMT and public space projects.

The city's policy and strategic responses



This NMT Strategy provides a strategic tool to guide NMT thinking, planning and project implementation in the future. The Plan will enable the City to define programs and prioritize actions and to more proactively meet the City's NMT requirements. The diagram below shows the structure of the NMT Policy Framework and the various elements that have been included as part of the NMT framework package. Firstly, the "Vision and Objectives" is one of the key drivers of the NMT Plan since it encompasses "how the City visualises NMT". The NMT Vision is the "ideal" that the City aims to achieve. Various objectives have been identified that are measurable and can evaluate how successful the City has been in realising this NMT vision.

A concise problem statement has been developed that describes the NMT concerns in Cape Town. The City's proposed policies for the City of Cape Town in response to the concerns facing NMT users are indicated hereafter. NMT strategies have been identified to achieve the City's NMT vision and objectives. Strategies have been identified along the same themes that have been identified in the problem statement and policies. The NMT strategies are cross-cutting and may impact across a number of themes. NMT must be part of an integrated solution and the accountability for various interventions lie with various sectors (private, public), various spheres of government (local, provincial, national) as well as various departments (transport, urban design, spatial planning, etc.).

Access

The Access theme aims to improve connectivity and mobility within the City through NMT. This involves planning and implementing infrastructure that supports access through NMT.

Policy 1.1: All people are entitled to reasonable access to other people, places, goods and services including those using NMT.

Policy 1.2: Safety is a priority for all NMT users, especially learners, cyclists and pedestrians.

Policy 1.3: NMT will not to be compromised over of the needs of motorised traffic.

Policy 1.4: Transport Impact Assessments must respond and address the needs of universal access and NMT requirements.

People and Communities

NMT can promote social and economic transformation by generating economic opportunities and uplifting social conditions. The strategies for this theme have been divided into economic and social opportunities that are promoted through NMT infrastructure development and other low cost mobility initiatives.

The people and communities theme promotes livability and equity for citizens within the City through NMT. Strategies therefore include elements such as quality of environment, people safety and security.

Policy 2.1: All people and communities in Cape Town are entitled to equal levels of service such that the basic needs of all people, especially women, children, the poor and the physically challenged should be provided for.

Policy 2.2: The public realm should be designed, built, managed and maintained in a way that protects the well-being (physical, mental and social) and safety and security of all people, enhances the quality of life in communities and increases the accessibility and primarily the walkabiliity of the whole of Cape Town.

Policy 2.3: All individuals should be committed to making responsible choices in the interest of their personal well-being as well as for the greater good of the environment.

Policy 2.4: NMT needs and requirements take priority in development and management of residential areas and public space networks.

Social & economic transformation

NMT has always been closely associated with environmental sustainability because of its minimal impact on fossil fuel usage, noise and air pollution. NMT is also best supported by sustainable land use development principles.

Policy 3.1: NMT will be employed as a tool to maximise economic gain through the promotion of low cost mobility and the creation of NMT-related employment opportunities.

Policy 3.2: NMT considerations will be taken into account to enhance social transformation and the development of a more equitable society through contributions to improvement of quality of life and the provision of independent mobility for captive users.

Policy 3.3 NMT planning and design should take cognisance of the informal trading policy of the City of Cape Town.

Environmental sustainability

Lack of awareness discourages the use of NMT in the City. The inconsiderate behaviour and unlawful attitude of motorists and NMT users is problematic. This contributes to the high pedestrian accidents that currently exist. NMT needs to be marketed and promoted as a positive transport alternative accompanied by appropriate user behaviour.

Policy 4.1: NMT will be employed as a tool to support environmentally sensitive transport solutions.

Policy 4.2 NMT should be aligned and support Travel Demand Management Strategy of the City of Cape Town, as well as the City of Cape Town Energy and Climate Change Strategy.

Integration

NMT cannot be implemented in isolation and success relies on an integrated approach i.e. within government departments and between public and private sectors.

Policy 5.1: An integrated development planning approach will be followed when implementing NMT in Cape Town.

Policy 5.2: Through integrated planning, NMT considerations should be addressed with all developments in Cape Town, in particular the Integrated Human Settlements Programme.

Policy 5.3: Through integrated systems design, planning and implementation, NMT networks and facilities should integrate modes of transport, with particular focus on public transport facilities and interoperability.

Policy 5.4: Funding for NMT should be prioritised and coordinated with external and internal parties.

Awareness

Policy 6.1: NMT shall be recognised as an essential mode of transport.

Policy 6.2: The culture and respect of NMT must be promoted throughout Cape Town through example by political leaders of City of Cape Town, evidence of projects, supportive law enforcement and visibility of NMT.

Policy 6.3: The City of Cape Town should support and reinforce programmes and projects that target key markets/sectors and promotes public life and NMT, such as events to reclaim public space, like "Vehicle Free Days" and Night Markets.

Policy 6.4: The City of Cape Town shall promote and support training of officials and stakeholders with respect to NMT planning and infrastructure design.

Policy 6.5: The City of Cape Town shall promote NMT by example through the provision of NMT support facilities such as showers and bicycle parking at municipal buildings that include depots, offices and the development of incentives promoting NMT, such as public transport allowances, bicycle travel allowances, etc.

NMT network development

The Metropolitan Bicycle Plan and the Pedestrian Safety Plan was used as informants to develop the City of Cape Town Strategic NMT Plan, illustrated in Volume 2. This Strategic NMT Plan aims to identify strategic locations/ areas in Cape Town where NMT should be prioritized. The priority is determined by the degree of people concentration, the special consideration given to learner travel to and from school, the needs of the tourism sector and the role of NMT recreation. The Strategic NMT Plan highlights the areas with NMT priority, which also comprises strategic nodes with Cape Town favouring NMT use and the Metropolitan Cycle Master Plan.

This plan is only developed at a strategic level and does not include focus areas at local community/ neighbourhood levels. The NMT priority areas at neighbourhood levels should be developed through the development of local area NMT network plans. The NMT Strategic Plan forms a framework for the development of local area NMT network plans. It should be a dynamic plan that is guided by the development of the local area NMT network plans.

Areas where NMT priority should be given consideration include the following:

- Public transport interchanges, bus and rail stations
- School accesses and key access routes to schools (school priority zones), as well as tertiary educational institutions.
- Areas of intense pedestrian activity such as CBD areas, shopping/service districts, community centres and facilities, etc.
- Tourism sites (where appropriate), heritage sites, conservation areas (where appropriate), and recreational areas/ routes.

All of these sites within Cape Town are not shown in the Strategic NMT Plan, only those of metropolitan significance.

Nodes and links in Cape Town that is significant within a metropolitan context are highlighted in the Strategic NMT Plan. It must be noted that these nodes and links are only illustrated in a notional manner and that the exact boundaries of these special NMT nodes and links, should be finalised only through the development of NMT local area network plans.

NMT facility design guidelines

Various design guidelines are available in South Africa that includes the NMT Facilities Guideline[8] and the Southern African Development Countries Road Traffic Signs Manual[9]. These guidelines should always be consulted and referred to during NMT planning and design processes. However, certain issues are highlighted hereafter to illustrate priority NMT considerations. Design guidelines have been included for general NMT, Pedestrian and Bicycle Facilities.

Public participation

As part of the participatory process, key stakeholders and role-players have been identified and targeted to provide the necessary inputs into the development of this strategic plan and policy framework. A greater stakeholder forum was also convened on 29 September 2005.

Stakeholders and role-players were represented by sectors that has NMT as a key element within there sector of influence. Internal City sectors include transport planning, local economic development, urban design, spatial planning, disability desk, NMT planning, public transport and heritage management. External departments consulted include the Department of Education, Cape Town City Partnership, Department of Community Safety, South African Rail Commuter Corporation, Provincial Government of the Western Cape, Department of Transport and Public Works, Bicycle Empowerment Network and Metrorail.

Volume 1: status quo assessment

Volume 2: policy framework (this document)

Table of contents

List of appendices

List of figures

List of tables

List of acronyms

City : City of Cape Town
MBM : Metropolitan Bicycle Master Plan
NGO : Non-governmental organisation
NMT : Non-motorised transport
PTI : Public Transport Interchange
SMME : Small, medium and micro enterprises
SNP : Special needs people
TDM : Travel Demand Management
TSM : Transportation Systems Management

Acknowledgements

We wish to acknowledge the contributions made by:

- MCA Planners in assisting with GIS
- MMA Architects in developing typical NMT examples
- Participants at the stakeholder workshop held on 29 September 2005.
- Representatives of the following who were willing to be interviewed as part of this process:
  - City of Cape Town officials
  - Provincial Government Western Cape, Department of Transport and Public Works
  - South African Rail Commuter Corporation
  - Cape Town Partnership
  - Bicycle Empowerment Network

1. Introduction

1.1 Background

Although planning and implementation for bicycle and pedestrian facilities in Cape Town have been undertaken in the past, these initiatives have not been carried out under the guidance of an overall framework or policy for the broader metropolitan area. Whilst, pedestrian and cycle issues are briefly described in the City of Cape Town's Integrated Transport Plan[3], a contextual analysis of non-motorised transport (NMT) issues in Cape Town, the City of Cape Town's (hereafter referred to as the City) policy responses and strategies, have not been comprehensively addressed.

Pendulum Consulting has been appointed by the City to undertake the development of the City's NMT Strategy.

1.2 Objective of study

The objective of the study is two-fold, firstly to develop a policy, accompanied with a set of objectives and strategies to realise an improved NMT environment and culture in Cape Town, and secondly; to develop an Strategic NMT Plan for Cape Town which would identify areas and routes that should be considered as key NMT routes and places in Cape Town where NMT users would receive a certain degree of consideration, if not priority.

1.3 Scope of study

NMT includes all forms of movement that do not rely on battery and/or fuel combustion driven mechanisms to be propelled[1]. These include walking, cycling, rickshaws, animal-drawn carts (especially in rural areas) and rollerblading/ skating for recreational purposes. However, in the Cape Town context, NMT mostly comprises walking and cycling, hence the policies and strategies are mostly developed around the needs of these users.

Furthermore, in this study NMT is viewed as growing livable communities. NMT forms part of the transportation system, pedestrians especially, and contributes to the life of the community. These two paradigms are key considerations in developing this policy framework.

1.4 Methodology

The methodology followed in the compilation of status quo analyses and the resulting policy and Strategic NMT Plan, was guided by the strategic nature of the project. Primary data collection was not undertaken, but desktop analyses of existing literature and studies, as well as existing development frameworks, were used to inform the development of policies and the Strategic NMT Plan. Where primary data was collected as part of previous work undertaken in this regard, it was also used as a source. Furthermore, stakeholders were interviewed to assist in developing a qualitative understanding of the nature of the NMT concerns in Cape Town.

1.5 Layout of report

This report is one of two volumes that together comprise the NMT Strategy for the City of Cape Town. Volume 1: The Contextual Framework summarises the legal, policy and existing conditions that surround NMT in the City. It also provides a basis to develop a comprehensive NMT problem statement for the City. This volume, Volume 2: The Policy Framework provides the City's response to this problem statement.

Volume 2 has been divided into the following sections:

- Section 1, *Introduction*, discusses the background, scope, objectives and methodology for the NMT study
- Section 2, the *Vision and Objectives,* describes the vision and objectives that the City of Cape Town is aspiring to.
- Section 3, highlights *Key themes for required interventions* that will guide the development of the NMT Strategic Plan.
- Section 4, describes the *Methodology* followed in developing the NMT policy framework and NMT strategic plan.
- Section 5, *Problem Statement*, contains the issues that have been summarised into a problem statement which forms the basis for the City's policy response.
- Section 6 includes the *NMT Strategies* that will assist the City to realise is vision and forms the main core of the NMT Plan.
- Section 7, *NMT Network Development,* contains a strategic NMT map for the City which shows areas of priority NMT areas.
- Section 8, *NMT Facility Design Guidelines,* includes guidelines that would promote NMT friendly environments.
- Section 9, *NMT Design,* shows some sketches where NMT activity is dominant and includes examples of how design guidelines could be implemented.
- Section 10, *Public Participation*, describes the participation process that has been undertaken as part of this study.

2. Vision and Objectives

The City's response in recognising the needs of NMT users in Cape Town is addressed in the following vision statement for NMT:

VISION STATEMENT:

"Cape Town will be a city where all people feel safe and secure to walk and cycle, NMT is part of the transport system, public space is shared between all users (NMT, special needs people and motorised users) and everyone has access to urban opportunities and mobility."

An important goal in realising this vision is to

GOAL STATEMENT:

"Increase cycling and encourage walking by creating a safe and pleasant bicycle and pedestrian network of paths to serve all the citizens in the Cape Town Area."

The primary objectives of this goal are as follows:

- Increase cycling and enable walking as a mode of travel.
- Safer pedestrian and cycling environments.
- Development of an attractive and dignified environment
- Promote a changed culture that supports the use of cycling and walking as a means to move around in the city and elicit more responsible NMT behaviour.

Further secondary objectives of the policy that could be achieved though the successful implementation of the policy, are:

- Integrated land use development appropriately suited for non-motorised transport.
- The social and economic empowerment that non-motorised transport can affect through improved low-cost mobility.
- The development of a safer streetscape that allows non-motorised transport users their fair share of the available public space in the mobility network environment.

3. Key themes for required interventions

Based on priorities and strategic direction identified in the City of Cape Town's IDP and NMT theory review, the following have been identified as key themes required for intervention.

The apartheid city structure of Cape Town created isolated and internally orientated communities where the poor are located the furthest from economic opportunities and growth centres. Socio-economic conditions remain disparate between the disadvantaged and advantaged sectors of Cape Town's communities with a large portion of the City's population still facing high poverty levels and low income levels. To ensure an effective societal transformation in Cape Town, interventions are required that emphasise access for all, the importance of people and communities, the role of economic and social transformation, environmental sustainability, integration and awareness. These themes are intrinsically linked and cannot be viewed in isolation. These themes, and more specifically, the role of NMT as an intervention tool, are briefly discussed hereafter.

3.1 Access

In an attempt to reduce the disparities in socio-economic conditions between communities living in Cape Town, the city has to become accessible to all. Access to people, places, goods and services is important to the social and economic well-being of Cape Town's communities. Improved transportation options are a key means through which access can be achieved.

NMT has the ability to address some of the access dilemmas facing Cape Town, not necessarily on a City-wide level, but more on a local level. NMT, specifically cycling, would enable individuals in out-lying communities with limited access to public transport, to cycle to the nearest Public Transport Interchange (PTI) or rail station. This mode of NMT does have the ability to free up more disposable income for poor people and furthermore, improve their quality of life.

NMT provides for basic low cost mobility and independent movement. Improved NMT opportunities in various forms can improve access to opportunities, which is especially relevant to the poor.

3.2 People and Communities

To ensure sustainable growth of all communities in Cape Town, the city needs strong and well-functioning people and communities. These are the building blocks for a sustainable society. NMT contributes directly to building communities and enhancing quality of life through improved mobility, improved access, improved and safer environments. However, it is also important that it is linked to the promotion and increased use of the public space environment. NMT and quality public space are key ingredients for building strong and well-functioning communities.

3.3 Social and economic transformation

A large part of Cape Town's population still lives below the poverty line with very few employment opportunities being available, low educational levels and low incomes. The quality of living conditions remains poor, with a lack of formal housing and basic services. NMT has the potential to contribute to economic transformation by providing opportunities for small businesses linked to NMT support services, as well as through the promotion of NMT activities in the tourism and local economic development sectors.

NMT infrastructure can also provide quality environments to support social transformation.

3.4 Environmental sustainability

Based on current trends, human activities overload and destroy the environment, if not properly managed. It is important to control and manage negative impacts, especially the impact of transport, to ensure the environment is sustained for future generations. Transport can play a role in

environmental protection through the development and promotion of environmentally sensitive transport systems.

3.5 Integration

To ensure the successful development of a society and environment that works for all, NMT and the themes identified for a successful societal transformation in Cape Town, have to be implemented in an integrated manner. These themes are inter-linked and cannot be implemented in an isolated manner.

3.6 Awareness

NM & Associates et al[1] stated that if Cape Town can work for the most basic transportation mode, namely NMT and more specifically for the person on foot, it has the potential for the successful implementation of all other transport systems. This requires an awareness of the needs of NMT users and their function in society by all role-players, as well as by society. Awareness of the needs of NMT users and the potential role it can play in the transformation of Cape Town on various levels, have to be realised.

4. Structure of THE NMT policy framework

This NMT Strategy provides a strategic tool to guide NMT thinking, planning and project implementation in the future. The Plan will enable the City to define programs and prioritize actions and to more proactively meet the City's NMT requirements. The diagram below shows the structure of the NMT Policy Framework and the various elements that have been included as part of the NMT framework package. Firstly, the "Vision and Objectives" is one of the key drivers of the NMT Plan since it encompasses "how the City visualises NMT". The NMT Vision is the "ideal" that the City aims to achieve. Various objectives have been identified that are measurable and can evaluate how successful the City has been in realising this NMT vision.

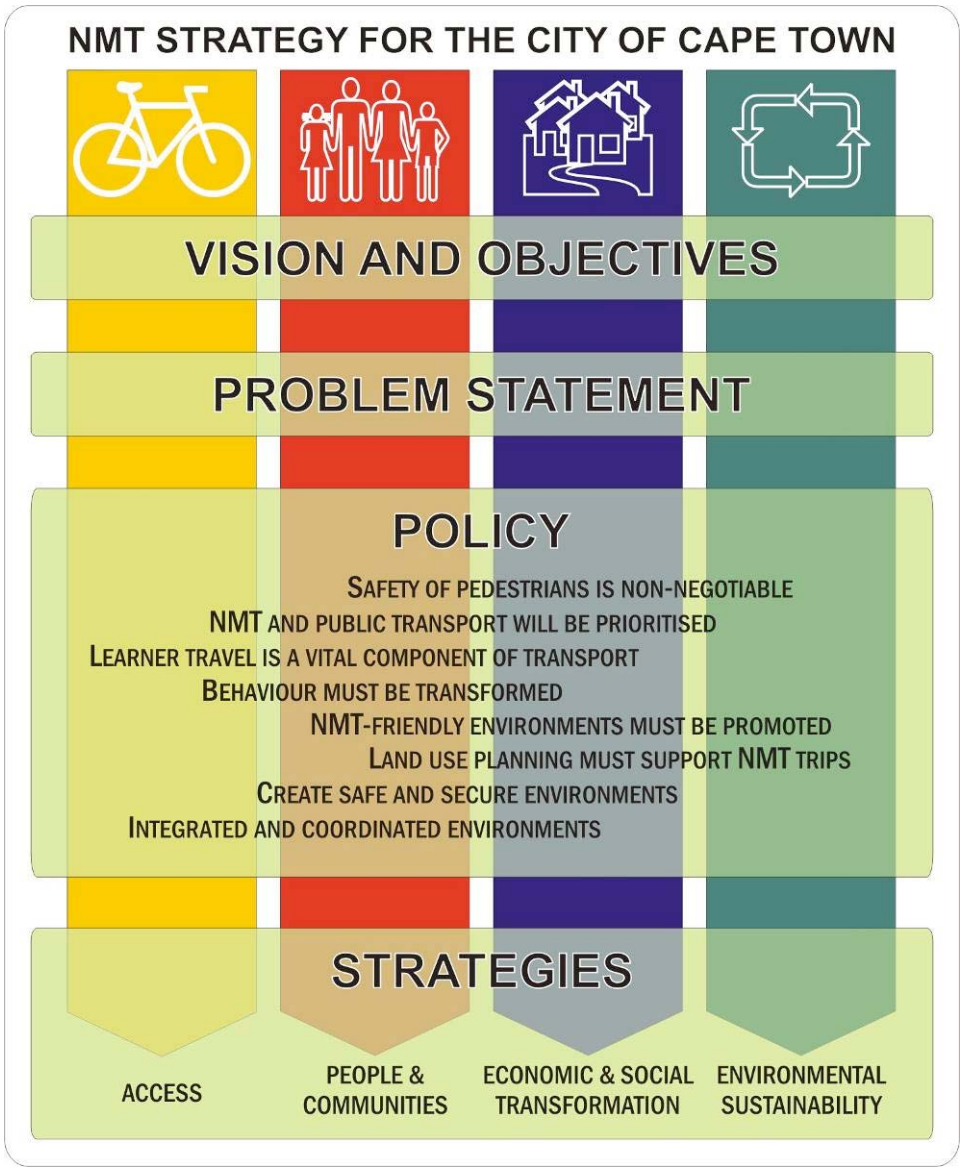


Figure 1: Components of the NMT Policy Framework

The problem statement is an integrated summary of the concerns and issues that face NMT in the City of Cape Town. The problem statement is a product of the contextual analysis that has been undertaken in Volume 1: Contextual Analysis. Various policies have been developed to respond to these NMT concerns in the problem statement. Finally, the last component of the Policy Framework is the NMT Strategies which have been developed to address the "gap" between the current conditions and the City's NMT Vision.

The policy framework has been structured along key themes. These themes are logical focus areas in which NMT issues, policies and strategies can be considered. These themes are inter-related and interventions will impact across the various themes. The first four are access, people and communities, economic and social transformation and environmental sustainability. Awareness and integration are more holistic in that they encompass the other themes. For example awareness and integration needs to occur within all of the themes (people and communities, access, sustainable development and economic and social transformation). A more detailed description of what is included in each of these themes is contained in the next section.

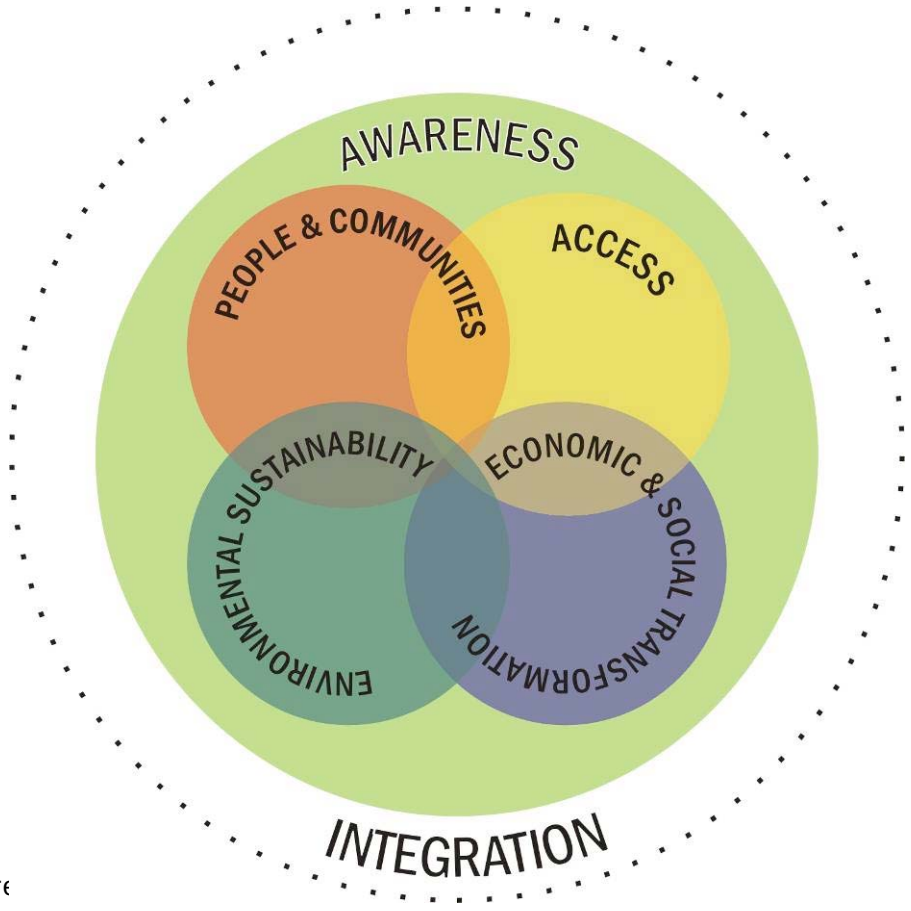


Figure 2: Inter-re

5. Problem statement

Based on the information collected during this investigation and the qualitative indications of NMT experiences in Cape Town, a problem statement has been developed with respect to NMT in Cape Town. Access for all, the importance of people and communities, the role of economic and social transformation, environmental sustainability, integration and awareness, have been identified as key themes for interventions for transformation in Cape Town. The concerns of NMT users can also be described in a similar manner, and are discussed hereafter.

5.1 Access

Owing to historical reasons, access for all citizens of Cape Town is becoming more problematic and is fundamentally a result of inequity on various levels. However, these trends are exacerbated and continuing with the development of low-cost housing settlements on the outskirts of the cities, removed from employment opportunities and public amenities, thus increasing the demand for travel, especially the demand for public transport.

In the context of Cape Town, a few examples of outlying areas developed before 1994 are Khayelitsha, Mitchell's Plain and Atlantis. However, even after 1994, areas such as Delft and Wesbank were developed, perpetuating the location of housing for poor communities on outlying areas of the city, forcing individuals to pay high transport costs and to travel long distances.

Where public transport cannot be afforded or communities do not have access or have limited access to public transport, people and learners have to walk long distances to their destinations. This increasing trend is illustrated through statistics[2] that indicate that NMT usage in Cape Town is approximately 19% of the commuting and learner trips being undertaken in Cape Town. This is an increase from the estimated 7% NMT modal share in 1991.[3] The commuting and learner NMT travel is especially prevalent in the metro south east areas of metropolitan Cape Town.

Investigations into learner travel have indicated that learners travel to school mostly by motorised modes that include private cars, public transport and school buses. Learners do not favour NMT as a mode of transport and road safety, personal security concerns, as well as long trip distances, have been cited as the most likely deterrents.

Access for citizens using motorised means of transport is also being impacted by increasing levels of congestion in Cape Town. Mobility patterns in Cape Town are also indicating the alarming trend of increasing private car usage. This has resulted in increasing congestion during peak commuting hours. This is resulting in an increased focus on managing congestion with reduced awareness of the needs of NMT.

On more local levels NMT comprises various means. Barriers such as rail lines, freeways and major arterials, previously designed and located outside of an integrated transport and land use planning framework, had lead to unsafe NMT environments. People are forced to either cross these physical obstacles in an unsafe and invariably high risk manner, or to follow long paths to safe crossing points.

Pedestrian safety is becoming increasing problematic in Cape Town with the pedestrian fatality rate (% of all road fatalities) of 63% being greater than provincial and national pedestrian fatality rates of 45% and 38% in 2002, respectively. Rail safety for pedestrians is also extremely problematic, owing to the illegal crossings of railway lines. Road and rail safety for NMT users is also especially problematic in the metro south east areas of the metropolitan Cape Town as has been identified in the Pedestrian Safety Project[4].

Figure 3: Environments are designed for Motorised Vehicles inhibiting NMT access

5.2 People and Communities

The NMT environment in Cape Town is generally characterised as a poor quality environment, with the standards of NMT environments being substandard in poorer communities. Public spaces, including NMT routes within road environments, are often not sociable, are poorly maintained, seldom used and suffer from the infiltration of crime. This is often due to poor infrastructural planning, lack of an integrated design approach, and difficulties experienced in operation and marketing of public spaces.

Figure 4: Hostile NMT environments with poor provision for cyclists and pedestrians

The road environment is also extremely hostile for NMT users. Transport infrastructural design and planning is mostly skewed towards the needs of motorised traffic. Cape Town has an extensive metropolitan road network that includes freeways, expressways and major arterials. These roads are generally characterised by wide road reserves to ensure available future road capacity, dual carriageway roads or single carriageways with multiple lanes. The extensive metropolitan road network which traverses Cape Town's landscape and in some instances separates communities is perceived as a barrier to community development in residential areas.

The increased level of congestion due to increased levels of private car usage is resulting in increased parking demands, especially in the more urban centres of Cape Town. This increased parking demand and congestion, are also impacting on the quality of the public environment, as well as the quality of residential environments.

The walkability of Cape Town is also perceived to be extremely low. This concern is especially problematic in the more urban environments of Cape Town where pedestrian movement is more intense. This is due to intersection design skewed towards the needs of motorised traffic, pedestrian crossing facilities being inadequately provided or located, lack of sidewalks, accessibility for people with disabilities being compromised, etc. Cycling suffers from similar neglect and experiences lack of facilities, hostility from road users, etc.

The above factors, the quality of public space and the perceived hostility of the road environment, have major implications for NMT use and perceptions in Cape Town as it impacts on the sociability and walkability of Cape Town. This is of particular concern for the tourism sector.

Safety and security are the primary considerations for NMT users and the perceived lack thereof in Cape Town is adding to the negative perceptions of NMT use in Cape Town. The current design of most public spaces with regard to infrastructure and quality of the space i.e. lighting, sight lines, activities to encourage natural surveillance, etc. does not promote safety and security.

Figure 5: Public Spaces are poorly maintained and have limited NMT infrastructure

5.3 Social and economic transformation

Although the economy for the City of Cape Town has significantly improved over the past decade, social and economic conditions continue to be greatly disparate. There are many that have increased their income and living conditions, but for a majority, unemployment, lack of housing and poor social services remains a reality. This disparity in conditions is also reflected spatially, with the poor continuing to live on the outskirts of the City. They are required to travel long distances and are captured public transport riders because they cannot afford private vehicles. NMT can be used to generate social and economic development and transform the quality of life for citizens of the City of Cape Town.

Figure 6: Large numbers of people in Cape Town still experience poor living conditions, lack of housing, unemployment and rely on low cost mobility modes such as public transport and NM

5.4 Environmental sustainability

The State of Energy report for Cape Town[5] listed some of the issues facing the transport sector in Cape Town and stated that "*urban sprawl causes long commutes, which result in higher transport energy consumption and a corresponding high release of carbon and other emissions*". Long commutes also require longer days away from home, less productive time which decreases quality of life, primarily for the poor. These current levels cannot be sustained by the City in the future and remedial measures have to be implemented to arrest the current trends. NMT is a form of sustainable transport that is currently not receiving the necessary recognition in transport planning.

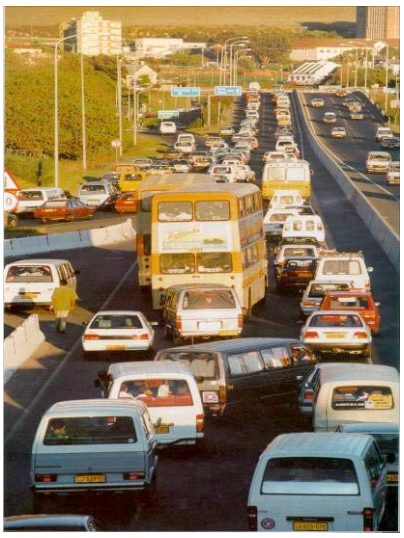


Figure 7: An increasing number of motorised vehicles increases air and noise pollution and requires more space for roadways and parking

5.5 Integration

Owing to apartheid town planning, people have to travel long distances to their places of work, to urban centres or to schools. This has also resulted in pedestrian desire lines crossing major freeways, arterials and railway lines, adding to the poor road and rail safety statistics of NMT users.

The lack of an integrated planning approach is viewed as the most significant contributor to the poor NMT environment Cape Town is currently experiencing. The lack of integrated planning has also resulted in the development of unsustainable and hostile residential environments with inadequate transport, civil services, shops, work opportunities, etc. Out of sheer desperation people are forced to cross or walk along these major roads to their places of work. Furthermore, it is also added to the growth of the informal trading economy. Trading stalls are located along sidewalks of major pedestrian routes or street vendors are trading on foot along major roads. Transport planning, skewed towards the needs of motorised traffic, has also impacted negatively on the quality of the NMT environment.

The lack of NMT consideration is also displayed in development planning where NMT is not given sufficient attention in the design of buildings, traffic impact assessments, etc. The lack of institutional integration, project coordination and non-alignment of budgets are also impacting negatively on the quality of the NMT environments and the implementation of NMT and public space project.

5.6 Awareness

Although the NLTTA regulations[6] for the inclusion of NMT as a mode in integrated transport planning, has resulted in a perceived increased awareness of NMT within transport planning, NMT is still not recognised as a mode of transport. This lack of recognition is manifested in a general lack of consideration for pedestrians by motorists and lawless and reckless attitudes of pedestrians. This lack of consideration for NMT needs is also inherent in infrastructural planning and design of transport elements and the conscious introduction of the culture of walking, cycling and NMT in the mobility environment and the respect towards NMT users in the streetscape environments, are required.

The lack of NMT awareness is also resulting in a culture/ societal behaviour in Cape Town that NMT use is negative, not desired and only for the poor. The City's Policy Responses

A concise problem statement has been developed that describes the NMT concerns in Cape Town. The proposed policies for the City of Cape Town in response to the concerns facing NMT users are indicated hereafter.

Table 1: City of Cape Town NMT policies

Theme	Policies	
1. Access	Policy 1.1:	All people are entitled to reasonable access to other people, places, goods and services including those using NMT.
	Policy 1.2:	Safety is a priority for all NMT users, especially learners, cyclists and pedestrians.
	Policy 1.3:	NMT will not to be compromised over of the needs of motorised traffic.
	Policy 1.4:	Transport Impact Assessments must respond and address the needs of universal access and NMT requirements.
2. People and Communities	Policy 2.1:	All people and communities in Cape Town are entitled to equal levels of service such that the basic needs of all people, especially women, children, the poor and the physically challenged should be provided for.
	Policy 2.2:	The public realm should be designed, built, managed and maintained in a way that protects the well-being (physical, mental and social) and safety and security of all people, enhances the quality of life in communities and increases the accessibility and primarily the walkabiliity of the whole of Cape Town.
	Policy 2.3:	All individuals should be committed to making responsible choices in the interest of their personal well-being as well as for the greater good of the environment.
	Policy 2.4:	NMT needs and requirements take priority in development and management of residential areas and public space networks.

Theme	Policies	
3. Social & Economic transformation	Policy 3.1:	NMT will be employed as a tool to maximise economic gain through the promotion of low cost mobility and the creation of NMT-related employment opportunities.
	Policy 3.2:	NMT considerations will be taken into account to enhance social transformation and the development of a more equitable society through contributions to improvement of quality of life and the provision of independent mobility for captive users.
	Policy 3.3	NMT planning and design should take cognisance of the informal trading policy of the City of Cape Town.
4. Environmental sustainability	Policy 4.1:	NMT will be employed as a tool to support environmentally sensitive transport solutions.
	Policy 4.2	NMT should be aligned and support Travel Demand Management Strategy of the City of Cape Town, as well as the City of Cape Town Energy and Climate Change Strategy.
5. Integration	Policy 5.1:	An integrated development planning approach will be followed when implementing NMT in Cape Town.
	Policy 5.2:	Through integrated planning, NMT considerations should be addressed with all developments in Cape Town, in particular the Integrated Human Settlements Programme.
	Policy 5.3:	Through integrated systems design, planning and implementation, NMT networks and facilities should integrate modes of transport, with particular focus on public transport facilities and interoperability.
	Policy 5.4:	Funding for NMT should be prioritised and coordinated with external and internal parties.

Theme	Policies
6. Awareness	Policy 6.1: NMT shall be recognised as an essential mode of transport. Policy 6.2: The culture and respect of NMT must be promoted throughout Cape Town through example by political leaders of City of Cape Town, evidence of projects, supportive law enforcement and visibility of NMT. Policy 6.3: The City of Cape Town should support and reinforce programmes and projects that target key markets/sectors and promotes public life and NMT, such as events to reclaim public space, like "Vehicle Free Days" and Night Markets. Policy 6.4: The City of Cape Town shall promote and support training of officials and stakeholders with respect to NMT planning and infrastructure design. Policy 6.5: The City of Cape Town shall promote NMT by example through the provision of NMT support facilities such as showers and bicycle parking at municipal buildings that include depots, offices and the development of incentives promoting NMT, such as public transport allowances, bicycle travel allowances, etc.

6. NMT strategies

A strategic NMT Plan has been developed from the NMT problem statement and the City's strategic responses. NMT strategies have been identified to achieve the City's NMT vision and objectives. Strategies have been identified along the same themes that have been identified in problem statement and policies. The NMT strategies are cross-cutting and may impact across a number of themes.

NMT must be part of an integrated solution and the accountability for various interventions lie with various sectors (private, public), various spheres of government (local, provincial, national) as well as various departments (transport, urban design, spatial planning, etc.) In the development of the strategies, the responsible sector by strategy has been included in the table of strategies below.

Strategies have been prioritised with high (H), medium (M) or low (L) priority weighting, which have been identified as the following:

- High: To be implemented as a matter of priority, for which funding has to be actively sought
- Medium: To be implemented as a matter of priority, subject to the availability of funding.
- Low: To be implemented after the priority actions have been addressed.

6.1 NMT Strategies for Theme 1: Access

The Access theme aims to improve connectivity and mobility within the City through NMT. This involves planning and implementing infrastructure that supports access through NMT.

6.2 NMT Strategies for Theme 2: People and Communities

The people and communities theme promotes livability and equity for citizens within the City through NMT. Strategies therefore include elements such as quality of environment, people safety and security.

6.3 NMT Strategies for Theme 3: Social and Economic Transformation

NMT can promote social and economic transformation by generating economic opportunities and uplifting social conditions. The strategies for this theme have been divided into economic and social opportunities that are promoted through NMT infrastructure development and other low cost mobility initiatives.

6.4 NMT Strategies for Theme 5: Awareness

Lack of awareness discourages the use of NMT in the City. The inconsiderate behaviour and unlawful attitude of motorists and NMT users is problematic. This contributes to the high pedestrian accidents that currently exist. NMT needs to be marketed and promoted as a positive transport alternative accompanied by appropriate user behaviour.

6.5 NMT Strategies for Theme 4: Environmental Sustainability

NMT has always been closely associated with environmental sustainability because of its minimal impact on fossil fuel usage, noise and air pollution. NMT is also best supported by sustainable land use development principles.

6.6 NMT Strategies for Theme 6: Integration

NMT cannot be implemented in isolation and success relies on an integrated approach i.e. within government departments and between public and private sectors.

Table 2: Strategies to improve Access

Strategic theme		Responsible sector	Priorities		
			H	M	L
1.1	***Infrastructure***				
1.1.1	Provide accessible infrastructure across the City within priority NMT areas : • Upgrading of public transport interchanges • Upgrading of public spaces • Developing links between key destinations • Provision of bicycle parking and storage facilities • Construction of bridges and walkways	*All*	•		
1.1.2	Provide rail crossings at adequate and convenient locations • Upgrading of existing rail crossing • Identification of construction of new rail crossings	*SARCC, Transport*	•		
1.1.3	Implement improvement measures within learner focus areas across Cape Town • Promotion of scholar patrols • Implementation of bicycle/pedestrian paths and other NMT infrastructure in school priority zones • Introduction of walking and cycling bus	*Transport, Education*	•		
1.1.4	Incorporate universal design elements in all design and construction processes. • Development of a universal design guidelines for City of Cape Town	*All*	•		
1.2	***Planning***				

	Strategic theme	Responsible sector	Priorities		
			H	M	L
1.2.1	Promote and enforce the use of appropriate guidelines for NMT facility design and implementation • Development appropriate NMT facility guidelines for the City of Cape Town	*Transport*	•		
1.2.2	Integrate NMT with public transport and private transport. • Improvement of NMT access to public transport interchanges and parking garages • Improvement of NMT circulation at public transport interchanges and parking garages • Provision of bicycle storage facilities at public transport interchanges.	*Public Transport, Transport*	•		
1.2.3	Provide good NMT connectivity • Development of bicycle master plan for the metropolitan area of Cape Town. • Development of local area NMT plans	*Transport*	•		
1.2.4	Plan and design appropriate housing developments. • New housing developments to consider NMT requirements as part of implementation scheme.	*Housing*		•	
1.2.5	Incorporate NMT considerations into the evaluation process of future developments. • Inclusion of NMT and public transport in Traffic Impact Assessments (TIAs) • Inclusion of NMT, public transport and universal access as part of building plan approval process. • Consideration of NMT during construction stages	*Approval Authorities*		•	
1.2.6	Promote cycling as an alternative form of transport. • Development of appropriate infrastructure to promote NMT. • Incorporation of showers and lock-up facilities at places of work to improve the convenience of NMT use.	*Planning, Transport*	•		

Table 3: Strategies for People and Communities

Strategic theme		Responsible sector	Priorities		
			H	M	L
2.1	***Quality of environment (attractiveness, comfort, convenience and sociability)***				
2.1.1	Design and construct attractive NMT environments.	*Design, Planning and Transport*	•		
2.1.2	Ensure comfort and convenience in the design and construction of NMT environments.	*Design, Transport*		•	
2.1.3	Provide good information and signage to ensure way-finding for NMT users.	*Transport, Tourism*		•	
2.1.4	Develop maintenance programs for public spaces and NMT routes. • Development of a maintenance and monitoring strategy for the maintenance of public spaces	*All*	•		
2.1.5	Integrate human activities in public space development	*Design, Planning*		•	
2.1.6	Implement appropriate NMT considerations in residential communities as well as along access links. • Upgrading of residential communities with street lighting, traffic calming, sidewalks, pedestrian crossing facilities, landscaping, etc.		•		
2.1.7	Reduce the impact of parking on the quality of public places. • Development of a parking management plan for the City as a Travel Demand Management (TDM) measure. • Conversion of existing parking areas to the public spaces, where required. • Development of by-laws to prohibit parking on pavements.	*Planning, Transport, Design*		•	

Strategic theme		Responsible sector	Priorities		
			H	M	L
2.2	***Road and Rail Safety***				
2.2.1	Prioritise pedestrian safety • Compliance to the Pedestrian Safety Plan completed in June 2005. • Implementation of pedestrian safety remedial and proactive measures.	*Transport, SARCC, Traffic Enforcement, TSM*	•		
2.2.2	Promote road safety through appropriate design of infrastructure and signage.	*Transport, Urban Design, Planning*	•		
2.2.3	Implement safety awareness programs	*Enforcement, Education*			
2.3	***Security***				
2.3.1	Promote a mix of land use activities to increase natural surveillance.	*Land use planning, urban planning*	•		
2.3.2	Promote security through appropriate design of infrastructure • Provision of lighting at NMT places with high concentration of people • Provision close circuit television (CCTV) cameras at NMT places with high concentration of people. • Deployment of security personnel in areas with high pedestrian intensity.	*Urban Design, Transport, Public Transport*	•		

Table 4: Strategies for Social and Economic Transformation

Strategic theme		Responsible sector	Priorities		
			H	M	L
3.1	***Infrastructure***				
3.1.1	Provide, manage and maintain facilities that support local economic development in conjunction with public spaces. • Provision for appropriate trading facilities. • Improvement of facilities for traders • Development of design and maintenance guidelines for trading facilities	*Design, Planning, Transport, Maintenance, Enforcement, Economic Development*	•		
3.1.2	Incorporate heritage, conservation and tourism needs as part of public space development.	*Tourism, Heritage, Design, Planning,*		•	
3.1.3	Support labour intensive methods and SMME business in NMT facility construction.	*Transport, Planning and Design*	•		
3.2	***Economic Opportunities***				
3.2.1	Develop and support low cost mobility initiatives that includes bicycle service centres, bicycle shops, secure bicycle parking, bicycle deliveries, and tourism-linked NMT projects.	*Design, Planning and Transport*	•		
3.3	***Social Considerations***				
3.3.1	Provide NMT as an alternative mode to captured public transport riders. • Improved availability of low-cost bicycles to poorer communities	*Transport, NGO's*	•		
3.3.2	Provide quality urban environments that support NMT and sociability.	*Transport, Urban Planning*	•		

Table 5: Strategies for Environmental Sustainability

Strategic theme		Responsible sector	Priorities		
			H	M	L
4.1	***Sustainable Transport***				
4.1.1	Promote NMT as part of sustainable transport initiatives.	Transport	•		
4.1.2	Promote NMT modes in environmentally sensitive or conservation areas where appropriate.	Heritage, Parks and Conservation			•
4.2	***Sustainable Development***				
4.2.1	Provide good NMT connectivity between service centres and within new development proposals.	Transport, Housing	•		
4.2.2	Promote mixed land use and higher density development.	Spatial Planning		•	
4.3	***Economic Sustainability***				
4.3.1	Develop NMT as low cost transport mode alternative.	Transport	•		
4.3.2	Develop NMT as low cost feeder to public transport.	Transport	•		

Table 6: Strategies for Awareness

Strategic theme		Responsible sector	Priorities		
			H	M	L
5.1	***Promote awareness of NMT as a mode***				
5.1.1	Develop marketing campaigns to promote NMT awareness and change perception as desirable mode • Development of NMT-pro advertisements in various mediums • Development of NMT marketing plan	Transport	•		
5.2	***Safety awareness***				
5.2.1	Develop learner safety programs as part of the school curriculum	Education	•		
5.2.2	Develop programmes to increase motorists awareness of NMT users • Development of a Marketing Plan to inform public of traffic and NMT rules.	Transport		•	
5.3	***Enforcement***				
5.3.1	Undertake Law enforcement on NMT offences • Development of NMT Traffic enforcement programme	Traffic		•	
5.3.2	Undertake Law enforcement on motorist offences against NMT users.	Traffic	•		
5.4	***Behaviour***				
5.4.1	Develop programmes to create behavioural transformation amongst society.	Transport		•	

Table 7: Strategies for Integration

Strategic theme		Responsible sector	Priorities		
			H	M	L
6.1	**Departmental Coordination**				
6.1.1	*Liaise with other departments to ensure consensus on sector policy responses.*		•		
6.1.2	*Coordinate NMT planning activities and implementation projects in all sectors within the City of Cape Town that includes Public transport planning, spatial planning, urban design, road safety, education, local economic development, tourism*	*All*	•		
6.1.3	*Include NMT consideration as a component of all projects*	*All*	•		
6.1.4	*Ensure budget alignment on NMT projects.*	*All*	•		
6.1.5	*Appoint a political leader/ to represent and market NMT.*	*Transport*	•		
6.2	**Coordination with other Sectors**				
6.2.1	*Promote institutional integration with other government agencies and the private sector, including NGO's.* • *Formation of NMT focus group/ coordinating panel* • *Liaison with private developers on NMT guidelines*	*All government agencies, Private Sector and NGOs*		•	
6.2.2	*NMT implementation to "piggy-back" on other NMT-related projects to ensure maximum implementation awareness.*	*All*	•		

NMT interventions cut across a range of government departments and sectors. To realize the NMT vision, each role-player must take responsibility and ensure they have made appropriate provision for NMT. However, it is recognised that the various government departments or sectors are managed by different authorities, leaders, etc. Strategic responses have been identified to guide various parties in their planning and implementation of NMT. Refer to Table 8.

Table 8: Strategic Sector Responses

Sector	Strategic Sector Reponses
Transport	• Public transport and NMT will be prioritised. • NMT and particularly pedestrian safety will be an important consideration in transport planning. • Infrastructure, signage and other NMT considerations will be implemented.
Public Transport	• Public transport planning will consider NMT as an important feeder mode. • Network and linkages around public transport facilities will be developed. • Bicycles and bicycle facilities will be included in public transport facilities.
Urban Design	• Design of urban environment will support NMT activity. • Quality environments will be developed that promotes livable communities.
Spatial Planning	• Land use planning will support NMT activity. • Mixed land use will be implemented to minimise trip distances. • NMT linkages and connections will be promoted.
Education	• Safety and awareness of NMT will be included in school curriculum. • Education Department will coordinate on preferred transport mode and NMT requirements at schools.
Housing	• Housing will be designed and implemented to support NMT friendly environments. • Provision will be made for quality urban spaces. • Integration with other departments to coordinate NMT provision.
Tourism	• Coordination with other departments around NMT provision in tourist areas. • NMT activity supports tourism.
Local Economic Dev. (LED)	• NMT promotes LED and informal trade. • Provision of markets and informal trading facilities will include NMT considerations.
Private Sector	• Private development will include NMT design and facility considerations. • Coordination between private and public sector on NMT planning will be undertaken.

7. NMT Network Development

7.1 Background

The Metropolitan Bicycle Master Plan was developed on the bases of connecting potential bicycle trip generators and attractors such as tourism sites, scenic routes, residential communities, places of work and strategic facilities around Cape Town through a metropolitan bicycle network. The Metropolitan Bicycle Master Plan is a dynamic plan that adjusts as local area networks are developed. It complements existing bicycle planning in local areas and forms an important consideration and guide in the development of local area bicycle planning where it does not exist.

The Pedestrian Safety Plan was also developed by the City of Cape Town in response to the high pedestrian casualty rates. Areas were identified for pedestrian safety interventions and these were also considered in the development of the NMT Master Plan.

7.2 NMT Strategic Plan

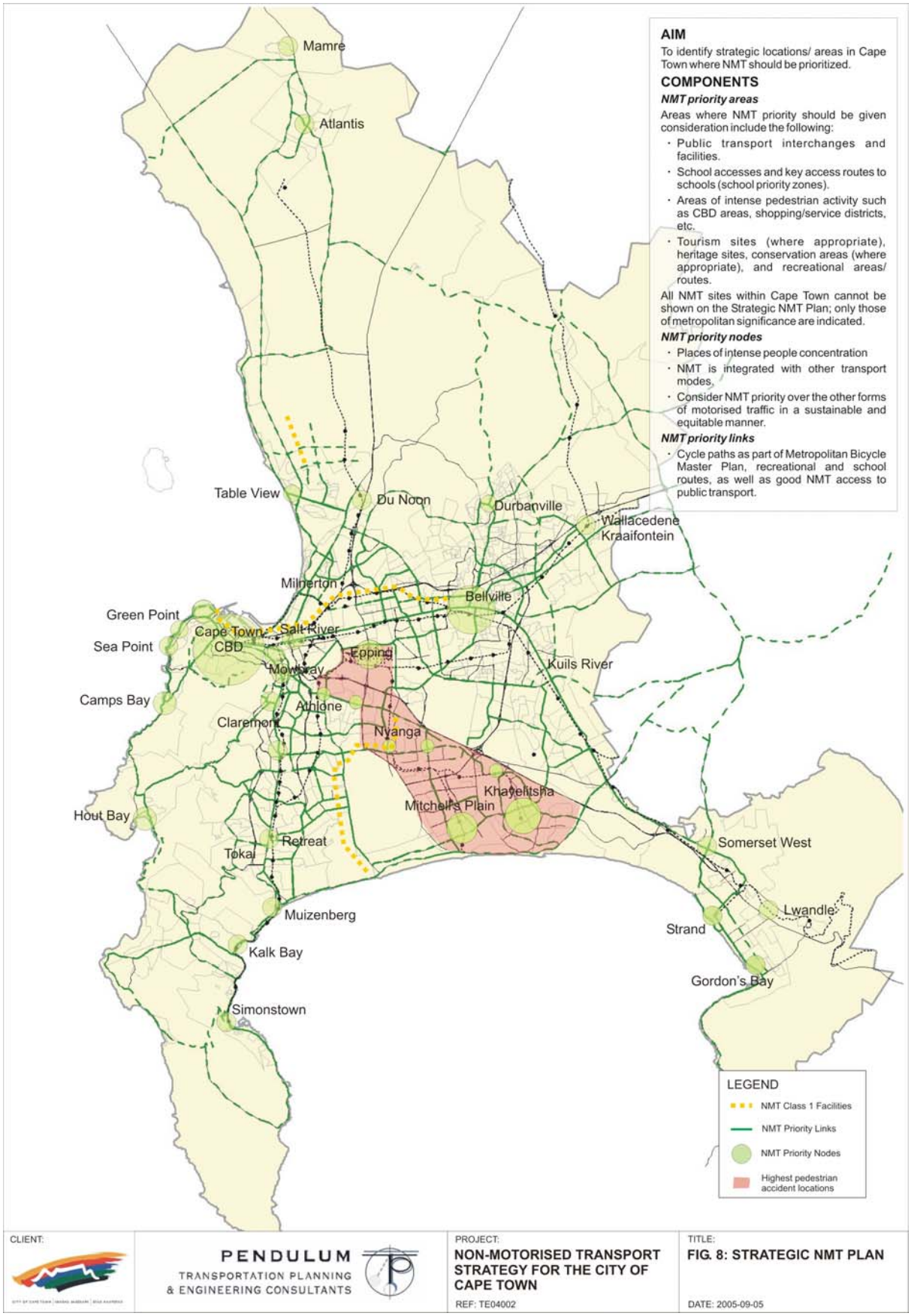
The Metropolitan Bicycle Plan and the Pedestrian Safety Plan was used as informants to develop the City of Cape Town Strategic NMT plan. This Strategic NMT Plan aims to identify strategic locations/ areas in Cape Town where NMT should be prioritized. The Strategic NMT Plan highlights the areas with NMT priority, which also comprises strategic nodes with Cape Town favouring NMT use and the Metropolitan Cycle Master Plan.

The Strategic NMT Plan is shown in Figure 8. This plan is only developed at a strategic level and does not include focus areas at local community/ neighbourhood levels. The NMT priority areas at neighbourhood levels should be developed through the development of local area NMT network plans. The NMT Strategic Plan forms a framework for the development of local area NMT network plans. It should be a dynamic plan that is guided by the development of the local area NMT network plans.

7.2.1 Areas with NMT priority

Areas with intense people concentration and that require a more human-scaled environment to function successfully, should be prioritised for NMT. These areas include Public Transport Interchanges, tourist attractions/recreational areas, school priority zones, CBD Areas and access links to public transport. Owing to the large number of people attracted to these nodes, these areas should be developed to be as safe, attractive and convenient as possible, adhering to the principles of good public space design.

Figure 8: Strategic NMT Plan



Areas where NMT priority should be given consideration include the following:

- Public transport interchanges, bus and rail stations
- School accesses and key access routes to schools (school priority zones), as well as tertiary educational institutions.
- Areas of intense pedestrian activity such as CBD areas, shopping/service districts, community centres and facilities, etc.
- Tourism sites (where appropriate), heritage sites, conservation areas (where appropriate), and recreational areas/ routes.

All of these sites within Cape Town are not shown in the NMT Strategic Master Plan, only those of metropolitan significance.

The priority is determined by the degree of people concentration, the special consideration given to learner travel to and from school, the needs of the tourism sector and the role of NMT recreation.

However, NMT priority should be applied in a sustainable and equitable manner. In certain cases, NMT priority can only be achieved where trade-offs between motorised traffic and NMT are achieved. This will result in a balanced street system for use by all road users.

7.2.2 NMT priority nodes

NMT priority areas include nodes of intense people concentration. Generally, in these areas NMT forms are mixed with other transport forms and should be granted priority over the other forms of motorised traffic in a sustainable and equitable manner.

However, there are certain special NMT areas where pedestrian activities should be prioritised over motorised traffic. Pedestrian activities add to the creation of liveable environments and Transportation for Livable Cities[7] states that "*Cities that have a high rate of crime in streets, poor facilities for pedestrians, no protection for people from vehicles or inclement weather, and few attractions along pedestrian facilities cannot be considered human orientated, attractive or livable.*" It is the latter factors that should be strived for in certain areas in Cape Town through the promotion of pedestrianisation. These include areas such as CBD Areas, public transport interchanges, tourist-favoured precincts such as the historical part of Cape Town CBD.

These forms of priority should be achieved through the development of streets favouring pedestrians, such as pedestrian malls, or public transport streets, development of by-passes for vehicles, etc.

Nodes in Cape Town that are significant within a metropolitan context are highlighted in the Strategic NMT Plan. It must be noted that these nodes are only illustrated in a notional manner and that the exact boundaries of these special NMT nodes should be finalised only through the development of NMT local area network plans

7.2.3 NMT links

To ensure that NMT functions as an effective component of the transport system, links should be identified that provide a certain degree of mobility. These include cycle paths as part of Metropolitan Bicycle Master Plan, recreational routes and routes towards schools, as well as good NMT access to various modes of public transport. The links included in the Strategic NMT Plan are at a metropolitan level and neighbourhood level NMT links should be identified as part of local area planning.

These NMT links include

- NMT pathways located outside of the road reserve and are separated paths (class 1), for example bicycle ways through parks.

- Paths located within the road reserve, such as paths that physically separated from vehicular traffic (class 2), as well as bicycle lanes (class 3) that are located in the travel way of the road.

8. NMT Facility Design Guidelines

Various design guidelines are available in South Africa and includes the NMT Facilities Guideline[8] and the Southern African Development Countries Road Traffic Signs Manual[9]. These guidelines should always be consulted and referred to during NMT planning and design processes. However, certain issues are highlighted hereafter to illustrate priority NMT considerations.

8.1 General NMT Guidelines

General NMT guidelines and guidelines specific to the needs of pedestrians and cyclists are highlighted hereafter.

8.1.1 Crime Prevention through Environmental Design (CPTED)

Crime Prevention Through Environmental Design (CPTED) is concerned with designing the local environment to minimize opportunities for crime.[10] Paths intended for day and evening use are more secure if located near residences, which provide passive surveillance. Lighting should be adequate to remove very dark areas at night, and vegetation should be managed to ensure good sight lines, minimal places to hide, and ensure paths are visible to surrounding areas. The placement of bicycle parking facilities should also be well considered to reduce the likelihood of bicycle theft.

The following guidelines, adapted from Safe Cities: Guidelines for Planning, Design and Management, can be used to make cycling facilities and routes safer so that people will not be afraid to use them.

- Is there adequate visibility of parked bicycles, and for people in the process of locking and unlocking their bicycles from people passing by, in adjacent buildings, or from station attendants?
- Are there entrapment spots? Are there dark isolated spaces near the bicycles?
- Is there a clear system of through routes on city streets, preferably not separated by visual barriers?
- Are the routes clearly sign-posted, not only on the route but along major roads feeding into the route?
- Are commuting routes chosen not only for convenience and lack of detours, but also for security? This means locating bicycle routes adjacent to areas of high pedestrian and car traffic during the day and evening, with as much continuous building, as few “empty spaces” and as few underground crossings as possible. Separating bicycle paths from both pedestrian and automobile traffic makes them more vulnerable.
- Are the routes well lit?
- Do they avoid underground crossings?
- Are there bushes and dense clusters of trees avoided immediately adjacent to the route?

Dimensions for people in wheelchairs

Source: NMA & Associates et

Dimensions for cyclists

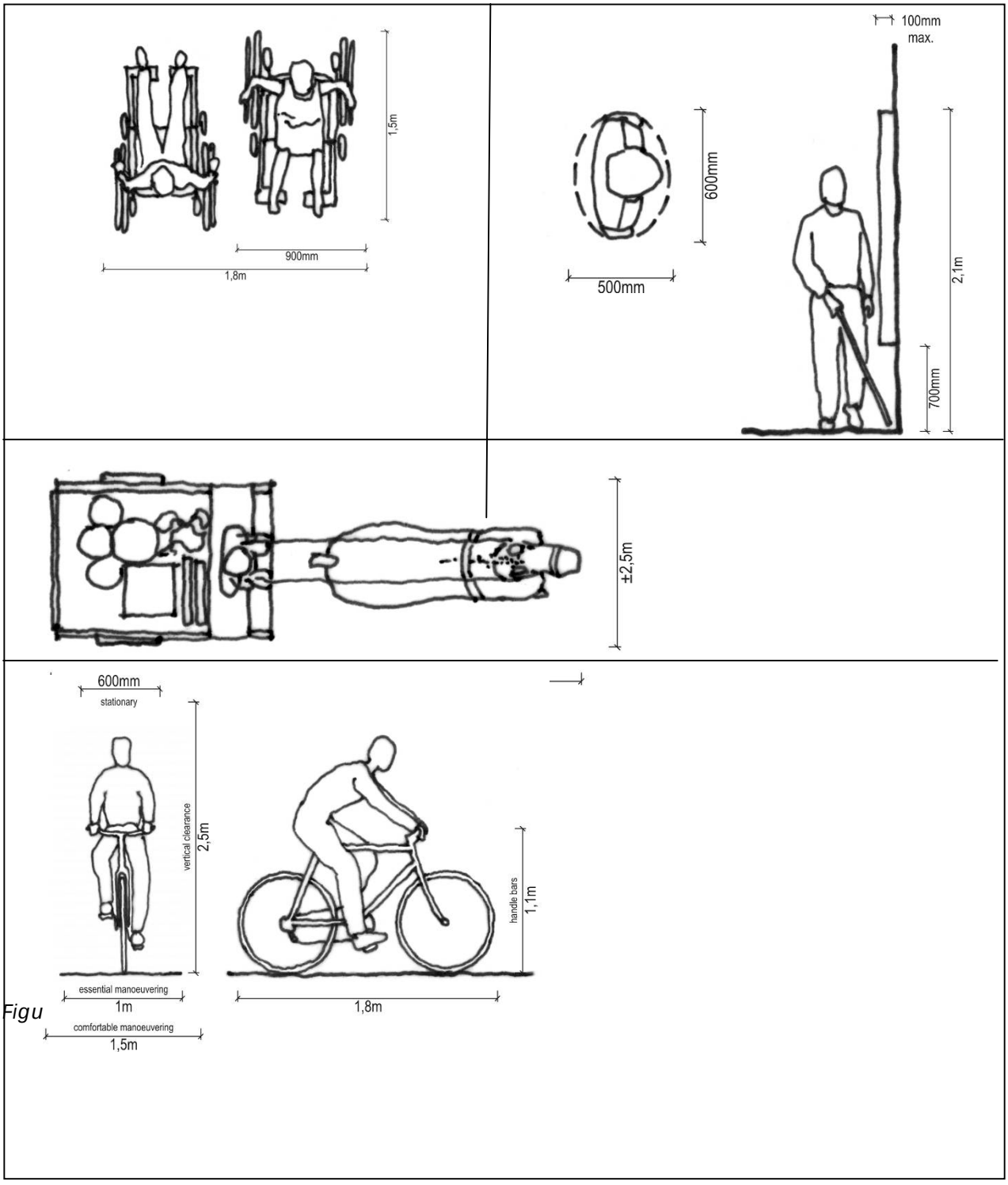
Source: Dft Bicycle and Pedestrian

Dimensions for pedestrian body

Source: City Guidelines for Pedestrian Facility

8.1.2 Design Dimensions

Typical dimensions to consider in detail designs are included:



Figu

8.1.3 User Conflict

Design features and user policies should be used to minimize conflicts between cyclists, pedestrians and equestrians, for example, the separation between cyclists and pedestrians through the use of bollards, a line of trees or street furniture.

8.1.4 "Shy" or Obstacle Fear Distance

Although a typical pedestrian or cyclist is only about 0.6m wide, when moving they need a buffer between themselves and other objects. This is referred to as "shy or obstacle fear distance."

As travel speeds increase, so does the obstacle distance requirement. This should be taken into account when evaluating the adequacy of sidewalks and paths for the volumes and mixes of users. It means, for example, that two people walking quickly side-by-side typically require about 1.8 metres of total width (0.6 metres of body width each, plus 0.6 metres of shy distance on each side. Also, a 2.5-3.5 metre sidewalk or path is just sufficient to comfortably accommodate a couple of pedestrians heading in one direction passing another pedestrian.

Source: DoT Bicycle and Pedestrian Facility Guidelines[8]

Wider paths are needed to accommodate moderate speed skaters and cyclists. A 0.3m obstacle fear distance should be adequate for cyclists next to an obstruction such as a wall, or a vertical level difference such as a kerb.

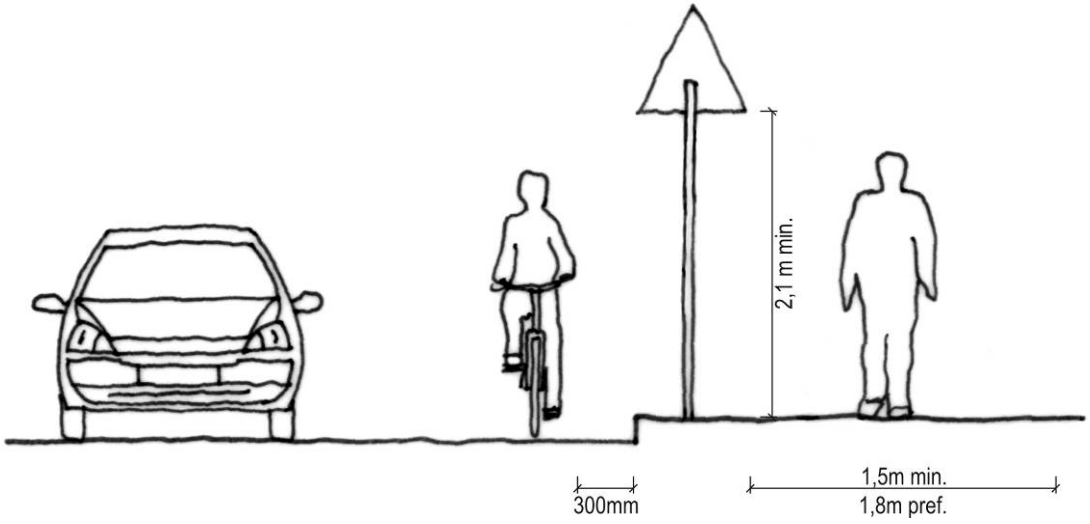
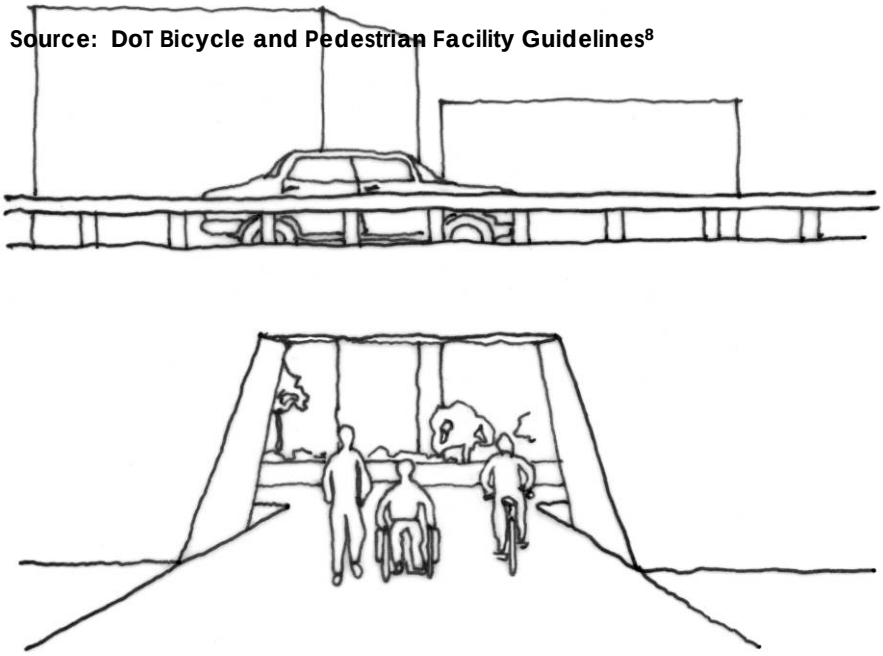


Figure 10: Sidewalk width and vertical clearance

8.1.5 Underpasses

The following guidelines are recommended for pedestrian underpasses:

- Always provide a clear view from one end of the underpass to the other, and if at all possible avoid any curvature, either horizontal or vertical.
- Make the motor vehicles climb a few degrees on the overpass so that pedestrians and cyclists can pass underneath at grade. Downhill slopes into an underpass should be avoided to keep cyclists from attaining excessive speeds.
- Do not build stairs down to underpasses; they discriminate against NMT users such as cyclists, wheelchairs, trolleys, baby strollers and deter use of the system.
- Provide bright, attractive and secure lighting throughout the underpass at all times.



Source: DoT Bicycle and Pedestrian Facility Guidelines[8]

Figure 11: Uninterrupted sightlines under underpasses

8.1.6 Access for People with Disabilities

It is important that public facilities be accessible to the greatest number of people including those with disabilities. This is called "universal design." A variety of universal design guides and standards are available and should be utilised.

In general, accessible design requires the elimination of obstacles within the route of travel.

Gradients impact the comfort and usability of a NMT route, particularly for wheelchairs. Guidelines on gradients include the following:

- An accessible route of travel should not exceed a gradient of 1:20 or 5%.
- If the gradient must exceed this maximum, a ramp of not greater than 1:12 or 8.33% may be constructed.
- Landings should be provided every 1.5m of vertical rise. However, the maximum ramp length should not be greater that 9m to suit wheelchair users.

- A landing length of 1.5m is recommended, however, the absolute minimum landing length is 1.1m.

8.1.7 Kerb ramps

Ramps are useful for all people, baby strollers, luggage wheels, skaters, cyclists and people in wheelchairs. They provide accessibility at intersections, building entrances and other areas where elevated walkways are edged with kerbing. Guidelines include:

- The preferred width of the ramp is 1.5m. 1.2m is an absolute minimum. The gradient should not exceed 1:12. Flared sides should be at a maximum of 1:10. The landing should be at a minimum of 1.2m, with 1.5m being recommended.
- The kerb ramp should be orientated perpendicular to the kerb.
- Kerb ramps should be directly opposite the pedestrian/ cycle crossing path.
- Kerb ramps and ramps to raised public transport platforms should have a detectable warning surface for people who are visually impaired.
- A warning surface is required at kerb ramps and ramps to raised public transport platforms.
- Dropped kerb for multi-use paths should be the full width of the pathway. Care should be taken that it does not provide access for vehicles onto the sidewalk.

Source: DoT Bicycle and Pedestrian Facility Guidelines[8]

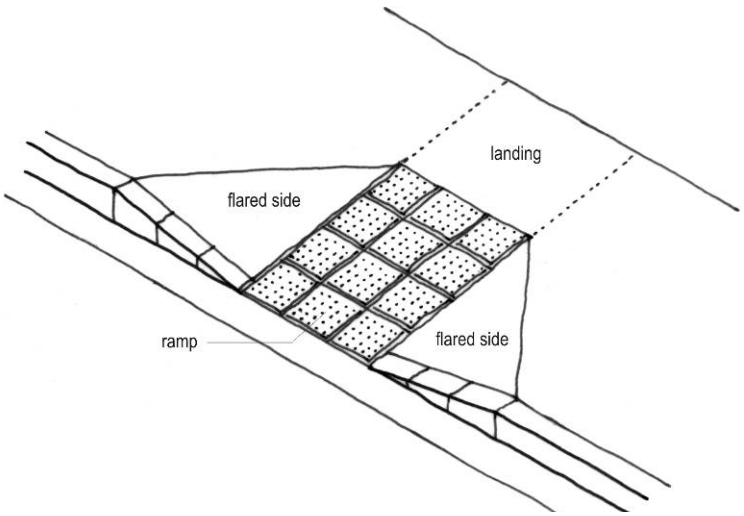
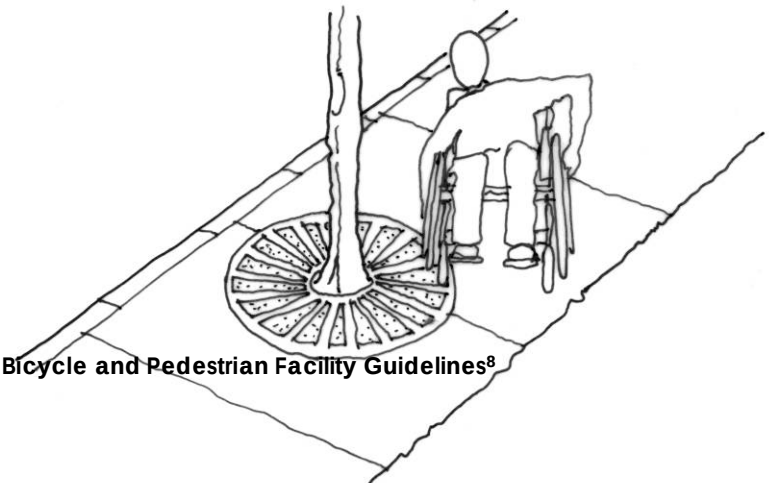


Figure 12: Kerb ramps

8.1.8 Gratings

Gratings are best if located outside the route of pedestrian travel. If not possible, the openings should be less than 12 mm in width. Refer to Figure 13.



Source: DoT Bicycle and Pedestrian Facility Guidelines[8]

Figure 13: Tree gratings

8.1.9 Hand Rails

In steep areas, continuous handrails are to be provided at a height of 1m to help people in danger of slipping and falling. Refer to Figure 14.

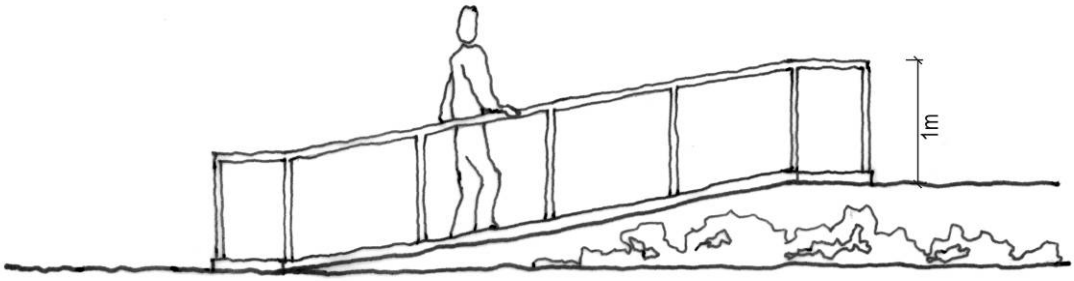


Figure 14: Height of handrails

8.1.10 Street Furniture

Street furniture signs, trash cans, and utility boxes may pose hazards to the visually impaired person. In general, it is suggested that street furniture be grouped together to be more noticeable than they would individually and take up less room. Add contrast with a brighter colour, maintain a clear height of pedestrian walkways, and place grouped objects in an area with a different surface, and/or mark with a tactile strip. Also take cognisance of the needs of blind people in locating and designing street furniture.

Figure 15: Ramps for cyclists and people with disabilities

8.1.11 Street Trees and Other Vegetation

A minimum planting strip of about 1.8m in width from the edge of the kerb to the edge of the sidewalk can provide a good separation buffer between the travel way and the pedestrian path. 1.8m will provide adequate space for the tree to develop. Trees may be planted in 6, 9, 12 or 15m intervals and should form a canopy overhead. Trimming trees to about 2.7m in height preserves sight lines for drivers and pedestrians. Tree species should be carefully chosen for good performance.

It is important that vegetation near roadways and paths be maintained. All vegetation above 0.3m in height should be trimmed back a least 1m on each side of all paths. Vegetation at intersections should be trimmed to provide adequate sight lines. Tree and shrub roots may cause disruption in a path surface. Removal of trees within 1m of the path and the use of root barriers may help to reduce problems.

Potential hazards from tree roots can be controlled by laying a good base of crushed gravel above the tree roots and below concrete sidewalks so they can grow without causing cracks in the sidewalk. Tree roots that may be a hazard to pedestrians can be painted yellow as a warning.

8.1.12 Surface

Smooth surfaces such as cement concrete or asphalt are firm and stable enough to support wheelchair wheels, crutch tips, and other mobility aids. Stabilized gravel may be acceptable in recreational settings, however loose gravel and wood chips generally do not provide for an accessible surface.

Bricks or cobblestones also have aesthetic appeal, but may cause hardships for people with disabilities. The pavements are also more difficult to maintain over the long-term.

8.1.13 Maintenance

Regular maintenance is essential to ensure that the facilities are safe and comfortable to use. Road and path surfaces should be swept regularly to remove glass and other debris. They should be given the same or greater maintenance standard as motor vehicle travel ways due to the absence of the “sweeping action” from regular car travel.

Maintenance of pathways and public spaces are particularly important for people with disabilities because debris create obstructions, decreasing manoeuvrability particularly for wheelchairs.

8.2 Pedestrian Guidelines[10,8]

8.2.1 Pedestrian Streets

- Pedestrian streets are only successful in areas that are attractive and lively. They require a critical mass of users. They should form a natural connection route for diverse attractions (tourist activities, shops, offices, etc.), and serve as both a destination and a thoroughfare.
- Develop a pleasant environment, with greenery, shade and rain covers. Brick, block pavement or textured cement should be used instead of asphalt, if possible. Street-level building features and street furniture should be pedestrian scale and attractive. Avoid blank walls on buildings.
- Develop a variety of pedestrian-oriented retail shops and services that attract a broad range of customers and clients. If possible there should also be offices and residential apartments, preferably located over shops.
- Allow motor vehicles as required for access, with appropriate restrictions based on need, time and vehicle type. This may include unrestricted motor vehicle traffic during morning hours, public transport and high occupancy vehicles, pickup and drop-off for residents and hotels, service and emergency vehicles, or other categories deemed appropriate.
- Pedestrian streets should have good access to public transport and parking. They should be located in a pedestrian-friendly area. Mid-block walkways and buildings open to through public traffic should be developed and enhanced as much as possible.
- Security, cleanliness and physical maintenance standards must be high.
- Provide a range of artistic, cultural and recreational amenities (statues, fountains, playgrounds) and activities (concerts, fairs, markets).
- Where appropriate, highlight historical features.
- Pedestrian streets should generally be small and short, typically just a few blocks in length.
- Vehicle traffic on cross-streets should be slowed or restricted.

Figure 16: Use of public art, greenery and shade in public space

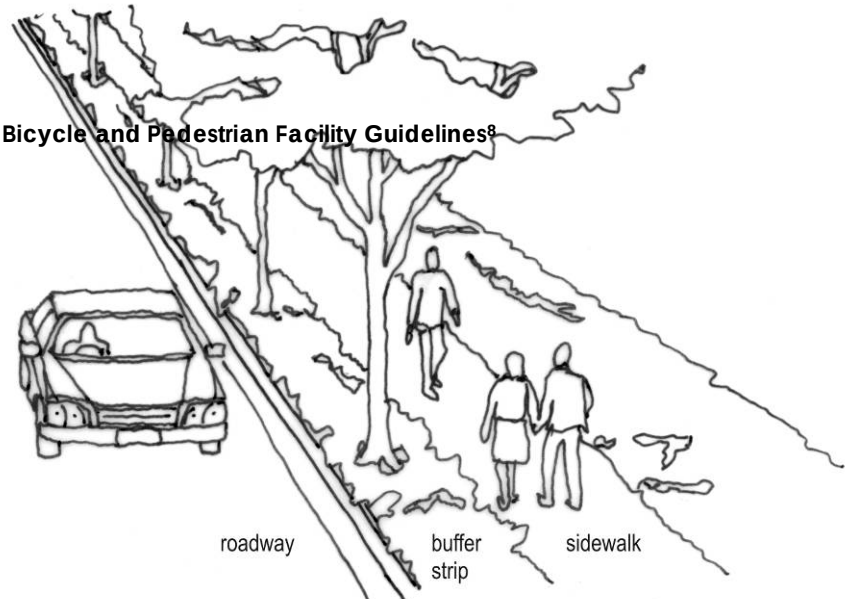
8.2.2 Pavements, Sidewalks and Pedestrian Walkways

The minimum acceptable width for sidewalks is 1.5m on local streets and 1.8m (or wider) elsewhere where there are greater numbers of pedestrians or where there are relatively high volumes of people with disabilities.

Other guidelines include:

- Where a walkway is less than 1.5m wide, passing areas must be installed.

- Vertical clearance must be a minimum of 2.1 m.
- A cross slope must not be greater than 2 % but must allow for adequate drainage.
- The level differences between driveway accesses and sidewalks are a cause of great discomfort for cyclists, wheelchair users and blind people. There are acceptable designs such as carriageway crossings and kerb returns across the footway.
- The needs of blind people using a cane need to be considered.
- Sidewalks should be separated from the adjacent roadway by a buffer strip as shown in Figure 17.



Source: DoT Bicycle and Pedestrian Facility Guidelines[8]

Figure 17: Buffer strip on sidewalks

8.2.3 Pedestrian Crossings facilities

A marked pedestrian crossing includes the use of road markings and either road signs or pedestrian signals. Facility design guidelines include:

- Road markings should not be used alone to indicate a pedestrian crossing and should be accompanied by the appropriate road signs.
- Pedestrian crossing signage should not be provided where pedestrian or vehicle traffic signals are in place, as the former would be illegal.
- Solid pedestrian crossing lines can only be used in conjunction with STOP-lines and with traffic signals. .
- At yield-control crossings, block pedestrian crossing RTM4 should be provided to demarcate the crossing point in conjunction with the appropriate signage. Zigzag lines may also be used.
- At signal-controlled crossings, pedestrian crossing lines RTM3, should be used.
- A pedestrian crossing can be made safer by using overhead signs, flashing lights, street lighting for illumination, push-buttons, etc.
- Where traffic speeds and volumes are very high, grade separated crossings provide the best protection and ease in crossing for pedestrians.

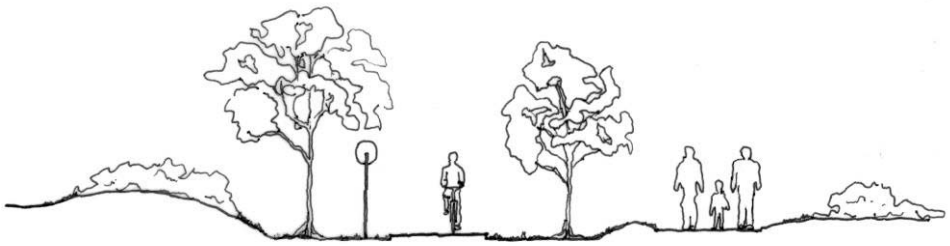
8.3 Bicycle Facility Design Guidelines[8]

8.3.1 Bicycle facility classification

Current cycle facility classification is illustrated in Figure 19. Typical examples are illustrated in Figure 18.

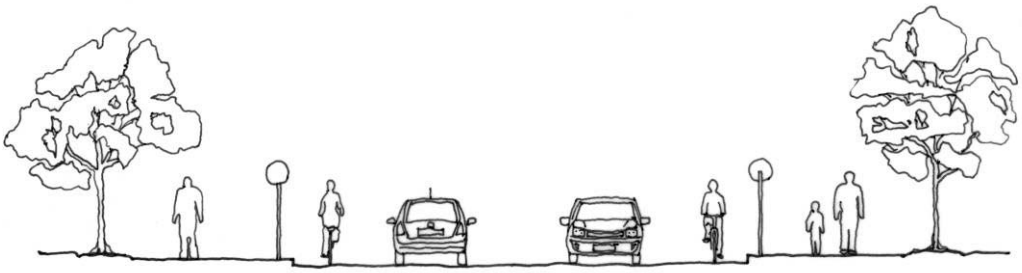
- Class 1: Located along an independent alignment outside of the road reserve and reserved for either cyclists only or shared by pedestrians and cyclists.
- Class 2: Path which is located within the road reserve, but separated from the travel way and reserved for either cyclists only or shared by pedestrians and cyclists
- Class 3: Bicycle path that forms part of the street or the carriageway and is marked accordingly. Referred to as a bicycle lane.
- Class 4: Located on a low-volume street to serve as a link in a network of cycle facilities. The path is indicated by signs and markings.

Figure 18: Typical examples of bicycle facilities.

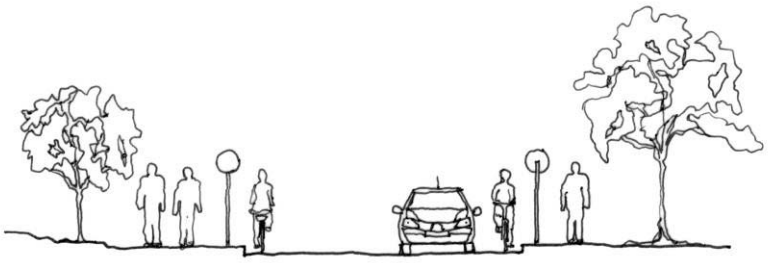


Class 1
Path on independent alignment reserved for either cyclists or cyclists and pedestrians only

Class 2
Path located within road reserve but separated from other traffic and for the use of cyclists or cyclists and pedestrians only



Class 3
Path forming part of a street or carriageway and marked accordingly; also known as a cycle lane



Class 4
Path located on a low volume street to serve as a link in the network of bicycle paths, indicated by signs and markings

Figure 19: Cycle facility classification

8.3.2 On Road Facilities – Cycle Lanes

All roads should be thought of forming the bicycle network. On major urban roads, cycle lanes can increase safety and reduce conflicts with other vehicles. Cycle lanes should always be one-way facilities carrying traffic in the same direction as adjacent motor vehicle traffic.

The minimum width for a cycle lane should be 1.2 m excluding kerb and gutter, 1.8m when next to a parking lane). A minimum width of 1.5m is also recommended on roads where unpaved shoulders are provided, or where there is a drop-off between the roadway and the shoulder.

A minimum width of 1.5m should be provided at junctions, although a width of 1.8m would be preferred. The wider width is required to accommodate two cyclists who stop side-by-side at the junction. However, this width should not be wider than 2m to prevent vehicles from using them.

Road shoulders along rural roads can serve as walkways and cycle ways. However, this would only be acceptable where pedestrian volumes are limited. Shoulders that are heavily trafficked by pedestrians and cyclists will not function adequately and in those circumstances, separate facilities might be more appropriate.

Bicycle lanes are usually provided as one-way facilities. Two-way bicycle lanes should not be provided as it encourages travelling against the direction of vehicle flow. However, two-way cycle lanes can be implemented in one-way streets, only under certain conditions.

8.3.3 Off Road Facilities – Cycle path

The minimum recommended bicycle road width for 2-way operations is shown in Table 9.

Table 9: Dimensions for 2-way operations

Desirable minimum	3.5m
Acceptable minimum	3.0m
Absolute minimum	2.5m
Horizontal clearance	0.5m

Wider dimensions may encourage motor vehicles to operate in the bicycle facility. Bollards should be used to prevent entry from vehicles.

Separated bicycle facilities should NOT be thought of as a substitute for accommodating bicycles on nearby roads. These paths should be considered extensions to the street system and meet an important recreational need.

Two-way paths need careful attention design where they intersect with traffic. Twinned paths on each side of a road provide more safety, especially at intersections.

The minimum width for a one-way path is 1.5 m, and a wider (3.5m) path with markings down the centre of the path may minimize conflicts where there is heavy traffic. Converting rail lines to trails provide good facilities with good sight lines and shallow grades. Good access including motor vehicle parking, water, toilets and telephones make for a successful facility.

8.3.4 Bicycle Boulevards and Local Streets

Bicycle boulevards are streets that encourage cycling and discourage motor vehicle traffic by means of traffic calming devices. On local streets, bicycle route signs may be desired where they form part of the bicycle network.

8.3.5 Sidewalks and Ramps

Owing to the road safety considerations, bicycle paths on sidewalks (class 2 facilities) are preferred for the more vulnerable cyclists such as inexperienced cyclists and learner cyclists.

Cycling on the sidewalk is generally not supported by more experienced cyclists as it is inconvenient to manoeuvre the level differences between sidewalks and driveways. There are also safety considerations, as there is a high potential for collisions at driveways and intersections.

8.3.6 On–street parking

On-street parking can pose risks to cyclists who cycle past and people with disabilities as they exit their vehicles. Where cars are parallel parked, a cycle lane may be provided between the road and parked cars if the cycle lane is wide enough and far enough from the vehicles to avoid car doors opening into the cycle lane. Diagonal or perpendicular parking facilities are very dangerous for cyclists and cycle facilities should be avoided in these areas.

8.3.7 Rail Crossings

- Rail crossings should be at right angles to the rails as acute angles may trap the wheels and cause crashes.
- The travel way should be widened if the crossing angle is less than 45 degrees to permit a wider crossing angle.
- Warning signs and pavement markings should be posted before the crossing.
- Road surfaces should be flush with the rails.
- Rubberized flanges around the rails or removal of unused track can minimize the danger for cyclists.

8.3.8 Intermodal Linkages

Airports, rail, buses and taxis should allow cyclists to reach distant destinations. Trains should permit bicycles as checked baggage, or in the passenger car. Terminals should provide for secure bicycle parking, and areas may be provided for bicycle set up, and clear access to the station should be provided. Road based public transport should be equipped with racks to carry at least two bicycles.

8.3.9 Traffic Signals

Traffic signals should be adjusted to detect bicycles along cycle routes. Quadra pole loop detectors are more sensitive to bicycles and may be more effective than standard loop detectors. The most sensitive area of the detector should be stencilled with a bicycle symbol. The right-most and left turning lane should be stencilled in this way.

8.3.10 Traffic Signs

Standard signs are adequate for most bicycle facilities. Signs specifically directed at cyclists should be smaller and lower than normal street signs. Signs should be between 1.2 and 3.0 meters in height and should be 1.0 metres from the edge of the bicycle path to provide adequate clearance for cyclists who may veer off the path to pass. Consideration should be given to adequate stopping distance to heed the warning or information on the sign.

8.3.11 Traffic Calming Devices

Traffic calming measures usually benefit cyclists by removing or slowing traffic. Some measures need to be carefully designed to accommodate cyclists. For example, where speed bumps or diverters are used, a by-pass area for cyclists should be included. Where pinch-points are used, rolled kerbs can allow cyclists to by-pass the pinch-point. Traffic calming devices can also be used as refuges for cyclists crossing two-way busy roads. Refuges should be 3 metres wide, by 2 metres across and provide handrails and bollards.

8.3.12 Bollards

Bollards should be placed where vehicles may enter a cycle path; one should be placed in the centre, with bollards to the side, each providing 1.5 m clearance. They should be clearly visible and have reflectors. Refer to Figure 20.

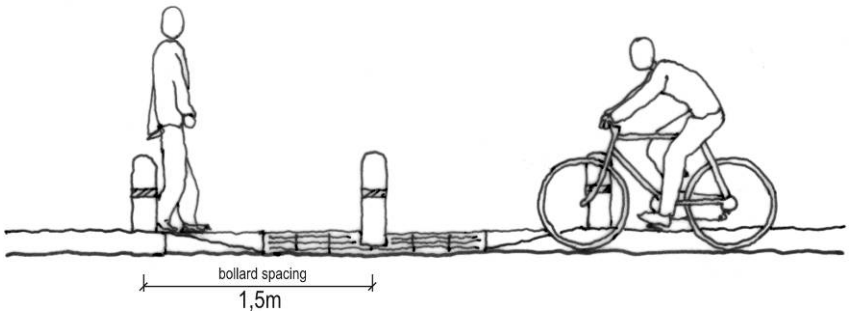


Figure 20: Bollard spacing

Source: DoT Bicycle and Pedestrian Facility Guidelines[8]

8.3.13 Pavement Structure

A cycle facility may be surfaced with cement, asphalt, or fine gravel screenings. However, the surface should be at least as smooth as that provided for vehicles and tree roots should be prevented from disrupting the smooth surface.

8.3.14 Bicycle Parking

Secure short-term and long-term parking must be provided at all destinations. The provision of bicycle parking at various facilities can be required by bylaw. Careful design and placement criteria are recommended for best results.

Bicycle parking is an important part of a bicycle plan as it provides security for bicycle users at their destinations. Refer to Appendix A for bicycle parking design options.[11]

- Long-term parking should be provided at residences, employment centres, schools, and transportation interchanges to safely store bicycles for several hours or days at a time. These must be fully protected from the weather, and enclosed in a secure space. This includes lockers, storage rooms, or fenced areas with restricted access.
- Short-term parking is needed at commercial and recreation centres. It should be as accessible (close to destinations) as possible. At least some short-term bicycle parking should be protected from the weather (a portion can be unprotected, since demand tends to increase during dry weather), and it should be visible to by-passers to discourage theft. Cycle racks should support the frame of the bicycle and provide something to lock the frame and wheels.
- Bicycle racks and lockers must be well anchored to the ground to avoid vandalism and theft. They should be located where cycles already parked, or where recommended by bicycle advisory groups. Signs may be needed to indicate bicycle rack location. The following factors should be considered when locating cycle parking facilities:

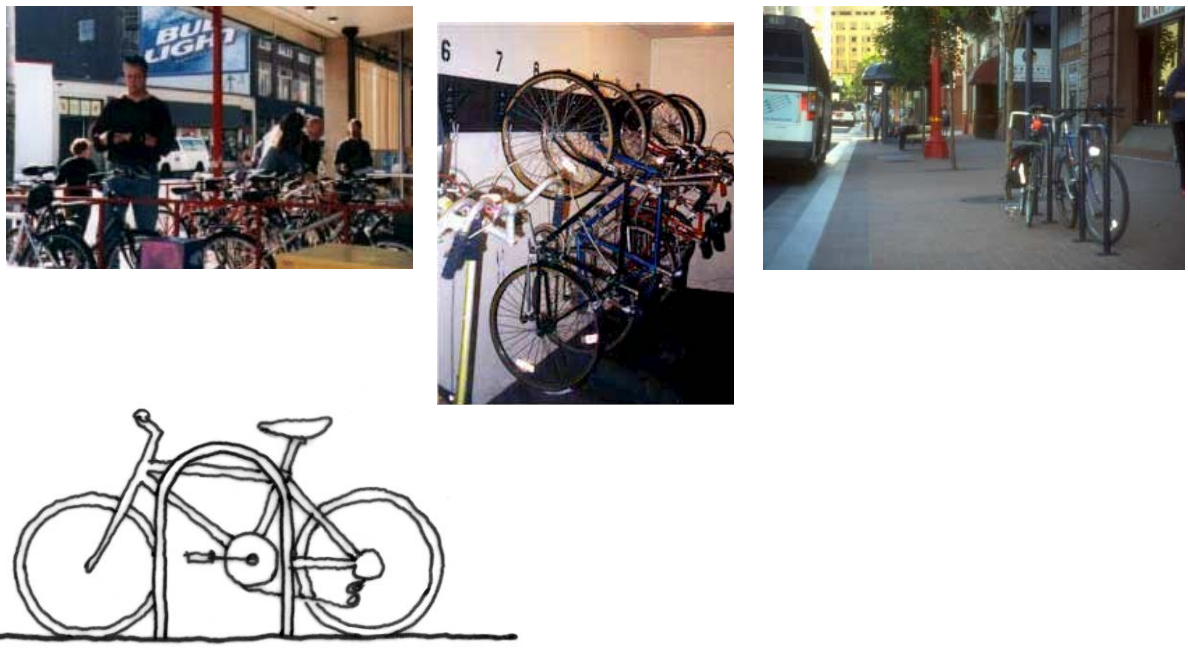


Figure 21: Various forms of bicycle parking

8.3.15 Bridges and over-passes

Special attention is needed to ensure adequate protection from traffic, adequate railing height and materials, and adequate width for sharing with pedestrians. A railing at handlebar height and one at shoulder height should be provided, do not use vertical railings or chain link fences that can easily snag a handle bar and cause a crash.

8.3.16 Construction zones

Bicycle lanes are to be rerouted for construction; adequate signage, and lighting must be in place. Where metal plates provide temporary road surfaces, they must meet the road at right angles and a ramp of asphalt provides a feathered edge for cyclists.

8.3.17 Extruded Kerbs

Extruded kerbs should not be used to separate a cycle lane from traffic as they present a hazard to the safe operation of the bicycle, make right turns impossible and present cleaning difficulties

8.3.18 Drainage / Utility covers

Drainage and utility grates should be flush with the roadway surface and long openings should be placed at right angles to the wheel's travel. Ideally, grates and utility covers should not be placed in the cycle lane, and kerb inlets should be used instead.

8.3.19 Intersections

Intersections (including driveways) are the most likely place for car-bicycle collisions. Intersections should be carefully designed to reduce the chance of conflict. Driveways should have adequate sight lines to see all traffic on the road. Cycle lanes at intersections and cycle paths where they connect with streets should be carefully designed. Intersections with freeways should be grade-separated.

8.3.20 Lighting

Bicycle facilities should be adequately lit. Street lighting is usually sufficient for wide kerb lanes and cycle lanes; separated paths and cycle parking areas require appropriate-scale lighting where evening walking and cycling is expected. Intersections of paths with roads must be well lit.

8.3.21 Workplace Facilities

Many people say that they would try commuting by cycle but feel they need a shower and a place to change clothes once they arrive at work. Some jurisdictions are requiring that such facilities be provided when a building is built or remodelled. Clothes lockers, large enough to accommodate a week's worth of clothes and toilet articles, can be provided. A bathroom may be remodelled providing a shower stall.

NMT design

8.4 Typical examples

A few examples have been developed to describe how typical NMT treatments can be incorporated in the design process. The examples include the following:

- Pedestrian Street with public square. Refer to Figure 22.
- NMT consideration at transport interchange. Refer to Figure 23.
- Street with sidewalk and bike path at intersection. Refer to Figure 24.
- School precinct. Refer to Figure 25.
- Separate NMT facility along recreational park. Refer to Figure 26.

8.5 Case studies

Two case studies have been identified where these typical NMT design considerations have been applied. The sites considered include a typical "township" scenario (Khayelitsha CBD) and a typical city scenario (St. Georges Mall).

8.5.1 Khayelitsha CBD site

The Khayelitsha CBD site illustrates NMT considerations at the proposed public transport interchange project in Khayelitsha. The components of the site include minibus taxi/ pedestrian crossing/ rail station interface.

The urban design response focuses on promoting a safe pedestrian priority zone at the interface with the motorised traffic, as well as the pedestrianisation of the station entrance and drop-off/pick-up zone. Refer to Figure 27.

8.5.2 St. Georges Mall

This site is located along St. Georges Mall in Cape Town CBD at the intersection with Strand Street. St Georges Mall is a busy pedestrian route crossing a Strand Street, a class 3 arterial road of metropolitan significance. The latter route is a barrier to pedestrian movement along St. Georges Mall and results in major pedestrian/ motorised traffic conflict at this crossing.

The urban design response promotes a safe pedestrian priority zone at this crossing between the pedestrian mall and Strand Street. The proposal pedestrianizes the road crossing for the benefit of NMT users. Refer to Figure 28.

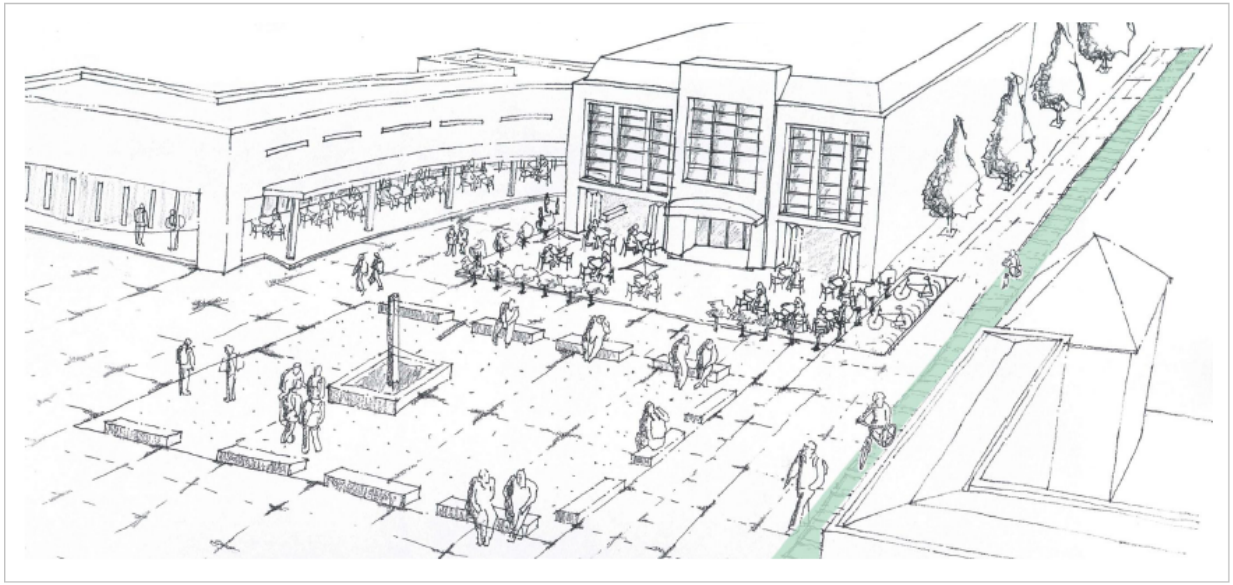


Fig. 22.1: Pedestrian Street with Public Square, by MMA Architects

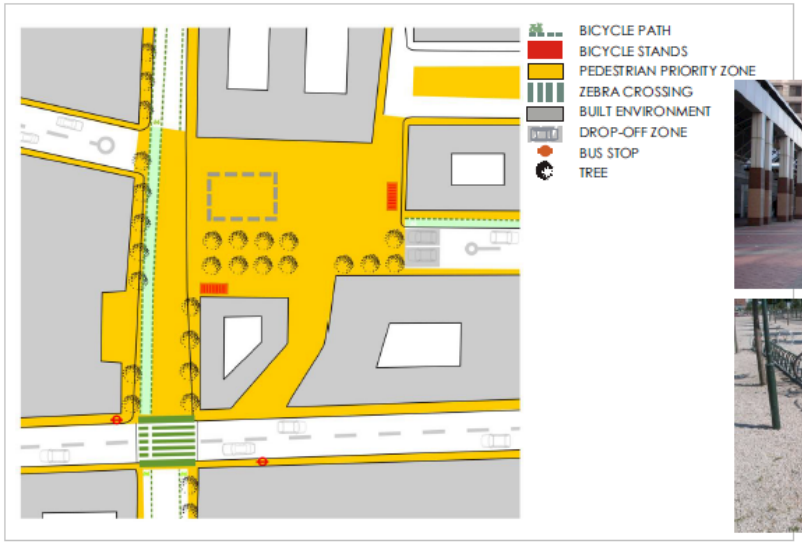


Fig. 22.2: Pedestrian Priority Zones with Pedestrian and Bicycle

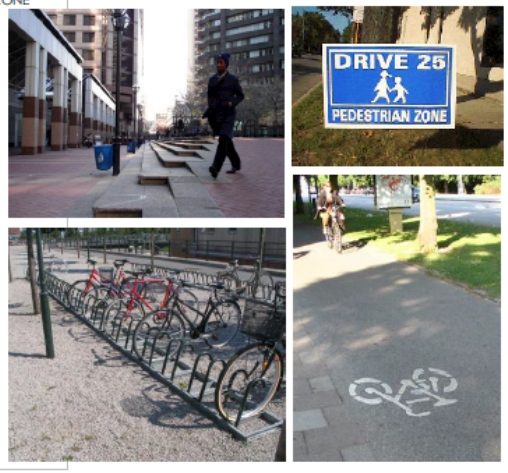


Fig.22.1-22.6, Courtesy of MMA Architects

Pedestrian Street with Public Square

- **Location:** unspecified urban environment : city context
- **Character:** a vibrant mixed-use city public square with commercial opportunities
- **Objective:** the creation of a pedestrian priority zone to enable safe movement system
- **Urban Design Response:** Developing an integrated multi-modal movement system
- **Elements:** NMT signage, traffic calming, raised pedestrian movement routes, pavement trading spaces, appropriate soft and hard surfaces

Figure 22

Pedestrian Street with Public Square

Figure 22: Pedestrian street with public square

Figure 23: NMT consideration at transport interchange.

NMT consideration at Transport interchange

- **Location:** propose Transport interchange in township environment
- **Character:** Station forecourt - Railway Interchange with informal trading facilities Retail nodes
- **Objective:** To provide vibrant trading facility , harmonising NMT movement with taxi movement
- **Urban Design responses:** Promoting an integrated multi-modal movement system, creating a safe pedestrian priority zone and appropriate drop-off and pick-up zones
- **Elements:** NMT signage, traffic calming: raised pedestrian movement zone, bicycle routes, bicycle parking: public furniture: separation of movement routes: pavements trading spaces: appropriate hard & soft surfaces

Figure 23

NMT Consideration at Transport Interchange

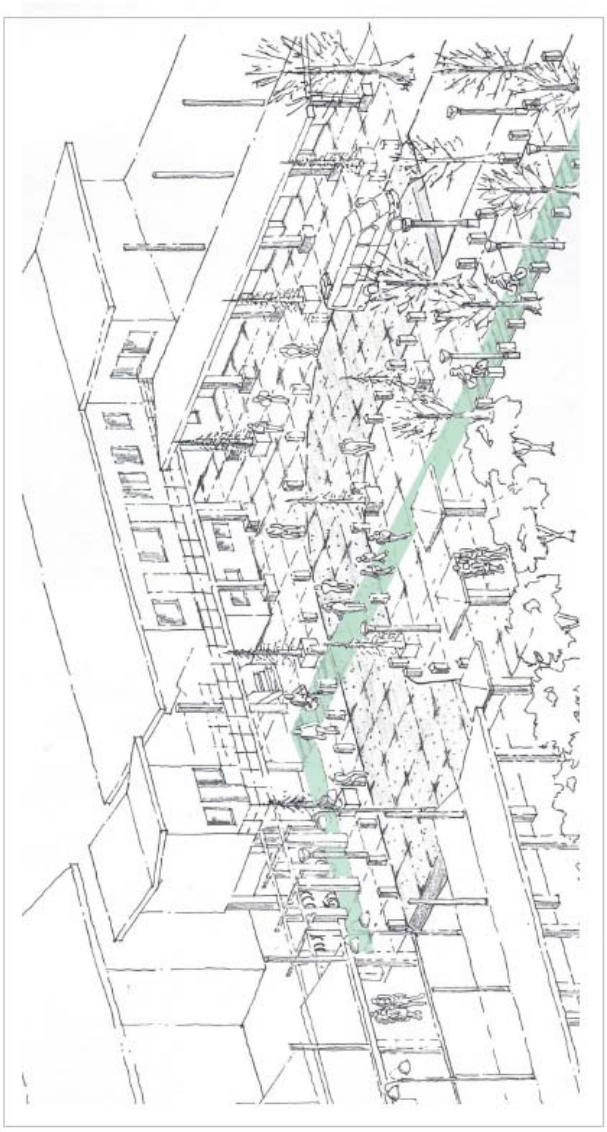


Fig. 23.1: Transport Interchange with Pedestrian Priority Zone

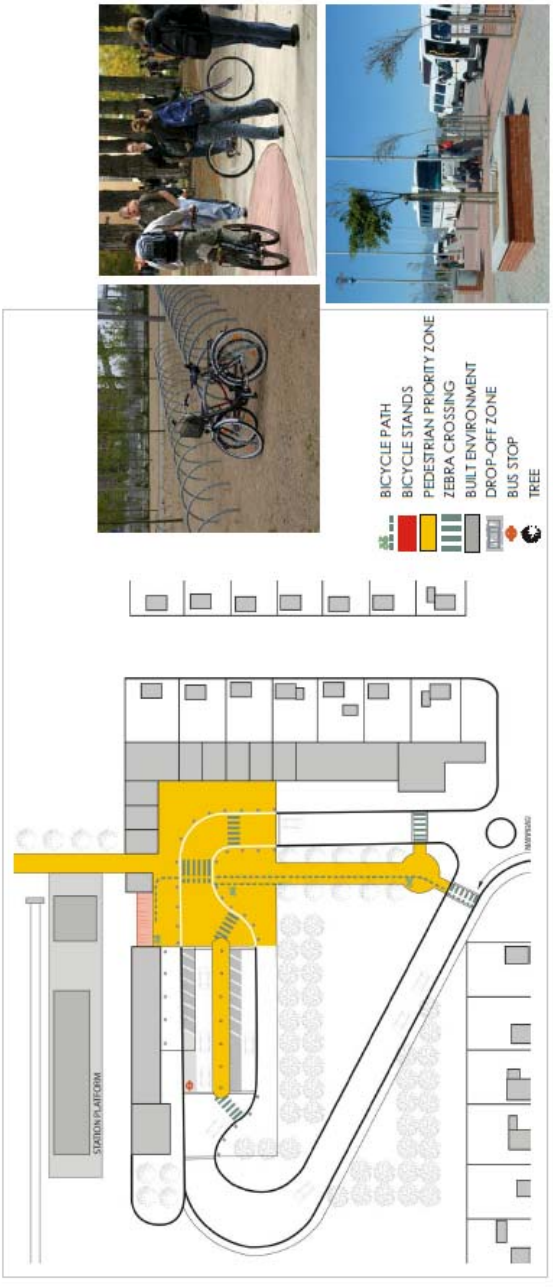


Fig. 23.2: Pedestrian Priority Zone and Bicycle Routes at Transport Interchange

Fig. 23.3-23.5, Courtesy of MMA Architects

Figure 24: Street with sidewalk and bike path at intersection

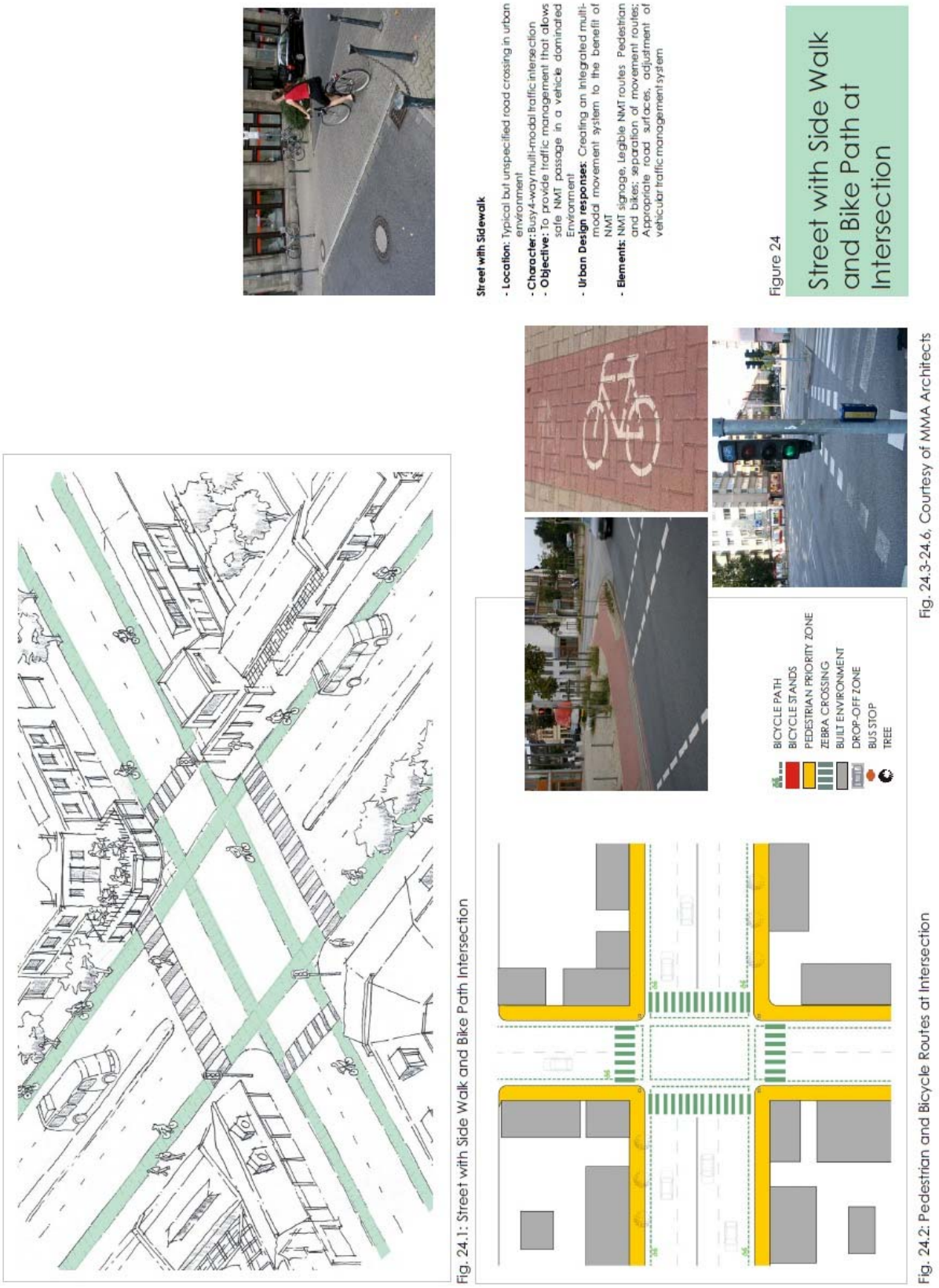


Fig. 24.1: Street with Side Walk and Bike Path Intersection

Fig. 24.2: Pedestrian and Bicycle Routes at Intersection

Fig. 24.3-24.6, Courtesy of MMA Architects

Figure 25: School precinct

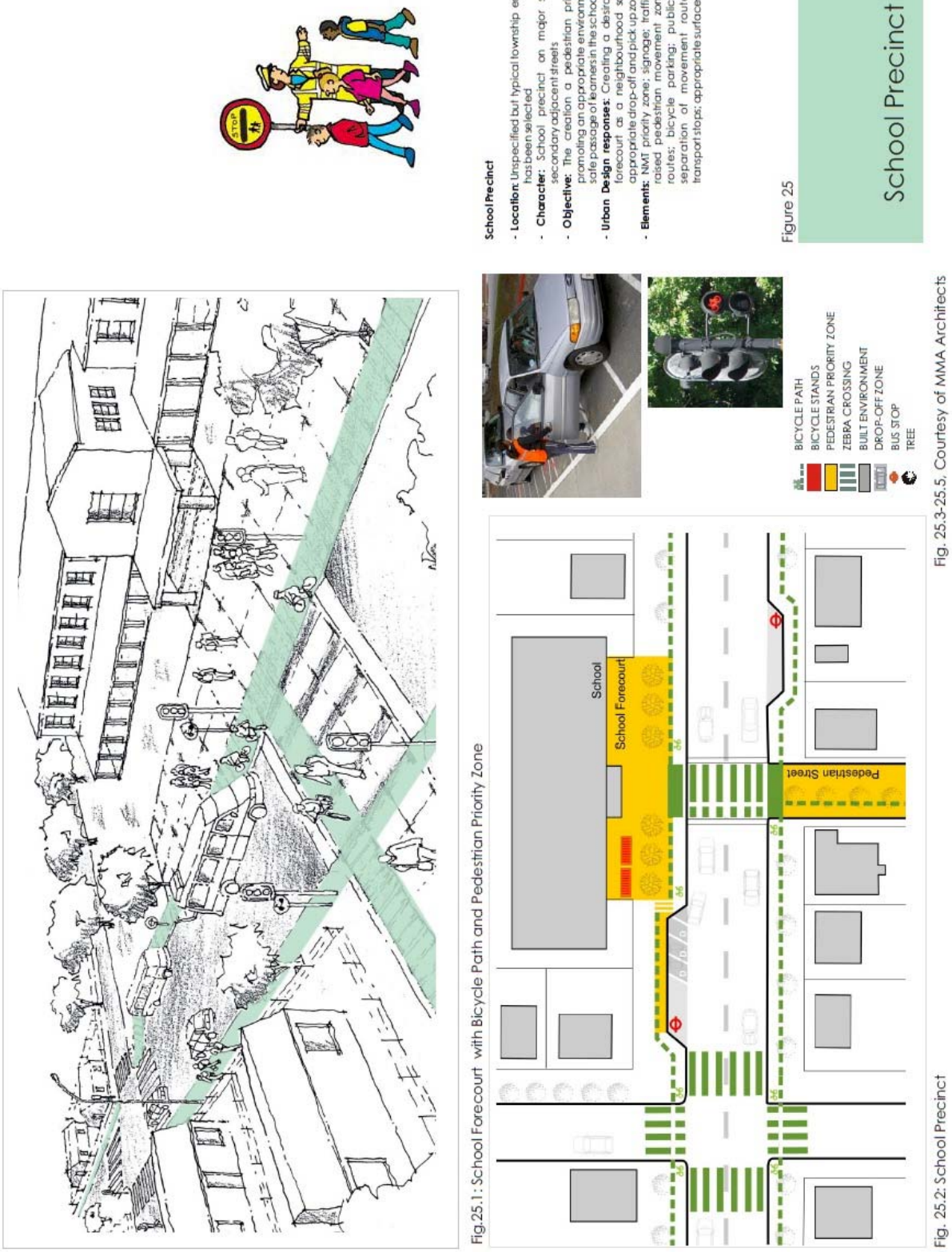


Figure 26: Separate NMT facility along recreational park

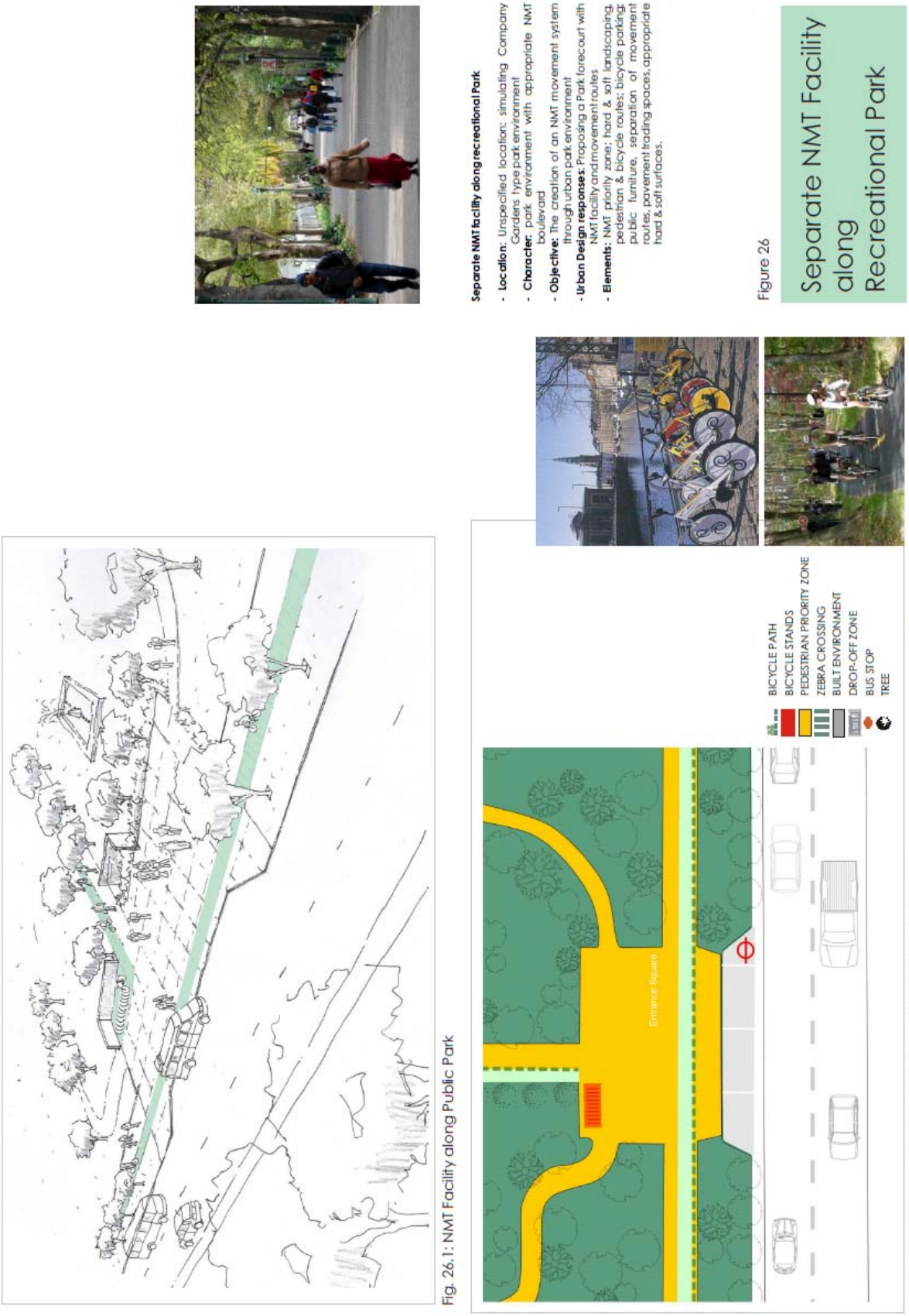


Figure 27: Typical “township” interchange situation: Khayelitsha

"TypicalTownship" Scenario

- **Location:** Proposed transport railway interchange project in Khayelitsha has been selected
- **Character:** Taxi/ pedestrian crossing/ Station entrance interface zone
- **Objective:** To manage conflicting multi-modal movement system, to harmonize NMT and vehicular interface-taxi/bus movement routes
- **Urban Design Response:** Promoting a safe pedestrian priority zone at interface zone, pedestrianising the station entrance & drop-off/ pick-up zone
- **Elements:** NMT signage, traffic calming, raised pedestrian movement zone, bicycle routes, bicycle parking, public furniture, separation of movement routes, pavement trading spaces, appropriate hard & soft surfaces

Figure 27

A Typical "Township Interchange Situation": Khayelitsha

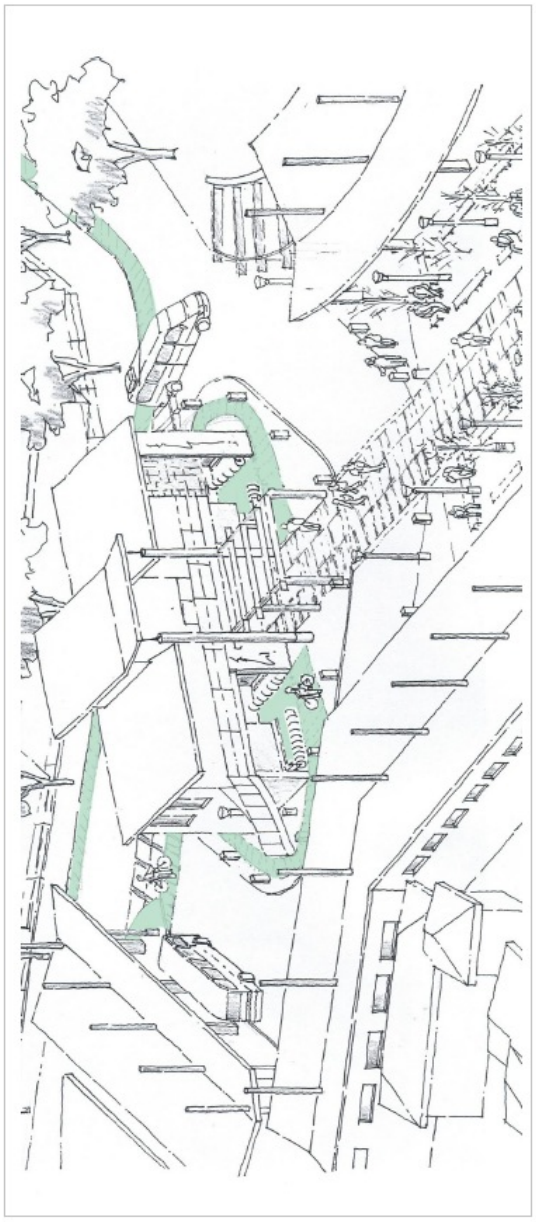


Fig. 27.1: Khayelitsha Transport Interchange with Taxi Rank and Bicycle Stands

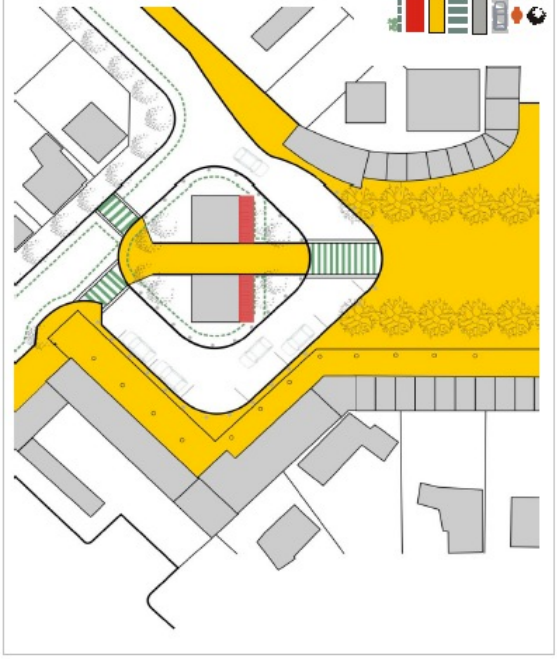


Fig. 27.2: Transport Interchange with Pedestrian Priority Zone and Bicycle

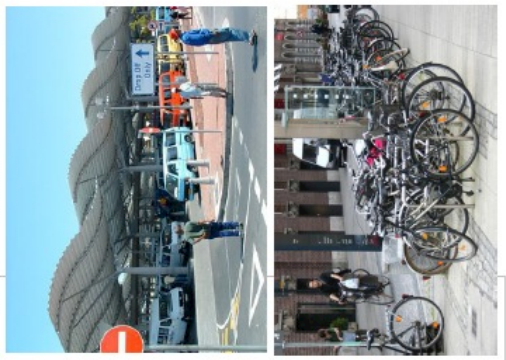


Fig. 27.3-27.5 Courtesy of MMA Architects

Figure 28: A typical "City Scenario": St. Georges Mall

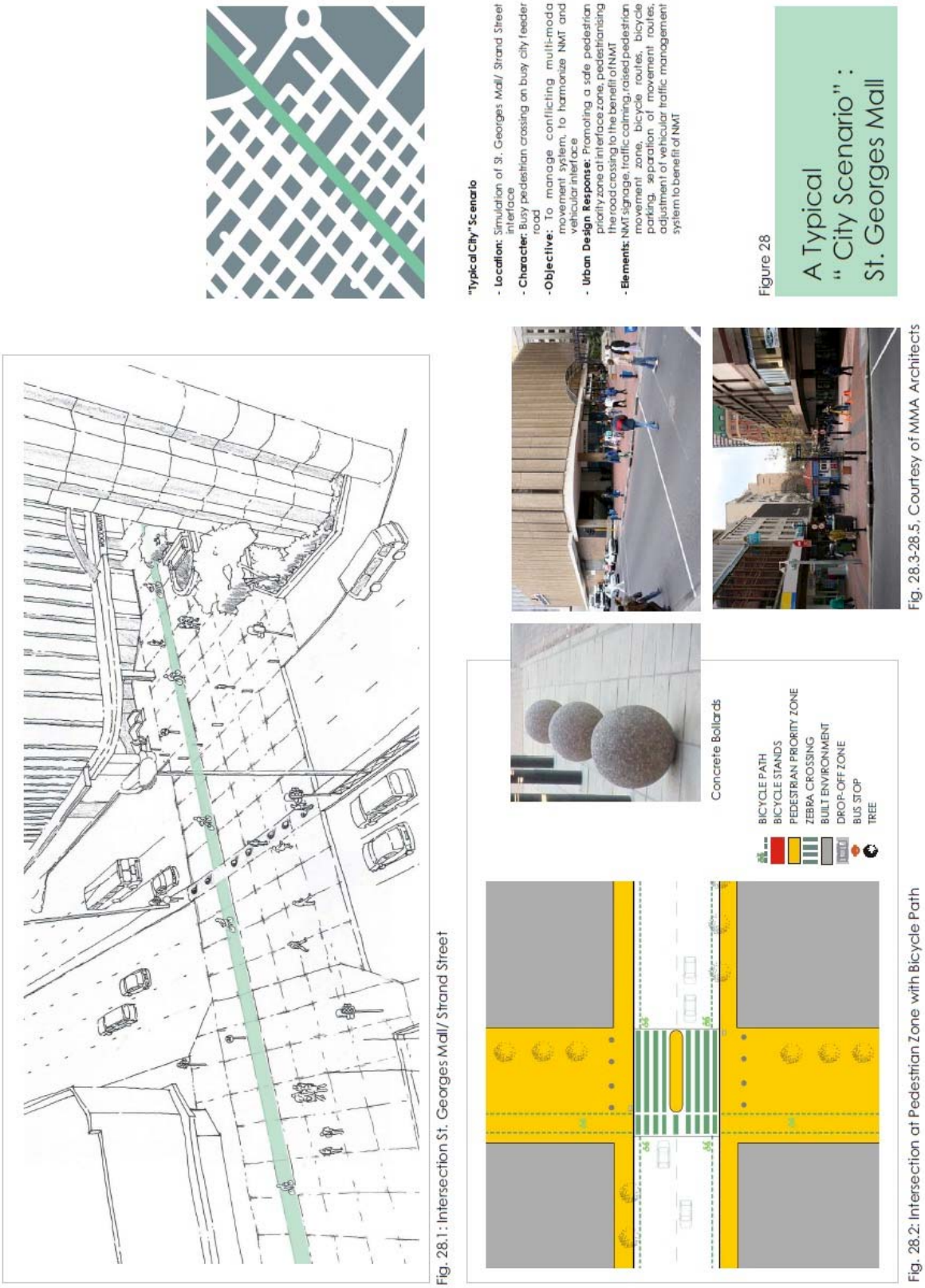


Fig. 28.1 : Intersection St. Georges Mall/ Strand Street

Fig. 28.3-28.5, Courtesy of MMA Architects

Fig. 28.2: Intersection at Pedestrian Zone with Bicycle Path

9. Public Participation

As part of the participatory process, key stakeholders and role-players have been identified and targeted to provide the necessary inputs into the development of this strategic plan and policy framework. A greater stakeholder forum was also convened on 29 September 2005.

9.1 Key stakeholders and role-players

Stakeholders and role-players were represented by sectors that has NMT as a key element within there sector of influence. These sectors include the following as indicated in Table 10.

Table 10: Key stakeholders and role-players

Sectors within City of Cape Town	External sectors
Transport planning	Cape Town City Partnership
Local Economic Development	South African Rail Commuter Corporation
Urban Design	Provincial Government of the Western Cape, Department of Transport and Public Works
Spatial Planning	Bicycle Empowerment Network
Disability Desk	
Non-motorised transport	
Public Transport	
Heritage Management	

Interviews were conducted with representatives of the various sectors. These interviews focused on the following:

- Main spaces and places where NMT is most dominant
- Understanding of main problems that face NMT users in the Cape Town
- Problems experienced by various NMT users that include commuters, learners, recreational users and service users.
- Measures to address these problems
- Important priority actions

9.2 Greater stakeholder forum

A greater stakeholder meeting was held on 29 September 2005 at which the document was presented and comments and input were requested. A discussion document was also forwarded to those not present at the workshop and comments were requested by 10 October 2005. No comments were received.

Appendix A

Bicycle Parking Guidelines

TCT
TRANSPORT FOR CAPE TOWN

The City of Cape Town's Transport Authority

ISSUE #1: Installing Secure & Convenient Bike Racks

Lack of secure bike parking is a major deterrent to commuting by bike and the Portland metro area has one of the highest rates of bike theft in the U.S. Racks should be selected and installed to allow for good visual surveillance and the use of high security locks.

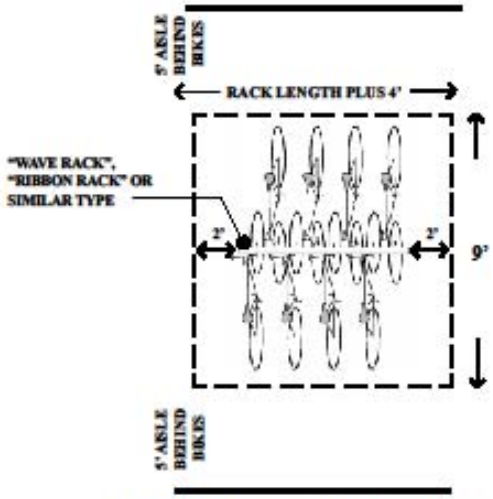
Key Points

Existing customer parking at Powells Books in downtown Portland is located directly in front of the main entry to the store, insuring constant surveillance.

Location: A convenient location near a main building entry will encourage cycling and insures at least some casual surveillance can occur. Cyclists will resist using racks in isolated areas.

Rack types: must allow the bicycle frame and one wheel to be locked to the rack. "Wheelbender" racks that only hold the front wheel are potentially damaging as well as being impossible to use properly with high-security U locks.

Sunshine U-LOK Corporation's "MINI-LOK" rack is one of many designs which allows one wheel and the frame of the bike to be locked together with a standard high-security U lock.



Plan view of double loaded rack showing minimum clearances for parking normal bikes.

Installation: must allow sufficient maneuvering room as well as space for the locked bike itself. Generally, a five foot maneuvering aisle is required on at least one side for cyclists to access racks. Other sides should have sufficient clearance for projecting parts of the bike and pedestrian circulation.

Clearances for parallel-loading racks, one or two bikes per rack, depending on rack type and spacing

For other issue papers and case study examples, contact DEQ's ECO Information Clearinghouse at (503) 229-6446

DEQ End-of-Trip Facilities Design Program 1999 - 2000

ISSUE #2: Providing Covered Bike Parking

Local and national surveys indicate that lack of adequate bike parking and other related facilities is a major deterrent to commuting by bike. Cyclists are discouraged from riding to work when parking is uncovered, especially during Oregon's long rainy season.

Possible Solutions:

Intel Jones Farm campus - proposed new racks located in an existing outdoor covered area near a main entry.

◀ **Outdoor areas protected by existing building overhangs** often represent the most economical solutions, assuming such space can be found. Ideally six to seven feet of covered horizontal length should be available and the area should be close to a building entry. See Issue Paper #1 for tips on bike rack selection and installation.

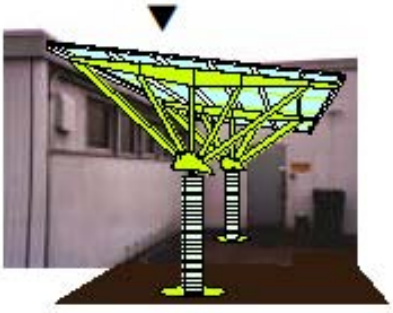
New fabric or metal canopies supported by existing building structure may represent a simple solution. Canopies of all kinds require some type of building permit and engineering for snow loads. Many local awning companies provide a package design, permit and installation service. ▶

Intel Ronler Acres campus - proposed canopy on existing building over existing racks near a main building entrance.

"CORA's" Bike Barn is a prefabricated metal and fabric structure. Capacity is 40 bikes.

◀ **A limited number of manufacturers produce prefabricated, freestanding covered bike parking structures.** Custom design and fabrication by a local metal working shop is another possibility.

▼



Custom freestanding cover for Revtek emphasizes metal fabrication abilities the company is known for.

Using bike "lockers" or parking in indoor areas are other solutions. Bike lockers are boxy enclosed units for single bikes, available from many manufacturers. See Issue Paper #4 for Indoor Parking solutions.

For other Issue papers and case study examples, contact DEQ's ECO Information Clearinghouse at (503) 229-6446

Browning Shaan Architects

DEQ State of Oregon Department of Environmental Quality

DEQ End-of-Trip Facilities Design Program 1999 - 2000

ISSUE #3: Bike Parking in Public Areas

Convenient bike parking near building entryways is an important part of promoting cycling as transportation, but existing building footprints sometimes leave no room for bike racks. Using adjacent public right-of-way areas like sidewalks is a common solution.

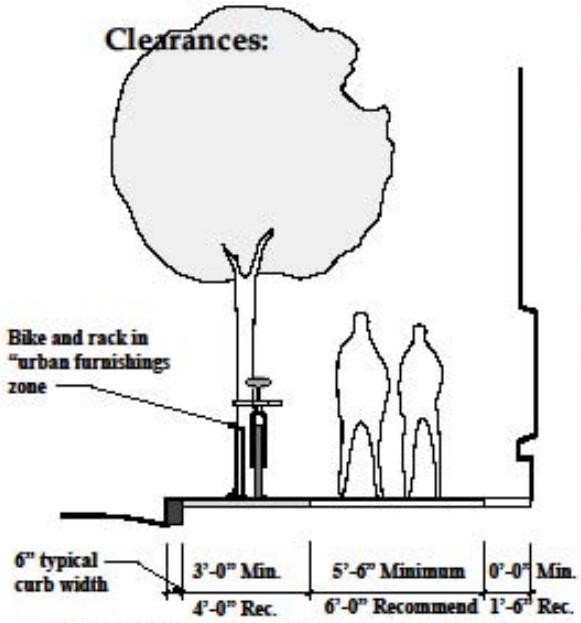
Key Points

Location: To minimize conflicts with pedestrians, racks should usually be located in the strip of the sidewalk near the curb which contains other "urban furnishings" such as lights, trees and transit shelters. Your city or county DOT will have detailed requirements.

Bikes parked in the "urban furnishings zone" on the City of Portland's transit mall. Portland and a few other cities in the metro area are proactively installing public racks. Check with your city's department of transportation (DOT) to find out about possible on-demand bike rack installation.

Rack types: In addition to common "hitching post" styles, an infinite variety of sculptural shapes can serve as racks. A local coffee shop is shown above. See Issue Paper #1 for more on rack selection.

Clearances:



Commonly accepted minimum and recommended clearances for pedestrian movement and bike parking. Note that sidewalk widths of less than 9' will not accommodate bike racks.

Cover: Kiosk type structures in the public right of way are unusual, but a possible way to provide covered bike parking when it cannot be accommodated on private property. See Issue Paper #2 for more on covered parking.

For other issue papers and case study examples, contact DEQ's ECO Information Clearinghouse at (503) 229-6446

DEQ End-of-Trip Facilities Design Program 1999 - 2000

ISSUE #4: Indoor Bicycle Parking

Theft and exposure to weather are the two biggest concerns for bicycle commuters who must leave parked bikes in remote locations. Moving commuter bike parking indoors can often solve both of these problems, but existing indoor space is usually in short supply.

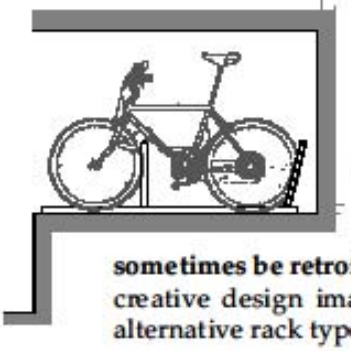
Key Points:

When vertically staggered, hanging racks can be spaced as close together as 17" on center.

◀ **Common horizontal bike racks are not the only way to handle bike parking.** Alternative rack types such as vertical hangers and two-tier assemblies can double the capacity of a given indoor space.

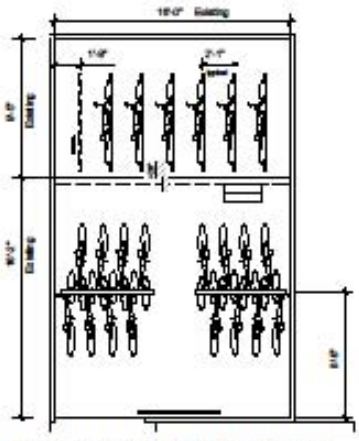
▶ **When possible clothing lockers, shelves, wall hooks and a private changing area are useful additions to a bike parking room .** This is especially important if bike commuters have no access to locker and shower rooms elsewhere.

The Port of Portland's retrofit of an existing employee bike parking room doubled the amount of rack space and added shelving, changing areas and clothing hooks. Clothing lockers were provided as part of the original installation.



◀ **Odd-shaped leftover spaces, of little use for other purposes, can sometimes be retrofit for bike parking.** Applying creative design imagination in conjunction with alternative rack types is usually the key to success.

▶ **Providing adequate clearances for maneuvering and parking bikes is critical.** Manufacturers' suggested minimums are sometimes unworkable in practice. Careful layout and testing of proposed rack locations is advised before permanent installation. See Issue Paper #1 for more information on selecting and installing racks.



New layout for Powells Books employee bike parking room captures unused space for additional bicycle parking racks.

For other issue papers and case study examples, contact DEQ's ECO Information Clearinghouse at (503) 229-6446

DEQ End-of-Trip Facilities Design Program 1999 - 2000

Browning Shaw Architects

Oregon Department of Environmental Quality

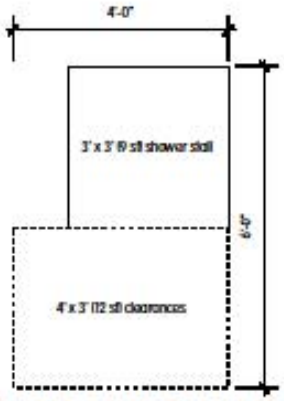
ISSUE #5: Lockers, Showers & Changing Rooms

Walking or bicycling to work can often result in wet, muddy or sweaty employee commuters. The lack of showers and changing rooms at work is a very common deterrent to would-be cyclists and walkers, especially among those in white collar occupations.

Possible Solutions:

Shower and locker installation. Lockers are available in an almost infinite array of types and sizes. "DesignRite" solid phenolic lockers are pictured here.

◀ **Retrofitting restrooms or other areas with existing plumbing usually represents the most cost effective way of installing locker/shower rooms.** A number of regulatory issues, including compliance with building codes and the ADA (Americans with Disabilities Act) must be addressed before construction can begin.



Work with an architect or other appropriate design professional to insure that applicable code standards are met.

Assume you will need a minimum space of about six feet by four feet for a single shower stall and changing room. Several more square feet will be needed to include a small sink and the required maneuvering room. ▶

◀ Once installed, locker and shower rooms can also be used to support in-house company sponsored exercise programs.

A growing number of businesses are finding the benefits of improved health and employee fitness more than pay for the facilities improvements needed to encourage exercise. ▶

Recent medical studies indicate that as little as 30 minutes a day of brisk walking is enough to maintain optimal health.

Browning Shaw Architects (503)223-5662

DEQ State of Oregon Department of Environmental Quality

For other issue papers and case study examples, contact DEQ's ECO Information Clearinghouse at (503) 229-6446

DEQ End-of-Trip Facilities Design Program 1999 - 2000

References

1. Prepared by NM Associates Planners and Designers, HHO Africa Infrastructure Engineers for Provincial Government Western Cape and City of Cape Town, Phase 1: Cape Town CBD-Klipfontein Road-Khayelitsha Corridor: Non-motorised transport Planning and Conceptual Design, April 2004, Cape Town.

2 Statistics South Africa, Census 2001, Cape Town, 2001.

3 City of Cape Town, Directorate Transport, Roads and Stormwater, Moving Ahead: Integrated Transport Plan of the City of Cape Town, Chapter 2: Transport Needs in a growing City, Draft, 2002

4. Prepared by Arcus Gibb for the City of Cape Town, Pedestrian Safety Project, Volume 1: Pedestrian Safety Strategic Plan for the City of Cape Town, J24166A, July 2004, Cape Town.

5. City of Cape Town, State of Energy Report for Cape Town, Cape Town, 2003.

6. Republic of South Africa, National Land Transport Transition Act, No 22 of 2000, Provincial Land Transport Frameworks: Regulations relating to planning requirements in terms of the National Land Transport Transition Act, 2000, Pretoria, section 3, available from http://www.transport.gov.za/library/regulations/2002/reg1004.html [accessed on 3 December 2003].

7. Vukan R. Vuchic, University of New Jersey, Transportation for Livable Cities, Centre for Urban Policy Research, New Jersey, 2000, pages 31, 32, 312.

8 Department of Transport, Pedestrian and Bicycle facility Guidelines, Manual to plan, design and maintain safe pedestrian and bicycle facilities, Draft 0.1, 2002.

9 Department of Transport, Committee of Transport Officials, Southern African Developing Countries, Road Traffic Signs Manual, 3rd Edition, November 1997, Pretorius

10. Todd Litman, Robin Blair, Bill Demopoulos, Nils Eddy, Anne Fritzel, Danelle Laidlaw, Heath Maddox, Katherine Forster, Pedestrian and Bicycle Planning: A Guide to Best Practices, 25 February, 2016

11. Browning Shone Architects, DEQ End of Trip Facilities Design Program, 1999-2000