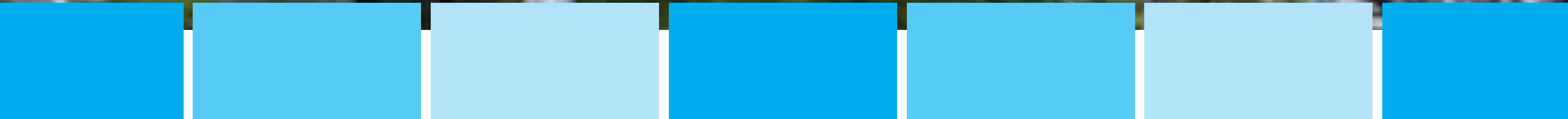


CHAPTER 5



DEVELOPING PEDESTRIAN MASTERPLANS



5. DEVELOPING A PEDESTRIAN MASTERPLAN

5.1 Introduction

This chapter presents an overview of the user requirements, and the requirements for planning pedestrian networks, with the experiences from the pilot cities being used as key lessons learnt.

5.2 Overview of user requirements

Desire lines offer essential information for network planning, as they indicate the routes people desire to use. Although designers, planners and policy-makers might wish to change people's behaviour, and direct them to other routes, research has shown that people will walk (and cycle) where they wish to do so. It has been proven that pedestrians are only prepared to detour for 15-20m to get to a formal freeway crossing. If formal infrastructure does not follow the 'coherent-direct' guidelines, they are less likely to be used (Behrens, 2012).

In order to plan a walking or cycling network, planners need to have rich information about people's travel and mobility behaviour.

QUESTIONS TO ASK WHEN PLANNING WALKING NETWORKS:

- How many people currently can or could walk?
- Where do they walk and what routes do they take?
- What is the purpose of their trip?
- What are the existing facilities and their infrastructural barriers?
- What are the social, weather, safety and other barriers?
- Where are the missing connections?
- What are the land-uses, trip origins and trip destinations?

It is essential to involve pedestrians in network planning, as they have local knowledge of the routes used, and their associated problems. Key informant meetings, surveys, focus groups and participatory mapping are all essential elements of the stakeholder engagement process (GTZ, 2009).

5.3 Considerations for providing quality walking and cycling spaces

5.3.1 SAFETY AND SECURITY

Pedestrian networks should encourage social as well as traffic safety. Social safety can be established by locating pedestrian networks which are within cyclists need to be protected as much as possible from personal violation i.e. personal safety. Facilities therefore need to offer sufficient lighting and visibility to pedestrians and reduce 'dark spots' that facilitate crime. The Crime Prevention through Environmental Design (CPTED) principles of safety in design, need to be taken into consideration when designing land uses for pedestrian infrastructure.

5.3.2 WALKABILITY

Pedestrian networks should facilitate easy crossing of intersections with accessible connections to other neighbourhoods and public transport facilities. Networks should provide continuity, linking origins with destinations. As far as is practicable, routes should follow desire lines.

The City of Tshwane recently conducted a walkability assessment of its

streets and neighbourhoods. The assessment looked at land use; vehicle speeds; future developments; accident data; environmentally sensitive areas; public transport routes – in order to develop a tool that can be used by town and transport planners alike, in locating appropriate pedestrian infrastructure where people are most likely to desire to walk. The result is shown in Figure 5.1. The places that are most walkable are shown in red. The least walkable areas are in purple and blue.

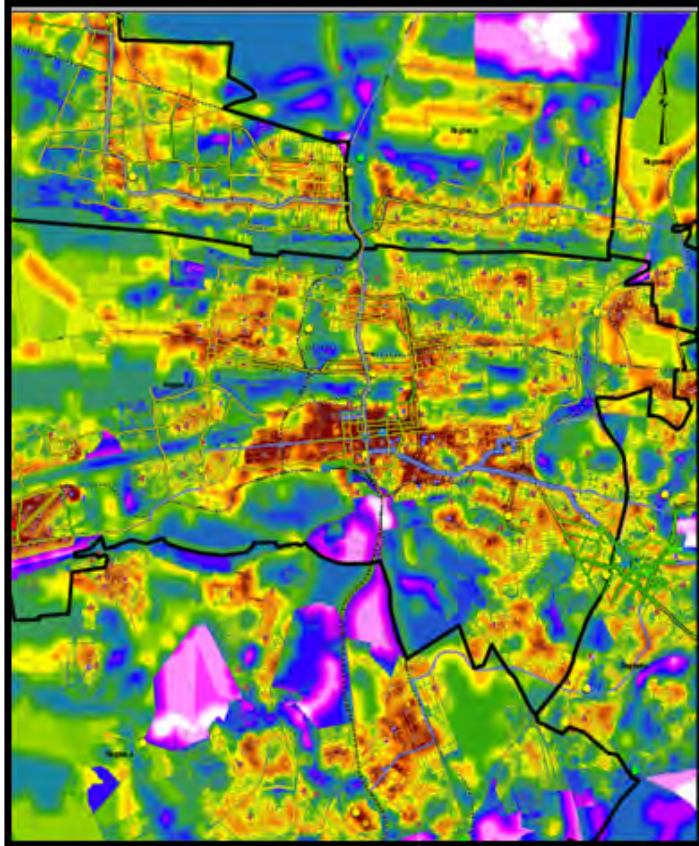


Figure 5.1 City of Tshwane's walkability map

5.3.3 ATTRACTIVENESS

Pedestrian networks should ensure an interesting and attractive streetscape and should encourage possibilities for initiatives on, and next to, the public space. Routes should cater for people to stop, rest, chat and/or window shop in pleasing surroundings.

5.3.4 COMFORT

The requirements of people with special needs (for example, people who are mobility impaired, who are travelling with small children, have many items to carry, etc.) should be taken into account. Adequate design standards should be used in terms of width, grade and quality. Dropped kerbs are required at intersections for special needs users.



Figure 5.2 Universal access kerb ramp as per approved DoT standards

5.4 Data collection and analysis

Pedestrian network planning requires data collection. To identify NMT needs, identify nodes, plan strategies and networks, design infrastructure, all of which requires a clear understanding of the status quo and needs of NMT users.

5.4.1 DATA COLLECTION NEEDS

The pedestrian planning specific data collection needs are:

- User needs and behaviour characteristics (trip purposes and travel patterns);
- Existing road traffic volumes and speeds;
- Road classes and hierarchies;
- Identification of conflict points;
- Desire lines and route choices;
- Pedestrian accident data;
- Barriers to greater levels of walking;
- Topography;
- Distances travelled and time taken to travel;
- Environmental and traffic impact assessments.

5.4.2 PEDESTRIAN-RELATED DATA

Data collection can be undertaken utilizing various means. These are:

- Specialist reference groups and stakeholder engagement;
- Desktop reviews: master plans, land-use plans, accident data, traffic and environmental impact assessments;
- Site visits and audits;
- Pedestrian walkway condition audits can also be undertaken on NMT projects, to determine the following elements of existing infrastructure:
 - i. Slope (has an effect on universal access);
 - ii. Cul de sac (as this impacts on accessibility);
 - iii. Path obstructions (e.g. lighting poles);
 - iv. Sidewalk continuity;
 - v. Condition of the pavement;
 - vi. Speed limits;
 - vii. On and off street parking.
- Observation and personal interviews
For example, the City of Johannesburg undertook pedestrian audits along their pedestrian network supporting the BRT using a questionnaire similar to **Fig 5.3**.

- Satellite imagery (desire lines and short-cuts)
- Secondary sources such as the National Household Travel survey (NHTS).
- Manual counts and video footages

Counts are often required in the street design process as inputs to transport models, for capacity assessments, to measure the attractiveness of different spaces, to estimate route choice or for the appraisal of different design options.

CITY OF CAPE TOWN NMT SURVEYS

In 2009, the City of Cape Town initiated a City-wide NMT Programme to develop a comprehensive NMT network plan. The conceptual NMT network planning was informed on an ongoing basis by pedestrian and cycle user groups, nodes and trip generators such as social amenities, public transport networks and interchanges, accident statistics and hazardous locations and existing local NMT networks.

Monitoring activity can also take place to measure the impact of changes, for example before-after counts as a means of measuring the change in usage resulting from an intervention. Thus, an NMT City Wide Survey Program was formulated in Cape Town, which annually conducts surveys across the City where the City Wide NMT Programme will be implemented, and key areas which require specific NMT interventions. The counts were done in the mornings for two hours (06:00 to 08:30). Counts were separated into pedestrians, scholars and cyclists.



5.5 Urban design to maximise pedestrian environments

Urban design elements were included in the pilot project for Johannesburg. These included seating, bollards, greenery, and bus shelters. Though these elements are costly, they contribute to making liveable urban spaces and NMT facilities which are attractive. This is illustrated in **Figure 5.4**

5.6 Environmental impact assessments

As part of the Greening COP17 programme in 2011, the eThekweni Municipality planned a new cycling and pedestrian pathway from Blue Lagoon to the Umgeni River Bird Park.

An Environmental Impact Assessment (EIA) was triggered as a part of the proposed bicycle and pedestrian infrastructure, which was within 30 meter of the 100-year high-water mark of the estuary.

The purpose of an EIA is to:

- Assess alternatives to the proposed activity in a comparative manner;
- Assess all identified impacts and determine the significance of each impact; and
- Formulate mitigation measures.

It took time for the EIA record of decision to be reached, particularly regarding the storm water management and the impact on the river bank, due to the public consultation process that was required. The eThekweni Metropolitan was able to construct the facilities almost exactly as they had been designed, as they had designed the facilities in consultation with environmental specialists.

In NMT projects, especially ones which might negatively impact environmentally sensitive areas, it is best to allocate sufficient time for the extensive public consultations to meet the EIA requirements.

5.7 Pedestrianisation schemes and improvements



Figure 5.3 Urban design view of complete streets for City of Johannesburg

PEDESTRIANISATION WITHIN BLOEMFONTEIN CBD

The Bloemfontein CBD has been re-designed to put the travel needs of pedestrians, cyclists and public transport users as a first priority, ahead of motor vehicles. Pedestrians are now accommodated on a continuous network of pathways and shared roadways as a primary priority, while motorists traffic calming and traffic management to reduce traffic hazards. Elizabeth Street and Selbourne Avenue were chosen as pilot areas for the pedestrianisation project and CBD upgrade. Elizabeth Street was a particularly important link as part of the CBD upgrade as it provided access to adjacent properties such as the Appeals Court and Provincial Legislature and also links to major eastern and western commercial nodes, and adjacent shopping centres. The pedestrian streets were supplied with street furniture, adequate lighting along the paths, bollards to protect the pedestrians from motor vehicles, raised intersections, trees for shade, benches and bins to encourage a sense of place along the walkways. The project was undertaken between May 2006 and September 2008, in preparation for the 2010 World Cup. See Figure 5.5 and Figure 5.6.



Figure 5.4 Selbourne Avenue before pedestrianisation



Figure 5.5 Selbourne Avenue partially pedestrianised

5.8 Integration with public transport

The combination of walking and cycling with public transport can provide a good alternative to car use, as this combination offers a last-mile trip alternative within South African cities.

Steps to integrating NMT with public transport

- Transport interchanges need to be regarded as key destinations and origins;
- Pedestrian networks should radiate from and toward key points of origin and destination; and
- Pedestrian networks should cater for facilities such as seating, shade, and water as much as possible.

5.9 Signage and way-finding

NMT facilities are enhanced by implementing a well-planned, attractive and effective signage and way-finding system through highlighting their existence to both NMT user and motorists, identifying a route, and enabling 'legibility' and continuity of the network.

Signage is governed by the South African Road Traffic Signs Manual (referred to as SARTSM) although cities have much greater freedom in deciding way-finding signage (i.e. signs that are of significance only to NMT users and that do not govern road users), which provide route, distance and tourist information.



CITY OF CAPE TOWN'S MYCITI BUS SYSTEM IMPLEMENTS UNIVERSALLY ACCESSIBLE SIGNAGE AND WAYFINDING

The design details of the directional signs and information maps for MyCiti are accessible to sighted users, due to the use of internationally recognisable symbols rather than tactile language or signs targeted at the sight impaired only. The use of international symbols also reduces language barriers often associated with written signage.

The conceptual design of the tactile way finding for the MyCITI System was adapted for application in a wider urban streetscape, with the goal of guiding sight-impaired users to the BRT stations and stops. The tactile way-finding was intended to complement the directional way-finding the infrastructure team designed and implemented along pedestrian routes leading users from a distance of approximately 500m to the MyCITI System stations.

International best practice was followed when designing these pedestrian routes through the installation of tactile paving, dropped kerbs and on-demand audible pedestrian pushbutton traffic signals at intersections. Specific attention was given to major pedestrian routes leading to the public transport facilities and the MyCITI stations.



Figure 5.6 Universal Access Design at Intersections and Mid-Block Crossings, City of Johannesburg

- Pedestrian and cycling infrastructure should be kept distinct, as far as possible, due to safety of the NMT user.
- Excellent data is required on pedestrian activity so as to establish pedestrian routes that will be used to their full potential.

5.10 Concluding comments

- Pedestrians include persons with special needs which can be wheel chair users, the visually impaired, pregnant women and the elderly. These pedestrians' different needs ought to be taken into consideration when undertaking pedestrian planning. The City of Johannesburg's Orlando project aimed to include special users' needs in the pedestrian network, especially at intersections and pedestrian ramps. This is shown in **Fig 5.7**



Figure 5.7 Polokwane Pilot Project – Separation of Bicycling and Pedestrian routes

- When planning pedestrian facilities near environmentally sensitive areas, additional time-frames need to be set aside to accommodate public consultation processes for EIAs.
- Signage and way finding is essential in ensuring maximum use of the provided infrastructure, as shown in the ETA pilot project where the cycling infrastructure is clearly demarcated
- There is an important role for urban design in maximising the potential of the pedestrian environment. This can be witnessed in pedestrian schemes where apart from the development of walkways, other factors are addressed such as street furniture, lighting, bollards to protect the pedestrians from motor vehicles, raised intersections, trees for shade, benches and bins to encourage a sense of place along the walkways.
- Pedestrian schemes should be considered where high pedestrian activity occurs and serves as both a link between key destinations and a link to broader public transport routes.
- The integration between pedestrian infrastructure and public transport networks will support the uptake of the public transport, particularly in areas where people have a choice of different modes of transport.



Figure 5.8 Ethekwini pilot project signage

