

ALLEVIATION OF THE PEDESTRIAN SAFETY CRISIS IN THE CITY OF CAPE TOWN

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ABSTRACT

Historic road traffic accident statistics for the City of Cape Town indicate that pedestrian casualties have consistently been one of the most significant contributors to the unacceptable road traffic accident situation. In 2002, 63.0% of all road accident fatalities in the City of Cape Town were pedestrians. These pedestrian fatalities are especially significant in the economically active age group of the population, ie between ages 26 and 35.

Interventions that target pedestrian safety are not always integrated across different focus areas. At present there is also a distinct lack of co-ordination with respect to the application of national, provincial and local resources to address the unacceptably high pedestrian accident rate in the City of Cape Town. This includes inter-disciplinary co-ordination within the relevant authorities.

This paper outlines the findings and recommendations of the Pedestrian Safety Study undertaken for the City of Cape Town identifying priority areas for pedestrian safety interventions and specific projects based on available funding. Projects identified attempt to co-ordinate interventions between disciplines and authorities by including planning initiatives, changes to the road and rail environment, raising the awareness of the public with respect to pedestrian safety, educating road and rail users as well as enforcement.

1. INTRODUCTION

In 2002, 63% of all road accident fatalities in the City of Cape Town were pedestrian fatalities. An analysis of the pedestrian fatality statistics indicate that the number of fatalities has increased by 13% over the past five years.

Out of concern for the growing pedestrian safety crisis developing in Cape Town, the City of Cape Town's Portfolio Committee for Transport, Roads and Stormwater tasked the Directorate: Transport, Roads and Stormwater in 2004 with the development of a Pedestrian Safety Implementation Plan and appointed ARCUS GIBB (Pty) Ltd to undertake this study.

The objective of the study was to develop a framework for all role-players in the metropolitan area to undertake pedestrian safety related activities in a coordinated manner in an effort to reduce the pedestrian casualty rates in the City. The study deliverables were therefore:

- A report outlining the City of Cape Town's Strategic Plan stating its strategic approach and policy for the management of pedestrian safety interventions in the future.
- A second report that describes the development of a Pedestrian Safety Implementation Plan for the City of Cape Town, including the identification of priority areas in the City for pedestrian safety interventions as well as the preparation of a list of specific pedestrian safety projects, associated budgets and priorities for implementation, based on available funding resources.

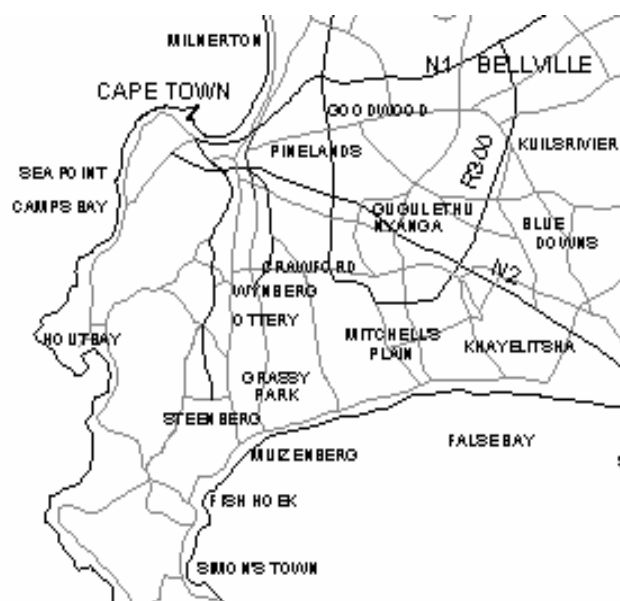
This paper reports upon:

- Walking as a Mode of Transport
- The Pedestrian Safety Problem in Cape Town
- Problems related to existing Pedestrian Safety Interventions
- The City of Cape Town Problem Response
- Identification of Priority Implementation Areas
- Improving Institutional Integration, Planning for Pedestrians, the Road Environment for Pedestrians, Pedestrian Awareness, Pedestrian Safety Education and Enforcement
- Conclusions of the Study

2. WALKING AS A MODE OF TRANSPORT

The cheapest form of transport remains walking, and even the use of public transport entails a significant amount of walking. The majority of the South African urbanised population will not make use of private transport on a daily basis and will continue to rely on more affordable means of transport to access urban opportunities.

The Cape Town results of Census 2001⁽¹⁾ identified that 19% of all respondents to the question on trips to school and / or work indicated that they walk. The demand for walking to work / school was highest in Nyanga / Philippi, Khayelitsha and Mitchell's Plain, areas north of Durbanville and the greater Helderberg areas - the last two being primarily rural environments.



Behrens⁽²⁾ found in his study undertaken in 2002 that walking accounts for approximately 36% of the trip purpose (not only work / school) mode choices. Despite considerable car dependence, walking remains an important mode of transport.

The Behrens⁽²⁾ study also found the following influence of household income on travel patterns:

- Household and personal trip generation declines with income;
- Wealthier households drive significantly more and walk significantly less than poorer households (approximately 61% of trips amongst low-income households are undertaken on foot); and
- Although poorer households generate fewer trips, their tendency to walk further and for longer periods of time result in considerably wider walking trip ranges compared to that of more affluent households.

3. THE PEDESTRIAN SAFETY PROBLEM

Pedestrian safety is one of the major issues for many road authorities across the world. In the City of Cape Town historic road traffic accident statistics⁽³⁾ indicate that the percentage of pedestrian fatalities to total fatalities has increased from 48.4% in 2000 to 63.0% in 2002, ie it has consistently been one of the most significant contributors to the overall road traffic accident situation and is deteriorating.

A comparison of the pedestrian and total number of casualties for 2002 is shown in Table 1.

Table 1: 2002 Comparison of Pedestrian and Total Number of Casualties for Cape Town

Severity of Accident	No of Accidents with Pedestrians	Total No of Accidents	% of Pedestrian Accidents to Total Accidents
Fatal	428	679	63.0%
Serious	975	2 647	36.8%
Slight	4 016	16 687	24.1%

The above data indicates that pedestrian accidents account for the largest proportion of road fatalities. The proportion is smaller for serious and slight injury accidents. It can therefore be concluded that pedestrian accidents are more likely to be fatal.

Approximately 60% of 2002 pedestrian accidents took place under low visibility (night and dawn / dusk) conditions as shown in Figures 1 and 2. It should also be noted that one and a half as many fatal pedestrian accidents take place during night times compared to all pedestrian accidents, indicating the importance of lighting and visibility with respect to the severity of pedestrian accidents.

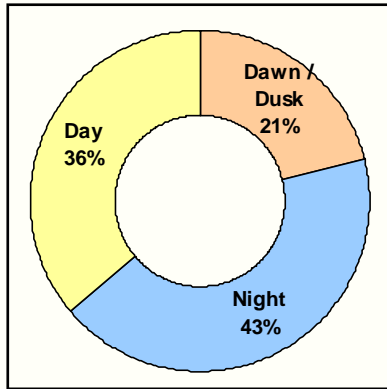


Figure 1: Environmental conditions for fatal pedestrian accidents

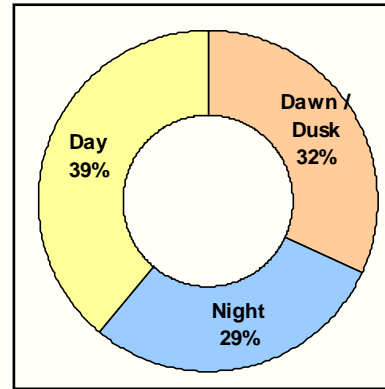


Figure 2: Environmental conditions for all pedestrian accidents

From detailed pedestrian accident statistics a number of general problems were identified as constituting the pedestrian safety problem. These are:

- Poor implementation of remedial measures at high accident locations or areas as a result of the lack of specified accident locations
- Accidents are generally related to the environment in which the road operates, ie residential or commercial, as well as the class of the road
- Accidents in areas with high numbers of pedestrians and lower operational speeds tend to have more accidents with less severity
- Accidents in areas with lower numbers of pedestrians but higher operational speeds tend to have less accidents but with more severity, eg more fatal pedestrian accidents compared to less severe accidents on freeways
- Accidents along some roads are related to the number of educational facilities located along or having desire lines crossing these roads, ie higher percentage of smaller children involved in accidents
- Accidents along some roads are related to time of day and day of the week, ie more accidents during the evening and weekends, which could be associated with lack of adequate lighting and / or substance abuse
- Although not very defined there is an indication that higher pedestrian accident rates occur during the late winter and spring months, which could be associated with poor visibility of pedestrians during adverse weather conditions

4. PROBLEMS RELATED TO EXISTING PEDESTRIAN SAFETY INTERVENTIONS

The unacceptability of the current number of pedestrian casualties on South African roads is acknowledged within the national sphere of government. By means of national legislation, emphasis has been given to the incorporation of non-motorised transport (NMT) in all land transportation related planning. National guidelines for the planning, design and maintenance of such pedestrian facilities are also in place. A framework is thus provided for the incorporation of walking as an important mode of travel in all land transport related activities.

Although most transport related guiding documentation of the Provincial Government Western Cape (PGWC) address the need to promote NMT as well as addressing road traffic related pedestrian safety issues, implementation of many of these plans has either not taken place or has taken longer than anticipated. No emphasis has been given to rail related pedestrian safety issues by the PGWC.

Most of the City's guiding documentation is either newly formulated or still in the process of development. Therefore, although NMT is emphasised on a metropolitan level, implementation of many of these plans has not yet taken place on any large scale. Implementation to date has been based on the recommendations of the Provincial Pedestrian Plan where most of the identified Western Cape high accident locations are within the City and do not relate to specific planning and implementation projects being undertaken within the City. These initiatives, therefore, are often not undertaken within a holistic planning or implementation framework for pedestrians; are not co-ordinated or integrated, resulting in the maximum benefit of the interventions not being realised.

As with the PGWC, no emphasis has yet been given to rail related pedestrian safety issues on a metropolitan level. A principle has, however, been established whereby the City of Cape Town undertakes planning to integrate adjacent facilities with proposed new rail facilities.

A number of pedestrian safety awareness raising interventions / programmes are being undertaken within the City. Educational programmes are currently focussed on provision of education to schoolchildren. This is as a result of an initiative to establish a new road and rail safety focussed generation as well as the difficulty in targeting older groups in formalised training environments.

Traffic enforcement is currently focussed on road users and therefore only indirectly on the safety of pedestrians. Very little enforcement is taking place with respect to pedestrians due to the difficulty in establishing the true identity and contact details of the pedestrian. Enforcement is also generally undertaken in an ad hoc manner with no co-ordination of planning and implementation initiatives.

Legislation pertaining to pedestrian safety and also related issues such as unlawful occupation of road and rail reserves should be addressed before priority can be given to pedestrian safety related enforcement.

5. THE CITY OF CAPE TOWN PROBLEM RESPONSE

In order to determine the success of the future implementation of pedestrian safety strategies and interventions, the City has as an objective the reduction in the number of pedestrian casualties, and specifically fatalities, in traffic and rail accidents.

The number of pedestrian casualties, however, gives a poor indication of the degree of implementation of interventions. Secondary performance measures were therefore identified to monitor the implementation of pedestrian safety interventions and are specifically related to individual focus areas.

These focus areas are:

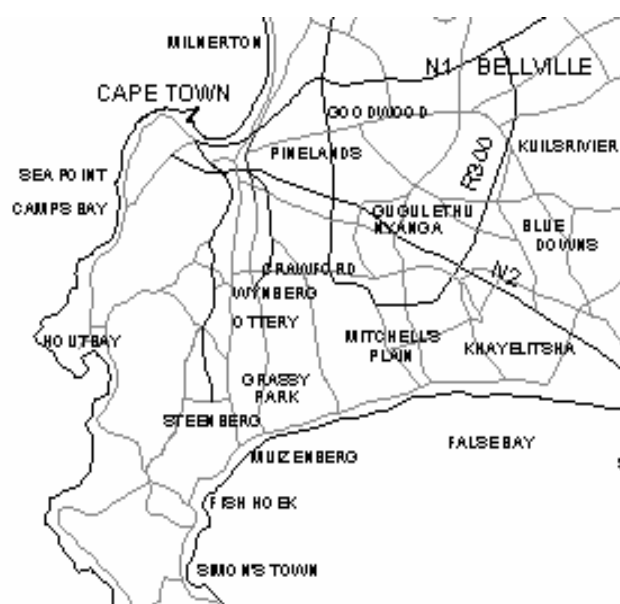
- **Institutional Integration**
Improvement of the integration of pedestrian planning, pooling of resources and co-ordination of projects on an inter-disciplinary and inter-organisational basis.

- **Planning**
Integration of the needs of pedestrians in the planning process.
- **Road Environment**
Incorporation of pedestrian needs into the road and rail design process and the prioritisation of maintenance activities affecting pedestrian safety.
- **Awareness**
Raising the awareness of all members of society in terms of the need and benefit of adequate provision for pedestrians.
- **Education**
Education of all road and rail users in terms of the rights and responsibilities of pedestrians as well as the traffic rules and other safety related information.
- **Enforcement**
Enforcement of pedestrian and driver compliance with the law.

More than one sphere of government, or part thereof, is to be responsible for the strategies identified under each of the focus areas. The strategies must therefore be addressed in an integrated manner between the respective spheres of government.

6. IDENTIFICATION OF PRIORITY IMPLEMENTATION AREAS

Priority implementation areas were identified by analysing the concentration of the fifty roads within the City with the highest Equivalent Pedestrian Accident Numbers (EAN) during 2002. An absence of serious pedestrian accident roads in the southern peninsula as well as the northern suburbs was identified. Based on the concentration of most of the more serious pedestrian accident roads, an area was identified that includes most of the metro south-east, including suburbs such as Nyanga, Gugulethu, Mitchell's Plain, Philippi, Khayelitsha and Delft. A further area adjacent to the N7 and Potsdam Road was also identified.



After preliminary site inspections and interviews with police and traffic officers, the above-mentioned area was subdivided into the following four general problem categories:

- **People living in the road reserve of a freeway**
A number of the pedestrian safety problems on the N1 can be attributed to people and / or families living in the freeway road reserve, especially under bridges at interchanges.
- **People crossing a freeway**
The largest pedestrian problem on the N2 is related to people crossing the freeway for purposes of accessing employment areas, collecting firewood, waiting to be picked up by contractors, recreational purposes and so forth. Some localised pedestrian crossing problems also occur between Macassar and Firgrove as people gain access to the Firgrove rail station.
- **High pedestrian / low vehicle speed conflict area**
A high pedestrian / low vehicle speed conflict area is characterised by large volumes of pedestrians, many conflict points along roads and a raised awareness by drivers of pedestrian movement and typified by roads such as Lansdowne Road in Khayelitsha and NY1 in Guguletu and Nyanga.
It should, however, be noted that the identified priority areas and specific roads may show characteristics of both the high pedestrian / low vehicle speed and low pedestrian / high vehicle speed areas.
- **Low pedestrian / high vehicle speed conflict area**
A low pedestrian / high vehicle speed conflict area is characterised by lower volumes of pedestrians, extended conflict points along roads with low conflict reoccurrence and a poor perception by drivers of road usage by other modes of transport, typified by roads such as New Eisleben Road in Mitchell's Plain and Walter Sisulu Road in Khayelitsha.

Most of the focus areas had at least basic to very good pedestrian infrastructure and generally the pedestrian problem related more to lack of education and enforcement. In addition, a further problem was the under-utilisation of the facilities provided due to security problems. These security problems relate to situations such as the demand of a passage fee by local criminals for the use of a pedestrian bridge or muggings in subways.

7. IMPROVING INSTITUTIONAL INTEGRATION

Four recommendations were made to improve institutional integration. These were:

- That the Metropolitan Road Traffic Management Co-ordinating Committee (MRTMCC) facilitate the formation of a Working Group that will take ownership of the City's Pedestrian Safety Implementation Plan, the ongoing development of the plan and the co-ordination of the application of national, provincial and local funding sources. This Working Group should, in the long term, also endeavour to address pedestrian safety issues in an increasingly proactive manner.
- That a political champion and representative of the City's mayoral committee be identified to whom the respective affected departments within the City should report on a quarterly basis to improve the institutional integration within the City of Cape Town structures.
- That the political champion liaise with the PGWC, SANRAL, SARCC and Metrorail in order to facilitate their buy-in to address the pedestrian safety problem and kick-start

the establishment of structures within and between these organizations, ie to improve pedestrian safety in a multi-disciplinary manner. The strategies pertaining to the improvement of pedestrian safety within the City should also be presented to the relevant Head of Departments at the PGWC.

- Specific liaison structures should be established to enable personnel “on the ground”, such as the traffic enforcement teams, scholar patrol officers, maintenance teams repairing fences / lights, pruning vegetation and so forth, to report on specific needs as observed in communities. Although specific community requests may not always be met, alternative solutions to alleviate these problems may be identified.

Although it is proposed that interventions be focussed within the identified priority areas, other initiatives outside of these areas should not be abandoned unless resources can be better applied within the priority areas.

8. IMPROVING PLANNING FOR PEDESTRIANS

The projects identified and prioritised as part of this study did not specifically relate to future planning initiatives. As part of the identification of priority areas it was, however, recommended that planning in especially the prioritised areas, but not excluding the remainder of the City, take the requirements of pedestrians into consideration.

Planning of pedestrian networks linking priority areas with origins / destinations outside these areas. Also planning of facilities that can indirectly improve pedestrian safety, such as the provision of dedicated cycle lanes in wide travel ways that reduce operating speeds of vehicles on wide roads.

Although generally very good pedestrian facilities exist in the priority areas, a number of these facilities do not allow for the volumes of pedestrians making use of them, eg a 1.5 m sidewalk may be sufficient in areas such as Durbanville with high vehicle ownership and lower volumes of pedestrians but not in areas such as Khayelitsha with high volumes of especially school children making use of pedestrian facilities. The demand for pedestrian facilities, both current and future, has to be taken into account when planning for the provision of such facilities.

Even when pedestrian facilities such as bridges over roads or rail are provided, the usage of these facilities are dependent on the natural channelisation, or lack thereof, of pedestrians to such facilities due to the built form surrounding them.



9. IMPROVING THE ROAD ENVIRONMENT FOR PEDESTRIANS

Specific road environment projects were identified as part of this project. No projects specifically related to the rail environment were identified, as the City does not have control over the implementation of such projects. It was, however, recommended that the provision of pedestrian rail level crossings be investigated in especially the Mitchell's Plain, Nyanga and Khayelitsha (north) areas as well as the maintenance of barriers preventing access to sections of the rail reserve. Some pedestrian safety projects were, however, identified that will improve the safety of pedestrians approaching or leaving rail stations.

10. IMPROVING PEDESTRIAN AWARENESS

A need for raising the awareness of pedestrian safety in the identified priority areas was recognised. Although facilities were provided, pedestrians did not always make use of such facilities. Many pedestrians did not seem aware of the need for ensuring their own safety while, for instance, crossing a road.

A need for sensitising drivers to pedestrian needs and vulnerability is especially required in the Mitchell's Plain area where the wide roads encourage higher vehicle speeds.

The need for the reporting of accidents and accurate completion of traffic accident reports at police stations should be emphasised.

11. IMPROVING PEDESTRIAN SAFETY EDUCATION

A need for education of both children and adults in the identified priority areas was recognised. A number of pedestrians as well as drivers do not observe the general rules of the road. Although this might not be attributed to lack of knowledge alone, targeting the residents with respect to pedestrian safety education should also increase the awareness of pedestrian safety requirements.

One of the specific problems observed in the majority of the identified priority areas are people, generally in groups, sitting on the sidewalk with their legs in the roadway.

Although this might be relatively safe on roads where wide shoulders are provided it is not so on some of the narrower roads and should therefore be discouraged as far as possible.

Police officers completing traffic accident forms also need to be trained to adequately complete such forms. This includes identifying, as far as possible, the specific location and possible cause of an accident if not readily available from the person reporting the accident.



12. IMPROVING ENFORCEMENT

A need for enforcement of both pedestrians and drivers in the identified priority areas was recognised. Enforcement of specifically the following transgressions is required:

- Unsafe pedestrian behaviour (such as uncontrolled crossing of roads where signalised and unsignalised pedestrian crossings are provided at regular intervals)
This enforcement initiative should also be used to identify where pedestrian facilities are still lacking or current facilities are not provided according to pedestrian desire lines. Feedback from the enforcement teams should be given to the engineers and specific contact persons on both sides should be identified for this purpose
- Pedestrians in freeway road reserves, especially crossing of freeways and stopping of vehicles along freeways to pick up employees / contract workers
- Speeding (mostly occurring on the wider roads but should especially be enforced on narrower roads through residential areas)
Here again feedback should be given from the enforcement teams on the need for traffic calming on specific roads
- Red light violations at traffic signals
- Illegal parking on sidewalks and alongside roads, thereby obstructing pedestrians
- Substance abuse by pedestrians and / or drivers
- Criminal activity in unlit areas, at pedestrian bridges, eg demanding payment for allowing pedestrians to cross, and so forth
- Informal trading on sidewalks that obstruct pedestrian flow
- Informal housing in road and rail reserves, especially on sidewalks

13. CONCLUSIONS

This paper highlights some of the major conclusions and recommendations of the City of Cape Town's Pedestrian Safety Study. In particular it identified that to address the pedestrian safety problem within the City the following has to be improved:

- Institutional Integration;
- Planning for Pedestrians;
- Road Environment for Pedestrians;
- Pedestrian Awareness;
- Pedestrian Safety Education; and
- Enforcement.

14. REFERENCES

- [1] Statistics South Africa, Census 2001.
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- [4] Metropolitan Road Traffic Management Co-ordinating Committee, Cape Metropolitan Area: Draft Road Traffic Management Operations Plan: 5-Year Plan. 2 July 2002.