8. Recommendations

Prior to formulating recommendations to relevant problem areas for the specific demarcated study area, certain evaluations were conducted and points of views established. The research process was as follows:

- Evaluate and understand the problems and tendencies as established in the literature review.
- Evaluate and understand the general planning theories and solutions provided to the relevant problems and tendencies experienced in these planning theories.
- Investigate and understand what policies authorities were implementing on an international, national, provincial and local sphere.
- Evaluate projects already implemented in the form of pilot study examples which 1) experienced the same problems and 2) implemented the planning theories and/or solutions addressed in the literature review.
- Demarcate a study area and analyse the status quo of relevant factors.
- Formulate tailor-made recommendations for the implementation of a non-motorised transport system in the demarcated study area.

The hypothesis formulated for the research study reads: “A non-motorised transportation system, within the CBD of Upington, would be more sustainable to the larger community of Upington, as opposed to the current private vehicle dependable system.” With this in mind, the recommendations to follow were made with regards to the transportation system in the CBD of Upington.

The recommendations were divided into core and complimentary recommendations. The core recommendations will have a direct influence on the transport system within the study area, whereas the supporting recommendations will have an indirect influence. It is, however, important to note that the two are intertwined and to address the unsustainable transport problems effectively they cannot be implemented separately.

Table 29: Recommendations

<table>
<thead>
<tr>
<th>Core Recommendation</th>
<th>Detail information</th>
<th>Reference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>i.</strong> Prohibit motorised vehicles within the study area of Upington</td>
<td>a. It is proposed to transform a street in the study area into a pedestrian mall and Copenhagen, Demark and Ghent, Belgium followed a phased strategy and are</td>
<td></td>
</tr>
</tbody>
</table>
gradually expand until the entire CBD is pedestrianised.

b. In order to realistically implement such a strategy (pedestrian only area) and to give the community time to accept the transformation, it is prescribed that it be phased in.

c. To create a truly sustainable transportation system to the benefit of the larger (most residents) community of Upington an entire NMT study area is required.

currently recognised as very successful car-free CBD’s (See 5.1.1 and 5.1.2).

The Spatial Development Framework of //Khara Hais Municipality prescribed the following:

The conversion of certain streets to pedestrian streets in order to facilitate and encourage pedestrian movement and limit the dominance of the private vehicle and create detailed landscaping within the CBD (See 4.2.4).

Supporting Recommendations

ii. Design

d. Due to the fact that a large amount of space will be freed, designs will be crucial to attract and keep residents in this pedestrianised area. These designs should include: planning on human scale, visual interests, amenities and planning specifically for the weather (water points, shading, green areas etc.).

e. As with any public area it should be maintained in order to attract residents and tourists.

Bates (2013) illustrates the design principles of a pedestrianised area (See 3.3.2).

Rosen (2006:15) said a pedestrian mall (referring to 3rd Street Promenade in Santa Monica) must have “something to eat, something to drink, something to see and somewhere to go”. Rather than concentrating on a retail mix to compete head-to-head with the
<table>
<thead>
<tr>
<th></th>
<th>f.</th>
<th>g.</th>
<th>h.</th>
<th>i.</th>
<th>j.</th>
<th>k.</th>
</tr>
</thead>
<tbody>
<tr>
<td>iii. Build or enlarge parking garages on the periphery of the study area</td>
<td>The area should be utilised through the day and in the evenings.</td>
<td>In order to sustainably develop a pedestrianised study area the parking bays that will be lost due to the development must be replaced. In order to ensure that the study area remains accessible it must be reachable via the private vehicle.</td>
<td>It is proposed that the three existing parking areas be extended to form parking garages. See Figure 38 for the location of these existing parking areas.</td>
<td>The parking garage must be linked to the pedestrian CBD by means of easily accessible footpaths.</td>
<td>Mixed land uses within an urban area is a central principle in the Smart growth theory, New urbanism and Pedestrian mall developments. It is therefore proposed that the vacant upper floors (41%) of the study area be earmarked for residential developments. This will</td>
<td>indoor mall, the city took a different route and concentrated on entertainment (See 5.2.1)</td>
</tr>
</tbody>
</table>
provide more residents the opportunity of living and working in the same area, and consequently reduce traffic between neighbourhoods and the CBD.

Furthermore, zoning regulations and policies in Europe promote mixed land use practices whereas American regulations and policies promote the separation of land uses (See 5.2.1).

The United Nations (UN) emphasises ten core recommendations to the international community, in particular to donors and governments for promoting increased investments in walking and cycling infrastructure. One of these is to integrate NMT networks with other modes, especially public transport, in order to maximise mobility. The maximum comfortable reach for walking and cycling are 3 km and 15 km respectively. (See 4.1.1).

v. Different non-motorised modes and public transportation should be prioritised

k. Due to the fact that residents automatically utilise non-motorised transportation, mostly walking, when using public transport, it is necessary to simplify the interexchange between different modes. It should therefore be easy to exchange between busses and taxis to cycling and walking as well as the other way around.

l. It is also suggested that non-motorised linkages be developed between neighbourhoods and the CBD. Residents will then be able to cycle or walk safely between their home and work (between neighbourhoods and the study area).

m. It is necessary to develop a reliable and fixed public transportation, mostly walking, when using public transport, it is necessary to simplify the interexchange between different modes. It should therefore be easy to exchange between busses and taxis to cycling and walking as well as the other way around.

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m. It is necessary to develop a reliable and fixed public transportation, mostly walking, when using public transport, it is necessary to simplify the interexchange between different modes. It should therefore be easy to exchange between busses and taxis to cycling and walking as well as the other way around.
Transportation system in order to reduce private commuting, especially in higher income neighbourhoods where more than 90% of residents utilise the private vehicle to commute to the CBD. A bus system is recommended as routes can be amended and it requires minimal initial capital.

Source: Own construction (2013)

The figures below illustrate the final recommendations made for the demarcated study area. The planning theory policies, pilot study examples and specific case study were taken into account to finally compile the tailor-made recommendations as indicated in the table above and illustrated in the figures below.

Thirteen strategic developments were identified to implement and support a pedestrianised study area within Upington as indicated in Table 29. Each of the developments will be scrutinised and discussed in more detail below:

A. Develop a pedestrian mall in the study area.

It was revealed in Chapter 3 that South Africans in general are not familiar with pedestrian areas. A pedestrian mall development could therefore be considered as an introduction of pedestrian areas to the residents of Upington. Pedestrian malls occupy a street, therefore, 1) residents can become familiar with the development, 2) the success of a small scale (one street) pedestrian area in Upington can be evaluated and 3) the inconvenience for residents would be minimal.

In the Literature Review it was identified as part of the principles that a pedestrian mall be developed in a street which has a high level of activity. This street/mall should attract residents during the day as well as night in order to be functional. Taking into consideration the principles identified in Table 10 as part of the Literature Review and the Road Hierarchy section (Section 6.4.5) as part of the Pilot Studies; Scott Street was identified to be transformed into a pedestrian mall. As indicated on the figure below Scott Street is a major road within Upington, accommodating numerous activities as well as residential units. It is extremely accessible and in the proximity of
retail outlets and historical buildings. All of these aspects were identified as contributing to a successful development. The policy documents indicate that pedestrian streets should be developed in Upington, but does not provide comprehensive insight.

Figure 40: Scott Street: Pedestrian Mall


B. Developments should be phased in.

Part of the phase-in strategy is clarified above. This was to introduce and develop a Pedestrian Mall before implementing a full scale pedestrian only area. This strategy (phase-in activity) emphasises the fact that any amendment regarding the transportation system should first be implemented on a smaller scale, the results analysed and then further implementation could take place if the results are satisfactory.

This strategy proved to be successful in the case of Copenhagen and Ghent which formed part of the pilot studies.

One of the possible challenges which might be experienced during the development of pedestrian areas, as identified by the professionals in the interviews, is the fact that residents are in a comfort zone and used to the current transport system. The phased in strategy could assist residents in adjusting to the newly implemented systems, before full scale implementation takes place.
C. Transform the study area into a non-motorised transport/pedestrian area.

Taking into consideration the problem statement, literature review’s content, policies, the pilot studies and the case study analysis it was found that to truly benefit the larger community of Upington the entire study area should implement NMT as the only allowed transportation mode. This will in effect transform the area into a pedestrian only area.

The success achieved in Copenhagen and Ghent illustrated that it is possible to develop a large scale pedestrian area. In the literature review and pilot study chapter it was identified that the downfall of a pedestrian area could be due to the large extent of it. Therefore, it will be necessary to implement best practices of projects that are already implemented.

The figure below identifies the area where NMT should be implemented. Thereafter, the best practices, also categorised as the “supporting recommendations”, will be analysed.

![Figure 41: NMT implementation area: Study Area](image)

Legend

- Study Area


D. Plan on human scale

An essential objective for the development of pedestrian only areas, where private vehicles previously dominated, should be to redesign the streetscape on a human scale. Residents should be comfortable and in control within the pedestrian only area.
A major challenge will be to utilise the vacant “vehicle roads”. as observed from the literature review and pilot studies activities should not compete directly with indoor malls, but should rather endeavour to establish “something to eat, something to drink, something to see and somewhere to go”.

In a dry arid area such as Upington, planning should always take the weather into consideration. Therefore amenities, dealing specifically with the extreme heat, should be installed in the study area to ensure the comfort of residents in the pedestrianised area.

Specific research is required to establish which businesses and activities should occupy the area left vacant by private vehicle orientated transportation infrastructure such as roads and parking bays.

E. Maintenance

In order to avoid urban decay, residents and tourists should be encouraged to visit the pedestrian area and make use of non-motorised transportation. In order to ensure the existence of such an area, maintenance will be an important factor.

It is also crucial to keep residents and visitors safe in the study area.

No additional expenditure will be required as the area is already maintained and patrolled by police officers.

F. Utilise area day and night.

The importance of utilising a pedestrian area was emphasised in the unsuccessful pedestrian malls in the USA, mentioned in the pilot study chapter. Adequate utilisation can only occur if maintenance and safety (point e) are important aspects for local government. In addition, the establishment of a mixed developed zone (Point J) within the pedestrian zone is integral.

G. Study area accessible via private vehicles.

The current transport system in Upington is private vehicle orientated. It is also a system that has been operational for decades and residents are familiar with how it functions. To identify and develop a study area which will exclude private vehicles will still need to be accessible by private vehicles. It is therefore crucial that the current transportation system is fully functional surrounding the immediate vehicle free zone.

The figure below indicates that national roads will be used as the boundary for three of the four sides of the study area. The following data is also important with regards to the recommended development:
• From the vehicle accommodating roads to the furthest point within the pedestrian area is 203 m.
• The additional distance travelled by private vehicles will be maximum 882 m (1 156 m – 203 m) due to the pedestrian area.
• Parking bays in parking garages on the periphery could replace the parking bays lost due to the development of the NMT zone (see Point H).

![Diagram of vehicle accessibility surrounding the Study Area](image)

**Legend**
- Study Area/NMT only area
- Private vehicle accommodating roads
- Furthest point in study area from private vehicle roads – 203 m
- Direct route from A to B – 274 m (no NMT/pedestrian area)
- Direct route from A to B – 1 156 m (with a NMT/pedestrian area)

**Figure 42: Private vehicle accessibility surrounding the Study Area**

Source: Own construction using © 2013 DigitalGlobe, ©2013 Google and © AfriGIS (Pty) Ltd

Derived from the figure it is evident that the pedestrian area will be very accessible to private vehicle users.

H. Public parking garages.

To ensure that the CBD of Upington replace the parking bays lost if a pedestrian area is developed, the recommendation will be to develop three parking garages on existing single storey parking areas. The replacement of parking bays will ensure that the CBD maintains the current accessibility for
private vehicle users or even increase the accessibility if more parking bays can be developed than originally lost in the study area. Gruen proposed (see Section 5.3) the development of parking garages for the first pedestrian mall development in the USA (Kalamazoo pedestrian mall) to maintain the high accessibility via private vehicles to the CBD of the city.

The figure below indicates the stands for the parking garages as well as the routes that will be travelled to the pedestrianised area.

![Parking Garages Map](image)

**Figure 43: Parking garages**
Source: Own construction using © 2013 DigitalGlobe, ©2013 Google and © AfriGIS (Pty) Ltd

Derived from the figure it is clear that ample parking areas exist in close proximity to the study area which can be developed into multi-storey parking garages. To determine the exact specifics regarding parking garages additional research is necessary.

I. Linkages between the parking areas/garages and the study area.

In order for private vehicle users to reach the pedestrian area they will need to park their vehicles and then commute, via NMT, to the study area. From the three main recommended parking garages two have only a vehicle road separating them from the study area. It is therefore crucial that these
linkages be safe and developed specifically for people commuting from their vehicle in the parking area to the study area. It is also recommended that the additional parking areas be linked with the study area (see Figure 41).

Where possible, these linkage routes should be separated from vehicle traffic by making use of bridges and/or underground pathways.

J. Mixed land use development.

A core principle emphasised in both the literature review and pilot studies is that mixed land use development is key in determining the success of a pedestrian area and/or a pedestrian mall development. A residential character in the study area will ensure that fewer people will be dependent on private vehicles to travel vast distances between neighbourhoods and work. If residential development takes place, the workplace and house will be walking distance from each other. In addition to this, the utilisation rate of the study area will increase, as much more night activity will take place if people reside in the area.

The result of the case study analysis indicated that ample space exists on upper floors to intensify the study area by developing residential units. It is therefore recommended that residential units be developed in current vacant space, within the study area.

k. Transfer points: transport modes.

When establishing a new main transport system in an area, such as non-motorised transport in the study area, it is crucial to ensure easy and quick transfer from one transport mode to another. If bottle-necks occur, the accessibility of the study area will decrease and put the development in danger of decay. The importance of accessibility was emphasised by the Planning Theories (Chapter 3) as well as the highly successful Park and Ride system in Ghent, Belgium (Pilot Studies). The main transfer points in and around the study area will be:

- Vehicles/Pedestrian – This transfer will take place at the parking garages and parking areas
- Public transport/Pedestrian – This transfer will take place at the proposed bus stops (see point M) and the current taxi terminus.
- Bicycle/Pedestrian – This transfer will take place at the bicycle stands, which should be placed throughout the study area.
- Bicycle/Public transport – In order to accommodate cyclists on public transportation it is proposed that busses be equipped to transport cyclists.
The following map indicates the transfer points (existing and proposed) in and around the study area:

In order to identify ideal locations for transfer points additional and specific research is necessary.

L. Non-motorised pathways: Between neighbourhoods and residential suburbs

Notwithstanding the fact that non-motorised linkages are proposed for areas outside the study area, it will have a direct influence on the accessibility and success of the proposed non-motorised area. The proposal for non-motorised pathways is in direct relation to the Planning theories principles addressing accessibility, walkable neighbourhoods and a variety of transport modes (Chapter 3).

In general it is proposed that pathways be developed for non-motorised transport modes (cyclists, pedestrians, etc.), in order to promote sustainability and address the principles mentioned above.
It is proposed that specific research be conducted in order to optimise the development of these pathways. The following figure illustrates hypothetical non-motorised pathways between neighbourhoods and the study area.

**Figure 45: NMT pathways**


M. Public transport system.

Due to the nature of non-motorised transport users only being able to travel short to medium distances, public transportation is integral to the success of a NMT area. Residents or tourists who do not own a private vehicle should be able to research any part of the city, including the study area, comfortably. This entails that public transportation is necessary.

Due to the low initial capital, low operating costs, flexibility and availability, busses are recommended as a public transportation vehicle. Busses, as opposed to trains, will also be able to utilise current road infrastructure, keeping development costs to a minimum.
All the pilot study examples consisted of good public transport infrastructure. It was also found in the case sturdy analysis chapter that lower income areas mainly make use of the taxi, whereas the higher income areas almost exclusively make use of the private vehicle. It is therefore necessary to service both the low, middle and high income areas with public transportation. For specific routes, and the type of busses needed, additional research is required. The following figure will however illustrate hypothetical bus routes through the city of Upington. If successfully implemented, together with the NMT pathways and pedestrian study area, residents without private vehicles will be equal to private vehicle owners as all transport modes will be considered equal.

![Figure 46: Bus route](image)


The recommendations made above are a direct result of the research conducted in the literature review and empirical study. The table below illustrates the relevance of the recommendations to the planning theory principles, policies, best practices of the pilot studies and the case study analysis.
<table>
<thead>
<tr>
<th>Recommendations</th>
<th>Planning theories’ principles</th>
<th>Relevance to policies</th>
<th>Best practices of Pilot studies</th>
<th>Case study analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>A – Develop a pedestrian mall</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Possible, sufficient activities and great accessibility</td>
</tr>
<tr>
<td>B – Phase development in</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Will be possible in study area</td>
</tr>
<tr>
<td>C – Develop entire NMT study area</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>Will be possible in study area</td>
</tr>
<tr>
<td>D – Plan on human scale</td>
<td>✓</td>
<td>×</td>
<td>✓</td>
<td>Sufficient space and amenities</td>
</tr>
<tr>
<td>E - Maintenance</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Service already rendered</td>
</tr>
<tr>
<td>F – Utilise area during day and night</td>
<td>×</td>
<td>×</td>
<td>✓</td>
<td>Ample vacant erven to develop residential units and ample space for activities</td>
</tr>
<tr>
<td>G – Study area accessible via private vehicle</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Private vehicle infrastructure already developed</td>
</tr>
<tr>
<td>H – Public parking garages</td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td>Sufficient space to develop and replace parking bays that will be lost</td>
</tr>
<tr>
<td>I – Linkages between parking garages and study area</td>
<td>×</td>
<td>✓</td>
<td>×</td>
<td>Ample space to develop linkages for NMT users</td>
</tr>
<tr>
<td>J – Mixed land use development</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>Sufficient vacant area for additional land uses, especially residential units</td>
</tr>
<tr>
<td></td>
<td>K – Transfer points: Transport modes</td>
<td>L – NMT pathways: Suburbs and study area</td>
<td>M – Public transport system</td>
<td>Already developed infrastructure and sufficient space to develop new transfer points</td>
</tr>
<tr>
<td>----------------</td>
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<td>----------------------------------------</td>
<td>----------------------------</td>
<td>--------------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td>×</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
| Source: Own construction (2013)

The comprehensive figure on the next page summarises the final recommendations made from a spatial point of view. It is believed that the proposed recommendations will provide the general public of Upington with a more sustainable transport system, compared to the private vehicle orientated system currently in operation.
a. Develop a Pedestrian mall in the study area
b. Phased implementation
c. Ultimately the entire CBD should be pedestrianised
d. Implement and develop activities
e. Maintain area
f. Utilise in day and night
g. Private vehicle access routes from neighbourhoods
h. Develop three parking garages
i. Link garages with CBD
j. Mixed land use – develop residential units
k. Simplify transfers between transport modes
l. NMT pathways between neighbourhoods and the CBD
m. Public transport – Bus system

Figure 47: Recommendation figure

Source: Own construction based on ©Google (2013)