



Mobilising Youth: A study of school learner mobility in Claremont, Cape Town.

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ABSTRACT

South African cities have been shaped by the country's colonial rule, followed by the era of Apartheid. During Apartheid the majority of South Africans were forced to live on the periphery of cities far away from opportunities that were found in city centres, causing stark social, economic and spatial polarisation. Since the end of Apartheid many, including planners, have been attempting to address these imbalances across the country. One of these imbalances includes access to educational opportunities. There is a clear lack of research on learner transportation within South African cities and receives very little attention in legislation and policy.

Learner mobility is therefore the focus of this study and the research aims to identify barriers to learner mobility and ways in which spatial planning can respond to these barriers. Objectives of the study therefore include identifying barriers and exploring learner mobility patterns and travel experiences.

To conduct the study, surveys, field observations and a spatial analysis was undertaken within a local precinct in Cape Town, namely Claremont. Surveys were distributed to learners within the area in order to gather data on learner mobility patterns. The guiding spatial plan for Claremont, the Southern District Plan was critiqued and analysed along with the findings from the surveys to identify the barriers to learner mobility and the ways in which spatial planning can respond.

The research revealed that the dominance of the private motor vehicle, the inability to integrate land use and transport planning, safety while travelling and the lack of youth participation in planning are the four critical issues that need to be addressed to improve access to education across Cape Town and overcome the barriers to learner mobility.

If the interface between land use and transport planning could be implemented correctly and for the right reasons, with safety and youth participation in mind, social equity, spatial equity and increased accessibility to education can become a reality. It is hoped that this research be a useful contribution to begin the shift of the South African city to one that is more inclusive of its children through the use of spatial planning and can increase learner mobility and access to education.

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LIST OF ACRONYMS

BRT	Bus Rapid Transport
CBD	Central Business District
CFC	Child-friendly Cities
CTSDF	Cape Town Spatial Development Framework
IDP	Integrated Development Plan
IRPTN	Integrated Rapid Public Transport Network
ITP	Integrated Transport Plan
LTS	Learner Transport Scheme
MSA	Moving South Africa
NGO	Non-governmental organisation
NLTA	National Land Transport Act
NMT	Non-motorised transport
PTLF	Provincial Land Transport Framework
SDF	Spatial development framework
SDP	Southern District Plan
SPLUMA	Spatial Planning and Land Use Management Act
SRTS	Safe Routes to School
TOD	Transit-orientated development
UNICEF	United Nations Children's Fund
US	United States of America
WSB	Walking school bus

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Chapter 1

INTRODUCTION

1.1 Background

South African cities have been shaped by the country's colonial rule, followed by the era of Apartheid. During Apartheid the majority of South Africans were forced to live on the periphery of cities far away from opportunities that were found in city centres, causing stark social, economic and spatial polarisation. Since the end of apartheid many, including planners, have been attempting to address these imbalances across the country. One of these imbalances includes access to educational opportunities. Since the abolishment of strict discriminating school admissions policies, children have been travelling far distances from areas found on the periphery to city centres that offer schools with higher educational standards (Lemon and Battersby-Lennard 2010). This trend is increasing and is particularly noticeable in Cape Town. Cape Town's increasing gap in equality which is visible in its economic, social and spatial dimensions is supported and further influenced by the transportation infrastructure of the city. This includes the role transportation plays in the degree of access learners have to educational facilities. The topic of research undertaken will focus on school learner mobility in Cape Town. This topic has been chosen because school going youth comprise of 24% (18 years and younger) of Cape Town's population and transport options influencing learner mobility therefore play a significant role in their access to educational opportunities. With the increasing trend of learners travelling to schools further and further away from their place of residence, it is clear that many schools are becoming delinked from where learners are living.

1.2 Research Problem

The main problem is that there is a lack of learner transport planning in South African cities. Currently there are initiatives and plans in place for rural learner transport but as migration to the cities increases, access to education in cities has to receive increased attention. In Cape Town, many children are travelling far distances to schools but their journeys using public transport are often unsafe, costly and unreliable, resulting in lateness and absence. In conjunction to this problem, learners who are being driven to school in motor cars contribute to 24% of Cape Town's traffic congestion (Behrens 2004).

Learners are not included in the process of planning, including for their travelling needs. Overall, the lack of integrated transport planning for school learners is causing social segregation and inequality between learners privileged enough to be driven to school and those that are not. This does not allow the ease of access required for learners to get to and from schools of varying distances and is contributing to increased traffic congestion.

This problem is related to the much broader problem of Cape Town being designed for car-based transit over public transport which has resulted in city sprawl and unequal access for the majority of Cape Town's population. The majority of the population with very little income are spending the most money to have access to opportunities (Van Wyk et al. 2009). Car ownership and the desire to own a car is increasing in African countries that are experiencing population increases and industrial growth, which correlates with the decrease in the supply of public transport (Dennis and Urry 2009).

Besides these problems, there is also the concern for the safety of learners while travelling between home and school. Youth are particularly vulnerable to road accidents and, in addition, personal security while travelling is threatened due to high crime rates experienced in Cape Town and other Southern African cities. Addressing learner transport is a way to tackle the broader issues of integration, equal access, city growth and environmental sustainability. Traffic congestion, sprawl and increased fossil fuel and carbon emissions are having detrimental environmental effects, and are leading us into a dangerous and uncertain future.

1.3 Research Motivation and Values

The motivation behind this research is to respond to these problems. Besides the work done by Behrens on learner transport (2004, 2007), there is a research gap especially within the planning field on learner mobility in South Africa. Not only mobility, but inclusion of youth in the process of planning and development is also neglected in theory and in practice.

The disconnection between schools and places of residences and the trend of increased learner mobility across the city cannot be ignored, and needs to be addressed whether it be in the short-term or longer term. Learners are a significant proportion of commuters and researching accessibility to education may be a means to address the broader issue of accessibility in a city that has characteristics of the Apartheid city. Greater importance needs to be placed on good transport connectivity at a local scale.

The values driving the study are strongly associated with the core principles of a planner. This dissertation is guided by planning principles and values of social and spatial equity, social and economic rights of citizens, sustainable urban development and planning for multicultural cities (UN Habitat 2009). This study is important for highlighting the significance of the planner's role regarding issues of accessibility, including to educational facilities and aims to increase integration across a city that is largely polarised, by increasing the degree of accessibility to schools across the city and strengthening the integration of learners. Furthermore, a planner should intervene in order to create a city that is inclusive and provides opportunities that can be accessible to all. The role becomes increasingly important for influencing policy that will affect learner access and mobility.

1.4 Research Questions and Objectives

The aim of the study is to identify barriers to learner mobility and ways in which spatial planning can respond to these barriers. Objectives therefore include identifying barriers and exploring learner mobility patterns and travel experiences. The research also aims to identify ways in which spatial planning can be used to increase accessibility for learners with the use of public transport.

The central research question therefore is:

- What are the barriers to learner mobility and how can spatial planning respond?

Subsidiary questions include:

- What are learner mobility patterns?
- What is the modal split of learners?
- What are the spatial barriers to access that can be improved through design?
- How can a planner influence the shift away from a city designed for the motor car to one that promotes public and non-motorised transport?

1.5 The Study Area

The area under study varies between scales and shifts from a focus on the Cape Town metropolitan level to a district within Cape Town to the local area precinct of Claremont. Primary research is carried out at the precinct level in order to reflect how local and metropolitan plans influence what is happening on the ground in terms of learner mobility and access to schools. Final recommendations are made at a precinct scale but are informed by dynamics at the metropolitan scale.

Cape Town

More than half of the world's population live in urban environments and increasing migration to cities is a global trend. The South African experience is the same and the population within cities is increasing exponentially. This needs to be kept in mind when planning for cities that, as is, do not have sufficient opportunities for its existing population and are structured in such a way that do not maximise opportunities especially because of a lack of access. Cape Town has been chosen as the area of study because it is a city that is characterised with inequalities, including the access to education. Cape Town's context is unique compared to other cities internationally because learners travelling from low income areas on the periphery of city to urban centres are at a high risk of encountering gangsters while travelling and Cape Town's motor vehicle drivers are often aggressive to child pedestrians (Behrens 2004).

Claremont

On the local precinct level, primary data is gathered from Claremont and its near surrounds. Claremont has been chosen for the study because there are a large number of schools in the area and learners travel from far distances to attend a number of schools in the area. Claremont is well connected to the rest of the city and is considered one of Cape Town's major nodes, characterised by a high level of investment in the area. There is therefore an opportunity to explore if areas with high investment and well serviced public transport can influence learner mobility within a city.

1.6 Chapter Outline

The process followed for the research of this dissertation is represented in the flow diagram alongside. Firstly, the research problem was identified in this chapter and research questions and objectives were established, which are guided by certain values. In the second chapter a literature review is undertaken that includes literature relevant to the research topic and informed the criteria for assessment for the research at hand. Chapter 3 investigates two international cases relevant to the study, namely Bogotá in Colombia and GWL-Terrein in Amsterdam. The fourth chapter explains which methods were used for the research.

A policy review is carried out in Chapter 5 and covers national, provincial and metropolitan legislation and policies relating to the study and provides context for the precinct level of study in Claremont. Chapter 6 then drops down to the Claremont precinct, where data collected within the area and the Southern District Plan guiding development in Claremont are analysed and critiqued. Chapter 7 concludes with recommendations for improvement and suggests guidelines that can be followed. The dissertation concludes with limitations and research that can be taken further.



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Chapter 2

LITERATURE REVIEW

This chapter will investigate the South African city by exploring its history and characteristics that shape its current form with particular focus on its transport systems and the weight it carries for equal access to education. Transport highly influences learner mobility and should be recognised on a city-wide scale. Learners in Cape Town and most other cities in developing countries are faced with two possible dilemmas. The public transport system may firstly not be efficient enough to allow easy and safe access to schools, and secondly a car-dominated city could have serious consequences in terms of accessibility and the development of youth.

This chapter will be exploring literature that is relevant in the field of transport and youth planning, and will be the basis for and will guide ways in which barriers to learner mobility can be overcome. It will do so by first forming a picture of what a city that takes the needs of its youth into consideration could be like and explores literature on the participation of youth in planning practices. It will then investigate the South African city by unpacking the factors that have influenced its transport systems to be so ineffective and how the ways in which transport planning is carried out in South Africa is a barrier to learner mobility. Literature on learner transportation will be rigorously examined for Cape Town in particular. Then literature will be drawn upon regarding transit-orientated planning, with clear reference to accessibility and the notion of sustainable transport. The recent notion of child-friendly transit-orientated development will be focused on particularly. Transport solutions for school learners will be investigated and will cover the concept of active commuting by drawing on international learner transport programmes. Other than identify barriers of learner mobility, the objective of this chapter is to derive criteria from literature on child-friendly and transit-orientated spatial planning that can promote increased learner access to educational facilities by addressing the challenges currently faced by learners in South African cities.

2.1 Youth, Cities and Planning

2.1.1 Youth and the Urban Environment

In the 18th and early 19th century in American cities, adults preferred children not to be indoors and children would rather be playing out on the streets. The streets were children's playgrounds and they had to compete for the space with bicycles, cars and pedestrians (Gillespie 2012). The relationship between youth and their urban environment was encouraged, compared to now where in many cities children are often protected from urban environments and the "evils of the city". Gillespie (ibid) argues very strongly that this way of thinking, of viewing children as citizens that need protecting and are dependent on adults, is a culturally constructed norm which has shaped urban planning.

Children are at the greatest risk to environmental and social challenges. Global impacts of urbanisation, industrialisation, war, crime and environmental degradation all prevent youth from participating in cities (Malone 2001). More than half of the world's population is living in cities in developing countries that are characterised by stark polarisation between those that are privileged and those that are not. It is clear that if cities and infrastructure do not develop evenly with the increase in population, cities will be prone to increasing slums and poverty. In developing countries such as South Africa, less privileged children are under threat of pollution, traffic and violence, and more privileged children who are constantly under their parents "protection" are prevented from playing freely with other children in urban spaces (Riggio 2002). It is often found that in poorer areas children are still found to be playing on the street which provides them spatial mobility and independence, yet this also means that they are exposed to abuse and environmental harms such as waste. Malone (ibid) therefore believes that if children's needs are not supported, they will inevitably have to take risks which will shape the future of the child's life forever. "Ideally, towns and cities should be places where children and youth can socialise, observe and learn about how society functions and how they can contribute to the cultural fabric of their community. They should also be places where they find refuge, discover nature and find tolerant and caring adults who will support them." (Malone 2001: 11).



Fig 2.1 Children claim the streets to play in Bristol, England (Steyn 2013)

2.1.2 Planning with Youth

Youth have for far too long been regarded as invisible or dependent in the planning field and planners wish they were better equipped to plan for childhood (Gillespie 2012). Youth and children will be used alternatively throughout this dissertation but in both cases it is referring to anyone below the age of 18 years as this is the legal age of being an adult in South Africa. Evidence has shown that planning is failing the youthful population. According to Gillespie (2012) and Frank (2006) youth have the potential to contribute to meaningful opportunities for themselves in communities as well as give them a voice regarding environmental affairs. Youth are important stakeholder groups in all communities, have different needs to adults and therefore their input is valuable and a necessity. An adult-centric approach to planning make youth more dependent by making them less mobile and excludes them from public spaces which are designed for adults. Frank (2006) argues that altering planning practices to suit the needs of the youth is vital because they are a huge proportion of the human population and are prone to feelings of social isolation. Youth are also the adults of the future and therefore any decision made now will affect their future and their future children too. Decisions concerning city design, economic, social and environmental development should therefore directly address their needs.

2.1.3 Child-friendly Cities

The Convention on the Rights of the Child is a human rights treaty bound by international law that came into effect in 1990. The Convention on the Rights of the Child has comprehensively expressed children's rights internationally and highlights the importance of child participation in decision making processes. One of the goals of the Convention is to strengthen youth's position in society (Jans 2004), especially in the city where activities for children are put into separate spaces, apart from adults inducing feeling of exclusion. The Convention on the Rights of the Child provides direction for adapting cities to be child-friendly. The United Nations Children's Fund (UNICEF) began the Child-friendly Cities (CFCs) initiative as an effort to acknowledge children's rights in an urban environment. The concept of CFCs is not an end product but a framework to assist cities in becoming more child-friendly in all aspects (Centre for Sustainable Transport 2004).

CFCs are being developed to ensure that decisions made by government are in the best interest of children. Between one third to a half of children living in Africa are experiencing poverty and are under threat by traffic, pollution and violence largely in cities. Wealthier children are guarded by their parents and are often prevented from socializing freely with others their age. On the city scale legal requirements and budgets need to be adapted to develop a strategy for child-friendly environments at the city, community and family level. A CFC is not an end product; it is a means to encourage child-friendly approaches to be used on all levels of governance and services. It is a city not only appropriate for children but is a city that is developed with the input of children and is a good environment according to children themselves (Riggio 2002).

Good governance means that children are directly involved in decision-making and are given the power to influence decisions, express their opinions, have access to basic needs and services and have access to green spaces. If a city is child-friendly it is people friendly, and indicates a healthy society that will not only be to benefit a family but would be for the environmental, social and economic benefit of a community and society as a whole. Other than youth participation in decision making, youth also benefit by the process because it gives them a voice in their communities and promotes networking amongst youth and adults. As a result, youth directly experience the outcome of projects and the youthful society of a community advances. By participating, youth also become more accustomed to the socio-political context of their society and increase their communicative and collaborative skills (Riggio 2002).

2.1.4 Intervention for Youth

On a local scale general principles that can be followed when planning for those below the age of 18 years includes ensuring that spaces support a child's physical and social development needs by ensuring there is variety and opportunity. There should always be access at appropriate times and there should be safe access by public transport; children should be able to have independent access and spaces children encounter must be free of cars. Different spaces should accommodate different age groups, indoor-outdoor flow should be encouraged and activity paths should be well-defined with no dead space. Space must always be welcoming and the natural environment should enhance the child's experience (Freeman and Tanter, 2011). Stine (1999) encourages learning to take place outdoors and within the natural environment. She also justifies that youth should have the ability to participate in the decisions made for the spaces they will encounter and move through.

To implement ideas of child-friendly cities a number of measures should be taken. Firstly, a city scale plan should be developed for children, which will be supported by laws that are child-friendly. This plan would be well integrated with objectives on the national level and filter into objectives of local, community and family levels. Budgets should be specifically set aside for children and children themselves should be given the opportunity to prioritise where the budget should be spent (Riggio 2002). A CFC does not come about by adults advocating for children but by children being part of the decision, processes and implementation themselves (Malone 2001).

To improve the relationship between youth and their urban environment, and to ensure cities are child-friendly and correct interventions are used to do so, the interface between land use and transport planning is an important consideration. In the process of planning and formulating plans with children and for their needs, transportation routes will always have to be considered to ensure youth's mobility and accessibility. Plans will have to prioritize the interface between land use and transport planning to create the optimal city for children. The next section explores the South African city and how well it performs in terms of marrying land use and transport planning as well as the integration of youth into planning decisions.

2.2 South African Cities – Two worlds apart

2.2.1 Planning for the South African city

South Africa has experienced rapid political transformation in the last decade. The 1980s was a trying time for planners who were either working on the 'project of apartheid' or were part of bureaucracies, non-governmental organisations (NGOs) and universities critiquing apartheid planning (Harrison et al. 2007). In 1994, South Africa transitioned into democracy and from then onwards there was national commitment to redistribution, equity and integration which inspired planners to create a new alternative vision for the country. The planning system that currently exists in South African cities is largely state-led; however, current governments have included planning as a tool for change and planning methods have been included in policy and legislative frameworks, which forms the basis for South Africa's developmental government. Although the concept of planning has infiltrated into decisions and actions taken by professionals and the government, "the spatial imprint of apartheid remains entrenched in cities and regions, and the ambitious plans to transform South African cities are, as yet, showing little impact" (Harrison et al. 2007: IX).

2.2.2 Inefficient and inequitable

The legacy of apartheid left spatially and socially segregated South African cities. South African cities are spatially and socio-economically imbalanced, and have high degrees of exclusion and inequality. The perceived quality of life is declining for those that were previously "excluded" and the quality of life is increasing according to those that were previously "included" (Wilkinson et al. 2011). This highlights that overall the South African city is becoming increasingly polarised and is hindering cities from attaining equal access and opportunities for all. Since the end of apartheid, there has been notable increased movement between cities and from rural areas to cities, impacting the shape of cities (Borraine et al. 2006). High growth rates in cities place great strain on public transport services and infrastructure needed for a growing population (Wilkinson et al. *ibid*).

Increased migration to cities is resulting in a rise in the population living in informal settlements on the periphery of cities far away from opportunities in the city centres and is associated with increased social exclusion and high levels of unemployment. Currently, many cities are characterised by well-resourced and planned out suburbs, contrasting with informal settlements which lack basic infrastructure, services and transport links. This has serious environmental impacts and is contributing to an increasing ecological footprints and urban sprawl. The ecological footprint is spread even further with new housing developments found on the periphery of cities.

Transport systems in South African cities are in general energy inefficient; do not serve the majority of the population and transport routes are often congested resulting in high levels of pollution (Borraine et al. 2006). The transport system benefits those who were previously "included" as roads and highways are designed for those who are privileged enough to have private motor cars, but those that were previously "excluded" and live on the periphery of cities have to rely on an unreliable and unsafe public transport system.



Fig 2.2 Highway construction in Cape Town that caters for the wealthier (City of Cape Town 2008)

2.2.3 Access Barriers

Employees living on the periphery of cities use a transport system that is unequally accessible, has a greater demand than it can supply and is often unpredictable. Wilkinson et al. (2011: 146) states that, “Lower-income and sprawling peripheral areas means that hundreds of millions of people endure long commutes on crowded trains and buses crawling through the typical morass of urban traffic congestion”, as is the case for youth commuting far distances to schools (Boraine et al. 2006).

In all cities, motor car use increases greenhouse gas emissions and pollutes the air, affecting the health of people exposed to the emissions. Motorised lifestyles also make people lazy and make it easy for one to isolate oneself and not socially interact (Hodgson 2012). As car ownership increases in South Africa and in other cities all over the world, the distance between school and home increases, resulting in further city sprawl. Children are exposed to high concentrations of air pollution because they are travelling in peak hour congestion. With the increase in the use of the car, children are also losing their ability to negotiate public spaces on their own. The mobility of youth is also impacted by factors of safety and security when moving between destinations.

Although it has been argued that educational centres of excellence should be placed in areas that lack sufficient educational facilities (Lemon and Battersby-Lennard 2010), it can also be argued that in a city such as Cape Town where there are so many spatial inequalities it is necessary to integrate learners by providing access to opportunities throughout the city. According to Cox (2010) transport should be seen as a means of social reconstruction after apartheid.

2.2.4 Inadequate Public Transport System

If incomes, car ownership and carbon dioxide emissions continue to rise, and infrastructure and mobility continue to decline, increased public transport systems have to become a reality. Road-based public transport in cities in developing countries are generally provided by large public or private monopolies, making it difficult for cities to adjust to the dynamics of city growth and provide adequate services. It is therefore often found that in developing countries, informal public transport delivery is believed to be the only transport that serves the needs of most of its citizens. In Rio de Janeiro in Brazil, para-informal public transport proliferated in the mid-1990s as a response to increasing unemployment, low quality formal public transport, low levels of safety and increasing waiting and travel times (Wilkinson et al. 2011). The latter two are a result of increased private car use and growing congestion. Informal public transport services are however generally unsafe, poorly maintained, sometimes unlicensed and have no fixed travel times. Similar trends are experienced in South Africa and therefore this has implications when planning a transportation system for its cities (Wilkinson et al. *ibid*).

South African cities' historical apartheid layout, its rapidly growing population, increased population density on the periphery, urban sprawl and freeway development have resulted in an inability to provide adequate transport for the population. To address these challenges often found in many developing countries, the introduction of a public transport system orientated around Bus Rapid Transport (BRT) is being promoted as a solution.

However, obstacles that hinder the transformation of public transport systems in the South African city are likely to include the inertia to change institutional frameworks, resistance to change transport operators and no clear transformation strategies. Wilkinson et al. (2011) believe that there is no one solution for transforming the public transport system in South Africa, and if any new modes or systems are introduced they should first be thoroughly scrutinised and no development on systems should occur without understanding all that it will influence and its costs at the very early stages in any project. Not only must the outcomes of transport system transformations be thoroughly understood but the process of how to reach implementation too. It is often found that overall institutional frameworks in a city will determine implementability.

Behrens and Wilkinson (2003) consider a key challenge in metropolitan planning in Cape Town to be the dualistic structure of the city's development and believe that segregated development may have actually increased since democracy, but instead of along racial divides, it has post 1994 being along socio-economic divides. The transport system which is effectively divided in a way that better serves the advantaged than the disadvantaged can only be changed by fundamental alterations in land use patterns especially for those living on the periphery of the city far away from opportunities. Although a Spatial Development Framework (SDF) was published in 2009 as means to transform and integrate the city, it can be criticised that the SDF does not address the interface between transport planning and land use planning correctly and lacks practical coordination.

2.3 Learner Transport in Cape Town

In Cape Town, vulnerable users of the transport system are the youth. According to Behrens et al. (2007) the predominant destination for youth travel is to schools and school trips make up approximately 22 % of all trips throughout the city (Behrens 2004). Besides the work of Behrens who is associated with the University of Cape Town's Centre for Transport Studies, there is very little research done on learner transport in South Africa and may present a bias to learner transport in Cape Town because the city is a particular focus of Behrens' research. This therefore highlights a gap in research but also presents an opportunity for further study to be done. Behrens' research has revealed that there are a few key trends in learner mobility that match those experienced worldwide.

Parents of learners in Cape Town recognise that schools that were previously only for the "advantaged" offer a greater level of education and therefore although they live far away from these schools, they choose to send their children there. The transport costs are substantially high for those with lower incomes and therefore significant sacrifices are made by many families. Learners that travel far distances to schools were found to use a mix of transport modes throughout the city. Bicycles are the least preferred method of transport and reflect dangers of Cape Town roads with high average traffic speeds. A study carried out by Lemon and Battersby-Lennard (2010) revealed that learners travelling far distances often do not travel for more than an hour in total and most learner travel occurs within peak periods. Travel in the morning occurs with peak traffic (7am-8am) and in the afternoon its spread between 12h00 and 17h00 because of different grades finishing school at different times. Older learners are found to travel longer distances and leave for school earlier in the morning (Behrens et al. 2007).

The most significant trend found by Behrens (2004) is that learners from lower to middle income areas are far more reliant on walking as the primary mode of travel to and from school, compared to middle to upper income areas that increasingly reliant on the automobile. As schools that were previously labeled as being for "whites only" were allowed to be attended by anyone, school travel distances have increased substantially for learners from low to middle incomes areas. Another key trend is that as learners from low and middle income areas become older, their use of public transport increases, pointing out that schools are becoming increasingly further from home. Learners from middle to high income areas are mostly being driven to school (Behrens 2004).

2.3.1 Qualitative Findings

Although measures were taken after apartheid to loosen residential and educational segregation, segregation levels still remain high. Qualitative studies on integration between learners done by Lemon and Battersby-Lennard (2010) reveal that friendships are more strongly linked to schools than areas of residence and friendship choice is generally found to be determined by socio-economic status of home areas. Social integration and true equal access to education cannot be achieved even if there is a sufficient transport system that allowed all learners to get to a school of their choosing because of substantially high school fees for schools that have the highest levels of education. Lemon and Battersby-Lennard (ibid) suggest that incentives could be used to encourage schools to share human and physical resources.

2.4 The Interface between Land Use and Transport Planning

De Vasconcellos (2005) highlights that in Brazil, people with lower incomes spend a large proportion of their income on transportation have very low mobility and hardly contribute to transport externalities such as accidents, pollution and congestion. On the other hand, those with high incomes spend more time, money and space using cars to get from place to place and contribute to transport externalities 8.4 -15.2 times more than lower income groups. De Vasconcellos (ibid) argues that traditional transport planning that usually supports large investments into road infrastructure cannot be used for a developing country as it minimises social equity.

As this research focuses on barriers to learner mobility which includes access to educational facilities, it is essential that there are clear links between transport and land use planning. According to Timmermans (2003) transportation researchers and urban planners have developed integrated land use-transport models since the 1960s but it has never been a dominant field of research and land use planning has been seen as a variable of transport models. Land use-transport planning originated through the works of urban planners and at some point disappeared completely but currently is receiving increased interest again. This interest is largely a response to our car-dominated cities and need to address environmental issues induced by cities. According to Newman and Kenworthy (1995) cities have shifted from being designed for the human to being designed for the car, and cities have evolved from the walkable city to the transit-orientated city to the currently existing automobile city.

Coordinating land use and transport planning needs to be addressed once again as it is concerned with assessing the well-being of communities and cities, and can be used to evaluate how land use decisions influence the transportation system as well increase people's opportunities to access resources and services. It is an attempt at shifting back to a transit-orientated city once again. Integrating land use and transport planning intends to preserve natural capital resources, cultural resources, ensure health and have sustainable communities. It intends to cultivate a balance of mixed uses such as recreation, commercial, education, employment and service opportunities and identifies the importance of spatial proximity, design and layout for those uses. The integration of the fields considers long-term impacts, human-environment interactions, and pays particular attention to transport systems (www.fhwa.dot.gov 2013).

2.4.1 Accessibility

The traditionally approach to transport planning was to respond to transport demands of a society, but it may not be appropriate because demand could be a product of the wealthy and providing for unlimited demand could privilege the already privileged (Martens 2006, in Cox 2010). Cox (2010) therefore believes that a more equitable solution would be to improve transport to ensure access to basic needs rather than increasing mobility. Access can either be achieved through physical movement or by its substitution. Access is the person's perspective, accessibility the destination's perspective (Geurs and Wee 2004).

Bertolini (2005) believes that accessibility can be used as a conceptual framework for transit-orientated development. Definitions of accessibility have transformed over time and the most all-encompassing one is provided by Geurs and Ritsems van Eck (2001 in Vandenbulcke et al. 2009: 36) who define it as “the extent to which the land-use transport system enables (groups of) individuals or goods to reach activities or destinations by means of a (combination of) transport mode(s)”. Accessibility therefore cannot only be measured by the efficiency of transport infrastructure but has been assessed on its four main components of land-use, transport, time and the individual. Fig 2.3 diagrammatically represents the relationship between these four components and shows how they determine accessibility. Better accessibility means a high standard of living, as it gives an individual choice and provides a variety of opportunities especially for those who have few opportunities. In cities that are automobile dependent, accessibility is reduced by congestion, which generally results in peri-urbanisation (Vandenbulcke et al. 2009).

Densification increases accessibility and serves the pedestrian by having a number of activities in one area. Urban centres are so attractive because they allow opportunity for walking to destinations of activity and allow a space for looking, touching and experiencing (Cox 2010). Although ideally it would be great to plan for walking, it must be recognised that all individual trips are multimodal and provision must be for an overall functional transport system.

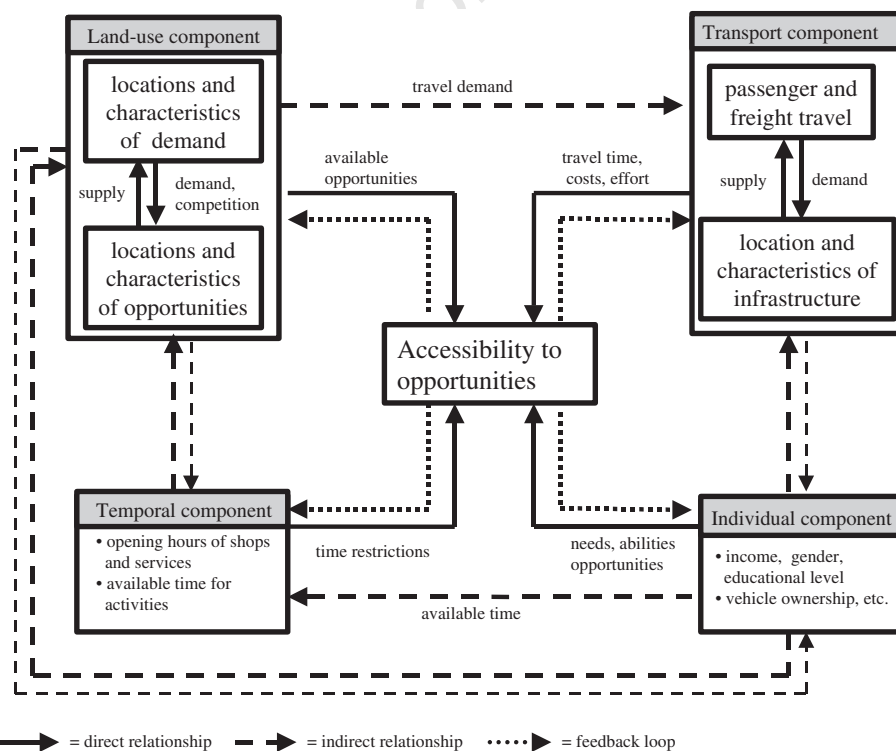


Fig 2.3 The four major components of accessibility (Geurs and Wee 2004)

2.4.2 Non-motorised Transport (MNT)

There are a number of factors in a neighbourhood and city that can promote NMT. However, according to Saelens et al. (2003) the characteristics of a neighbourhood determine the degree to which NMT is used (i.e. walking and cycling). Communities with higher densities, stronger connectivity and more mixed land use will use more NMT modes more than in communities that have low density, weak connectivity and poor mixed land use. Saelens et al. (ibid) believe that the choice between motorised and NMT is determined by two fundamental ways that land is used. The first is the distance (or proximity) which is determined by the density of a settlement and a mix of land uses. The second is the degree of connectivity i.e. directness to destination.

It is believed that the higher the population density in an area and the more pedestrian and cycling paths there are, the higher the use of NMT. Mixed use means that there are a number of land uses in a small area and a high degree of connectivity is seen when streets are laid out in a grid pattern with very few barriers, allowing one to reach a destination quickly and by route of choice. Unfortunately modern developments generally have a single use, with different land uses far from each other resulting in poor mixed use areas. It is also found that modern street patterns are often characterised by low-density intersections, barriers such as cul-de-sacs and hardly any route variety.

The spaces to be used by motor vehicles and by pedestrians are separated within a city. Cox (2010) believes that if spaces for walking, cycling and motor cars are not specifically kept separate, it would enhance the pedestrian experience as it would allow direct routes to be taken instead of sticking to a pavement specifically designated for walking. Currently motor cars marginalise NMT modes because spaces are designed to increase traffic flow speeds. More liveable cities are cities with spaces offering many activities and a range of transport modes, making spaces more lively and vibrant. According to Cox (2010; p119), "Prioritising children's mobility, [...], realigns actions of all users of the street space".

Car dominance in cities has made streets more dangerous for children to be mobile and have curbed their spaces in which to live and move. Perceptions of safety also curb the use of spaces by pedestrians, and it is believed that fear of safety has increased with the decrease of the use of public spaces by pedestrians and cyclists. The use of private cars increases fear and lessens face-to-face interaction between people on a daily basis, reducing the feeling of community and ownership of a public space by all. In some communities around the world, streets have been reclaimed by the pedestrian especially for the children to play and interact in. Children's mobility in a city can be indicated by the travel patterns to and from school. In countries such as Denmark, 60% of children walk and cycle to school and this is not by chance but by strong policy agreements that are deliberately aimed to reduce traffic volumes and speeds close to schools (Cox 2010).

2.4.3 Transit-orientated Development

The combined environmental, social and economic costs of an automobile city has made it necessary to rethink the way cities are built and Newman and Kennedy (1995) argue that "New Urbanism" may be a means to do so. New Urbanism aims to reconnect transport with land use and its primary focus is to establish transit oriented development (TOD) in order to reduce the dependence on the car.

TOD can be defined as “... regional planning, city revitalization, suburban renewal, and walkable neighbourhoods combined. It is a cross-cutting approach to development that can do more than help diversify our transportation systems: it can offer a new range of development patterns for households, businesses, towns and cities” (Calthorpe, in Dittmar and Ohland 2004: xii). This puts transport planning back into an urban context and acknowledges the city as organic and a living entity.

Bertolini et al. (2005:1) support a shift to TOD and highlight the importance of accessibility:

The integration of transport and land use planning is widely recognized as essential to the achievement of sustainable development. The concept of accessibility—or what and how can be reached from a given point in space—can provide a useful conceptual framework for this integration. More specifically, shifts of focus in urban transport planning from catering for mobility to catering for accessibility helps see how more sustainable transport options can, under certain land use conditions, provide a competitive degree of accessibility that matches less sustainable options.

TOD should be seen as a new paradigm that can address social and environmental challenges and not as step-by-step improvements. It can be viewed as successful if it offers location-efficient development, meaning that appropriate population densities are living close to and in walking distance of accessible transit systems. TOD aims to offer a rich mix of choices for neighbourhoods by ensuring the choices of activities such as shopping, mobility and housing. Neighbourhoods are to be attractive and pedestrian friendly and encourage healthy environments for people with strong spatial connection and designed with the natural landscape (Calthorpe, in Dittmar and Ohland 2004).

It is questionable whether this would be viable for existing low-density areas found on the periphery of cities (Dittmar et al. 2004). Areas found on the periphery of urban development are the most challenging for TOD because their location makes it difficult for higher densities and mixed use. To address these peripheral areas Calthorpe (ibid) believes one strategy for land use and transit is essential. He argues that this could be done by reserving rights-of-way for transit, and as development increases around these rights-of-way it will be able to support the transit system. This is imperative when addressing the challenge of having efficient transport for learners in Cape Town that live on the periphery that travel to schools in urban centres. For learners that are driven to school, Gilbert and O’Brien (2010) firmly believe that car travel replacing transit systems needs to be reversed for youth to develop healthily and can be done by focusing specifically on land use and transport planning for school learners. They believe so because car travel has replaced transit systems and reduce youth’s opportunity for exercise which can sometimes lead to obesity, as well as making learners increasingly vulnerable to the effects of motorised traffic such as air pollution and the risk of being in a car related accident.

2.5 Urban Form and Learner Transport

There is a clear link between land use and transport planning, and its influence on the use of NMT by school learners. McMillan (2006) has found that there is growing literature on the influence of urban form on travel mode choice by adults, but its influence on transport choice for learners to school is neglected. She determined that there is a strong correlation between urban form and school travel choices. She explores its influence by investigating three urban form functions that could affect learner travel choice, namely streets with complete sidewalk systems, the number of windows along the street and mixed-use land (besides schools and residential uses). Complete sidewalk systems were found to have no influence, but house windows facing the street by providing “eyes on the street” and the presence of mixed use has a positive influence on the perception of safety and therefore increases NMT use.

It is three times more likely that learners will use non-motorised modes of transport if they are in a close proximity (+/- 1.5 km) to schools. It has been determined that urban form strongly influences non-motorised travel behaviour and has potential to influence programs such as Safe Routes to school which will be explored in the next section. Although altering the urban form such as designing for traffic calming cannot solely influence learners to increase their use of NMT if the perceived distance is too far, urban form alterations along with educating people about the benefits of using NMT may show a change (McMillan 2006).

McMillan (2006: 77) states that “Movements like New Urbanism and Smart Growth and programs like Safe Routes to School and the American Association of Retired Persons’ (AARP) Livable Communities guidelines suggest that communities should be built that are accessible and accommodating to multiple modes and users of transportation. The research findings support the idea that planning decisions should be sensitive to how a place is used and the population it is meant to serve, particularly the more vulnerable and dependent users of the system”.

2.6. Child-friendly TOD

The current notion of CFCs is in the forefront of the planning field relating to youth but there is very little literature covering “child-friendly public transport” (Centre for Sustainable Transport, 2004). It is often a misconception that TOD with its walkability and sociability in an urban space is ideal for young, childless couples but there are a few authors and cases that show principles for TOD are highly suitable for children. It is also often believed that families prefer living in car-dominated “leafy suburbs” but Cervero and Sullivan (2011) argue that a de-emphasis on cars and parking make it the perfect space for adolescence as it decreases noise levels, air pollution and traffic accidents. Green spaces can substitute parking offering children opportunities to play and socialise in appropriate environments.

Cervero and Sullivan (2011) note that marketing TODs has had a significant role in who lives close to the transit system. They studied a few cases in Europe and Australia specifically designed and marketed to families. According to Cervero and Sullivan (2010) child-friendly TOD should be designed with the three following guides: A. Investment should be placed into pedestrian infrastructure such as sidewalks, internal paths and crossways. B. Mixed use to promote vibrant street life, brings activities closer together.

Spaces can be encapsulated for youth and will have natural surveillance as is embraced by literature from Jane Jacobs (1961). High levels of transit services increase independent youth travel and provide them with access to activities across the city.

Child-friendly TODs form part of the international effort to make cities child-friendly. Cervero and Sullivan (2011) believe that this is however only seen in a few unique cases because of the mindset that a car is needed to raise a child. An architect named Harry Teague created what is known as the “Bill of Rights for Kids” that can be followed to ensure appropriate design for children in cities. The Bill reads that cities shall be:

- Safe
- At an appropriate scale – no walls over 4 feet in height
- Accessible – youth have the ability to get from one place to another
- Integrated – nature, the community, work, ages, sees, all part of the whole
- A manifestation of tradition – youth will be able to identify cultural anchors, be they building types and styles, monuments, landmarks, or natural areas.

(Cervero and Sullivan 2010: 6)

Incorporating families into TOD projects is beginning to show as best practice of TODs according to Wampler (2012). Successful and equitable TODs are those that have mixed incomes and households, including family households. According to Wampler (2012) most families mainly base their choice of residence on the opportunity to high quality education for their children. Well synergised TODs that have access to high quality education have ten core connections according to Wampler (ibid):

- School quality plays a major role in families’ housing choices.
- A wide mix of housing unit types is needed to attract diverse families.
- School funding is intricately related to the housing unit mix.
- Student participation in afterschool activities may depend on transit access.
- Children with multimodal transit alternatives can access the increasing landscape of school options.
- Teachers benefit from mixed-income TOD that incorporates workforce housing.
- TOD design principles support walkability and safety for children and families.
- The mix of uses and transit connectivity inherent in TOD can bring family-serving amenities and services closer to residential areas.
- Integrating schools with TOD planning provides opportunities for the shared use of public space.
- TOD offers opportunities for renovating and building new schools in developments, which draw families.

(Wampler 2012: 6)

It is evident there is strong connection between TODs and access to education. Bierbaum et al. (2010) believe that to have successful TOD for families will require broad networking amongst individuals and institutions, especially between families and schools.

2.7 Transport Solutions

2.7.1 Active commuting by learners

Active transport is believed to increase social interaction amongst children, increase their health, get them into a routine of daily exercise and reduce congestion with its associated air pollution. All research has indicated that the biggest factor influencing parents' decision to allow their children to actively commute to school is the distance between home and school (Yeung et al. 2008).

The rates of active commuting by children have decreased globally by a large percentage in last 30 years, resulting in the declining levels of physical activity and increased overweight youth. Davison et al. (2008) found interesting patterns concerning active commuting to schools. Boys are more likely to actively commute between school and home as parents are generally found to be more protective over girls. Children with a 'lower' economic status are more likely to walk or cycle to school but oddly enough none of their studies proved that there was a relationship between family car ownership once distance to schools became factors. Studies show that public schools have far more active commuters than private schools.

School learners are more likely to walk or cycle if routes to school are safe, direct and have sufficient public transport infrastructure such as sidewalks. Transport mode is also weather dependent and influenced by residential density and mixed land use. Parents are happier to allow their children to walk or cycle if they feel the neighbourhoods their children will be passing through are safe and there are a number of other children doing the same. A major finding by Davison et al. (ibid) is that parents' perception of transport environments for their children has a greater influence on child active commuting than any urban form variables.

2.7.2 International Active Commuting Programs

Behrens et al. (2007) reviewed scholar transport policies and strategies in other parts of the world that have potential to be implemented in Cape Town because they are relatively low cost, do not rely too heavily on public sector expertise and facilitation or funding. Behrens et al. (ibid) believe that there will be greater prospects for the success of school travel planning in municipalities with higher budgets and a high dependence on cars. In a few countries, school travel plans have been developed as a means to improve road safety, reduce traffic congestion and encourage learners to walk or cycle to school.

Two predominant initiatives that try to encourage active commuting to school are the Safe Routes to School (SRTS) Program and Walking Buses. SRTS was established to the United States of America (US) through the Safe, Accountable, Flexible, Efficient Transportation Equity Act in 2005 and \$612 million in federal transportation funds were made available to the state, local and regional agencies for the program from 2005 to 2009. The program aims to encourage school learners to travel to and from school by bicycle or walking, as the physical activity of children and obesity has become a growing concern for the US population. All programs have to invest at least 70% of their funding into hard infrastructure and the rest into soft infrastructure such as public awareness campaigns. According to Watson et al. (2008) the program will not only benefit the school learners but will improve the walkability of communities as a whole and could be beneficial to communities with limited funding for NMT investment.

Davison et al. (2008) highlight that the SRTS program was successful when increasing accessibility by linking sidewalks and increasing pedestrian-friendly traffic signals.



Fig 2.4 An example of a walking school bus (Sykes 2007)

The Walking School Bus (WSB) is a project whereby adults volunteer to walk a number of children to and from school. The projects' benefits include increasing youth's physical activity, removing the problem of locating parking spots and not having to drive to the learners' school. Although most parents believe it is a good idea, evaluation has shown that the WSB is rarely sustainable and does not usually last for more than a year because of a lack of parent volunteers, road safety and a lack of communication between parents and schools (Davison et al. 2008). According to Kearns et al. (2003) the WSB is also only believed to benefit wealthier neighbourhoods. Engright, the initial proposer of the WSB in Australia, now believes that it is ultimately flawed because it reduces child independence, which it initially aimed to address and argues for new approaches that are more child-centric rather than adult-centric.

2.8 Safety and Transport

Lang et al. (2011) have done research looking at the safety of the child as a pedestrian when travelling to and from school. It appears parents are more concerned for their children's safety than the negative effects of increased motor vehicle use. As mentioned, distance is found to be the largest influence on modal choice to school. Lang et al.'s (ibid) studies reveal that parents who drive their children to school are mostly concerned about their child's road safety and time constraints. Urban form gives preference to motor vehicles instead of the pedestrian and a motorist believes they have preference over the pedestrian (Lang et al. ibid). In Cape Town, road traffic accidents are a monumental problem and in 2004 it was recorded that 60% of road accident fatalities were pedestrians, many of whom were children. The most vulnerable children are learners from lower and middle income areas travelling far distances to school (Behrens et al. 2007).

Transport safety is interlaced with general issues of safety and security. Holtmann and Jansen van Vuuren (2007) believe that road safety is rooted in criminal activity in South Africa. Crime affects mobility and as one has to be mobile, it makes one vulnerable. The presence of alcohol and guns make the biggest contribution to criminality and increase fear and perceptions of safety, which then increases the use of guns in society. Transport safety is affected by those consuming alcohol while driving and those that keep guns on themselves. Road safety is further influenced by unroadworthy vehicles, unlicensed drivers and corruption. Unsafe transport systems affect the most vulnerable (such as children) and often constrain their mobility and participation in activities. In the South African city the majority of people travel far distances using public transport. So if the system does not provide protection it is up to individuals to protect themselves (Holtmann and Jansen van Vuuren 2007).

The way in which public transport is designed and managed will influence safety. In some cases the lack of transport in mostly low income areas often leads to exposure to crime. Different modes of transport offer different risks. For example, train stops can be dangerous when there are often few people around, buses can be overloaded and unroadworthy, and passengers can be exposed to what is known as taxi violence in South African cities (Holtmann and Jansen van Vuuren 2007). Environmental design can be used for crime prevention by reducing the cause and opportunity for crime. Crime patterns experienced in poorer areas, in suburbs and in the inner city, are all different and therefore environmental designs need to be made accordingly.

South Africa's history of apartheid planning has influenced the patterns of crime it experiences, so although environmental design principles to increase safety is universal, principles can be framed to suit South Africa's context (CSIR 2005). A few basic design principles that can increase safety in an urban environment include surveillance, territoriality and design on a human scale. Passive surveillance (Jane Jacobs' "eyes on the street") allows the public to casually observe public and private spaces during their usual activities. It could be designed this way by having buildings close together, and entrances shared as well as visible open spaces. Lighting should always be adequate along streets and route layouts should always encourage pedestrian movement, not obstruct it as can be seen in Fig 2.5. Public open spaces can be bordered by buildings to ensure surveillance (CSIR 2005).

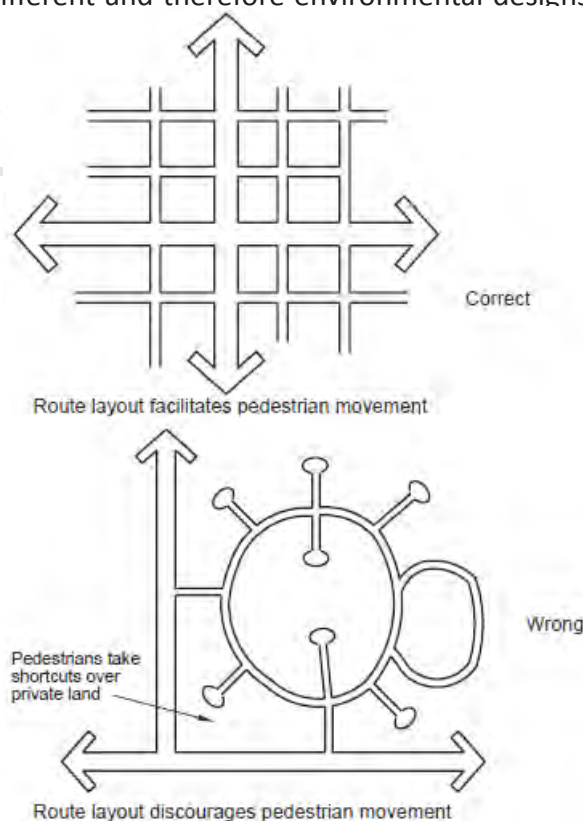


Fig 2.5 Route layouts should always facilitate pedestrian movement (CSIR 2005)

Territoriality gives community a sense of ownership of a space. Spaces should ensure pedestrians can coordinate themselves from a given location, which will increase their perception of safety. Open spaces that are left vacant attract criminal activity. It is also better to have a number of smaller open spaces along a route than only one open space along the route, as it increases visibility over a further distance (CSIR 2005). Designing on a human scale is safer and more child-friendly. All principles should be used together to have a greater effect on reducing crime and increase youth mobility (CSIR 2005).

Although the built environment alone cannot be relied on to offer security, these principles should be used when considering the safety of learners travelling between home and school. To improve the perception of road safety in order to encourage parents to allow their children to walk to school, besides built form, Lang et al. (ibid) suggests having environmental campaigns highlighting the negative effects of driving learners to school and the positive affects walking can have on children.

2.9 Key Challenges for Learner Transportation in South Africa and Criteria for Assessment

The literature clearly highlights the important need for appropriate learner transport internationally. It is clear that there is an array of challenges facing learner mobility in Cape Town. Having established its importance in South African cities, key challenges can be highlighted, and these challenges can be addressed as a means to begin improving learner travel in Cape Town.

2.9.1 Key challenges

A key challenge facing learner transportation in South African cities such as Cape Town is the transportation system as a whole. It is inefficient, unreliable, unsafe and its dualistic nature further polarises cities. With the increase in population migration to the city, urban sprawl and the rise of the automobile, the difficulty of the challenge continues to grow as the city grows. Secondly, learners do not have equal access to good quality education. The majority of students travelling from far distances using multiple modes of public transport are generally coming from the periphery of the city to better quality schools in urban centres. In contrast, the minority that live closer to good schools are driven to school, which exasperates the transport problem as it contributes to traffic congestion and pollution. Automobile cities are the norm internationally and a negative trend associated with this is the tendency for youth to have increasingly less independent mobility. From the literature, it is evident that youth and their surrounding urban environment are becoming less and less integrated and youth are sometimes excluded from exploring public spaces because adults view youth as being dependent and in need of protection. This is evident in the planning field, as planning mostly has an adult-centric approach and there is no floor for youth participation. Cape Town can be regarded as a child-unfriendly city, and with no specific learner travel plan it is going to prove challenging to have a city that is all inclusive of its youth and provide equal access to education.

2.9.2 Criteria for Assessment

The key challenges that act as barriers to learner mobility can be responded to with appropriate spatial planning. Strategies that combine a transit-orientated planning approach and a CFCs approach may be the means to ensure youth are gaining access to educational institutions across the South African city such as Cape Town, as it can increase their mobility and directly serves the requirements of youth themselves. A CFC is inevitably a sustainable one and shifting back to a city that is transit-orientated may be a means to make cities inclusive of all its citizens, especially its children. To attain a better performing city that is both child-centric and supports access to education through the use of TOD, the following criteria should be met on a fairly local scale appropriate for intervention:

a. Accessibility to a range of transport options

People should not be constrained to one particular transport mode. There should be a variety of transport options. Instead of having a city that is designed to work for the car, it should be designed for the transit of the pedestrian. Investment should be placed into different modes of public transport, especially NMT where applicable. A universal design approach should be followed for a transport system and ensure it is inclusive of everyone from children to those with disabilities to cyclists.

b. Metropolitan integration and connection

Accessibility provides an opportunity for integration. The metropolitan should be integrated and connected to different scales. The vision for development on a local level should fit into the vision of the city as whole, and vice versa. Strong integration should be supported by good social and physical connections. Transport systems have to be integrated at a range of scales for them to operate successfully and run efficiently.

c. An integrated approach to land use planning and transport; this incorporates densification and mixed use

Land use planning and transport planning should be well integrated on a city scale and local scale. The integrated approach should incorporate densification and mixed use. High density development should be located near transit systems. High densities should not merely be residential but it must offer other activities too (ie. commercial, recreation) that provide choice in a neighbourhood. High densities close to transit systems will promote the use of NMT to be used and make neighbourhoods pedestrian friendly, which is especially important for youth.

High densities concentrations in one area will also provide “eyes on the street” and high activity will make the urban environment a safer place for the youth to explore. Mixed use to promote vibrant street life brings activities closer together. Spaces can be encapsulated for youth and will have natural surveillance.

d. Walkable neighbourhoods and implementation at human scale

Neighbourhoods should be walkable and designs of spaces should be on a human scale for a pedestrian, especially youth, to navigate their way easily and feel comfortable through spaces. Any space, place or community offering activities should be able to be accessed by walking. Investment should be placed into pedestrian infrastructure to allow pedestrians move about as they please. To make pedestrian movement as safe as possible route layouts must allow for easy movement through spaces and not obstruct movement.

e. Safe with good surveillance

Safety is particularly important for youth. Safety needs to be considered in spaces and for the movement between spaces. All open spaces that are encountered should be under passive surveillance to ensure safety. Public open spaces can be overlooked by buildings to ensure surveillance. Open spaces should never be left vacant and it is better to have a lengthy stretch of small open spaces such as parks instead of only one large one in an area, as it will allow a higher surveillance passageway for mobile pedestrians.

f. Participation - considering learner needs in the process of planning

Learner needs must be considered in the process of planning. Planning is dependent on the requirements of youth and is approached through their lens. Youth participation is encouraged throughout the planning process and not only in the end product. Youth should be given a platform for contributing to any development that will influence their life. The relationship between youth and the urban environment should be promoted. Spaces that are encountered by youth should be welcoming and designed specifically by them for them, and support their development.

g. Institutional capacity and budget support

Institutions that will play a role in ensuring adequate transport for learners to school should be fully supportive of one another and understand their responsibilities clearly. There should be strong vertical integration between the national, metropolitan and local levels, as well as horizontal integration that encourages the relationships between stakeholders such as the government, schools, learners and local communities. Good institutional capacity should be supported by a budget that is used to ensure learner mobility specifically.

In the next chapter the criteria mentioned above will be used to evaluate international case studies that support access through TOD. Lessons will be able to be drawn from these cases to compare with and guide planning in Cape Town. The criteria will be used again in Chapter 4 and 5 as a tool for analysis.

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Chapter 3

***INTERNATIONAL
CASES***

The criteria for assessment established in the previous chapter that facilitate learner mobility and encourage the integration of land use and transport planning can be used to evaluate international cases. Child-friendly TOD is part of the larger initiative to have child-friendly cities (Cervevo and Sullivan 2010). Current research revolving around child-friendly cities is dominated by the inclusion of children in planning practices and making spaces youth-appropriate, but there are very few cases of child-friendly transport (Centre for Transport Studies, 2004). To inform the potential for child-friendly TOD in Cape Town, international cases will be drawn upon. Bogotá's city-wide BRT system and the GWL-Terrein TOD project in Amsterdam will be assessed.

Bogotá was chosen as a case study because similar to Cape Town, the majority of the poorest population living on the periphery of the city have to travel the furthest for employment and other opportunities (Bocarejo et al 2013). Its BRT system, the TransMilenio, was designed to address similar problems and lessons can therefore be drawn from its implementation. GWL-Terrein in Amsterdam, Netherlands, is a neighbourhood project that is based around a TOD system that specifically accommodates the needs of its youthful citizens. Although the development was built on a brownfield site, lessons can be drawn from the incorporation of planning and design principles used in the development.

3.1 Bogotá, Colombia

3.1.1 Background

Bogotá is well known for its TOD BRT system named the TransMilenio which was modelled on Curitiba's BRT system. It was initiated in 1998 under Peñalosa, the mayor at the time, who saw a BRT system to be cheaper and more efficient than subways (Berney 2011). Reshaping the urban form of Bogotá was not the aim of the TransMilenio but rather ensuring quick and affordable access for poorer communities (Cevero 2013). At the time there was also a desperate need for the city to move away from the informal and unsafe bus services it had (Montezuma 2005). The TransMilenio is considered a sustainable transport system. It is a mass transit system with corridors and feeder routes and since the system was introduced, demand for its service increased from 14 000 passengers per day in 2000 to 1.7 billion in 2011 (Hidalgo et al. 2011).



Fig 3.1 Bogotá TransMilenio (www.ecoefficiency.bligoo.com)

3.1.2 Design

It has main arteries that have lanes specifically for buses allowing them to move freely and quickly. Connected to these main arteries are feeder routes supplying the system. Arterial routes are tripartite (i.e. split into three parts), with one bus lane running through the centre and slow traffic lanes on either side of the middle lane as can be seen in Fig 3.1 above. Some of the slow lanes are specifically for NMT modes of transport and motorised vehicles are generally allowed only to use less direct routes to destinations. Arterial routes and feeder routes are separated into components making the entire system more efficient and allow peripheral areas to have easy access. The TransMilenio is unique for its interconnectivity between different modes of transport allowing ease of use by the passenger. Bus stations are 500m apart allowing equal and easy accessibility (Cox 2010).

Travel time and costs involved in operations have had the greatest impact in terms of saving costs for Bogotá. According to Hidalgo et al. (2011:134), “52% of the estimated benefits come from travel time savings for transit users, 37% from savings on the operation of traditional buses removed from service following the implementation of Trans-Milenio, and 8% come from air pollution and traffic crashes savings.” Employment has increased since the implementation of the system even though traditional buses are no longer in service. The system carries 45 000 passengers per direction per hour (Cervero 2013).

The transport system is well integrated with land uses. Higher density development has resulted due to the presence of the TransMilenio and areas on the periphery that have access to it have grown compared to those that do not have access. Fig 3.2 is a map of the main transit routes of the TransMilenio and it can be seen that they are positioned where the highest population densities across the city are found. The system is also well integrated with cycle and pedestrian infrastructure allowing ease of access, including those with disabilities (Bacorejo et al. 2013). There is a 300 km bicycle network linked to the TransMilenio, called the Cicloruta Transportation System. It was rolled out between 1998 and 2001 with the intention of reducing traffic congestion. Subsidiary aims were to benefit the natural environment, increase active transport and decrease travel times and cost (Parra et al. 2007).

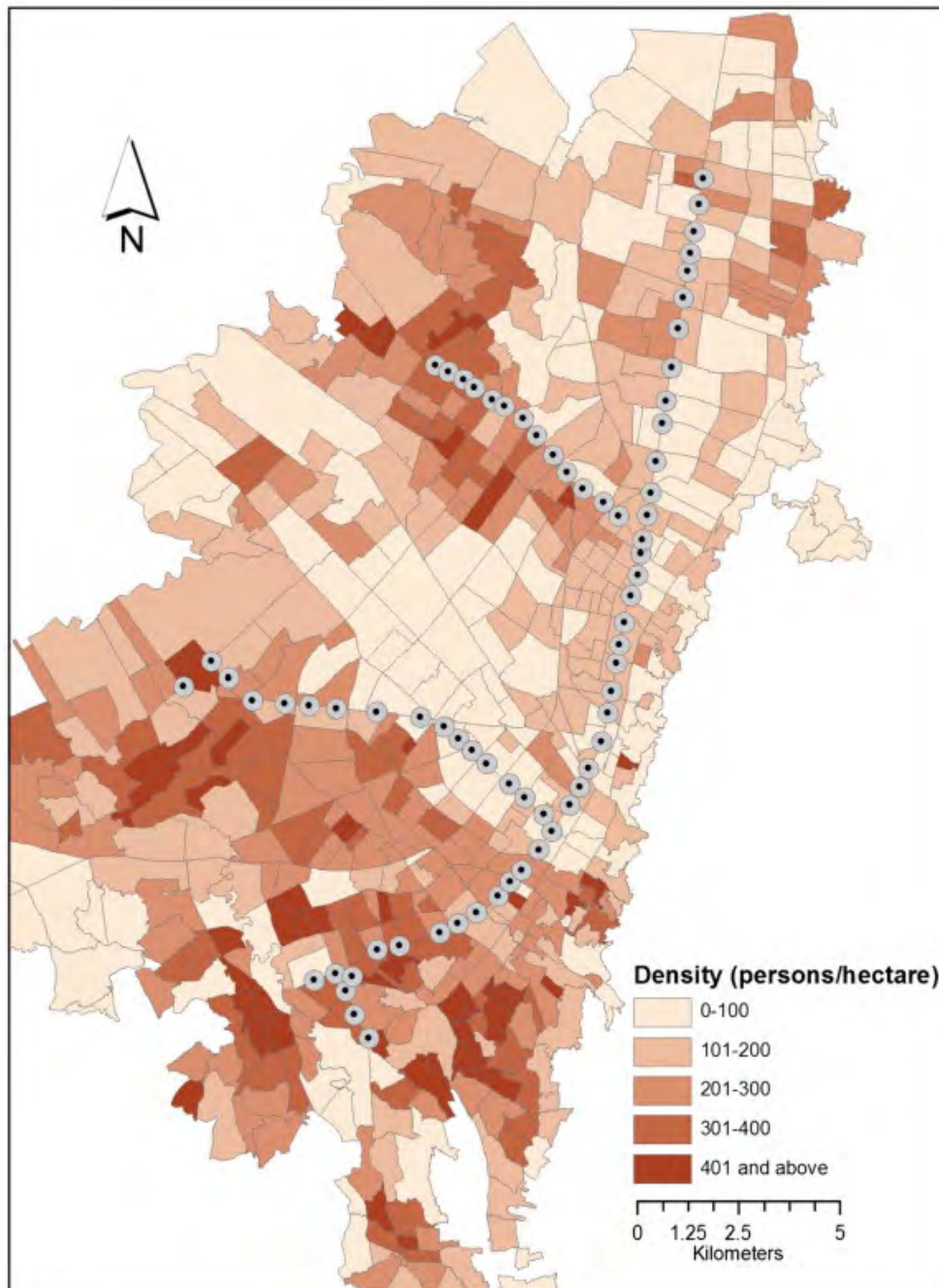


Fig 3.2 Map of Bogotá population densities in relation to the TransMilenio (Rodríguez et al. 2009)

3.1.3 Governance

Part of TransMilenio's success can be attributed to the combined vision of Peñalosa and Mockus, who was the mayor prior to Peñalosa. Mockus wanted to reconstruct citizenship. Peñalosa wanted to reconstruct the city. Montazuma (2005) believes that the administration of Mockus from 1995 to 1997 altered citizen mentalities and instilled a sense of culture across the city, increasing safety by a significant amount. It was so successful not because of a "zero tolerance" approach but because of investment in education and awareness. This therefore made it easier for Peñalosa to take measures such as restrictions on automobile use during his administrative years.

Peñalosa put forward that the mobility of the poor who cannot afford cars had to be addressed and a means to do so was with the use of public transport including walking, cycling and public transit. Peñalosa's District Development Plan (For the Bogotá We Want) for 1998 to 2000 prioritised de-marginalisation, social integration, mobility and city design on a human scale. Security and community unity were encouraged among citizens and institutional efficiency was a priority. The largest public investment projects during Peñalosa's administration included integrating the TransMilenio, constructing and maintaining roads, and improving and expanding municipal parks and libraries.

Actions by Peñalosa to improve mobility included improving public transport, restricting private use of motor cars, expanding cycle lanes and enhancing public spaces. In 2006 the Transport Master Plan put forward a strategy to have restrictions on car use and rather promoted NMT and transit use, thereby making the TransMilenio the city's transport backbone (Bassett and Marpillero-Colomina 2012). Fig 3.3 shows that the TransMilenio has made provision for NMT modes within its system.

TransMilenio is run by public-private partnerships. Although the city is supposed to be decentralised, most of the decisions made for the reconstruction were led by experts, those with lots of money and politicians. The government is bound to an agreement of open transparency with the public, therefore all bidding, hiring and contracting were publically transparent. Since the 1990s public participation has grown in the planning and development processes. A number of NGOs are involved in public space projects (Berney 2011).



Fig 3.3 Provision is made for bicycles within the TransMilenio system (Domingo 2010)

3.1.4 Public Investment

The TransMilenio was based on having access to public space. In most Latin American cities public space is extremely important for community interactions that are needed for democracy and is considered a normative element of Bogotá. A large shift from private to public development was initiated in 2000 when the Plan de Ordenamiento Territorial de Bogotá (Territorial Legislative Plan) was passed. The plan addressed the fact that more than 30% of the city's population are under 17 years old which emphasised the great urgency for available public spaces (Cervero 2013). During Peñalosa's administration, three libraries were placed outside of the city centre along transit routes to instil civic pride and provide greater educational resources. The libraries were used to catalyse social mixing and encourage people to travel from different parts of the city to the libraries' various locations. Currently, 400 000 people visit the libraries per month and it has improved living standards among low-income residents (Berney 2011). Not only hard infrastructural investment has been made in the city, but "soft" public investment too. In Bogotá there is programme called the Ciclovía, where certain roads are closed on Sundays and public holidays for recreational activities to occur in the roads (Parra et al. 2007).

3.1.5 Passenger Experience

The pedestrian experience was not explicitly considered in the TransMilenio development (Cervero 2013); however, access by the pedestrian has improved significantly due to the construction of walkways, sidewalks and plazas around the system's corridors. The investment in the built environment has increased safety and value in areas close to the transit system (Bacorejo et al. 2013). Public transport has become quicker, more reliable and cheaper. Tickets are purchased before boarding the bus on a platform which is in line with the bus itself, and therefore prevents unnecessary delays. Citizens are paying almost half the amount paid for transport before the TransMilenio existed (Bassett and Marpillero-Colomina 2012).

According to Bacorejo et al. (2013) the TransMilenio has the same capacity as a subway line with 40 000 passengers using the BRT per hour per direction. People living in high mixed land use areas that are well connected to the transit system are more likely to walk or cycle in Bogotá (Parra et al. 2007). "The achievement of the TransMilenio is that it has created a sense of common ownership and pride, a sense of belonging and identity." (Cox 2010: 85).

3.1.6 Shortfalls of the TransMilenio

All analyses of Bogotá show that the city has increased in population density instead of becoming a further sprawling city. It is also evident that population densities have increased in areas around the TransMilenio compared to areas that lack the system, especially in zones on the periphery that are served by feeder routes. There has, however, not been a great change in land use development as there have not been any legal requirements for development surrounding the BRT system (Bocarejo et al. 2013).

There are charges that the poor were not always the beneficiaries of the system as many were relocated to make way for the construction of the TransMilenio. Peñalosa believed that by moving illegal settlements found on the periphery of the city to developments close to the transit system, it would offer better access to economic activities and services.

However, it has been reported that those with low incomes living close to the transit system are paying high rents even though transport costs are not expensive. It is often found that developments near transit lines have the developers interests in mind and the extremely poor are still left marginalised on the city's outskirts (Bassett and Marpillero-Colomina 2012).

There are a number of challenges Bogotá faces to improve the delivery of public transport. Besides dissatisfaction of citizens with the maintenance of the system, the majority of the population still needs to be swayed to use mass transit and the use of cars needs to be discouraged. The multimodal functionality of the system is not adequate and improvements could be made by consolidating metropolitan and urbanised area transport. There is also no strong link between transport and land use planning. The pedestrian experience was not given enough consideration and pedestrian activity was suppressed by putting stations in the middle of active roadways, which further resulted in little commercial development near the stations (Cervero 2013). The development and implementation of the TransMilenio was mainly a top-down procedure, not allowing sufficient public participation and there are no clear strategies for communication and involvement of citizens.

3.2 GWL-Terrein, Amsterdam, Netherlands

GWL-Terrein is located in Amsterdam. It was developed on a 6 hectare brownfield site 3 km away from Amsterdam's city centre. It is car-free, has limited parking and good transit access. It is located at a tram line terminus and has high density housing based on "green" building principles. The initial intention of the project was to provide housing to families with children and have a low environmental impact development (Energy Cities, n.d.).

Although TODs are promoted to young childless couples, GWL Terrein was most appealing to families. Car-restricted and low-carbon development appeal to most parents. Families take a liking to the project because of its green open spaces, closeness to cultural activities and access to transport. Almost 50% of the developments' residents have children below the age of 18 years. It is great for toddlers and teenagers. Children can roam by themselves through the development (Cervero and Sullivan 2011).

3.2.1 Planning process

The site on which GWL-Terrein is developed was zoned for housing in 1989. Existing residents pushed for the site to be an eco-friendly, car-free neighbourhood, which was supported by politicians and the government. Basic principles for development were provided in 1993 in an Urban Planning Schedule of Requirements. The principles discouraged car-ownership and encouraged the use of public transport and safe pedestrian environments. Half of the housing provided on site was to be rented (social-housing) and the other half sold, some of which were to be grant-aided. Local residents in the area were given priority to buy houses on the site. An architect named Kees Christiaanse and landscape designer Adriaan Geuze developed a proposal in August 1993 in alignment with the development's goals, which was approved and a plan was developed in November 1993. No private investment was received for the development due to the stringent environmental requirements. Five housing associations invested in the project and construction began in phases from 1995 to 1998 (Foletta 2011).



Fig 3.4 Aerial view of GWL-Terrein (Foletta 2010)

3.2.2 Governance

Community involvement is strongly encouraged in the GWL-Terrein neighbourhood. The residents themselves were involved in the development of the project and pushed to have a car-free, resource reusable and a community-orientated development. The inner area of the development is car free and none of the 600 residential units on site have parking bays. There are a few parking bays on the outskirts of the development and only a few car permits are allowed. It was envisioned that the developments' car-free and clean environment would provide safe opportunities for children to play and neighbours to interact. It has taken environmental concerns strongly into consideration by designing buildings that are energy efficient, promote public transport, and therefore reduce residents' carbon footprint (Foletta 2011). There is one organisation for the development whose main purpose is to encourage community involvement. The organisation unifies the development and ensures there are many meetings to give the community a voice. It also organises events in the development to increase community bonding (Foletta 2011).

3.2.3 Design

Street Layout

The buildings are designed to form a density-perimeter around open green spaces and play areas for children (Fig 3.5). No motor vehicles are allowed on site and this is enforced by the development being raised off ground level. No streets cut through the development either. Cycle lanes lead out from the tram line terminus on the outskirts of the development and cycle lanes are protected from cars that move around the terminus either by a row of trees or the raised terminus platform.

Land Use Planning and Design

Buildings on site are designed in such a way as to enclose public spaces as well as ensure there are no gates and barriers that exclude other neighbourhoods from GWL-

Terrein. There is a community centre located on site, as well as a popular restaurant attracting citizens from all over the city, offices, gyms and shopping centres. Its mixed use nature offers many activities and opportunities. It is also well linked to neighbouring communities and therefore daily activities can be done all in walking and cycling distance (Foletta 2011).

Public Space

The interior of the development offers public spaces including play areas, shared gardens, open green spaces and mixed-use pathways. Green spaces are communal and therefore promote community interaction. An artificial canal runs through the development and offers opportunity for exploration and play (Fig 3.6). The mixed use pathways are believed to increase safety because cyclists and pedestrians are more likely to look out for one another. There are strong links between public spaces.



Fig 3.5. Play areas for children are encapsulated by buildings (Foletta 2010)



Fig 3.6 Artificial canal running through GWL-Terrein (Source: Energy Cities. N.d.)



Fig 3.7 Tram lines are separated from roads (Foletta 2011)

Public Transport

A tram line was extended right next to the development and there are two bus lines servicing the area, making GWL Terrein well-serviced in terms public transport. Tram lines are separated from roads as can be seen in Fig 3.7. A single ticket can be bought for any form of transport in Amsterdam, be it bus, tram or train, and youth have discounted ticket prices. The bicycle is used as the most common form of transport by residents (50%), and 30% walk.

3.3 Evaluation of Case Studies

Although the two cases differ in scale and Bogotá is part of a developing country and GWL-Terrein in a developed country, it will be useful to evaluate the two cases together to identify how their differences can have strengths and weaknesses. The cases will be evaluated in accordance with the criteria established in the previous chapter.

It is evident that Bogotá fairs relatively well despite its shortfalls. The TransMilenio offers accessibility to a range of transport options as it is designed for transit of the pedestrian. A lot of investment has been placed into public transport and considerable effort has been made to integrate motorised and non-motorised modes of public transport allowing it to offer high levels of transit services. The implementation of the TransMilenio has increased public transport reliability, safety and time efficiency. Equal pedestrian access is ensured by having bus stops 500m apart and provision is made for the disabled.

GWL-Terrein is on a much smaller scale but also ranks well in terms of accessibility to different transport options because it is purposefully located adjacent to a transit system allowing the residents of the development access to activities across the city. It also discourages the use of cars entirely, allowing for well used non-motorised transport. Management of having car-free neighbourhoods is easier on a local scale but on a city-wide scale such as in Bogotá, it would prove challenging. Access by children is a priority in the GWL-Terrein development and spaces are purposefully designed for easy navigation and safety. The pedestrian and cyclist both have easy access to the transit system and accessibility by all has allowed for integration of people with different ages and incomes, especially because of encouraged low cost housing in the development.

GWL-Terrein is well-integrated within the city of Amsterdam. This may have been easier because the development was purposefully placed on a brownfield site situated alongside a transit route already well-integrated with the rest of the city itself. Integration of Bogotá's metropolitan with the use of the TransMilenio could have been a harder task because it had to consider what already existed on local scales. However, the TransMilenio had the intent of implementing a BRT system to provide access to the marginalised on the periphery which has promoted social integration across the city. Peñalosa's idea of having public libraries in different areas along the transit system away from the city has made a contribution to social mixing too as people have to travel across the city to access the libraries.

High densities have surrounded the transit systems since the TransMilenio was implemented but it has been criticised for the fact that development close to the transit system is often owned by large property developers and not mostly by the low-income groups who are in greater need of transport access. Promoting mixed use along the transit line is not a priority in Bogotá but the large investment in public space along the route and attempt to integrate transport and land use have increased pedestrian access to a number of activities. Passive surveillance is lacking near the transit system; however, it has been proven that just the presence of the TransMilenio has increased safety across the city. The system was put in place to ensure those who do not have cars could have equal access to opportunities and therefore walkability is promoted. City design on the human scale is prioritised in the 1998-2000 District Development plans and therefore all, including children, can feel a part of and easily orientated within the city.

GWL-Terrein is walkable as walkways are well integrated into the development allowing pedestrians as well as cyclists to move freely through spaces as it is believed the mixed use of pathways ensures safety. The development has high density housing encapsulating public spaces such as play areas for children and other green public spaces allowing open space surveillance at all times. Mixed use is promoted on the site. There are a range of activities available including a restaurant, gym, residence and shopping facilities. Public spaces are designed on a human scale but the high density residences are not as they are very high, making the issue of safety questionable even though they do offer safety by providing eyes on the street.

In both cases, walkable neighbourhoods and implementation on the human scale were considered. On the more local scale of GWL-Terrein, safety was easier to address by design but on the larger city scale of Bogotá it was not addressed directly. Both cases used an integrated approach to land use and transport planning but it is evident that better integration of the two is easier on a local scale.

Bogotá lacks the inclusion of youth in its planning process and although many of the criteria have been met in some way, none of them were with the intention to ensure the better well-being of children. Children were not involved in the planning and development process of the TransMilenio. No specific focus is placed on access to education but it can be assumed that increasing accessibility across the city would tend to offer it. In the case of GWL-Terrein, although the project did not have youth participation during the process of planning, the initial intention of the project was to provide housing for couples with children. Spaces are designed specifically for youth to explore and use.

Institutional capacity and support have been strong for GWL-Terrein because of the large importance and input the local community has in the success of the development. It is a community-orientated development and open spaces are meant to encourage community interaction. The project is also very well supported by politicians and the government and therefore housing associations willing to support the development financially. Bogotá's TransMilenio was driven by politicians and therefore the project had budgetary support but it is unknown whether there was institutional support from local scales as well.

3.4 Lessons for Cape Town

As separate cases, Bogotá and GWL-Terrein may not be useful examples for guiding an increase in learner mobility in Cape Town but by combining the lessons learnt from each has great potential. Bogotá is not designed to address the needs of youth but provides good guidance for TOD on a city-wide scale. It has experienced similar socio-economic trends to Cape Town and, as a developing city, can provide useful information for TOD approaches for Cape Town. GWL-Terrein may not be completely relevant to Cape Town as it was developed on a brownfield site and it is homed in the bicycle-friendly developed city of Amsterdam, yet planning and design principles can be used to incorporate it into existing areas within Cape Town. This case can be used to improve the problem of having a car dominated society in Cape Town but does not offer stringent guidance for increasing accessibility from city peripheries with minimal investment. Lessons from the two cases include the following:

3.4.1 Institutional Capacity

Clear political leadership

The vision and desires of both Peñalosa and Mockus were known and clear, and could therefore provide clear leadership in Bogotá. Peñalosa built on and improved the principles Mockus followed while acting as mayor, thereby improving the city over time.

Local communities to drive the development

The GWL-Terrein project was successful because those living there want the project to be child and environmentally friendly. The community was also part of the planning process from the very beginning. The project has been sustainable because of a local organisation ensuring the development runs smoothly and there is community participation.

3.4.2 Invest in Social Dimensions

Investment into the social dimension of development was key for Bogotá. Investing in transit along with public space for citizens ensured that social and not just infrastructural needs were met. Promoting the significance of culture in public spaces instils pride and ownership amongst citizens. Ensuring that spaces were walkable and on a human scale gave citizens a sense of ownership for the transit system and related developments.

3.4.3 Plan for Everyone's Needs

Plan for the youth

Youth were considered throughout the planning and development of GWL-Terrein, and therefore their needs were always considered in design. Green public spaces allow for interaction and safety principles were followed to ensure surveillance at all times. All spaces are walkable allowing youth to have independence and access to the city as whole. Planning and designing with youth in mind has resulted in the project being a pleasant environment for all.

Address the needs of the marginalised

Bogotá was successful in addressing problems faced by those with minimal accessibility. By planning with the aim to address the marginalised needs, directed areas for development in the city. Cervero (2013) believes that integrating land use and transport must always be pro-poor if it is going to be successful. The TransMilenio was therefore specifically developed to serve the majority of the city's citizens.

3.4.4 Environmental Sustainability Focus

From the very beginning GWL-Terrein was aimed to be as environmentally friendly as possible and therefore investment was made accordingly. Green spaces are valuable in the community and are especially there to offer a space for children to play. Pathways are designed only for pedestrians and cyclists, and the pathways are integrated with the local transit system. Because there are other modes of transport available in the development, the car seems superfluous. Designing for no cars and preventing access of cars onto the project has proved there is no need for the car if there is adequate access to a transit system. Travel behaviour of residents has been altered because the development as a whole has a sustainability focus.

In sum, the most important lessons that can be taken from the two cases include having strong institutional support, planning for the inclusion of all citizens and with the natural environment in mind.

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Chapter 4

RESEARCH METHODS

To address the problem of the lack of learner transport planning in Cape Town and to answer the central research question of “What are the barriers to learner mobility and how can spatial planning respond?” a mixed methods approach was considered to be the most useful. A specific spatial precinct was focused on for the study and a survey method was used to conduct the research. Primary and secondary research were both used in the study and techniques used to carry out primary research included questionnaires and field observations. Tools for analysis were established in the literature review chapter and the study was subject to a few research limitations and had to take ethical considerations into account.

4.1 Mixed Method Approach

A mixed methods approach has been used for the study. It has been chosen as the most appropriate method for the study because Gaber and Gaber (1997) believe it gives a planner a more holistic view of the research problem being investigated and is especially useful when studying planning policies which was required for this study.

A strength of mixed methods is that it can be “mutually informative and provide the possibility for analyses in which both types of data contribute to and illuminate the analyse as a whole” (Gaber and Gaber 1997: 98, also seen in Laurie and Sullivan 1991: 117, Dandekar 1988, 1986, de Neufville 1987, Peattie 1967: 1990). Jick (1979) supports the use of mixed methods and believes multiple viewpoints will allow for greater accuracy and will provide insight on a phenomenon by collecting different types of data. Confidence of generalisation can be drawn upon by extracting quantitative and qualitative data with the use of the survey method.

A limitation of mixed methods research is that data collected can be divergent between the quantitative and qualitative data, making it difficult to interpret the data (Gaber and Gaber 1997). On the other hand it highlights that there is a complexity of understanding. Another limitation is that the different methods would ask questions differently and therefore it is questioned whether the different methods can analyse the same issue (Gaber and Gaber, 1997, also seen in Mark and Shotland, 1987, Guba and Lincoln 1985). When using mixed methods it is common that one method may be more appropriate (Jick, 1979) but in terms of this study, qualitative and quantitative research are of equal importance and can both be used together to provide useful information.

4.2 Scales of Analysis

Research was conducted on various interlinking scales; from the national scale which eventually narrowed down to a district scale by focusing on a specific precinct. South Africa and Cape Town were first explored on the broader scale by doing secondary research to provide a policy framework for the Claremont precinct in the Southern District of Cape Town. The policy review for the study was carried out by first exploring legislation and policies on the national level in South Africa and then similarly on the provincial scale of the Western Cape. On the Cape Town metropolitan scale, the Spatial Development Framework and Integrated Development Plan were analysed to identify constraints, opportunities and trends influencing learner mobility. The local scale was then analysed through the Southern District Plan and particular focus was set on Claremont, a node within the Southern District. Primary data was gathered within the Claremont precinct as a reflection of how broader and local legislation and policies inform what is occurring on the ground.

4.3 The Claremont Precinct

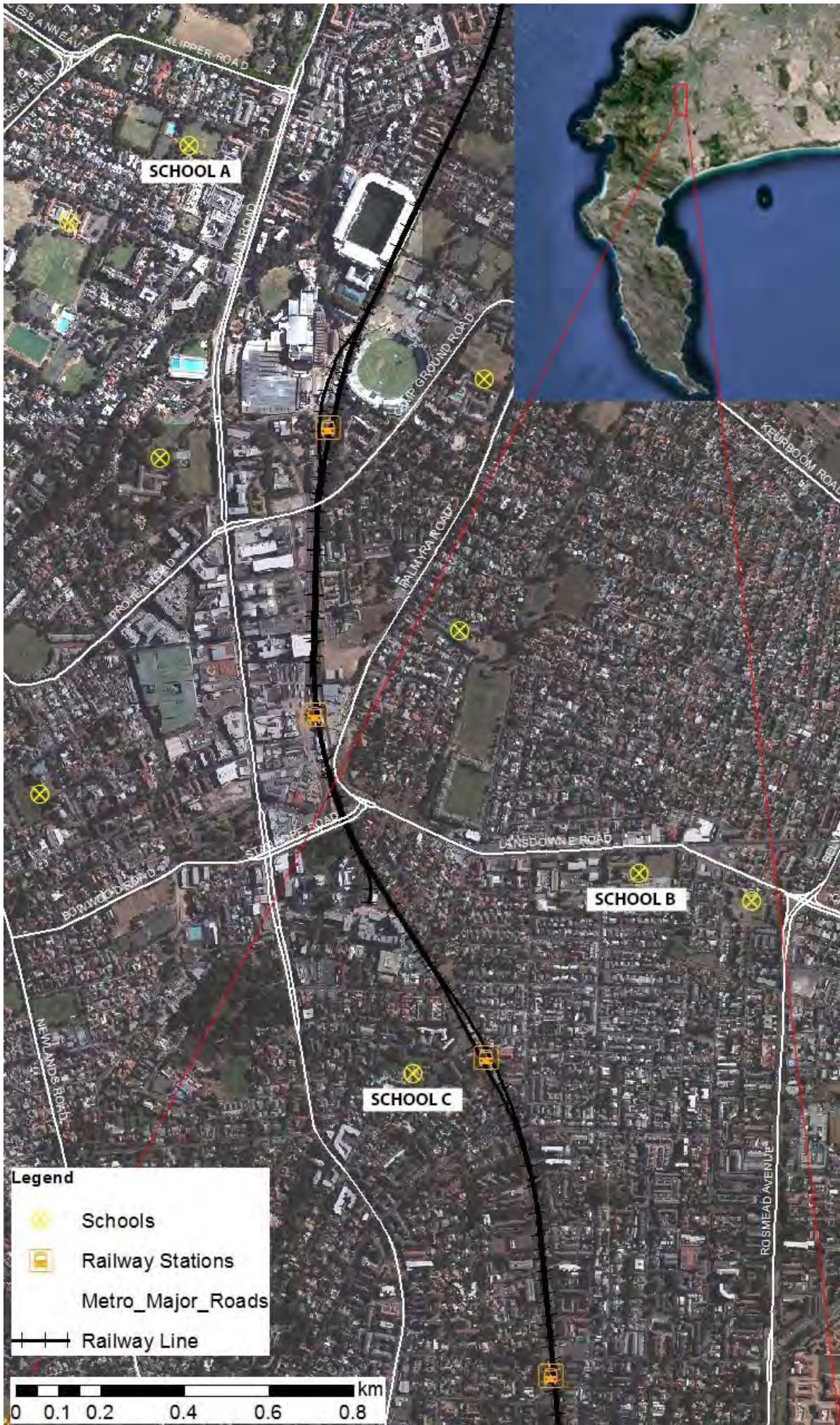
A specific spatial precinct was focused on for the study. The reason for choosing a particular precinct is to focus on a particular contemporary phenomenon occurring within the area which is suited to benefit from direct observation and collection of information in its natural environment.

4.3.1 Strengths and limitations of using a specific precinct

The strength of the focusing on a particular precinct is its ability to reveal how different factors contribute to produce the unique character of the entity being researched. Secondly, it can provide an in depth understanding of the entity and can highlight its uniqueness (Thomas 2003). However, this does have its limitations. Firstly, it is difficult to generalise by only focusing on one particular location. To address this limitation, documented research for the broader context of Cape Town was drawn upon in order to identify likenesses and differences between the trends found on the city scale and trends found on the local Claremont scale, which then informed confidence to be placed in conclusions drawn on the precinct level. It should also be noted that the purpose of the research is, however, not to generalise but rather to highlight what makes the particular entity unique. A further limitation of focusing on a particular precinct is a tendency toward being biased in order to verify preconceived ideas of the topic at hand. This has been overcome by first consciously identifying when biased conclusions were drawn, undertaking research with an open mind, not having any expected outcomes and by not swaying information found to suit expectations. To overcome all limitations quantitative research was carried out which according to Jick (1979) contributes in greater confidence of generalisations made with qualitative research.

4.3.2 Claremont

The spatial precinct used for this research was Claremont. It is located in the southern suburbs and is intersected by the Main Road and a railway line running from Cape Town to Simon's Town as can be seen in Map 4.1. The area could be considered a location of high activity in Cape Town and is a growing residential and commercial suburb. It is a well serviced area and has extensive transport infrastructure. Claremont was chosen because firstly it has a larger number of schools with high educational standards when compared to the rest of Cape Town, and the schools are located close together as can be seen in Map 4.1 on the following page.



Map 4.1: The location of the Claremont precinct in relation to the rest of Cape Town

Secondly, there are a range of schools in terms of them catering to mixed-income brackets and it can be assumed that learners are travelling from close as well as extremely far distances (Behrens 2004). The area is well integrated into the city's transit system and is prone to traffic during school peak hours because of the high number of private vehicles used to transport learners to school in the area. It was therefore an ideal location to research learner transport and mobility in Cape Town because it provided insight into different modes of learner travel within the area and across the city.

4.4 Data Collection

Research techniques used to collect data included questionnaires and field observations. Questionnaires were used as the research technique for gathering both quantitative and qualitative data and a site analysis of Claremont was also undertaken with the use of mapping. The Southern District Plan in which the precinct is located was also analysed and informed the findings of the questionnaire, field observations and site analysis.

4.4.1 Questionnaires

Quantitative research was used to give factual support to data collected within the spatial precinct. Primary and secondary research was used to provide quantitative data. A survey method was used to undertake the primary research. Survey methods "involve gathering information about the current status of some target variable within a particular collective, then reporting a summary of findings" (Thomas 2003: 41). Primary and secondary research are then combined, allowing comprehensive findings to be made. This is suggested by Thomas (ibid) as it provides far more thorough information than by only drawing from one study. Findings were evaluated and used to show trends.

The strengths of the survey lie in its ability to reveal the current status of trends in a particular area, which is extremely useful because the research undertaken aimed to address the barriers to learner mobility in Cape Town. Surveys provide extremely accurate data and generalisations of quantities did not need to be made (Thomas ibid). Surveys, however, lack qualitative data and are limited by the fact that they cannot provide reasoning to support quantitative data gathered. This however was not a limitation because the research was carried out using both qualitative and quantitative methods.

Approximately 200 questionnaires were distributed to learners from all three schools. Questionnaires were chosen because it allowed for a large amount of data to be collected in a short space of time. It was therefore very useful because data was collected from a relatively large number of learners across the three schools. Quantitative data collected from the questionnaires included information such as the percentage of learners using particular modes of transport, travelling distances and time of travel. Qualitative themes covered in questionnaire included transportation modes used by learners, modal choice and the experience of travel by learners. The questionnaire used can be seen in Appendix A.

In the three schools, questionnaires were distributed to two classes; one Grade 10 class and one Grade 11 class. These grades were chosen because it was assumed that at a large percentage of learners at the ages between 16 and 17 years travel independently. The only reason for not including Grade 12 learners in the study was because they are currently focusing on their final school examinations.

4.4.2 Field Observations

Observations were made of the different modes of transport learners take to and from school. A passive outsider approach was used to see how learners arrive at school, learner travel patterns in Claremont and spaces and places learners use besides their schools in the area. Photographs were taken to supplement the observations.

4.4.3 Site Analysis

Claremont was analysed with the use of mapping. Mapping was used to identify land uses in the area and transport infrastructure available to school learners. The site analysis allowed opportunities and constraints to be identified in the area.

4.5 Tools for Analysis

The analysis for Claremont was undertaken by first analysing plans and policies for the area and identifying challenges and future proposals that would influence the research. This was used along with the primary data collected and the mapping analysis of Claremont to provide overall findings for learner mobility in Claremont. In Chapter 2 a literature review was undertaken to explore literature that is related to learner transportation. From the literature, assessment criteria were established that were used to assess international cases and the findings of the analysis. The primary data that was collected for the analysis was used to analyse and critique the Southern District Plan, which is the district in which Claremont lies. The critique then allowed recommendations to be made accordingly.

4.6 Limitations of Research

The research was limited by the number of schools from which data was collected due to time constraints. Although only 139 questionnaires were returned in total, the limited sample nevertheless yielded pertinent observations that represented larger patterns. Strengths of field observations included its ability to provide information from unexpected and unplanned events, and it does not require any special recording equipment. For this particular research photography was used to enhance the information collected from observations. This, however, presents a limitation because photographing while observing can be distracting.

Research was also limited by the lack of previously undertaken research on learner transport in Cape Town and Claremont. Documented research, along with the research undertaken for this study, would add to the understanding and learner transport in Cape Town, although all factors that could influence the study may not have been considered.

4.7 Ethical considerations

The major ethical concern for the research was the fact that research had to be carried out in schools and data had to be gathered from school learners who were under the age of 18 years. This was addressed by firstly receiving permission from The Western Cape Education Department to conduct research in the three schools (Appendix B). Secondly, letters of consent to parents accompanied the questionnaires learners were required to complete. General ethical considerations taken included not harming anyone while the research was underway, giving participants the choice to partake in the research or not, confidentially if participants did wish not to be named and the aim of research was always communicated to all participants before any research was undertaken.

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Chapter 5

POLICY REVIEW

In the last decade, the integration of land use and transport planning has been promoted in South Africa as a means to overcome the barriers caused by planning and the spatial layout of the Apartheid city. To get an understanding of how land use and transport planning will influence learner mobility on the local scale of Claremont, national, provincial and metropolitan policy and legislation has been examined in this chapter. The reason for this is to understand how policy and legislation related to transport and land use allow for greater integration between the two. This will be done by first exploring legislation and policies on the national level in South Africa. Thus, it is worth reviewing the Moving South Africa Action Agenda: A 20-Year Strategic Framework for Transport in South Africa and the National Land Transport Act No.5 of 2009. Similarly for the Western Cape, the Provincial Land Transport Framework will be reviewed along with the Standard Operating Procedures Manual for Learner Transport Schemes, this is related specifically to learner transport in the Western Cape, in addition the Non-motorised Transport in the Western Cape Strategy will be reviewed. On the Cape Town metropolitan scale, The Integrated Development Plan and the Spatial Development Framework will be used to identify constraints, opportunities and trends that will influence the interface between land use and transport planning, and inevitably influence learner mobility. The second part of this policy review will be comparing what is being proposed and what the reality of the interface is in Cape Town. As a conclusion to this chapter the influence and challenges around the integration of land use and transport planning have on learner mobility in Cape Town, will be investigated.

5.1 Broad Policy Framework

Broader policy frameworks for land use and transport planning attempt to address the challenges provided by the Apartheid city. On the national scale, the most significant policy and legislation pertaining to the interface is the Moving South Africa Action Agenda and the National Land Transport Act No.5 of 2009. On the provincial scale, Western Cape's Provincial Land Transport Framework, Standard Operating Procedures Manual for Learner Transport Schemes and the draft Non-motorised Transport in the Western Cape Strategy, all have the largest impact on the interface.

5.1.1 National Policy and Legislation:

Moving South Africa Action Agenda: A 20-Year Strategic Framework for Transport in South Africa (1998)

The Department of Transport developed a project called Moving South Africa (MSA) in 1998 as a long-term strategy for transport in the country. MSA marked a discourse change from supply to demand, commuter-based to customer-based, and from private transport to public transport (Kane 2010). There are certain strategies put forward in the project that are likely to influence the integration between transport and land use on different scales.

Firstly, line-haul mass public transport will be placed within a small number of public transport corridors as a means to attract high-density and mixed land. This is an indicator of the increased integration between land use and transport planning. It is expected that economic opportunities will be placed within such corridors. It is also assumed that the market will determine the quality of public transport and social services in each corridor (CSIR 2005b).

Secondly, guidelines in the MSA determine which type of public transport infrastructure is most suited to different corridor types. These are only broad guidelines and decisions will be made on a smaller scale when addressing specific corridors. Guidelines influencing the interface include the following:

- There should be more than 40 000 passengers per day per direction along a corridor that will support a rail or dedicated public transport road. Nodes along these corridors such as stations and interchanges will be supported by feeder services such as buses and minibus taxis.
- 10 000 passengers per day per direction should use road infrastructure with a number of dedicated public transport lanes. Buses will most likely be the main transport provider with buses and minibus taxis as supporting services at transport interchanges.
- Where there are less than 10 000 passengers per day per direction, road-based schemes mostly serviced by minibus taxis and small vehicles, will likely occur along feeder corridors.

Settlement development near corridors needs to appropriately match corridor types and consider their location as it will be important to identify whether the settlement is going to be serviced by a main corridor or a feeder corridor. The position of modal interchanges is also important, especially for determining accessibility. MSA highlights that the high central-city densities are neither appropriate for South African cities, nor compact city approaches, given the decentralisation of workplace locations. The MSA therefore suggests a “corridor city” approach for South Africa.

This approach is deemed the most appropriate because of decentralised townships on the periphery, low density inner ring suburbs, declining central business district (CBD) vitality and the growth of satellite nodes in South African cities. It also recognises the vacant land found between townships and suburbs and notes they can be developed to enhance corridor flows. The MSA identifies that there are already existing corridors and aims to find strategies that will decentralize activity towards public transport corridors (CSIR 2005b).

National Land Transport Act No.5 of 2009

Objectives of the National Land Transport Act (NLTA) that are relevant to the relationship between land use and transport planning fall under section 31 of the Act. These state that land transport planning must be integrated with land development and land use planning processes must be integrated with the Integrated Transport Plans (ITPs) required for this Act these processes form part of Integrated Developments Plans (IDPs) used by municipalities. In general, the NLTA aims to increase the use of public transport that is to the satisfaction of passengers, is safe, reliable, readily accessible and has integrated transport modes.

The Act designates responsibilities across the three spheres of government, from national to municipal. The municipal level government is to have the greatest influence on integration between land use and transport planning and is responsible for implementation of densification, development corridors and promoting communication between the land use and transport planning role players. It is also the municipal government's role to encourage and promote public participation in planning, regulation and development of public transport. Moreover, it must ensure that passengers of special needs are considered as much as possible.

Section 71 (1) of the Act specifically addresses learner transport. It indicates that if a public transport service is dedicated to learners, the Minister can recommend regulations for services and could include requirements such as supervision, insurance, driver expectations and documents to be kept on the transport vehicle. The Act in its entirety does not specifically address combining land use and transport planning. Instead, its focus is on promoting public transport and delegating responsibility.

Spatial Planning and Land Use Management Act (SPLUMA) No. 16 of 2013

The central focus of the SPLUMA is to have systems of land use management and spatial planning that promote social and economic inclusion. It highlights that there is a need to increase access to land, with particular focus on those that were previously excluded and currently living in informal settlements and disadvantaged areas. Land development should occur in areas that limit urban sprawl and should optimise existing infrastructure. The tool that is to be used to ensure sustainable development of land is a Spatial Development Framework (SDF).

The Act says that a national SDF must take other relevant national policies and legislation into account. Provincial SDFs must incorporate all relevant plans, policies and development strategies of provincial departments and municipalities, as well as identify land for development. The municipal SDF must be prepared in alignment with the municipal Integrated Development Plan (IDP) and should show development corridors, activity spines and economic nodes for public and private investment to be prioritised. The SDF must also identify, quantify and provide locations for engineered infrastructure and service provisions for a span of five years. Ultimately, SPLUMA is focused on integrating land use management and spatial planning. However, it lacks a focus on integrating land use and public transport.

5.1.2 Provincial Policy:

Western Cape's Provincial Land Transport Framework (PTLF) (2011/12 – 2015/16)

The PTLF promotes an Integrated Rapid Public Transport Network (IRPTN). The network is to use rail as the backbone of the public transport system, with supporting bus and minibus services. The integrated transport network is to encourage high density development that is mixed use and pedestrian-friendly along main development corridors. The corridors will be associated with non-motorised forms of transport and should be universally designed to allow access by all citizens. The integrated transport system attempts to promote public over private transport to encourage integration of citizens.

The PTLF aims to integrate land use and transport, moreover will attempt to ensure that the transport system supports appropriate land use densities. It states that all individual municipalities must reflect this policy direction to ensure sprawl is reduced, less car-dependency, higher densities and mixed use. One of its key strategies is to integrate transport planning, land use and economic development.

Standard Operating Procedures Manual For Learner Transport Schemes (LTS) (2012)

The LTS is the only document that addresses learner transport on the provincial level. The LTS is a document developed by the Western Cape Education Department, who is responsible for learner transport in the province. The manual acts as a guide for learner transport in the Western Cape and is legally framed by The Constitution, National Education Policy Act and the South African Schools Act. The Constitution of the Republic of South Africa (Act 108 of 1996) contains the Bill of Rights. This states that everyone has a right to a basic education, which the state, through reasonable measures, must make progressively available and accessible. The National Education Policy Act (Act 27 of 1996) is directed to the advancement and protection of the fundamental right of a person to a basic education and equal access to education institutions. The South African Schools Act (Act 84 of 1996) provides in Section 3 (3) that there should be a place in a school for every child in the province, Section 5 provides that all learners have a right of access to quality education without any discrimination.

It should be noted that the legal framework that supports the document does not take transport itself into consideration. Some objectives of the LTS include ensuring that transport supports access to schools in a safe and secure manner, providing for the design of a route network that ensures safe accessibility by learners, ensuring formalisation of learner transport and promoting strong co-ordination between the various stakeholders associated with learner transport services.

This learner transport scheme developed by the Western Cape Education Department has set criteria for those that are applicable to the learner transport services it offers. Learners who qualify have to live in outlying areas immediately adjacent to Cape Town metropolitan or other towns. Moreover, the place of residence of a learner must be further than 5km walking distance from the school. The scheme neglects all other learners that are faced with the same challenges just less than 5km from a school or have difficulty in accessing transport; be it due to cost or distance constraints.

Draft Non-motorised Transport in the Western Cape Strategy July 2010

The Department of Transport and Public Works developed a NMT strategy in 2010. It has NMT guiding principles that specifically address the needs of youth. It states that youth need to have a high level of separation from motorised traffic, or that there need to be measures in place such as motor vehicle speed reduction to ensure their safety. It is mentioned that this is particularly important for journeys to and from school. Urban environments need to be appropriately designed to allow for passage of youth. In addition, they must consider that youth use modes of transport such as skateboarding and inline skates. Provision must be made for the full length of a journey and can be combined with other modes of public transport.

The broader policy framework leans towards integrating land use and public transport. A conclusion that can be drawn on the national level is that the National Land Transport Act No.5 of 2009 and Spatial Planning and Land Use Management Act No. 16 of 2013 are not specifically focused on integrating land use and transport planning. The NTLA mainly focuses on improving public transport and SPLUMA the integration between land use management and spatial planning. MSA, on the other hand, strongly emphasises the importance of integrating the two. Moreover, it supports transit-orientated development and has specific strategies and guidelines to do so. On the provincial scale, the PTLF strategies also fully support transit-orientated development, nevertheless it is evident that there is lack of policy to support the integration of land use and transport policy with learner transport. The only document that gives due consideration to the transport of learners is the NMT Strategy for the Western Cape. Unfortunately, even though mentioned, it is not well-integrated with other transport policies on the provincial level.

5.2 City Of Cape Town

Cape Town is similar to most South African cities and is characterised by a dualistic transport system where the more affluent residents of suburbs use private vehicles as their primary mode of transport; and poorer citizens on the periphery use either public transport or resort to walking. Cape Town can be characterised as being an unequally accessible, sprawling and spatially fragmented city housing a car-dependent society.

Purposefully planned transport networks were used to physically separate people of different races and access to opportunities during apartheid. As this occurred, the people that were privileged began to imitate western modernity trends of suburbanisation and motor car usage as the primary means of transportation, thus influencing the development of freeway systems in 1960s and 1970s (Wilkinson 2000). The reliance of the motor car has increased the city's pollution levels and contributes to the city's expanding carbon footprint. In addition, the highways further exclude those that do not have private transport or are dependent on a weak public transport network.

Cape Town has low-density and car-orientated development in higher income areas contrasting with high-density areas that often have very poor access to transport. In 2011 the population of Cape Town was measured at 3,740,026 people with an annual growth rate of approximately 2.57% (Stats SA; 2011 census). Cape Town's mono-centric and diversified economy has contributed to the city being spatially polarized and dispersed. The population with higher incomes are situated close to job opportunities are in walking distance thereof, but those with low incomes generally live far away from economic opportunities found in the city centre and at certain hubs. This results in them having to travel far distances for employment (Turok 2001). Given that rail and road networks are designed to feed the CBD and form a radial-centric pattern, the majority of people have to use multiple public transport modes as they attempt to move between the north and the south of the city, and 'across' fixed movement systems. With decreasing reliability on the rail network because of lack of capacity for the growing population, there has been a shift to increasing road-based transport. This has led to rising levels of congestion (Turok 2001).

5.2.1 Metropolitan Policy and Legislation:

Guided by the broader policy framework, Cape Town policy documents address the aforementioned trends that shape the city. The Municipal Systems Act (Act 31 of 2000) requires an SDF to form part of an IDP. The NLTA (Act No. 5 of 2009) drives the preparation of the IDP, delegates institutional responsibility and provides input from a transport perspective. The IDP is published every five years and must incorporate the Cape Town SDF which is published every twenty years to direct spatial development on the city level.

Integrated Development Plan

Cape Town's IDP 2012 -2017 is the city's key strategic planning instrument and is guided by five key goals of making Cape Town the opportunity city, the safe city, the caring city, the inclusive city and the well-run city. It aims to have infrastructure-led growth across the city.

A trend noted in the IDP is that low-densification is threatening Cape Town's sustainability. It is therefore necessary to move towards a denser city by supporting the efficient running of services such as public transport. Densification is encouraged along transport and development corridors and economic nodes. One of the objectives of the IDP is to ensure mobility and access through the implementation of an effective public transport system. Transport policies and investments must support the city's growth. Integrated, intermodal transport needs to be supported across the city and the means believed to do so was the introduction of recently founded Transport for Cape Town project. This will attempt to integrate all actors involved in the transport system and have one large network with overall visions and desires.

A key strategic focus of the IDP is to improve public transport with the use of bus rapid transport and to therefore support the mass roll out of the MyCiTi Integrated Rapid Transport (IRT) system in the city. Public transport in Cape Town needs to be of good quality, equally accessible to all citizens including children, safe, and economically and environmentally sustainable. The IDP promotes NMT by encouraging walking and cycling; and aims to improve public spaces.

There is a brief section the IDP that points the possibility of crime reduction and prevention through environmental urban design. That strategy incorporates universal environmental design principles and suggests that building regulations should follow the principles. One of the projects mentioned in the IDP is that the City of Cape Town's plans to create "recreation hubs" that offer spaces and places for community development across the city.

Cape Town Spatial Development Framework (CTSDf)

The Cape Town Spatial Development Framework Technical Report (2012) was published by the City of Cape Town. The purpose of the SDF is to guide urban growth and balance competing land uses by providing a long-term (+- 20 year) development path that will shape the spatial structure and form of Cape Town. It helps spatialise the five year IDP. It aims to address the key drivers of urban growth in Cape Town. These include population and residential growth, natural environment and resource capacity and the economy.

In general the CTSDF recognises that land and infrastructure needs to support economic investment and increase opportunities for economic activities. In order to achieve this, a strong focus must be on improving the public transport system. The CTSDF aims to adopt an integrated approach to land use planning, economic development and transport operations. It has a vision of increasing densification, public transport thresholds, having a greater mix of land uses and social facilities that are accessible to everyone. A principle guiding the CTSDF is the creation of safe, high-quality living environments that offer a mix of land uses. In the CTSDF it is stated that “a city that works for every resident, especially the poor, children, the disabled and the elderly, is more likely to be an equitable city” (p9).

The City of Cape Town plans to have a multidirectional accessibility grid for the city. This would provide convenient and affordable access to all citizens. The movement system must be public transport-orientated and must allow citizens across the city to have generally the same equal access to opportunities and facilities. The CTSDF states that “[t]he spatial organisation of Cape Town must shift away from the existing radial movement pattern towards a hierarchical, multidirectional, legible, open-ended ‘accessibility grid’ system which facilitates convenient access and multidirectional movement on a citywide basis between districts and between suburbs” (p28). An accessibility grid is guided by principles that encourage stop-start movement supported by public transport as it is likely to offer a higher degree of access to economic opportunities. Intersection points of routes along the grid will be the most accessible. Also, they are likely to be where transport modal interchanges are found. The CTSDF identifies two route types as being key components of the grid; namely, activity routes and development routes. Activity routes are characterised by continuous development comprising of mixed land use, social facilities and medium to high density residential development. Development routes would contain activity routes and link to parallel connecting side routes. Any commercial or business development would be nodal along the route.



Fig 5.1 Imagined activity route (CTSDF 2012)



Fig 5.2 Imagined development route (CTSDF 2012)

The City aims to have land use intensification along the accessibility grid. This means having mixed uses along the grid such as residential, commercial and industrial development; especially on the primary accessibility grid. Areas of land use intensification could be development corridors, strip development urban nodes or civic precincts. Development corridors have intense bands of high density mixed use developments that are located by areas of high accessibility along transit system. These should be supported by road and rail-based transport. Strip development occurs on a much smaller scale but is also characterised by mixed land uses along development and activity routes. Urban nodes are concentrations of high levels of mixed activity. Civic precincts should be found in areas of the highest accessibility. They are characterised by public investment and offer a range of social facilities.

As part of the CTSDFs strategy to “plan for employment and improve access to economic opportunities”, it envisages NMT planning and transit-orientated development to be prioritised as part of achieving a low carbon city. It is predicted that the demand for land suited to mixed-use development will increase. Economic activities should be in accessible locations and there has to be a movement system that is convenient and accessible for all. Moreover, this system should be public transport-orientated and equally accessible so that all people can reach a similar range of opportunities across the city. It can thus be noted that there is strong emphasis on improving public transport links for access to economic opportunities.

One of the three key strategies of the CTSDF aims to address spatial economic imbalances by improving public transport links between the south-east of the city and existing main economic centres. It also aims to establish an integrated city-wide public transport system that supports the accessibility grid by having a hierarchy of integrated public transport services related to the accessibility grid, expand passenger rail, include walking and cycling as essential components of land use planning and have parking policies that would encourage only the most appropriate modal choice. Part of the strategy is to integrate land use, economic and transport planning by enhancing metropolitan development corridors and encouraging mixed land uses. Also, higher density residential development and civic precincts are to be located on or adjacent to activity and development routes. Fig 5.3 shows the framework’s mapped transport routes in relation to land use functionality.

Another key strategy of the CTSDF is to manage urban growth and create a balance between urban development and environmental protection. The future form of urban development should attempt to achieve a compact city form by having appropriate densities to promote sustainable use of resources. It recommends that this be done by promoting an efficient public transport system. The last key strategy promotes building an inclusive, integrated and vibrant city. It aims to do this by creating environments that allow for a mix of land uses and address the unequal distribution of public and social facilities. It wants to encourage integrated settlement patterns by supporting a great mix of land uses that can support a residential area made up of different population densities.

When evaluating the proposals set out in the CTSDF, it is evident that the principles that encourage the marriage between land use and transport planning are being promoted. It is clear in its direction to have development along corridors, as well as to promote NMT and transit-orientated development in Cape Town. The CTSDF aligns well with Cape Town’s IDP. In terms of the criteria of assessment established in the literature review in Chapter 2, legislation and policy on the metropolitan strongly address accessibility, integration, high levels of transit services, high density mixed use and walkability, however, it fail to address design on the human scale, as well as open space surveillance and child-centric planning.

The CTSDF is a good example of what the city is trying to achieve . However its efficiency is questionable given the disjuncture between what is being planned for the city and what actually exists in Cape Town.

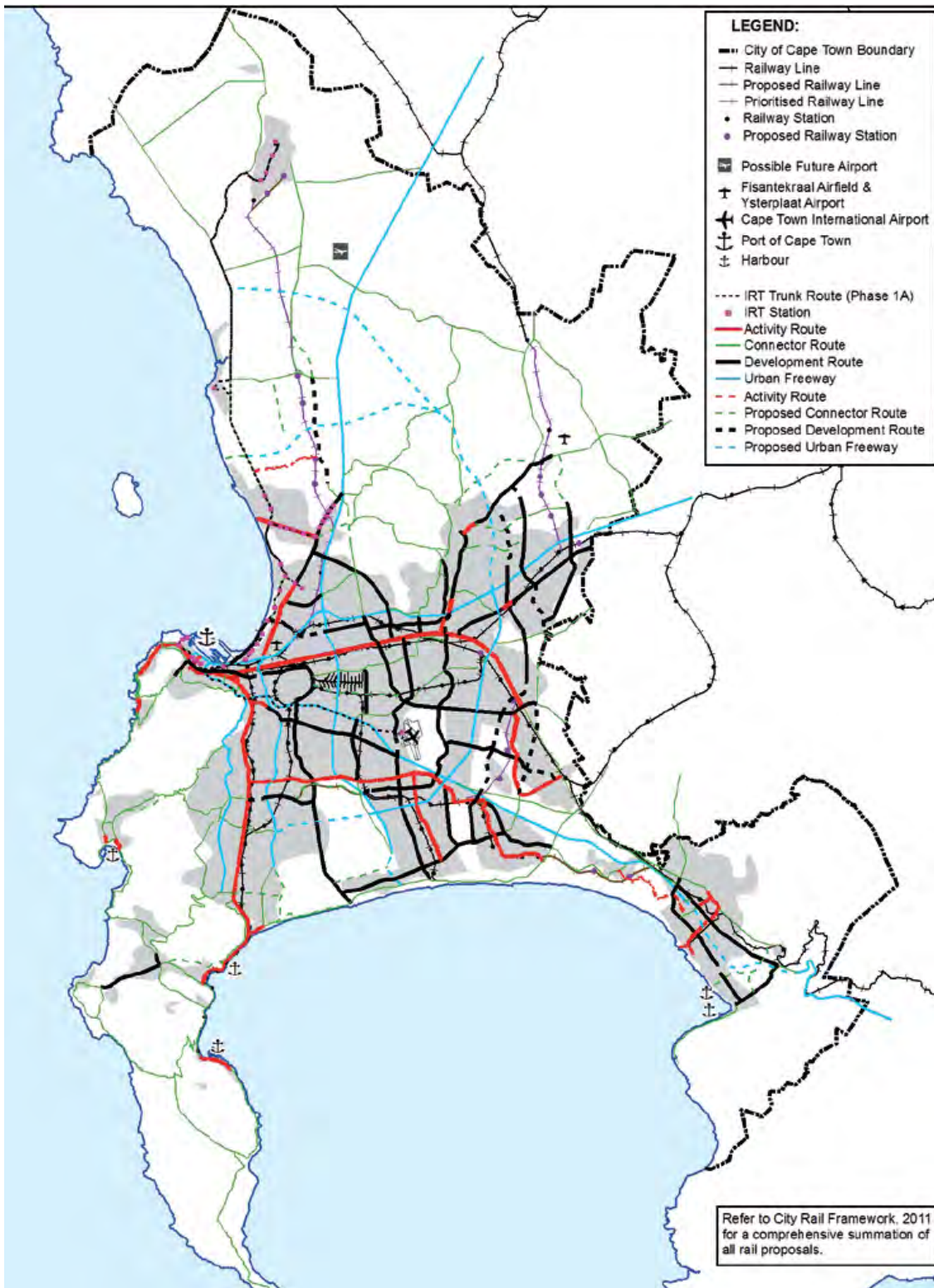


Fig 5.3 CTSDFs mapped transport routes in relation to land use functionality (CTSDF 2012)

5.3 The Reality of the Interface between land use and transport planning in Cape Town

Proposals set out in the SDF and IDP , and which are supported by national and provincial policy and legislation, in many ways support the strengthening of the relationship between land use and transport planning in Cape Town. However, this is constrained by a number of factors that are specific to Cape Town; and the reality of the interface is quite different. The intended marriage is hindered by trends that persist in Cape Town. These trends include institutional fragmentation and a disjuncture between policy and what actually exists on the ground.

5.3.1. Existing Trends

Even with the existing policies and legislation, Cape Town's dualistic functioning transport system persists. Most people with low socio-economic status use public transport or walk. However, those from wealthier socio-economic groups have access to private motor vehicles. The city aims to encourage people to use public instead of private transport. Nevertheless, there is a trend of the car-inspired middle class who are often purchasing vehicles for the first time (Kane 2010). This is compounded by South Africa's dual economy. One economy serves the needs of the affluent and formal, while the other serves the disadvantaged and informal.

The one economy invests into formal high quality roads and public transport and the other relies on mini-bus taxi services, poor pedestrian routes and sometimes non-existent roads (Kane 2010). Weak public investment in rail and other modes of public transport over time, have encouraged private car use (Crane and Swilling 2008). This has hindered rail from operating as the backbone of the transport system. Also, the demand for public transport in Cape Town is far greater than the supply.

A small proportion of Cape Town residents living in the Northern and Southern suburbs use and have potential to use public transport. Also, they are more prone to choose rail and mini-bus taxis than bus services. Integrated public transport is not occurring as is prescribed in legislation and policy (Kane 2010). Rail, bus and mini-bus taxis are fragmented modes of transport operating as separate subsystems of transport. Modes are therefore competing and there is very little integration (Crane and Swilling 2008). This may, however, change with the implementation of the MyCiti IRT system, provided that it is well integrated with other modes of transport. If there is no integration of public transport in Cape Town, it is questionable whether or not to expect integration between land use and public transport.

5.3.2. Institutional Fragmentation

Investment into institutional changes first needs to be investigated before any headway on TOD in Cape Town can be made. Integration of the land use and transport planning may not be effectively integrated because legislation of integrated development planning and urban transport planning frameworks exist under two streams. Consequently, this creates a favourable institutional framework. On the Cape Town municipal level, transport authorities are independent of the planning department, thus making integration even more difficult. Another problem is that land use planners and transport planners' professional practices are divergent (Wilkinson 2006). Transport engineers are also not familiar with 'just' city and 'green' city approaches to development as much as planners and environmentalists are. Therefore, many principles associated with these are left out when transport planning decisions are made (Kane 2010). Lastly, there is also no clarity on the structure on funding of public transport. This hinders progress to having a solid institutional framework in place (Wilkinson 2010).

5.3.3. Disjuncture between policy and reality

The existing trends and institutional fragmentation contribute to the disjuncture between what is in policy and what actually exists. Beukes et al. (2011) believe that the main reason for the disjuncture between proposals and what actually exists, is because guidelines developed by planners are out-dated and do not comply with current policies. Guidelines are separated for different modes of transport. Therefore, planners fail to have an integrated understanding of transport needed by all users.

It is therefore not surprising that infrastructure for the private vehicles is prioritised in Cape Town. Beukes et al. (ibid) believe that this disjuncture could be eliminated by integrated land use, and also socio-economic and environmental factors as these will provide context for development.

5.3.4. Gaps

Key gaps that hinder the interface are the minimal incorporation of TOD approaches being used in South African cities, as well as NMT planning. Wilkinson (2006) believes that although there is great attention paid to mixed use, high density, transport “corridors” in South African policy and legislation, very little is paid to TOD itself. Wilkinson (ibid) questions why TOD has not been incorporated as a strategic instrument to facilitate the integration of land use and transport planning. This in spite of the intention to adopt compact city and corridor approaches to development policies in South African cities. Existing policies do not call for TOD specifically but it is a development objective of the policy guiding development in Cape Town. Wilkinson (ibid) believes that TOD has the potential to integrate land use and transport planning. Moreover, the use of public transport and NMT is inhibited by the lack of transport infrastructure, facilities and the integration of NMT into planning entirely, even though legislation and policies prioritise public transport, including NMT (Beukes et al. 2011).

5.4 Conclusions for Learner Mobility in Cape Town

The influence that the challenges around the integration of land use and transport planning have on learner mobility in Cape Town, will be investigated. To do this, literature reviewed in Chapter 2 will be drawn upon to understand the relationship between learner transport and the planning for land use and transport. In doing so, it will be questioned as to whether the criteria established in Chapter 2 are supported in Cape Town; or if not, what are the problems are. This is to be done in order provide context for findings on the more local scale of Claremont.

The dualist nature of the transport system is quite evident in the modes of transport used by school learners in Cape Town. According to Behrens and Phillips (2004) there is an evident relationship between travel modes used by learners and socio-economic status. Across Cape Town, walking is the predominant mode of transport used by learners from lower income groups and car travel in higher income groups. This limits urban-youth interactions. The older learners are the more likely they are found to be walking. Cycling to school is very uncommon across the entire city and only makes up approximately 1% of learner transport (Behrens and Phillips, 2004).

Longitudinal data used by Behrens revealed that there is a trend in declining NMT use amongst learners. This has a direct relationship to the lack of NMT incorporated into the planning of the city, which is identified as a gap in the previous section. Data compared over time for a high school in Cape Town showed that there was a decline from 50% to 32% of NMT use over an 11 year period between 1988 and 1999. Cycling declined from 31% to 3% by 1999. Behrens and Phillips (2004) believe this is due to the change of modes over time from walking to cycling to private vehicle use owing to perceptions of safety, security and convenience. The use of private vehicles for school trips increased from 38% in 1976 to 91% in 2001. Studies by Behrens and Phillips (ibid) found that in Mitchells Plain, 58% of learners walk further than 680m to school and 25% walk further than 1 340m.

The lack of integration of modes of transport as highlighted in the previous section influences learner travel in Cape Town too. Learners that travel far distances to schools use a mix of transport modes throughout the city and it is often found that older school learners (Behrens et al. 2007) are more likely to do so because of issues of safety and the ability to navigate through space. Bicycles are the least preferred method of transport and reflect dangers of Cape Town roads with high average traffic speeds as mentioned in Chapter 2.

There is lack of documented research of learner travel in Cape Town, especially addressing the spatial issues on access to school. There is very little policy aimed at learner transport (only for those that live far from school and no others). No policies focus on public transport networks for school goers or identify the spatial relationship between schools and the transport system across the city.

Problems encountered by the learners and the demand for physical access to education are not being addressed in any legislative or policy documents. This is particularly worrying for the growing trend of learners travelling increasing distances to reach a school of their choice, as well as good quality education.

Overall Conclusion

The integration between land use and transport planning does not exist as is being planned for Cape Town. Concepts of transit-oriented development are explored in development directives, but are not being used to their full potential in Cape Town. The city may be constrained by its very economic-oriented development strategies as it tends to shift investment away from public amenities and does not promote a strong sense of community and safety.

With the gap in transit-oriented development, child-friendly transit-oriented development is non-existent. There is an evident lack of considering learner needs in the process of planning across the city. There are minimal policies addressing learner transport in Cape Town. Furthermore, this is not being integrated with spatial policy directives for Cape Town itself.

On the other hand, compared to other developing cities, Cape Town does have opportunities for change. Although in reality it does not exist in Cape Town yet, public transport is placed on the forefront of development in the city. This makes it easier to justify investment into the public transport system. There is also a demand for public transport in Cape Town as it is used by the majority of the city's population (Beukes et al. 2011). The promotion of development along transport systems using universal principles of design and promoting high density mixed uses along these systems, supports the concept of TOD. TOD has made its way into policy documents and if used appropriately and possibly on a small scale, it might catalyse the integration of land use and transport planning.

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Chapter 6

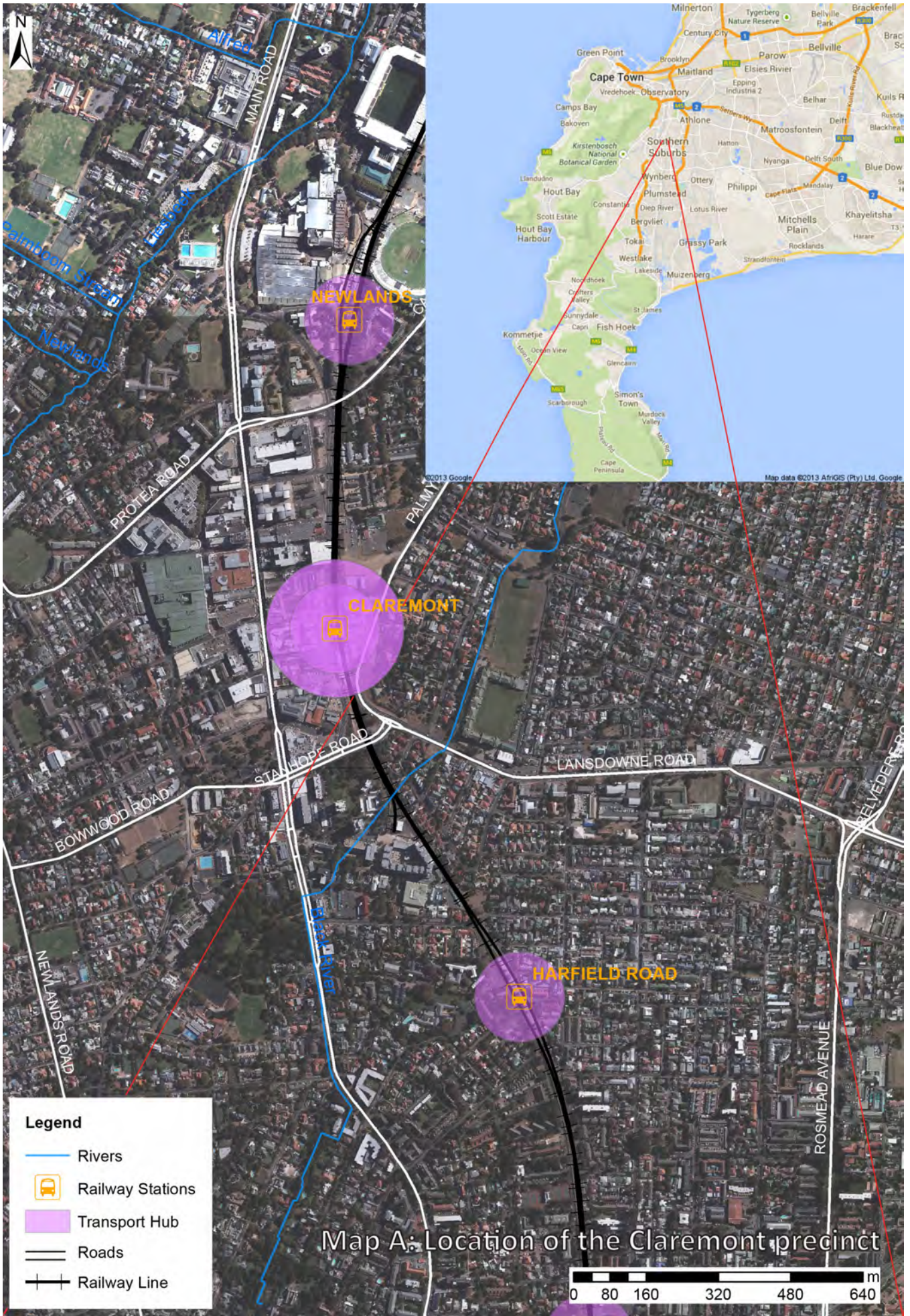
FINDINGS AND ANALYSIS

The prospects for learner mobility across Cape Town are explored in the previous chapter by reviewing national and metropolitan policies and legislation that relate to the interface between land use and transport planning. These broader policy frameworks influence what actually exists on the local scale. This chapter will explore what is happening on the local level by focusing on a specific district within Cape Town. Learner mobility will be investigated in the Southern District by focusing on the Claremont precinct.

The chapter will do so by first briefly introducing Claremont and its relation to the Cape Town metropolitan area. Secondly, data collected from school learners with the use of surveys from three schools in and around Claremont will be analysed. The data collected will be analysed in accordance with the criteria formulated in Chapter 2, namely accessibility to a range of transport modes, metropolitan integration, land use and transport planning integration, safety, learner participation and institutional capacity and budget support. Thirdly, the Southern District Plan (SDP) will be analysed with the same criteria and will be assessed along with the findings from the surveys to answer the central research question of what are the barriers to learner mobility and how can spatial planning respond. The aim of this chapter is answer the research questions of what are learner travel patterns and modal splits? What are the spatial barriers to access that can be improved through design? How can a planner influence the shift away from a city designed for the motor car to one that promotes public and non-motorised transport? Lastly and centrally, what are the barriers to learner mobility and how can spatial planning respond?

6.1 Claremont Precinct

Claremont is one of Cape Town's commercial nodes today. It was always a busy village and it served Philippi when German market gardeners immigrated to Cape Town in 1883. Claremont used to be an independent municipality between 1886 and 1913 (Cape Town Heritage Trust 1990). Development began in Claremont along the original north-south roadway that linked the city bowl to farms and residences in Rondebosch and Wynberg, and sea activities occurring in Muizenberg and Simon's Town. As settlements grew along this link, rail and better road infrastructure was developed. Most of the development occurred to the west of the spine, until only about 50 years ago when development began to increase to the east of the spine (CoCT 2011). Claremont is situated between the north-south link from the CBD to Muizenberg. It is located to the east of the M3 and to the west of the M5, with the Main Road intersecting it. It sits at the junction between Main Road and Lansdowne Road, all of which can be seen in Map A.



6.1.1 Environmental Setting

Claremont is in clear view of the Table Mountain range and therefore the area offers beautiful mountainous scenic views. The middle reaches of the Liesbeek River runs through Claremont and drains into Table Bay (see Map A). The Liesbeek River is 40% canalised and has led to habitat loss and ecosystem dysfunction in certain areas. The canalisation of the Liesbeek has also made it prone to flooding during certain times of year and water quality of the river in Claremont is moderate, yet could be better. The air pollution in the Claremont is generally not bad because of limited industrial activity; however, car exhaust emissions along the main roads do pollute the air (CoCT 2011).

6.1.2 Demographics

Claremont is a well-developed and an affluent suburb compared to the rest of Cape Town as can be seen in the statistics below. Most of the residents are well educated, employed and only 15% of households are earning less than R3 200 a month. Almost all households are formal dwellings and have access to piped water, formal flushing toilets, have refuse removal once a week and have electricity (CoCT 2013).

Claremont 2011 Census results:

- 89% of those aged 20 years and older have completed Grade 12 or higher.
- 95% of the labour force (aged 15 to 64) is employed.
- 15% of households have a monthly income of R3 200 or less.
- 99.5% of households live in formal dwellings.
- 99.8% of households have access to piped water in their dwelling or inside their yard.
- 99.6% of households have access to a flush toilet connected to the public sewer system.
- 99% of households have their refuse removed at least once a week.
- 99.9% of households use electricity for lighting in their dwelling.

(CoCT 2013)

6.1.3 Economic Trends

Claremont is considered a commercial node. Property prices are generally high in Claremont because of its high number of quality education facilities, recreational spaces, health facilities, transport services and job opportunities. Land in Claremont is also limits development because of its exquisite environmental setting, contributing to high the property prices. The area can therefore be considered an affluent area in relation to Cape Town as a whole and there is a trend of low density development dominated by the use of private vehicles as distance increases away from the railway line. Claremont is a node of economic activity along the economic development ribbon found along Main Road. There is investment in retail development close to public transport interchanges in Claremont as can be seen in Map B. Cavendish Square, a large retail complex is situated adjacent to the railway line (Map B) (CoCT 2011).



Fig 6.1 Traffic flow over Claremont bridge (Author 2013)

6.1.4 Movement Systems

Transport infrastructure is of a high quality in Claremont and its surrounds. Lansdowne and Wetton Road facilitate flow from Claremont to the east of the city as can be seen in Map A. The railway line running through Claremont originates at the CBD and extends all the way to Simon's Town. There is a high dependency on motor vehicles in the area and there is limited pedestrian movement. There is however high foot movement around the Claremont, Newlands and Kenilworth stations (CoCT 2011).

Public transport in the form of rail and minibus taxis is significant to the area as many people are coming from other areas for job opportunities. There is a road-based public transport station and rail station interchanges in Claremont. Claremont is one of the busiest interchanges in Cape Town and mixed use activities are occurring in close proximity to them, which is comparably the best to the rest of the city. There is significant dependency on public transport to access the area by citizens living to the east of the railway line. According to the CoCT (2012b) there should not be a need for the use of private motor vehicles because of the well-supplied public transport and the rail and bus system are underused in the area. Minibus taxis operating in the area are in competition with the rail and bus services as well as the road space with private motor vehicles, causing heavy traffic congestion.

Due to the increased settlement growth to the east of Claremont where there is limited accompanying economic opportunities, more people are travelling to Claremont for job and social opportunities. This has resulted in an increasing demand for movement opportunities in the Southern District which unfortunately has not been met yet. Despite there not being movement opportunities, congestion is growing in the area and the railway line that runs through Claremont acts as a barrier to the east of Claremont because it limits bridge access (CoCT 2011).

6.1.5 Public Amenities

Newlands is the sporting hub of the Western Cape and is home to rugby and cricket stadiums of an international standard that often hosts local to international rugby and cricket matches. Health, education and sports facilities in Claremont and its surrounds attract citizens from elsewhere in the city to the area.

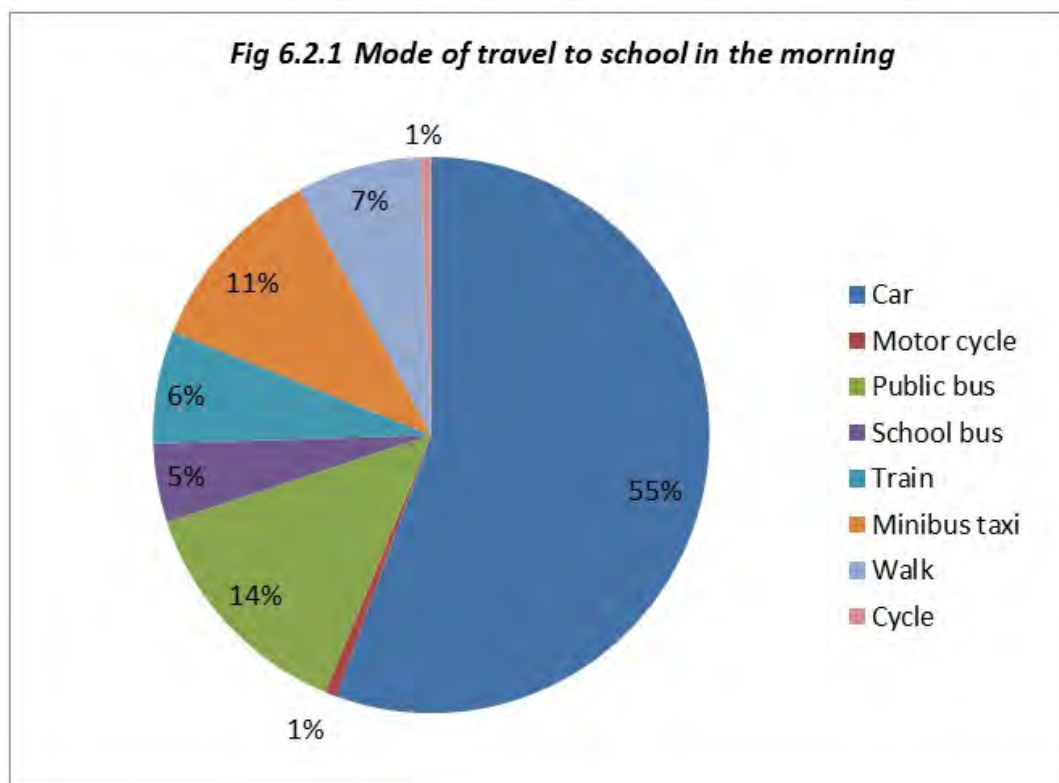
Claremont is known to have high quality education facilities, especially schools and is close to the University of Cape Town. Within Claremont there are ten schools, seven of which are high school institutes. There are at least another five schools located in areas adjacent to Claremont, including in Newlands. Facilities such as libraries, police stations, community halls, courts and post offices are easily accessible and there are a few open public spaces within Claremont. Water supply, solid waste removal and electricity supply are well serviced too (CoCT 2011).

6.2. Learner Reflections

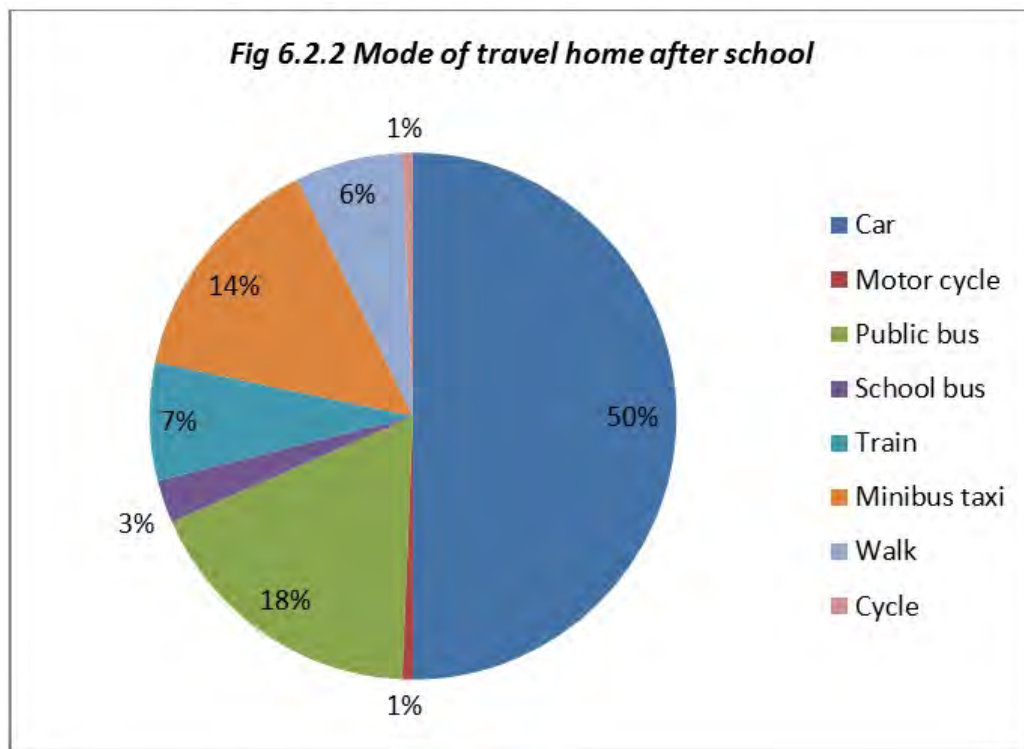
To provide insight into learner travel patterns and barriers to learner mobility data was collected from learners from three schools in and around Claremont. The three schools locations are shown in Map B on page 84. The data collected in the surveys will be analysed in accordance with the seven criteria developed in the literature review in Chapter 2. These criteria include accessibility to a range of transport options, metropolitan integration and connection, an integrated approach to land use planning and transport, walkable neighbourhoods and implementation at human scale, a safe environment with good surveillance, learner participation in the process of planning and lastly institutional capacity and budget support.

6.2.1 Accessibility to a range of transport options

For youth to be mobile, they should have a range of transport options. Data collected from the schools in Claremont provides insight into learner travel patterns. Fig 6.2.1 shows the transport modal use of learners in the morning. The car is the dominant transport used by learners to get to school (55% of learners use this mode), followed by the public bus (14%) and the minibus taxi (11%). Only 7% of learners walk to school. Trains are used by 6% of learners and 5% use dedicated school buses in the morning. Cycling and the use of motor cycles are each only used by 1% of learners. Fig 6.2.1 shows that the use of NMT is very uncommon among learners and constitutes only 6-7% of the school learners.



In the afternoon, the car is used 5% less than in the mornings as it is used by 50% of learners compared to 53%. The use of public transport increases in the afternoon. As can be seen in Fig 6.2.2, the public bus is used by 18% of learners, the train by 7% and the use of the minibus taxi increases from 11% to 14%. The use of school buses decreases from 5% of learners using them to 3%. Overall, more learners are using public transport to get home. It is found that only 9% of learners use mix modes of transport.

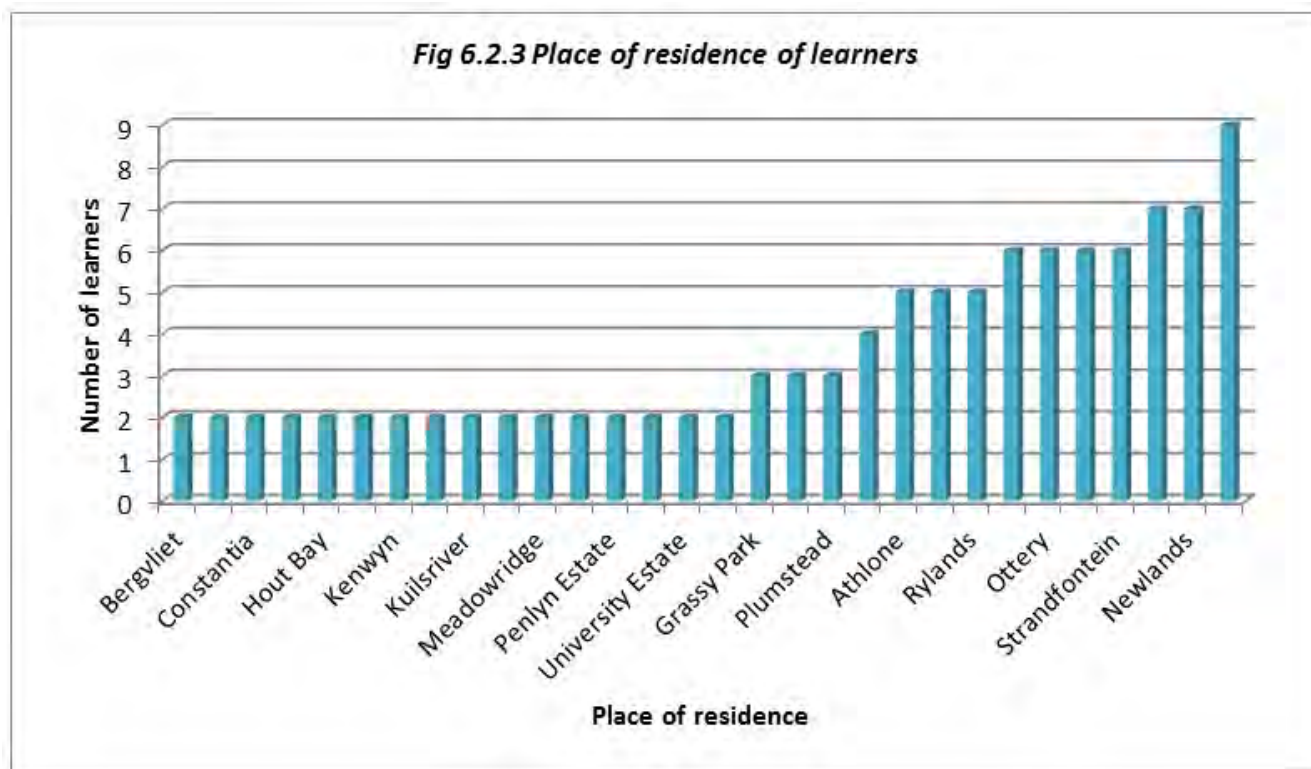


It is evident from these findings that there are a number of different transport modes learners use to get to and from school. According to the majority of learners sampled in Claremont, the car is their preferred mode of travel because it is believed to be safer and therefore it could be justified that safety and security influences learner's particular modal choice and is a mobility barrier as it narrows learners' transport options. There is a strong correlation between parents' biggest concerns being the safety of their children, and the learners that are being driven to school. It may be an assumption but the strong correlation alludes to the fact that parents of learners that are concerned about their children's safety while travelling, prefer to drive their children to school. Safety is limiting learners from using public transport, including NMT.

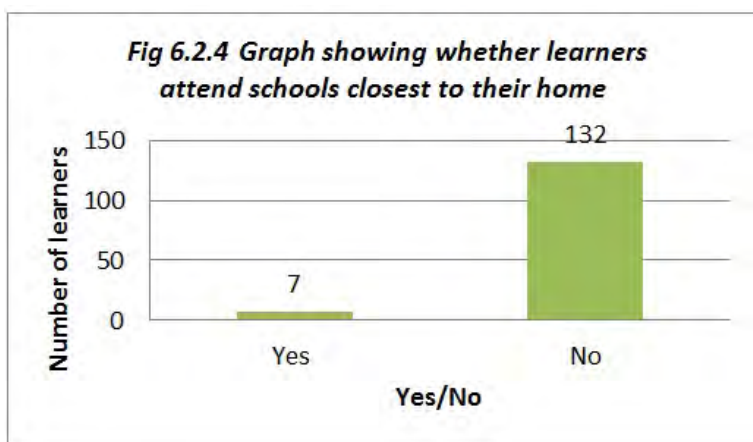
The data collected shows that 70% of learners say that they are currently using their preferred mode of transport and 30% are not. Those that are happy with their transport mode are mostly driven to and from school. The reasons for this are that it is easiest, fastest, most comfortable and safest. Those using minibus taxis and school buses are happy because they are travelling with their friends. Those that are not using their preferred mode say that do not like using the bus because it is often dangerous, boring, overcrowded and the journey is too long. Minibus taxis are not preferred because they are overcrowded too. Others would prefer that school be in walking distance and a few would prefer that there be an improved public transport system as is found in other countries such as New Zealand. There are also a certain number of learners that would prefer not to be transported in a car because they view it as expensive and environmentally unfriendly. These are therefore all barriers of different transport modes to learner mobility.

6.2.2 Metropolitan integration and connection

As can be seen in Fig 6.2.3, most of the learners attending schools in Claremont do not come from the area itself. Besides Newlands and Rondebosch, which are fairly close to Claremont, the majority of learners are travelling from areas on the Cape Flats. This therefore indicates that learners are being transported a significant distance to attend their school in the Claremont area (approximately 15km). Fig 6.2.4 indicates the significant number of learners that are not attending schools closest to where they live. This supports Behrens (2004) findings that there is a shift away from learners attending schools in their neighbourhood. The data reveals that reasons for doing so include that learners and their parents believe the schools in their area are not of good quality or they are located in an area that is considered unsafe and therefore they rather travel to a school in an area that is perceived to be safer.



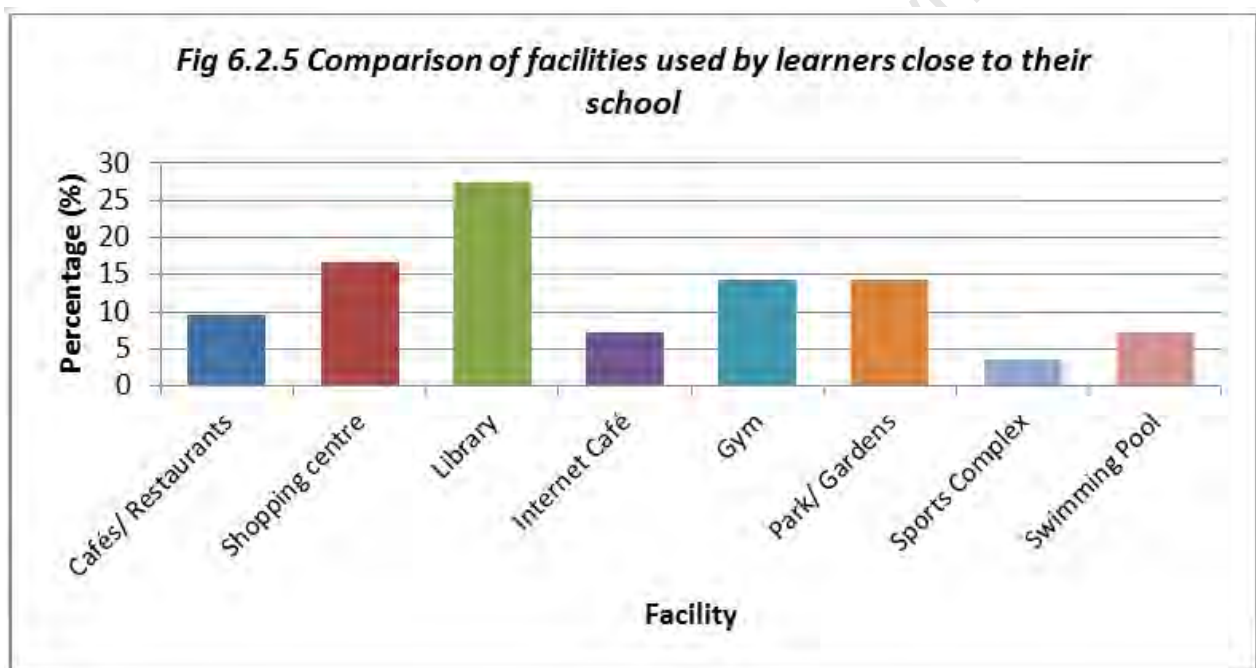
Because learners are travelling across the city, there must be some form of integration between the metropolitan level and local district level. There are strong physical connections between different scales. Claremont is well integrated with the rest of Cape Town as it one of the city's largest nodes and has a high standard of public transport infrastructure. The transport system linking Claremont and the rest of the city is well integrated and there is good road and rail access to the area. The fact that many learners are travelling from so many different areas presents an opportunity for integration of learners with different places of residence, cultural and socio-economic backgrounds.



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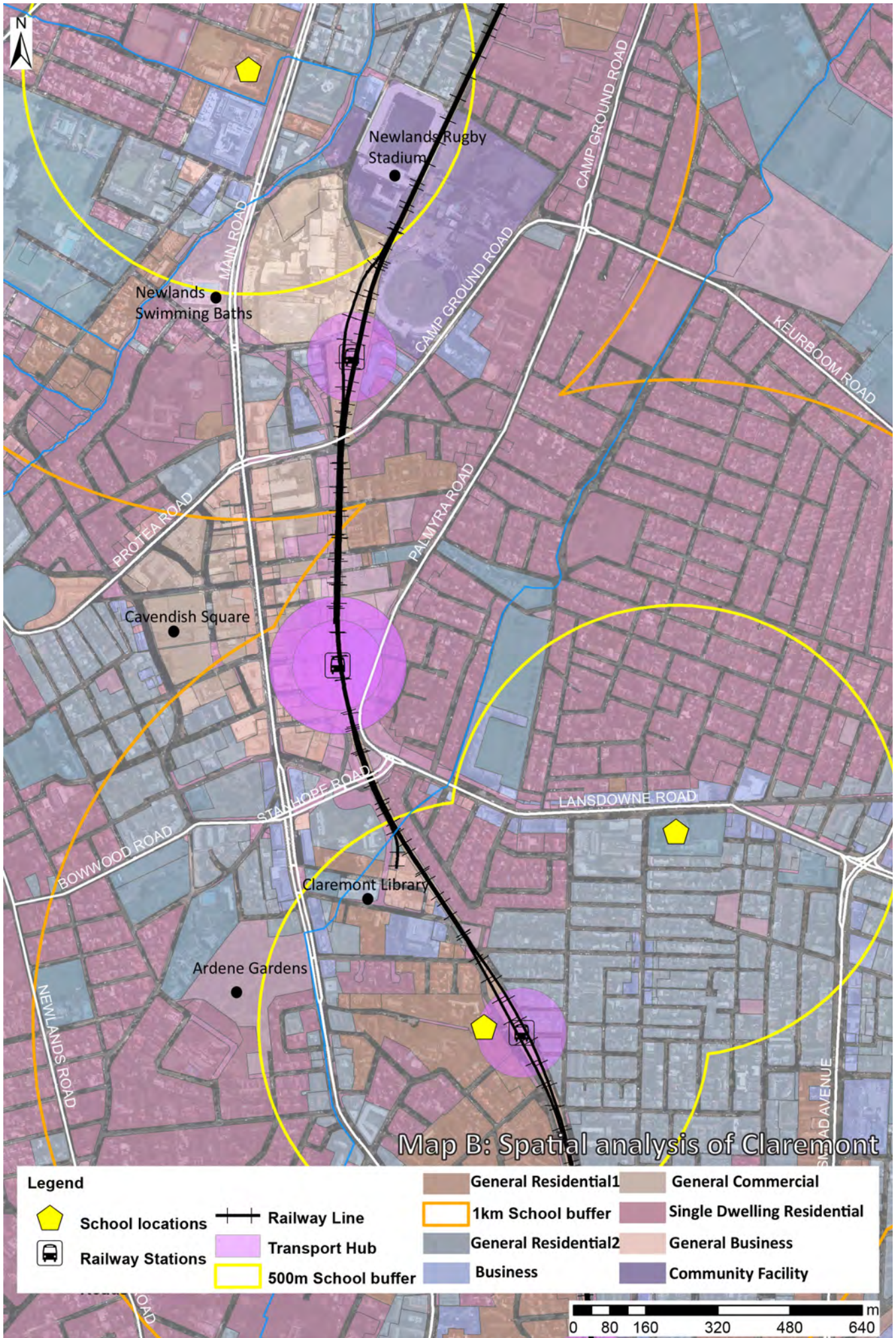
6.2.3 An integrated approach to land use planning and transport that incorporates densification and mixed use

Learners are travelling far distances to get to their schools in Claremont and therefore the integration between land use and transport planning is essential to ensure access to education in Claremont. Land use planning and transport planning should be well integrated between the Claremont scale and Cape Town metropolitan scale. Densification and mixed use development should occur near transit systems in order for a choice of activities to be within a walkable distance within a neighbourhood. It is found that 67% of learners from the three schools use other facilities close to their school. Fig 6.2.5 shows that libraries are the most community used facility in Claremont by the learners (27%) and the most commonly used library is Claremont library. Second to libraries, shopping centres are used by 16% of learners who mostly make trips to Cavendish Square. The gym is used by 14% of learners, and 14% use gardens/parks in the area too. Specific mention is made of the use of Ardene Gardens. Internet cafés and Newland Swimming Baths are used by 6% of learners, and lastly 4% of learners use sports complexes in the area. Specific places used by learners can be seen in Map B on the following page.



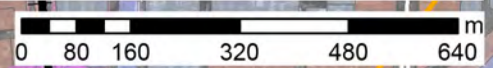
This data reveals that there are many mixed use activities occurring in Claremont and in close proximity to Main Road and the railway line as can be seen in Map B. There is opportunity for mixed uses that can cater for learners, but they can be constrained by walkability and an important criterion for TOD is the walkability of the space that is being moved through. It is clear in the spatial analysis (Map B) that Claremont has the infrastructure to facilitate transit-orientated development.

Map B indicates the schools that data was collected from in the area with 500m and 1 km buffers around them. It shows that the three schools sampled are all in walking distance of a public transport hub. This means there is problem as learners are not using public transport even though the service is there. Claremont has the infrastructure such as sidewalks and has all the facilities that youth would like to use but the issues of safety and security does pose a problem as well as the high use of motor vehicles in the area.



Map B: Spatial analysis of Claremont

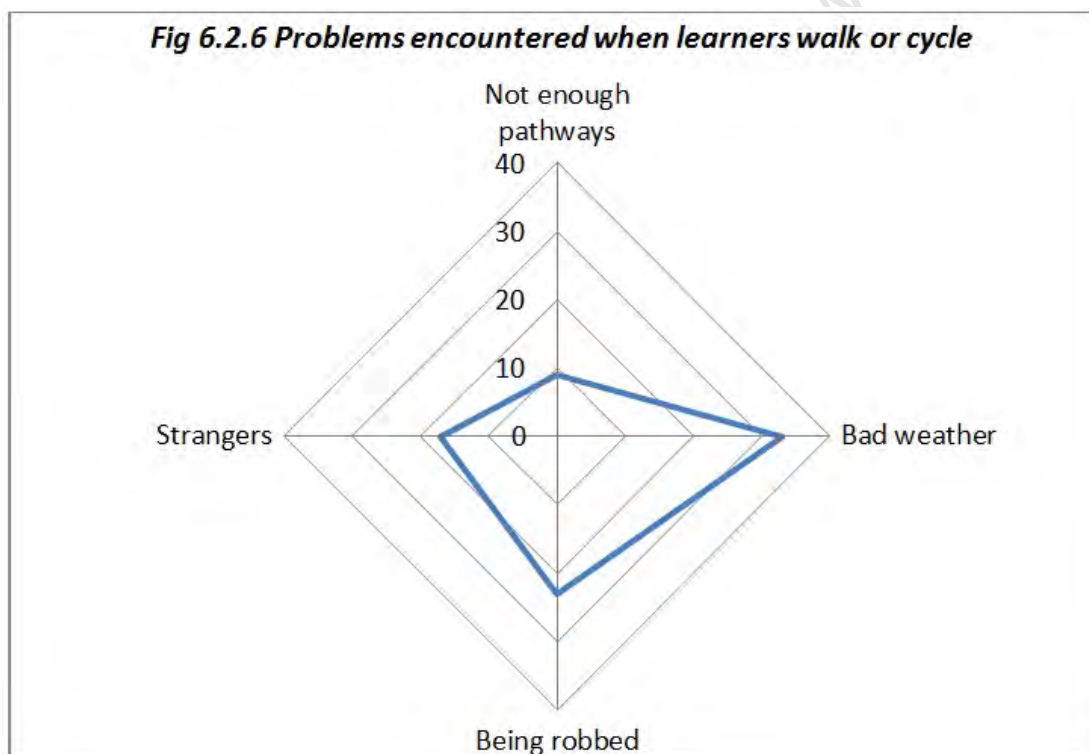
Legend		General Residential1	General Commercial
	School locations		Railway Line
	Railway Stations		1km School buffer
	Transport Hub		General Residential2
	500m School buffer		Business
			General Business
			Community Facility
			Single Dwelling Residential



6.2.4. Walkable neighbourhoods and implementation at human scale

Neighbourhoods should be walkable and designs of spaces should be on a human scale for pedestrians, especially youth, to navigate their way easily and feel comfortable through spaces. Although the infrastructure is available in Claremont and 70% of learners feel there are sufficient pedestrian pathways when walking, NMT is not a relied upon mode of transport because half of the learners are driven to school in Claremont as is seen in Fig 6.2.1 and Fig 6.2.2. The data reveals the nature of the dualistic functioning of the transport system in Cape Town and strongly points out that Cape Town is following the global trend of having a car dominated society. There is a lot of investment in public transport in Claremont but although this is so, the area promotes the use of the car which hinders the use of the rail from operating as the backbone of Cape Town's transport system.

From the data collected, 80% of learners feel comfortable walking in Claremont near to their school. Fig 6.2.6 highlights that bad weather is the biggest problem learners encounter while walking or cycling. Second to this is being robbed and third, attention from strangers. Not enough pathways are the least of learners' concerns in Claremont.



6.2.5 Safe with good surveillance

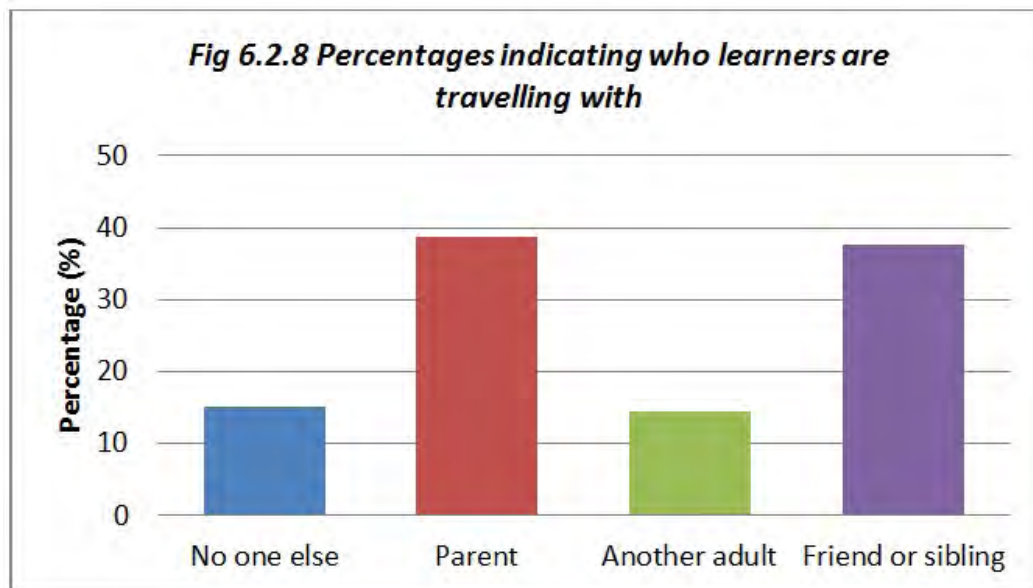
As highlighted before, there is a strong correlation between parents' biggest concerns being the safety of their children, and the learners that are being driven to school. Of the learners sampled, 30% of them would also not walk or cycle to school because they are concerned about their safety. Safety and security is therefore a significant barrier to learner mobility. Safety needs to be considered in spaces and for the movement between spaces, especially for the safety of youth.

From passive observation, there are certain areas in Claremont characterised by high walls along the sidewalks along Main Road where learners are often walking and therefore surveillance is limited to the cars driving past. The same is the case along the Liesbeek River. There are sufficient pathways to walk along the river but there are high fences not allowing “eyes on the street” for the safety of the pedestrian, lessening the sense of security along the pathways (Fig 6.2.7 alongside).



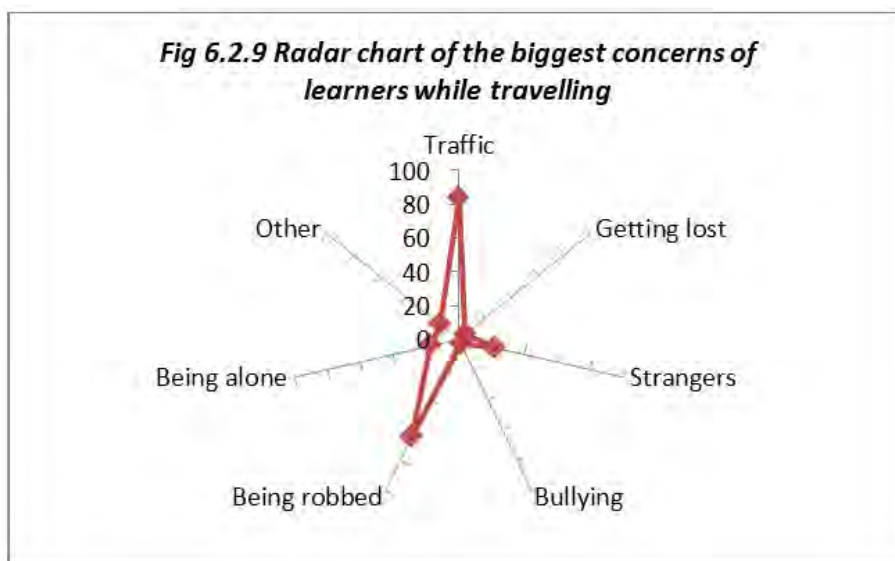
Fig 6.2.7 High fences along Liesbeek River preventing “eyes on the path”. (Author 2013)

In Fig 6.2.8 it can be seen that most learners are travelling with their parents or another adult (55%). Learners that travel with their friends or siblings make up 30% of the learners. Those that travel with friends or siblings are not travelling with others much older than they are and 15% are not travelling with anyone else. There does not seem to be a relationship between gender and travelling alone, as 58% of females from the sample are travelling on their own.



The data shows that 82% of learners feel safe travelling between home and school, and 18% do not. Reasons for not feeling safe include sexual harassment while using public transport, the careless driving by taxi drivers, the fact that it is dark by the time learners arrive home after travelling far distances, muggings, gangsters and road accidents. Only 50% of school learners believe their parents are worried about them while they travelling between home and school. Learners with concerned parents are generally being driven to school.

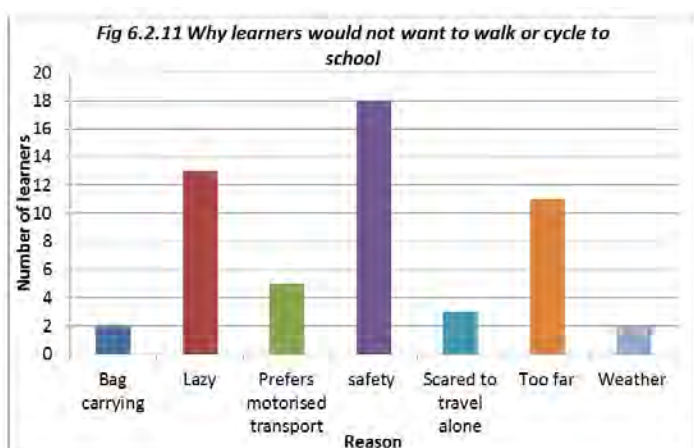
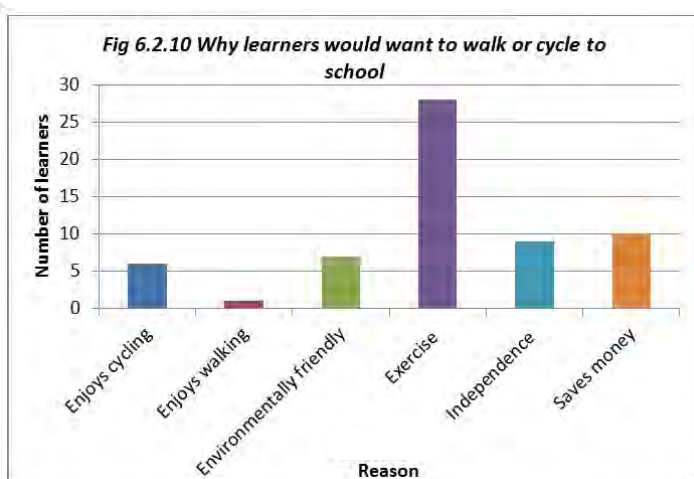
The largest concern for learners while travelling is traffic, as can be seen in Fig 6.2.9. This concern is followed by and almost equivalent to that of being robbed. Strangers are the third largest concern by learners, and as can be seen in the radar chart, and bullying and being alone are the smallest worries of learners. Other smaller concerns include time delays, road accidents, weather and gangsters.



If there was the option, 47% of learners would walk or cycle to school. Reasons for this can be seen in Fig 6.2.10 and the most prominent reason is to get exercise, followed by to save money. However, 53% of learners would not walk or cycle for the reasons seen in Fig 6.2.11. Safety is the biggest concern for walking or cycling and prevents learners from wanting to use NMT.

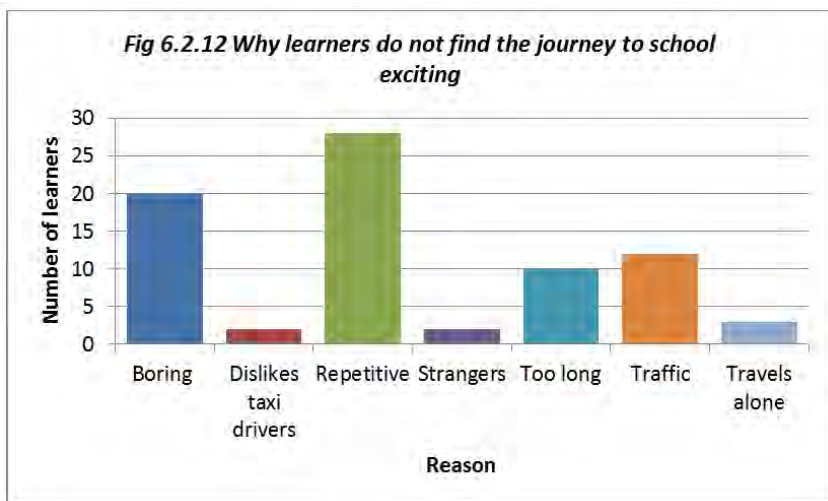
6.2.6 Participation - considering learner needs in the process of planning

Planning for youth is not being met in Claremont as learners do not have safe, independent access to public transport and are not in an environment free of cars (Freeman and Stine, 2011). The lack of use of transit services by learners can be preventing them from having access to other activities across the city (Cervero and Sullivan, 2011). This is due to the lack of including youth in the process of planning as it overlooks the valuable input learners could provide into the activities in around their schools that they feel they need to have access to. The travel experiences of learners is also not considered for schools in Claremont as only 32% of the learners from the schools sampled find travelling to school exciting. Reasons for finding it exciting includes that they travel with friends, it is an opportunity to sleep, there new things to see and they enjoy listening to music or the radio.

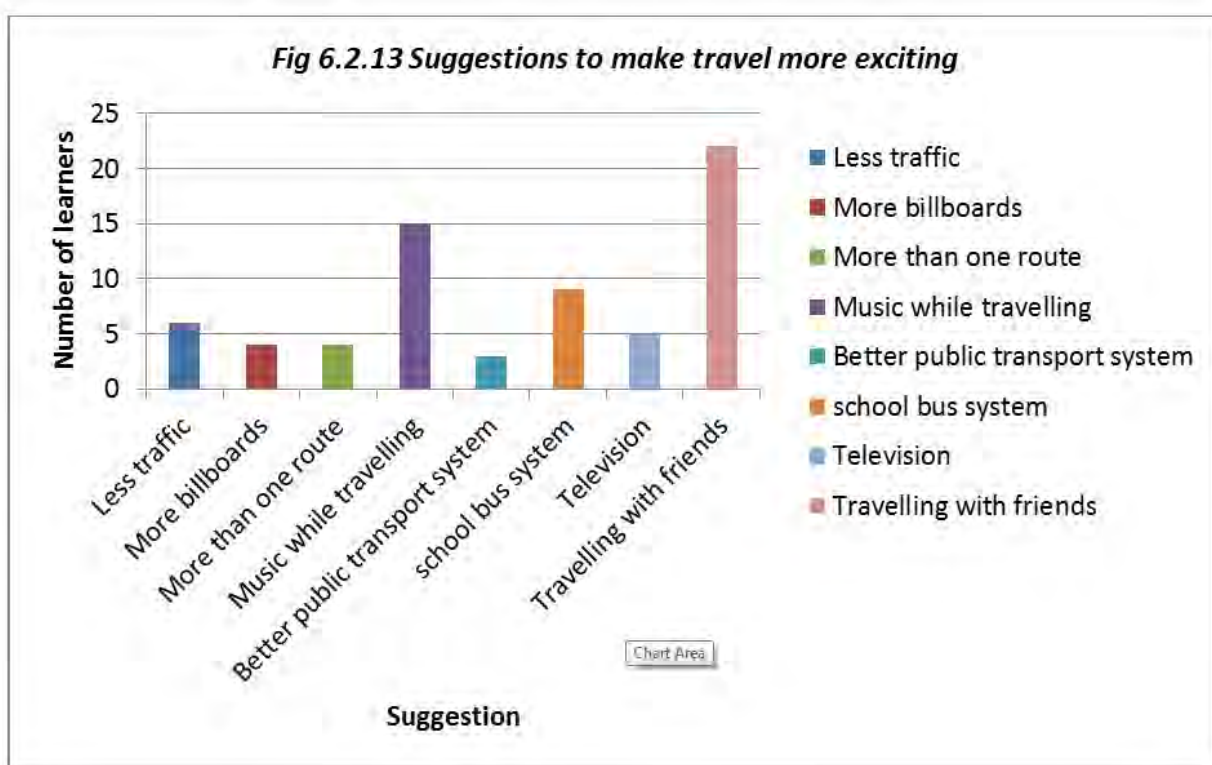


However, 68% of learners do not find travelling to school exciting for the reasons seen in Fig 6.2.12. The main reasons for them not finding their journey exciting is because it is too repetitive, boring, there is traffic and it takes too long.

With the use of the knowledge of learners in the Claremont area, planners could intervene to make spaces, travel and places more learner friendly. Suggestions given by learners to make school travel more exciting, in order of priority, include travelling with friends, having music playing while travelling and having a school bus system. Other reasons

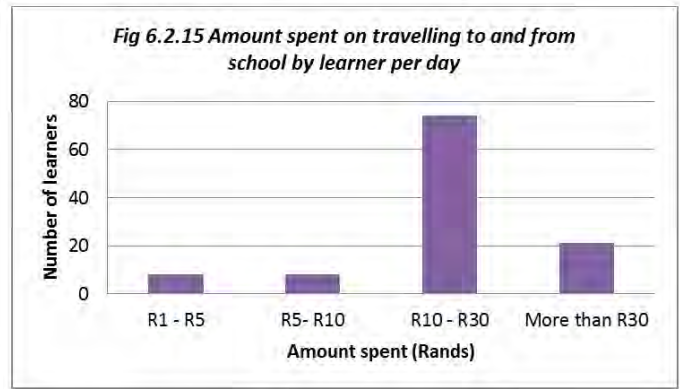
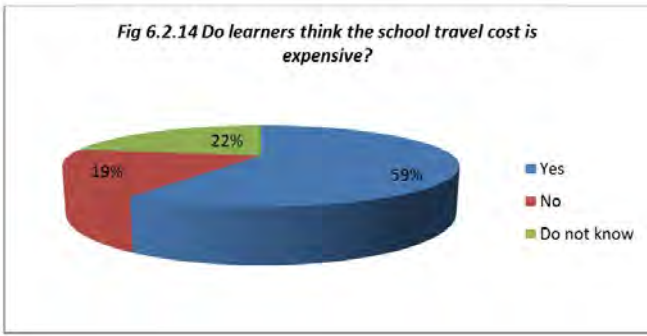


can be seen in Fig 6.2.13. It is clear that Claremont does not consider the specific needs of learners as their views have not been included in the planning process.



6.2.7 Institutional capacity and budget support

Institutions that will play a role in ensuring adequate transport for learners to school should be fully supportive of one another and understand their responsibilities clearly. Institutional capacity within Claremont involved with school learners and their mobility could not be investigated due to time constraints. There will always be ways to increase institutional capacity and budget support for learner mobility by identifying barriers that could be overcome with increased support. An example of such a barrier is the cost learners pay to travel between home and school. Fig 6.2.15 shows that 59% of learners believe that school travel costs are expensive, 19% do not and the other 22% do not know if it is. Although the cost may have only been an assumption by some learners, Fig 6.2.15 depicts that the majority of learners are spending between R10 and R30 a day on school transport. This followed by learners that spend more than R30 and lastly, less than 30 learners spend below R10 to attend school per day.



6.3 Southern District Plan Analysis and Critique

Claremont falls within the Southern District, one of eight districts of the City of Cape Town’s municipality. The SDP was published by the City of Cape Town in 2012; it is a medium to long-term plan (+- 10 years) and aligns with the Provincial SDF and Cape Town’s SDF. The SDP comprises of a Spatial Development Plan and Environmental Management Framework. The SDP incorporates the southern suburbs within the activity corridor of Main Road, Constantia Valley and valley enclaves that include areas such as Hout Bay, Fish Hoek and Noordhoek of the South Peninsula (see Fig 6.3.1). The SDP will be analysed according to the same criteria as the survey in order to critique the SDP on its influence it has or may not have on the learner mobility.

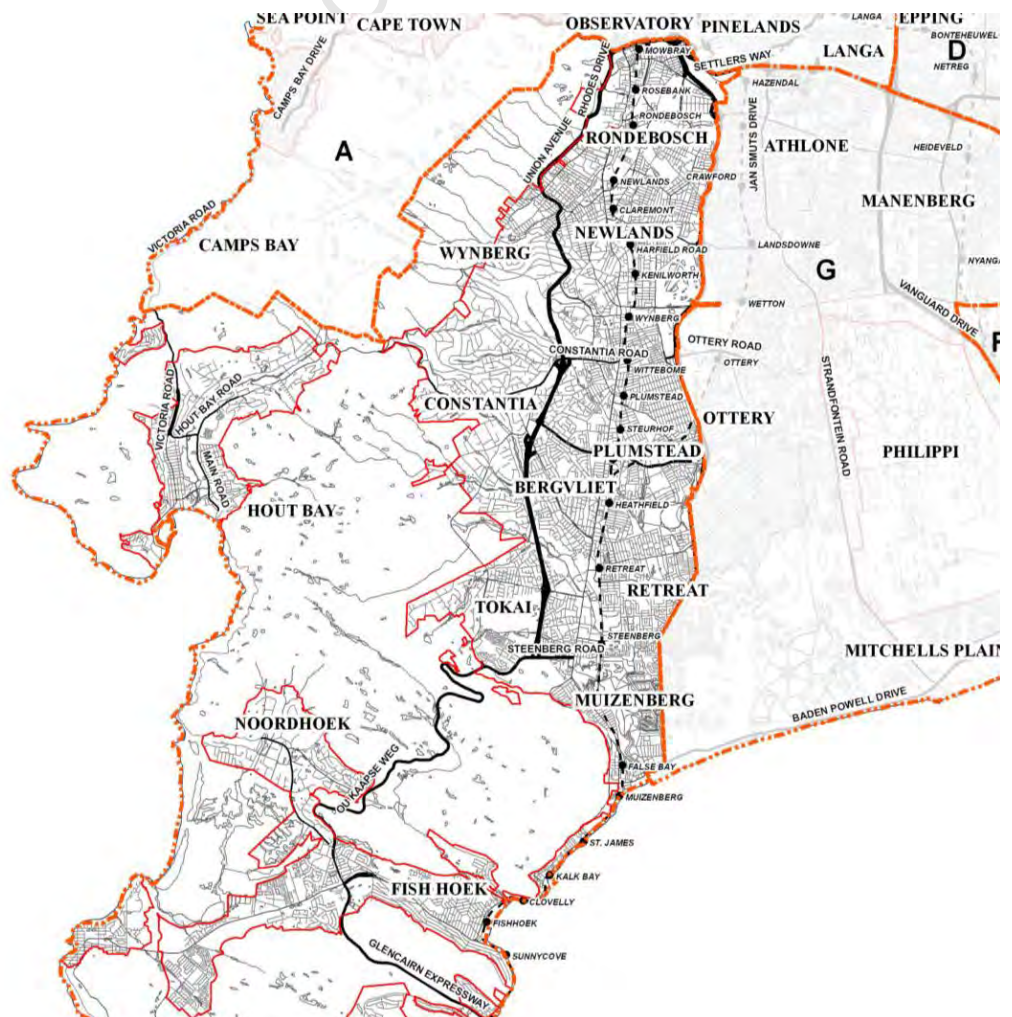


Fig 6.3.1 The boundary of the Southern District (CoCT 2011)

6.3.1 Accessibility to a range of transport options

The SDP identifies that policies in the past that separated residential and commercial development by ensuring commercial development occurs in nodes has meant that there is a need for travel between places of residences and job opportunities. If residential densities are too low, however, public transport is not viable and there will be an increase in traffic congestion.

There is inefficient east-west movement to Claremont. There is high traffic congestion along the Main Road corridor which is hampering access to economic opportunities in Claremont. This is all due to the high use of private motor vehicles in the area. The SDP aims to address this by improving public transport route access especially by facilitating better east-west movement.

The SDP intends to adapt the City of Cape Town's vision of having a public transport network where 85% of the city's population should be within 1km of a high quality public transport system. For this to be done, the rail service should be the transport backbone of the city and be of high quality, cater for high volumes and be used by those commuting long distances. There should also be a road based trunk service that is used by buses on dedicated infrastructure, a community service with standard buses and smaller vehicles feeding into trunk rail and bus services, and NMT lanes should be provided along transport routes and by stops and stations.

The accessibility grid is supported by mobility links which include the urban freeways and the rail network. Urban freeways do not permit direct access to land uses but they provide high connectivity for manufacturing and industrial activities. The rail networks allow mobility over longer distances. Rail stations are the central points of accessibility and when associated with road based accessibility such as in Claremont, they should support medium to high density land uses.

The SDP aims to develop a threshold for public transport use within the Southern District and intends to maintain the southern line for passenger's public transport right of way. Claremont is regarded as a regional urban node and Claremont station is considered a major urban station within Cape Town. Newlands station lying just north of Claremont station is also significant in the Claremont area and is considered to be an urban station that should be the centre of mixed use intensification and densification. Fig 6.3.2 maps a sub-district within the southern district and shows the significance of Claremont and the stations within the Main Road corridor.

Although the SDP does plan for a range of transport options within Claremont and significant investment has been put into the upgrading of the station, public transport as the central dependent form of transport in Claremont is lacking. As is evident from the learner reflections, Claremont is car-dominated and is the most well used transport mode although there are a range of transport options. The SDP aims to address this by having high density mixed use development occurring in walking distance along the rail and Main Road, but the car is still prevalent and acts as a barrier to learner mobility.

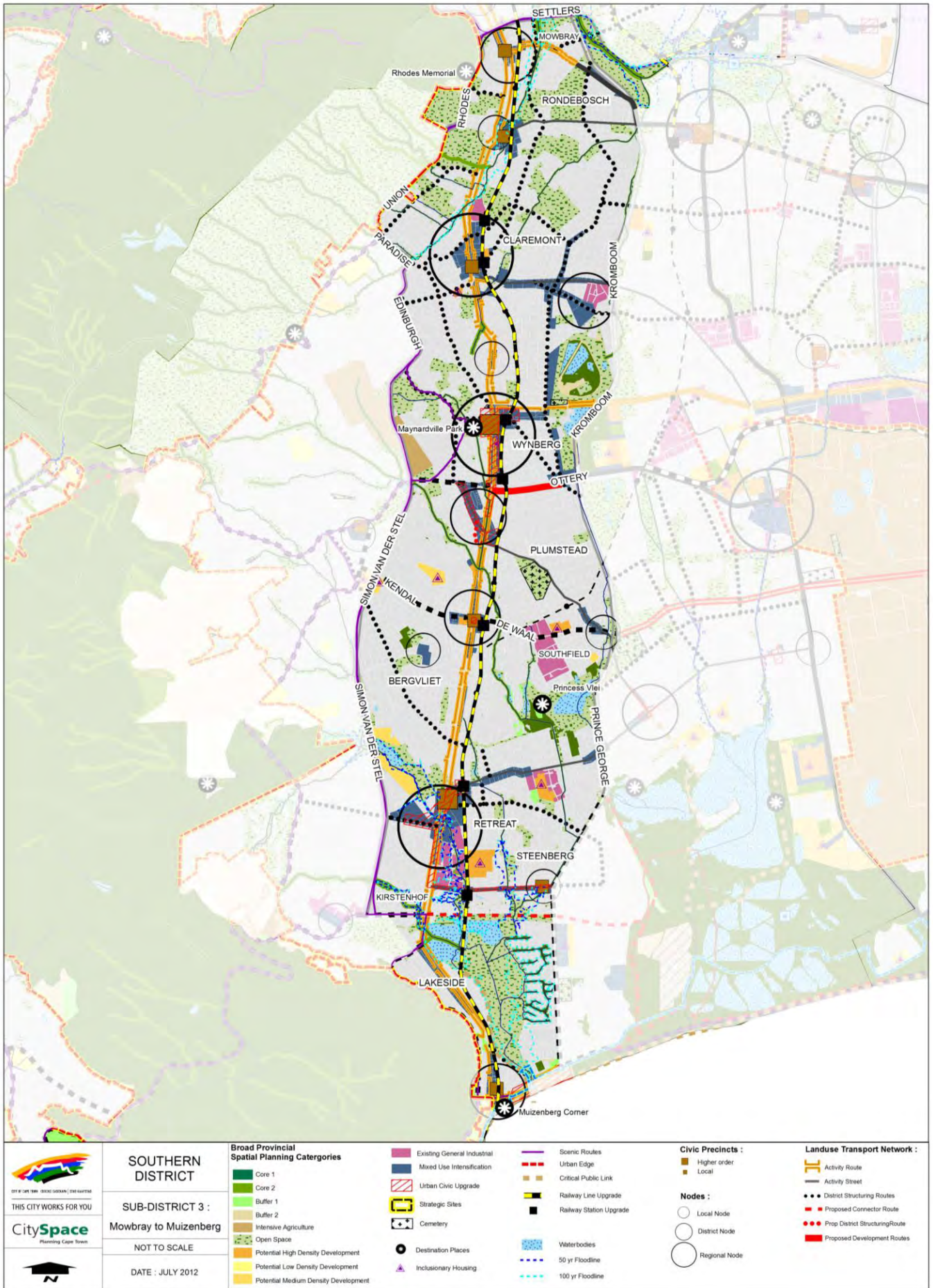


Fig 6.3.2 Sub-district 3: Mowbray to Muizenberg (CoCT 2011)

6.3.2 Metropolitan integration and connection

The SDP's strategies are aligned with the CTSDFs spatial policies and strategies. It is developed in a manner to detail the CTSDFs proposals at the district scale. The multi-directional accessibility grid on the metropolitan scale must guide the "secondary" accessibility grid on the district level. The "secondary" grid is to incorporate activity streets which will have nodal urban development along a route, which includes Claremont as a node along the Main Road corridor (Fig 6.3.2). It is to be characterised by a mix of land uses and medium to high density residential development. Main Road as a corridor should continue to have transport infrastructural development and increase links across the city to increase access to employment and social opportunities in the area.

Land use intensification is being promoted along the accessibility grid which promotes mixed-use and increasing access to opportunities. Areas of land use intensification should be focused along Main Road and within nodes such as Claremont. Claremont is particularly important because the city values it as an area of economic investment and it has a high level of accessibility. The City of Cape Town wants to develop a stronger east-west link across the metropolitan area and part of its strategy to do so is by linking Claremont as a node to the east of the city. Newlands, sitting just north of Claremont is considered the sporting hub of Cape Town and therefore accessibility to the area is promoted across the city.

The data collected revealed learners are travelling from many different areas to reach their school in Claremont. This highlights that the Claremont precinct is well connected with other areas because learners are able to access their schools. In terms of metropolitan connection and integration, Claremont is integrated well into the city as a whole and is prioritised as it is considered a node for development on the city scale. There is a strong focus on development along the Main Road corridor but this may be drawing attention away from emphasising strengthening the east-west link.

6.3.3 An integrated approach to land use planning and transport, incorporating densification and mixed use

In terms of marrying land use and transport planning, the SDP is following the same guidelines as the CTSDF. It aims to follow the strategy of improving economic access by improving accessibility to urban opportunities and by integrating land use, economic development and transport. The sub-strategy of the district is to establish an integrated city-wide public transport system that supports the City of Cape Town's accessibility grid.

Economic development should be in accessible locations so it can provide opportunities for a range of people. Access to these economic opportunities should be achieved by having a public transport system that supports it. Claremont and Rondebosch are centres of economic development in the district and are generally highly accessible because of the grid-based movement system comprised of rail, connector routes and freeways which essentially make up the Main Road corridor.

Claremont is considered a sub-metropolitan urban node in the Southern District and therefore has a specific function within the Main Road development corridor. It must be characterised by intensity, mixed use and a clustering of activities where there is high accessibility and provides urban opportunities. The SDP, like the CTSDP, intends to promote the concept of the development corridor which is spatialised in Fig 6.3.3. Its function varies in accordance with where it sits on Cape Town's accessibility grid and the mix of land uses it supports. Fig 6.3.4 on the following page shows the districts accessibility grid and areas for land intensification. Public transport routes and interchanges should be strengthened within the node and social facilities should be clustered at the highest points of accessibility such as Claremont.

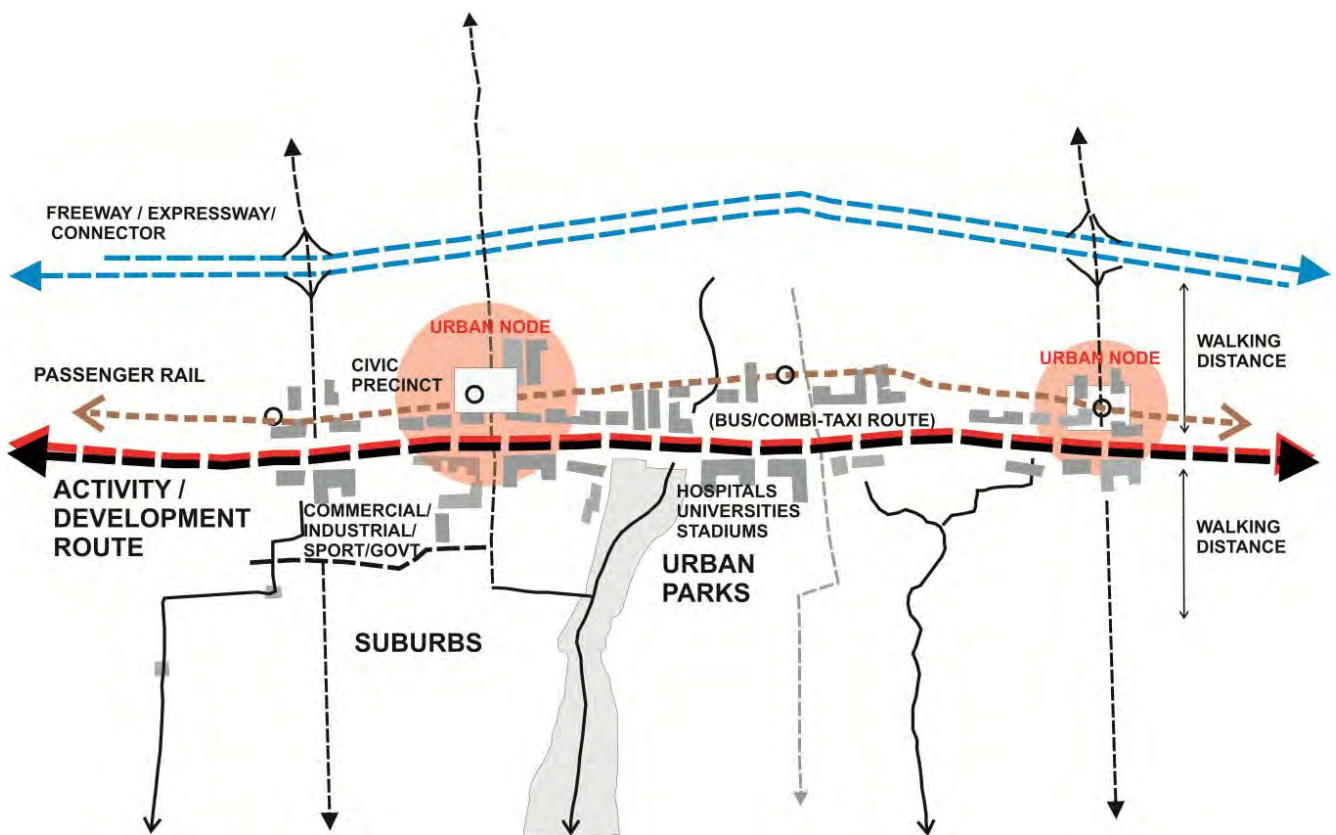


Fig 6.3.3 Development corridor concept (CoCT 2011)

The SDP wants to encourage integrated settlement patterns by having residential intensification along the Main Road. It wants to promote mixed residential types for a range of income levels. According to the SDP there are only a few areas where new development could still occur and high land prices prevent low income households from being located in the area.

It is clear from learner reflections that there are a number of activities available to youth in Claremont as the area is mixed use as promoted by the SDP, however 18% of learners feel that it is unsafe to walk about Claremont which constrains learners' mobility to access the activities in the area. As mentioned before, 30% of learners would also not walk or cycle to school because they are concerned about their safety. On Map B, it can be seen that many activities are in walking distance of the three schools from which data was gathered from.

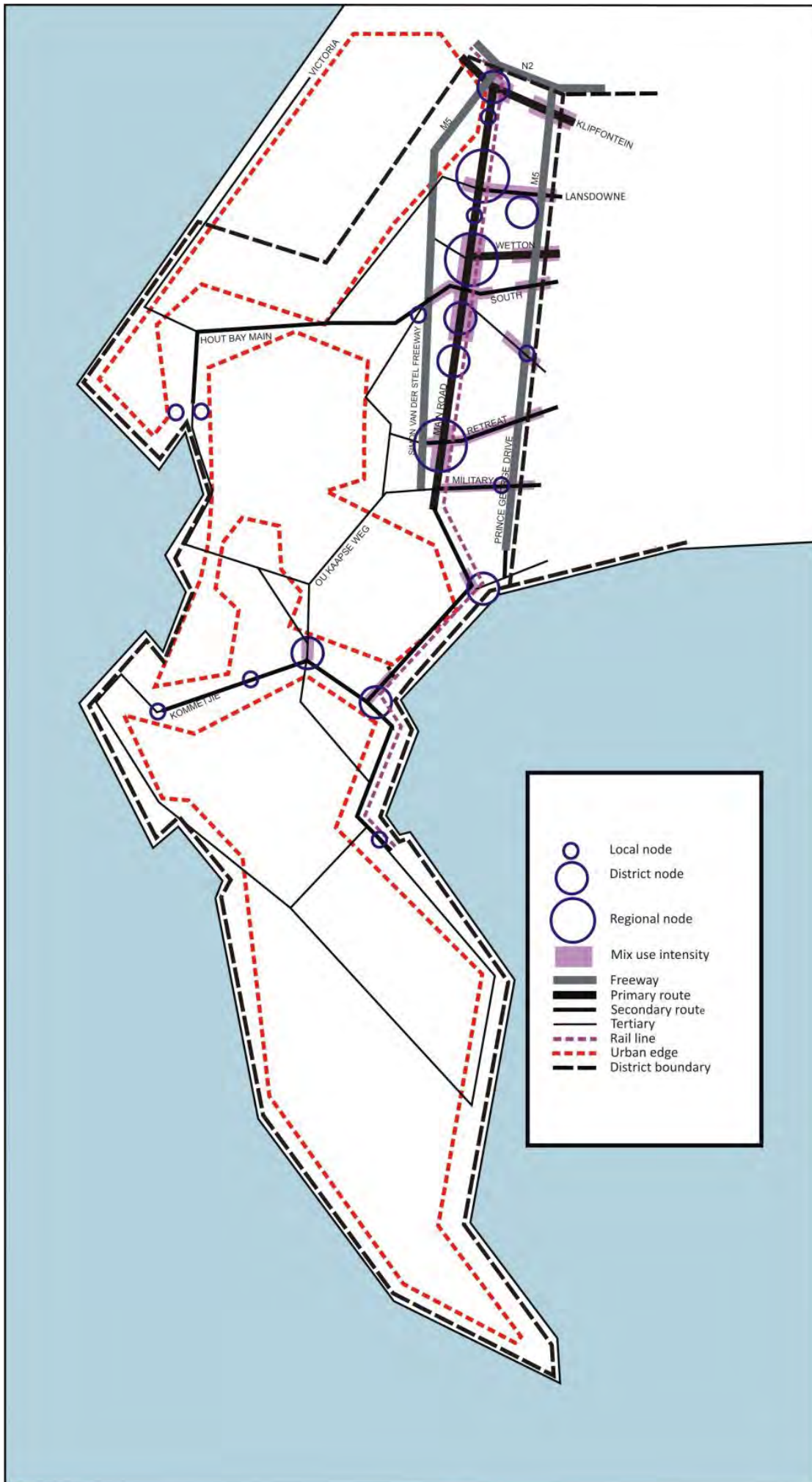


Fig 6.3.4: District accessibility grid and areas for intensification concept (CoCT 2011)

6.3.4 Walkable neighbourhoods and implementation at human scale

The SDP aims to have concentrations of economic opportunity that can be accessed by important movement routes. Efficient NMT and public transport networks should be established in and across the district. Social inclusion is being promoted by having more equitable access to health, education and recreation, and increasing living opportunities to within the Main Road corridor. Foot and cycle access aim to be prioritised in the district. The SDP envisions having business and social opportunities in walking distance to the public transport-orientated Main Road corridor.

The SDP also promotes that the functionality of open spaces that exist should be prioritised over the quantity of open spaces within the district. The development of higher order public facilities and spaces are encouraged within civic precincts such as in Claremont as it would be in walking distance from each other; however, NMT is not relied upon because of the dominance of the motor vehicle and because safety is a barrier to walking and cycling in Claremont. So even though the SDP wants to facilitate NMT with other forms of public transport to a greater extent, in reality it is not the case.

6.3.5 Safety

Safety is not explicitly considered in the SDP except for the mention of having a safe railway system. A lack of consideration for safety is a big shortcoming of the SDP as it is clear that this is a huge barrier for mobility from learner reflections. Safety by environmental design is not included, but the mixed use along the main corridor does offer passive surveillance. The infrastructure for development is great in Claremont but safety is completely neglected. It can be questioned if the role and function of the SDP should be to address issues of safety.

6.3.6. Learner Participation

The SDP does not have a process of public participation. It is clear from learner reflections that there are significant benefits of including learners in the process of planning and will assist in making spaces and places in Claremont more child-friendly.

6.3.7 Institutional capacity and budget support

As Claremont is well developed, institutional capacity in the area is of a high level. The ideas proposed by the SDP generally fit into what is existing in Claremont and therefore increasing institutional capacity and budget support would unlikely be a problem. There has been significant government investment in Claremont's public transport system and the Claremont station was upgraded in 2012. In essence, there is potential for support, but there is lack of support for transport specifically for learners.

The Spatial Development Plan for the Southern District can be seen in Fig 6.3.5. The plan incorporates the spatial concepts covered in this section and shows the structuring elements to the Southern District in detail.

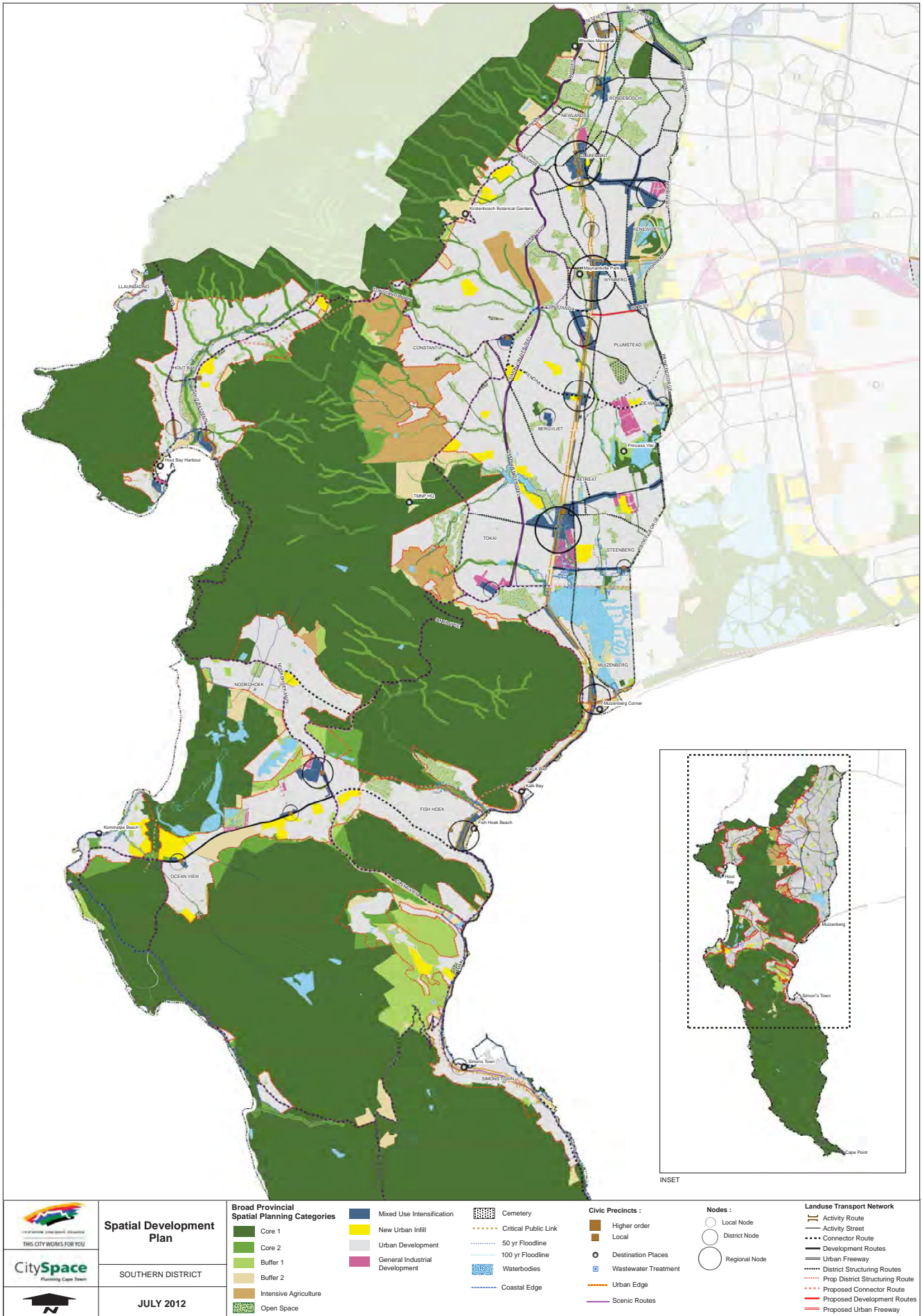


Fig 6.3.4 Spatial Development Plan for the Southern District (CoCT 2011)

6.4 Analysis Conclusion

To conclude this chapter, the research questions which have been answered throughout the analysis have drawn out central critical issues. Firstly, when investigating learner travel patterns it is evident that NMT is an under-used mode of transport and the use of the private motor vehicle dominates travel to and from school. This is a critical problem because the SDP and CTSDP are planning for public transport to be used instead of private transport, and have made increased provision for it but trends show that the use of the private vehicle is increasing. An issue arising from this is that it is defeating the purpose of integrating land use and transport planning. This relates to the other critical issue of safety. Safety is clearly a big concern for all learners and is evident in the modal use of learners and apprehension to use NMT. From the data collected, it is evident that safety is the largest barrier to learner mobility and public transport is largely viewed as an unsafe mode of transport to and from school, which is important to address because of the far travelling distances of learners. Another issue which is of concern is the lack of public participation when planning and developing the SDP. It is evident from the qualitative data gathered from learners that their suggestions can be used in planning and developing spatial plans.

On the other hand, the majority of learners are happy to walk about Claremont and many are using a range of facilities that the area offers. Schools in Claremont are in walking distance of public transport services which are located near a mix of land uses. Many learners suggest that travelling with friends would make school trips more enjoyable and therefore consideration should be made to increase the opportunity for learners to travel with fellow learners. There is an opportunity to increase the use of public transport as learners would use public transport if it were safer.

The dominance of the private motor vehicle, the inability to integrate land use and transport planning, the question of safety while travelling and the lack of public participation are critical issues that need to be addressed to improve access to education across Cape Town and overcome the barriers to learner mobility. The following chapter will therefore specifically address these four critical issues and propose ways to address them.

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Chapter 7

***RECOMMENDATIONS AND
CONCLUSION***

In this final chapter, recommendations for learner mobility improvement will be covered. It will answer the research questions and answer how a planner can influence the shift away from a city designed for the motor car to one that promotes public and non-motorised transport and how spatial planning and design can respond to barriers to learner mobility.

Critical issues and barriers to learner mobility as pointed out in the analysis include safety, a car-dependent society, the lacking interface between land and transport planning and learner participation. To address the issues and challenges to learner mobility, this chapter will recommend key strategic guidelines that can be implemented on the local scale and the Cape Town metropolitan scale. The guidelines respond directly to the analysis findings. This chapter will then conclude the research by summarising the answers to the research questions and draw out main conclusions from the study.

7.1 Guidelines for improving learner mobility

To increase learner mobility in Claremont and in the Southern District, more than one scale needs to be considered. Guidelines will be proposed for increasing learner mobility on the local scale within the district and broader guidelines will be proposed for the Cape Town metropolitan. In some cases, the guidelines for the local scale specifically address the challenges the Southern District faces and responds directly to the findings of the analysis in the previous chapter. Some, are however general and could be used to increase learner mobility in varying locations on the local scale. The guidelines respond directly to the four critical issues drawn out from the analysis and therefore address the issues revolving around of safety, a car-dependent society, the interface between land and transport planning, and lastly learner participation which fits into the broader problem of the limited inclusion of youth participation in planning processes.

7.1.1 Local scale recommendations:

7.1.1.1 Safety

In Claremont, it is found that parents driving their children to school are concerned about their children's safety. The analysis also reveals that there are a number of activities available to youth in Claremont as the area is mixed use as promoted by the SDP, however 18% of learners feel that it is unsafe to walk about Claremont and therefore constrains learners' mobility to access the activities in the area.

If there was the option to walk or cycle to school, 30% of learners would choose not to because they are concerned about their safety. It is evident from these findings that safety is the biggest barrier to learner mobility in Claremont. Although safety and security is imbedded in social issues within a society itself, it can be improved through spatial design.

Guideline 1: Ensure safety through environmental design

Spaces that learners walk through have to be safe and environmentally designed to ensure space is used in the best way possible to add to the safety of learners while they are in transit. Before design, youth pedestrian routes must be assessed and desire lines should be determined.

Principles of safety by environmental design include spatially designing a space that directs pedestrians to use particular routes to ensure there is greater surveillance along a common route. Public spaces should be welcoming to learners and citizens should feel they have ownership of it. Open spaces learners are traversing through must be well-lit, welcoming, on human scale and exposed to constant passive surveillance as can be seen in Fig 7.1. No spaces should be left vacant in an area as it welcomes crime and it is preferable to have a network of spaces that learners can use along a route instead of one large space, as it allows safety over a greater distance (CSIR 2005).

Buildings should be designed on the human scale along learner mobility routes. It should be regulated that these buildings are designed in mixed use areas to offer the greatest passive surveillance possible and buildings must be orientated with windows facing the street or space learners are using (Fig 7.2). If a path used by learners is along the same route as high vehicle activity, separate sidewalks away from traffic should be considered.

Besides using environmental design to increase safety of learners, policies should be put in place specifically for areas where there are a large number of schools such as in and around Claremont. These can include reducing speed limits near schools and only allowing pedestrian access from a certain distance away from a school to ensure learners are not vulnerable to the risk of road accidents.

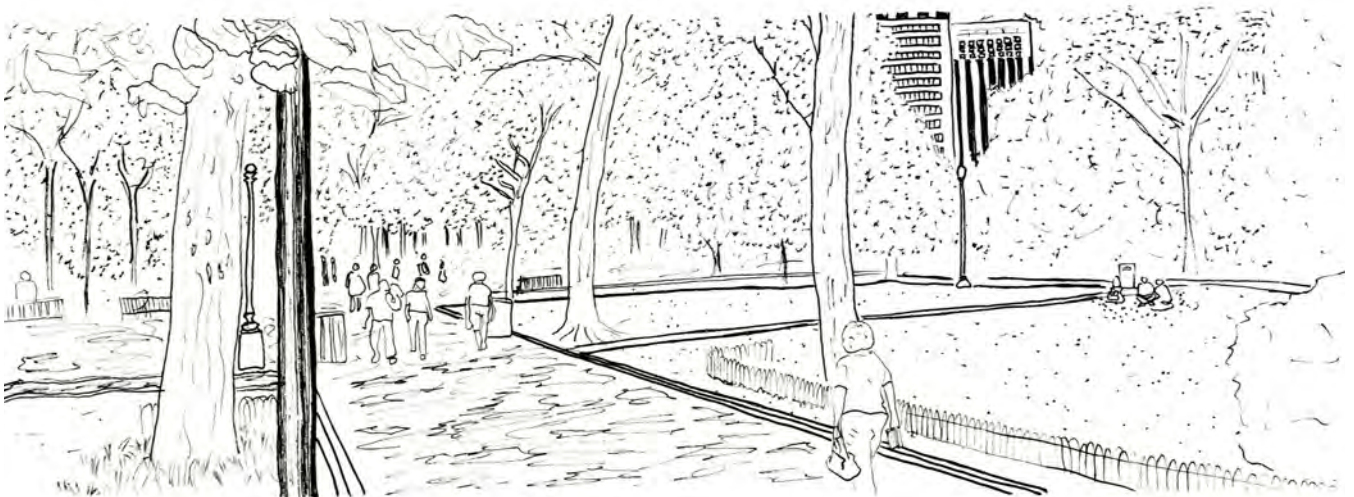


Fig 7.1 Open public space always allowing passive surveillance



Fig 7.2 “Eyes on the street” promoted through high dense, mixed buildings facing the street

Safety is not addressed in the SDP although it is hindering mobility and decreasing the use of public transport in the Claremont. The SDP should incorporate these concepts of environmental design because safety is the central issue which is preventing a shift away from the high use of private motor vehicles in the area to an increased use of the public transport available. Because school learners are a large proportion of the Southern districts’ commuters, the location of schools and their relation to transport hubs in the area should be considered. High density, mixed use activities should take place along the main routes that learners are using to increase their safety and ensure surveillance between school and a transport hub in the SDP.

Guideline 2: Locate educational hubs near transit systems that act as safe zones

Educational hubs or anchors could act as safe points for travelling between home and school. The hubs can be placed at key transit points within the public transport system that services schools in the local area. The anchor should be in walking distance from schools and there should be enough anchors within an area that ensures all learners can use it as a point of orientation. Routes linking schools and the educational hubs should include all the principles of safety by environmental design and offer a passage of safety from the hub’s location.

The hub should be designed in a way that is youth-friendly and gives them ownership of the space it encompasses. The hub should not only function as a point of safety but should offer activities that are mentally stimulating for youth of different ages. The hub could be based around a social facility that already exists, such as a community centre or library and could offer activities and workshops or simply act as a public space of youth interaction. It would be under constant surveillance not only because of safe design but because of it being a highly active transfer point.

For functions it cannot offer, it should be well connected to other facilities that can offer those functions. It is found that 67% of learners from the three schools use other facilities close to their school in Claremont. The hub must be well-integrated with libraries as they are the most common used facility by learners, followed by shopping centres. Cavendish Square, Ardene Gardens and Newlands Swimming Baths are often used by learner and therefore need to be well linked for learners in the SDP.

In essence the hub must be recognised as space that is specifically for the youth within the community and should be well connected to other educational hubs located all across the city, which will be addressed in the following section that covers the guidelines for the metropolitan scale (section 7.1.2.3).

The hub can be integrated with school bus drop-off points and will hopefully decrease traffic congestion by a small degree in certain areas and with time encourage parents to allow their children and learners to rather choose to use public transport in the area that is integrated with the hub. These hubs can be placed within and around Claremont in the Southern district and must be well considered when encouraging development along certain routes. Routes that are highly active by youth should be encouraged to have mixed use and dense activities. These educational hubs could be considered precinct nodes within the civic nodes of the SDP.

7.1.1.2 Car-dependent society

It is clear from the analysis that half of learners are getting to and from school in private motor vehicles. A shift therefore needs to be made away from a city designed for the motor car to one that promotes public and non-motorised transport.

Guideline 3: Promote environmental sustainable development as the primary focus on a precinct level within a district

If plans are developed with the natural environment in mind instead of the primary focus being on economic development as is the case in the SDP, a faster shift may be made away from a community that relies strongly on cars to one that uses public transport. A shift to develop in a way that is least harmful to the environment has potential to highlight the negative affects the high use of private motor vehicles is having within a district.

The SDP should have a strong environmental framework within its urban areas and not only existing natural spaces as it currently does. It can aim to address issues of car pollution and highlight the importance of having walkable communities that can be reliant on the good quality public transport services the Southern district offers but that is currently not used to its full potential. Incentives can be used to ensure more learners are travelling with public transport, such as cheapening school trips and improving security along learners' preferred routes.

In the conclusion of the previous chapter it was noted that there is an opportunity to enhance learner travel experiences by considering their desire to travel with fellow classmates. Travelling with friends amongst the youth can be promoted in a local area by promoting carpooling and the use of school buses. Incentivise should also be used for NMT. Incentives could include anything from financial incentives, to learners gaining points for NMT trips they use, to the provision of facilities provided by the educational hubs. Development with an environmental focus can highlight the importance having a pollution free environment and the increased safety of learners if there were no cars on the road. Spatially, car access can be limited on certain streets and certain streets should be designed specifically for pedestrians.

7.1.1.3 Land use and transport planning

The interface between land use and transport planning is being well promoted at different scales across Cape Town. However the interface is not necessarily making citizens more dependent on public transport to get to destinations.

Guideline 4: Prioritise youth's needs

Prioritising youth's needs while strengthening the relationship between land use and transport planning will benefit all citizens. If spaces and places are designed for youth in mind, it will be safer, more user friendly and likely more enjoyable and welcoming.

Schools and youth can be made the central focus of development in the SDP, within the Claremont area because there so many of them. Schools should be well linked with mixed uses in the area and environmental design principles for safer spaces should always be considered for youth. Gyms, libraries, parks which are already well used by the learners must be well connected to a transport network. Learner transport between facilities should be identified and in some cases, routes should be specifically designed for and spaces should be available for skating and cycling (Fig 7.3).

Leadership and responsibility should be given to a government official to address learner's needs when integrating land use and transport planning. Affordable transport must be considered to a far higher degree as it is now. The analysis shows that most learners are spending R10 - R30 to travel to and from school per day, and believe it to be expensive. In the SDP, improved social and environment development would be better than having economic development as the catalyst for marrying land and transport planning.

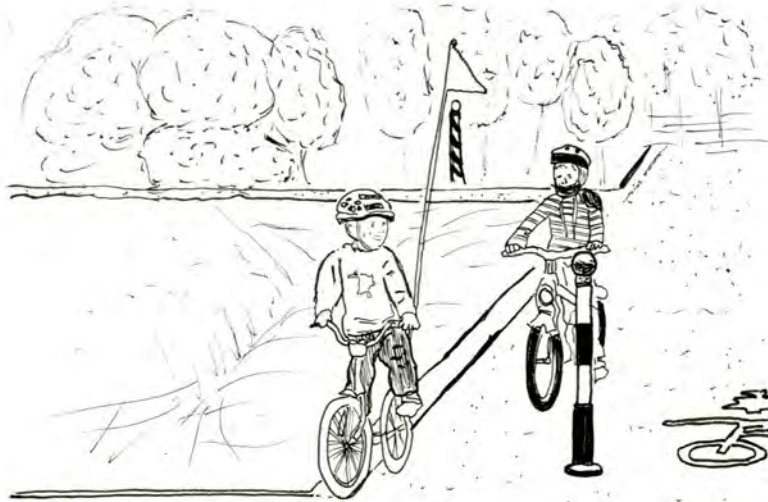


Fig 7.3 Street especially for cycling and pedestrians

Guideline 5: The SDP should ensure mixed income settlements are made a reality

The analysis pointed out that the majority of learners are travelling from areas outside of Claremont to reach their schools. Many of these learners are living on the Cape Flats which is a less affluent area when compared to Claremont. Land can therefore be made available for mixed income settlements in the Claremont area and specific sites should be made available for mixed income development in the SDP. Incentives can be used to attract private investors to invest in land for gap and social housing. If families move into Claremont that currently live a distance away, it will decrease travelling times and hopefully induce a shift in learners using NMT transport modes to get to school. Settlements are to be in walking distance of public transport services to ensure access to activities across the city.

Land for mixed income settlements should be prioritised close to existing public transport services. Those living there may be restricted from using cars, as is the case in GWL-Terrein investigated in Chapter 3. Although a planner can designate specific land for mixed income housing, investment in projects like these is a necessity and for it to work appropriately, it needs to be driven by the community itself.

7.1.1.4 Learner participation and increase institutional capacity

Institutional capacity can be increased by including more citizens in decision making. Networking between as many actors as possible can expand opportunity. Involving youth in decision making that will directly impact on their lives is vital to have an inclusive community.

Guideline 6: Local communities should drive development with their youth

It is evident in the case of GWL-Terrein that development driven by local communities is likely to be more sustainable. Development with youth in mind influenced decisions for the GWL-Terrein project and made development more community-centred. The youth's needs therefore need to be considered and not only that, but youth should be consulted during the planning process. Institutional capacity can be built by having constant engagement between role players that can influence learner mobility such as schools, parents, learners, planners etc.

Youth should be encouraged to be more actively involved in decision-making within their communities and their opinions should be considered as valuable as any professional's or adults. Learners could engage with issues revolving around their transport and their mobility, within a classroom environment. This could encourage youth interaction around issues that influence their lives. Personally involvement in development and implementation of projects and ideas can instil a sense of pride and ownership within the community. Because of the many schools located in and around Claremont, the area could be centralised around educational development and there is opportunity for the Southern District to be considered a schools district. Small impacts in a local community may impact youth's lives to a large extent.

7.1.2 Metropolitan scale recommendations:

The metropolitan scale guidelines must support and be supported with those guiding the local level. Guideline 7 will address the three critical issues of safety, a car-dependent society and land use and transport. Guideline 8 addresses learner participation and institutional capacity.

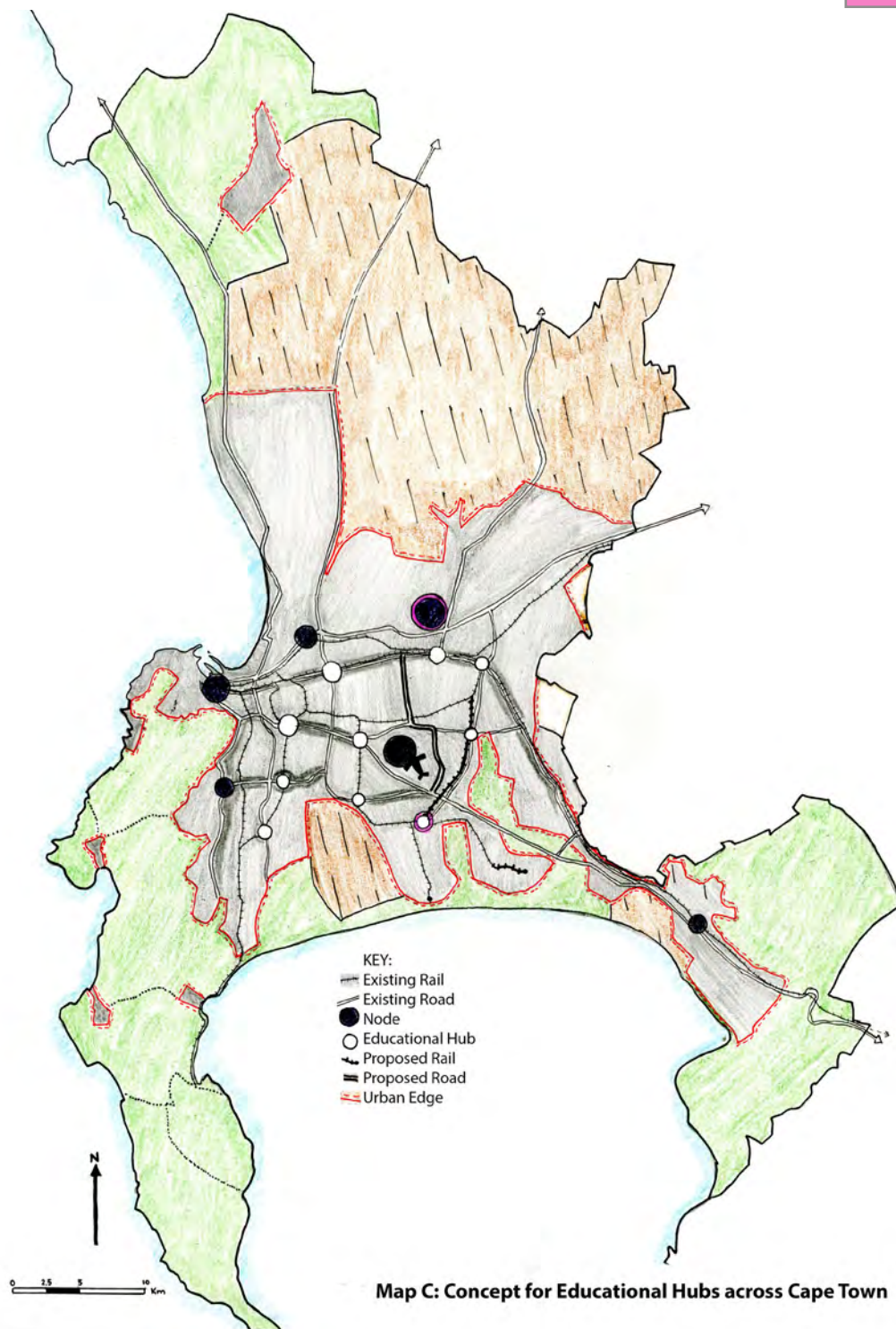
7.1.2.1 Safety, a car-dependent society, and land use and transport planning

Guideline 7: Promote a school transport network across the city using a pro-poor approach

Promoting a school transport network across the city is a way of addressing safety, Cape Town's car-dependent society and the weak interface between land use and transport planning. A school transport network may be a means to increase learner mobility on the metropolitan scale and is relevant to Cape Town because of the pattern of learners travelling far distances across the city to reach their schools. The system must be intentionally designed to be well connected and integrated with the local scale.

In terms of safety, the transport system must be safe, welcoming and affordable. The system should be based around learner's safety while in transit and while stationary within the network. Educational hubs as suggested under Guideline 2 will act as anchors of the system and function as secure point-to-point transfers of learners.

Map C is concept of the school transport network. The network must be aligned with the accessibility grid that is promoted in the CTSDf. Cape Town's existing radial transport network should be shifted to a multi-directional grid because it will make it easier to get to a desired location. It will promote accessibility which will provide opportunities for access to educational facilities, recreational facilities, commercial facilities and public open spaces. A grid pattern will make it easier for intermodal public transport exchanges which will increase transport options for learners. Rail should be the main form of transport because as it exists, it provides access for those from marginalised areas and will be less detrimental to the environment. Educational hubs should therefore begin by being based on the rail network and can occur where there are existing rail terminuses. On Map C, it is proposed that the use of the railway line be extended in the south-east region and just east of the airport. This will promote the use of rail over road networks and ensures that most learners in the south-east are in walking distance of a public transport network.



Map C: Concept for Educational Hubs across Cape Town

Public transport routes need to be managed as an entire system, ensuring that at least one mode of transport services any given area. The public transport service will be dependent on the learner density of the area, with more public transport investment in areas with higher learner densities. The system might work successfully by having one fare for any mode of transport taken by learners and no learner should walk more than 1 km.

Map C is only a concept and does not necessarily indicate the exact location of suggested educational hubs. Ideally, educational hubs should be in walking distance of all schools within an area. The hubs can be based around any social institutes within a local area such as a library, community hall, research centre or a particular school itself. A pro-poor approach should be used for developing the network as it will ensure the majority of learners that are travelling the furthest distances are gaining safer and more reliable access to their schools.

Because the system is based around public transport infrastructure, there will hopefully be a shift away from learners being so highly dependent on being driven to school in private motor vehicles.

Ensuring safety for learners while travelling between educational hubs will have to be done by increasing institutional buy-in and attracting both public and private investors to develop the school transport network. For example, institutional support will have to come from bus companies, the government and Transnet. Policies and regulations with a particular focus on youth can assist with the promotion of the school transport network. An example of such a policy could include allowing learners to travel with bicycles on buses and trains.

7.1.2.2 Learner participation and increase institutional capacity

Guideline 8: Promote the concept of the Child-Friendly City in Cape Town

There has to be clear political leadership when promoting the concept of a CFC. Institutional capacity can be built around the concept and the city should be responsive to youth's needs and budget there for. Child mobility is considered an indicator of a child-friendly city. When promoting the concept of a CFC in Cape Town, it should be ensured that all citizens know about what the city is striving for and not only those that will be apart of promoting the youth-orientated city. The following principles should be adopted for a child-friendly Cape Town:

A Child Friendly City must guarantee the RIGHT of every young citizen to:

- influence decisions about their city
- express their opinion on the city they want
- participate in family, community and social life
- receive basic services such as health care and education
- drink safe water and have access to proper sanitation
- be protected from exploitation, violence and abuse
- walk safely in the streets on their own
- meet friends and play
- have green spaces for plants and animals
- live in an unpolluted environment *(Centre for Sustainable Transport 2004: p12)*

7.2 Research conclusion

The problem of a lack of public transport planning in South Africa, its car-dominated cities and concerns revolving around safety while youth are travelling catalysed this study. As a response to these problems, research objectives were set, including identifying barriers to learner mobility, ways in which spatial planning can respond to these barriers, learner mobility patterns and ways in which spatial planning can be used to increase accessibility for learners with the use of public transport. To obtain these objectives specific research questions were asked and answered throughout the study.

This study began by drawing on literature in order to derive criteria of child-friendly and transit-orientated planning that promotes increased learner access to educational facilities by addressing the challenges currently faced by learners in South African cities.

The criteria were then used to evaluate the international cases of Bogotá, Colombia and GWL-Terrein in Amsterdam. Through exploring the case studies, key lessons were drawn upon for Cape Town.

The research questions were able to be answered through the analysis by using the same criteria developed in the literature chapter. Exploring national level through to metropolitan level legislation and policy relevant to access to education and the interface between land use and transport planning provided a context for what is being planned on the local scale. Data was then collected from school learners at the precinct level of Claremont that falls within Cape Town's southern district, in order to gather primary data.

In essence, the analysis answered the central research question of what are the barriers to learner mobility and how can spatial planning respond? The combined analysis of the data collected from learners in Claremont and the critique of the Southern District Plan, revealed that four critical issues act as barriers to learner mobility. The issues all well linked to the initial problems that catalysed this study altogether. Safety is the biggest concern and influences learner travel patterns and modal choice. Half the learners sampled in Claremont are travelling to and from school in motor vehicles which highlights the second critical issue of a society that is car-dependent. Third, although from national right through to local scale, the promotion of the integration of public transport and land use is being made, the reality on the ground is very different. The fourth and final critical issue the data reveals in that there is a clear lack of learner or even youth participation in the process of planning.

The second part of the central research question is answered through the recommendations. Recommendations respond directly to the four critical issues identified in the analysis. The recommendations suggest that the spatial barriers of learner mobility can be addressed on the local scale and metropolitan scale. On the local scale safety can be increased with the use of environmental design. Prioritising environmental sustainability within communities can influence the shift away from a city dominated by cars and to spatially increase access to education, youth's needs should be prioritised when integrating land use and transport planning. Local scale educational hubs can be used to increase public transport used by learners and may be a means to address safety of travel too. Educational hubs must be incorporated into a school transport network across the city which ties into recommendations made for the metropolitan level. The concept of a child-friendly city can be promoted in Cape Town to increase learner participation within society and allow them the platform to influence development.

Throughout the study, it has been noted that there is a lack of planning for learner transport in the South African city and there is a lack of research on learner transport too. For this study to have greater significance, increased research is imperative to draw attention to the topic of learner mobility and it can then be hoped that it may influence policy to specifically address the needs of learners in the city.

It can be hoped that this research be a useful contribution to begin a shift to a city that is more inclusive of its children through the use of spatial planning. In conclusion, if the interface between land use and transport planning could be implemented correctly and for the right reasons, with safety and youth participation in mind, social equity, spatial equity and increased accessibility to education can become a reality.

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University of Cape Town

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APPENDICES

Questionnaire



University of Cape Town



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Questionnaire: Understanding learner transport in Cape Town

To understand learner transport patterns and needs in Cape Town, I Nina Kay, a student of The University of Cape Town’s Master of City and Regional Planning programme, require high school learners to complete this questionnaire to assist me with my research. This questionnaire contains 30 questions. Please answer them as accurately and descriptively as possible. When it asks why, please provide as in depth an answer as possible. There are no wrong answers.

Age: _____

Gender: _____

Grade: _____

School: _____

What area do you live in? _____

1. How do you travel to school in the morning? Tick the appropriate box(es)

Car		Train	
Motor Cycle		Minibus Taxi	
Public Bus		Walk	
School Bus		Cycle	

If you use a combination of modes, please state them in order and approximately how long it takes you to use each mode.

2. Approximately how long does it take you to travel to school?

Less than 5 mins	5 to 15 mins	16 to 30 mins	31 – 45 mins	More than 45 mins
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3. How do you travel home after school in the afternoon?

Car		Train	
Motor Cycle		Minibus Taxi	
Public Bus		Walk	
School Bus		Cycle	

If you use a combination of modes, please state them in order and approximately how long it takes you to use each mode.

4. Approximately how long does it take you to travel home after school?

Less than 5 mins	5 to 15 mins	16 to 30 mins	31 – 45 mins	More than 45 mins
------------------	--------------	---------------	--------------	-------------------

5. Is your school the nearest school to where you live?

Yes No

6. Do you ever travel on your own when travelling to and from school?

Yes No

7. If you travel by car or if you walk to or from school, how many others do you travel with?

No one else	One other person	More than 2 other people
-------------	------------------	--------------------------

8. Who do you travel with when going to or leaving school?

On your own		Another adult	
Parent		Friend or sibling (What is their age? ___)	

9. Do other pupils use the same mode of transport to get to and from school that live in your area?

Yes No

If Yes, do you travel with them? _____

10. When travelling to places other than school, what mode of transport are you most likely to use?

Car		Train	
Motor Cycle		Minibus Taxi	
Public Bus		Walk	
School Bus		Cycle	

11. Do you travel straight home after school, or do you travel to somewhere else before heading home?

Yes No If Yes, where do you usually go? _____

12. What time do you usually leave home in the morning? _____

13. What time do you usually leave school in the afternoon? _____

14. What time do you usually get home in the afternoon? _____

15. Do you participate in after school activities that require you to travel home late in the evening?

Yes No

If Yes, What do you do after school? _____

16. Do you use other facilities such as libraries, swimming pools, internet cafes' or parks that are close to your school?

Yes No

Please state which: _____

17. Which places would you like to visit after school?

Library		Internet cafe	
Sports field		Gym	
Park		Shopping centre	
Other			

If Other, please specify: _____

18. Do you think that the cost of travelling to and from school is expensive?

Yes No Do not know

19. If you travel on your own, how much do you think it costs to travel to and from school in one day?

R1-R5		R10-R30	
R5-R10		More than R30	

20. Do you feel comfortable walking in the area close to your school?

Yes No

21. Do you feel safe while travelling between school and home?

Yes No If No, why? _____

22. Please tick in the circles below, what are your biggest concerns while travelling between school and home:

Traffic		Being robbed	
Getting lost		Being alone	
Strangers		Other	
Bullying			

If Other, please specify: _____

23. Do you think your parents are concerned about you when you travel to or from school?

Yes No If Yes, why? _____

24. If you walk or cycle, are these any problems that you encounter along your journey:

Not enough pathways for cycling/ walking		Being robbed	
Bad weather		Strangers	
Other			

If Other, please specify: _____

25. Do you feel there are sufficient pedestrian pathways and crossings where you usually walk?

Yes No

26. Would you prefer it if your school were closer to your home?

Yes No

Why? _____

27. Is you had the option, would you like to walk or cycle to school?

Yes No

Why? _____

28. Do you find the journey to and from school exciting?

Yes No

Please explain why:

29. Is the mode of transport you take your preferred mode? Why?

30. How do you think travelling could be made more exciting?

Thank you for the time spent on filling out this questionnaire!

University of Cape Town

Research Approval
Letter



University of Cape Town



**Western Cape
Government**

Education

Directorate: Research

Audrey.wyngaard2@pawc.gov.za

tel: +27 021 467 9272

Fax: 0865902282

Private Bag x9114, Cape Town, 8000

wced.wcape.gov.za

REFERENCE: 20130808-15639

ENQUIRIES: Dr A T Wyngaard

Ms Nina Kay
20 Tolpen Road
Lansdowne
7780

Dear Ms Nina Kay

RESEARCH PROPOSAL: INCREASING LEARNER ACCESS TO AND FROM SCHOOLS IN CAPE TOWN USING A TRANSIT-ORIENTED APPROACH

Your application to conduct the above-mentioned research in schools in the Western Cape has been approved subject to the following conditions:

1. Principals, educators and learners are under no obligation to assist you in your investigation.
2. Principals, educators, learners and schools should not be identifiable in any way from the results of the investigation.
3. You make all the arrangements concerning your investigation.
4. Approval for projects should be conveyed to the District Director of the schools where the project will be conducted.
5. Educators' programmes are not to be interrupted.
6. The Study is to be conducted from **12 August 2013 till 20 September 2013**
7. No research can be conducted during the fourth term as schools are preparing and finalizing syllabi for examinations (October to December).
8. Should you wish to extend the period of your survey, please contact Dr A.T Wyngaard at the contact numbers above quoting the reference number?
9. A photocopy of this letter is submitted to the principal where the intended research is to be conducted.
10. Your research will be limited to the list of schools as forwarded to the Western Cape Education Department.
11. A brief summary of the content, findings and recommendations is provided to the Director: Research Services.
12. The Department receives a copy of the completed report/dissertation/thesis addressed to:

**The Director: Research Services
Western Cape Education Department
Private Bag X9114
CAPE TOWN
8000**

We wish you success in your research.

Kind regards.

Signed: Dr Audrey T Wyngaard

Directorate: Research

DATE: 12 August 2013

Letters to Principal
and Parents



University of Cape Town



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DATE

The Principal

ADDRESS

Study of Learner Transport to and from schools in and around Claremont, Cape Town.

I, Nina Kay, am presently registered at the University of Cape Town for the Masters of City and Regional Planning programme.

I now formally request permission to conduct research activities, at the school, that will constitute as part of my research project. The research project will explore how learners are travelling to and from school.

My intended research work at the school will entail:

- (a) Questionnaires to be distributed to learners in one Grade 10 class and one Grade 11 class.
- (b) Distributing and collecting questionnaires during the third term of 2013.

I undertake

- (a) not to cause any disruption to the normal teaching programme
- (b) to negotiate the most appropriate times for the research to be undertaken
- (c) to ensure the anonymity of each learner, by not asking the learner to write his/her name on the questionnaire
- (d) to ensure the anonymity of the school, at your request
- (e) to conduct my research with integrity and with the utmost respect for the dignity of every person involved in this research project
- (f) that the research participants can withdraw at any time
- (g) to give the school a written report of my findings
- (h) to inform and request the consent of the parents of the learners.

Please inform me if you would prefer the school to left anonymous or not for the research. Please contact me or my supervisor (contact details above) if you require additional information regarding my reseach. I have attached an information letter regarding the research for the school, parents and pupils.

I trust that my request will be given your approval.

Thank you.

Yours sincerely

Nina Kay

Supervisor: Dr Nancy Odendaal

Tel: 021 650 2365
Nancy.Odendaal@uct.ac.za

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DATE

Dear Parent/Guardian

SCHOOL

Study of Learner Transport to and from schools in and around Claremont, Cape Town.

I, Nina Kay, am presently registered at the University of Cape Town for the Master of City and Regional Planning programme. I have been granted permission by the principal and the Western Cape Education Department to conduct my research at the school during the third term of 2013.

The research project will explore how school learners in and around Claremont travel to and from school in an effort to understand learner transport patterns and needs in Cape Town, and develop guidelines for learner transportation at a metropolitan and a local scale.

As a research participant, your son/daughter will be expected to

- (a) Complete the attached questionnaire.

I undertake

- (a) to ensure the anonymity of each learner, by not asking the learner to write his/her name on the questionnaire
- (b) to conduct my research with integrity and with the utmost respect for the dignity of every person involved in this research project
- (c) that the research participants can withdraw at any time
- (d) to inform and request the consent of the parents of the learners.

Please find attached:

- A letter providing further information regarding the research
- A letter of consent to be signed by you (the parent/guardian)
- A questionnaire I am requesting the pupil to complete

Please contact me or my supervisor (contact details below) if you require additional information regarding my research. I trust that you will accede to my request and, in this event, extend my sincere thanks to you and your son/daughter for agreeing to be a research participant.

Kindly please complete and return the attached consent form, acknowledging receipt of the information letter and giving your son/daughter permission to be a research participant.

Thank you.

Yours sincerely,

Nina Kay

Signed by candidate

Supervisor: Dr Nancy Odendaal

Tel: 021 650 2365
Nancy.Odendaal@uct.ac.za



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Information Sheet: Learner transportation study in Cape Town

Increasing learner access to and from schools in Cape Town using a transit-oriented approach

There is a lack of learner transport planning in South African cities. In Cape Town many children are travelling far distances to schools but their journeys using public transport is often unsafe, costly and unreliable, resulting in lateness and absence. In conjunction to this problem, learners who are being driven to school in motor cars contribute to 24% of the Cape Town's traffic congestion. This problem fits into the much broader problem of Cape Town being designed for the car.

Addressing learner transport is a way to tackle the broader issues of integration, equal access, city growth and environmental sustainability. Traffic congestion, sprawl and increased fossil fuel consumption and carbon emissions are having detrimental environmental effects, and are leading us into a dangerous and uncertain future.

The main aim of the research study is to form an integrated transport network for school learners that can be accessible by all learners throughout Cape Town. By doing so, it aims to encourage learners to use public transport and alter mindsets of citizens from a young age to consider environmental concerns of the city and encourage a shift away from a motor-vehicle dependent society. Addressing learner transport is a means to address larger urban issues of safety and accessibility to all opportunities across Cape Town. It is believed that if an environment can be planned for the youth, it will be user-friendly by all citizens.

The research will have to two outcomes. Firstly it will provide hypothetical guidelines for learner transport on the Cape Town metropolitan scale and secondly an example of a local spatial plan that can be developed for the area in/close to Claremont. The city scale guidelines will directly address the issue of the entire lack of policy that exists for learner mobility in cities, as well as on the local scale in Cape Town. It will provide learner mobility recommendations for an urban setting.

The local spatial plan will be used to demonstrate how guidelines on the city scale can be implemented on a local level. Data will be gathered from the local area specifically to ensure the plan addresses the needs of the learners in the specific area to ensure a degree of public participation. To gather data for the research, learners from different schools around Claremont will be requested to complete a questionnaire that will provide information about learner travel patterns in Cape Town.

Both the metropolitan guidelines and local action plan will hopefully be able to serve as a guide for implementation elsewhere in Cape Town and in South Africa, as the problem of learner transportation is experienced in all the country's cities.

Please feel free to contact myself or my supervisor for further details regarding the research project.

Yours sincerely,

Nina Kay
UCT MCRP student

Signed by candidate

Supervisor: Dr Nancy Odendaal

Tel: 021 650 2365
Nancy.Odendaal@uct.ac.za

Ethics Approval



University of Cape Town

Zulpha Geyer

From: Zulpha Geyer
Sent: 02 August 2013 12:14
To: ninakay75@yahoo.com
Cc: Nancy Odendaal
Subject: Ethics application Nina kay

Dear Nina,

I am pleased to inform you that your ethics application has been approved and you may commence research. The signed form will be sent to you shortly.

With best regards,

Zulpha Geyer: Centre for Research in Engineering Education | Chemical Engineering Building |
Upper Campus | University of Cape Town |

Tel: +27 021 650 4791 | Fax: +27 021 650 5501 |

"Promoting Research in Engineering and Science Education"



UNIVERSITY OF CAPE TOWN

University of Cape Town

EBE Faculty: Assessment of Ethics in Research Projects (Rev2)

Any person planning to undertake research in the Faculty of Engineering and the Built Environment at the University of Cape Town is required to complete this form before collecting or analysing data. When completed it should be submitted to the supervisor (where applicable) and from there to the Head of Department. If any of the questions below have been answered YES, and the applicant is NOT a fourth year student, the Head should forward this form for approval by the Faculty EIR committee: submit to Ms Zulpha Geyer (Zulpha.Geyer@uct.ac.za; Chem Eng Building, Ph 021 650 4791). **NB: A copy of this signed form must be included with the thesis/dissertation/report when it is submitted for examination**

This form must only be completed once the most recent revision EBE EIR Handbook has been read.

Name of Principal Researcher/Student: Nina Kay

Department: School of Architecture,
Planning and Geomatics

Preferred email address of the applicant: ninakay75@yahoo.com

If a Student: Degree: Master of City and Regional Planning Supervisor: Nancy Odendaal

If a Research Contract indicate source of funding/sponsorship: N/A

Research Project Title: Increasing learner access to and from schools in Cape Town using a transit-orientated approach.

Overview of ethics issues in your research project:

Question 1: Is there a possibility that your research could cause harm to a third party (i.e. a person not involved in your project)?	YES	NO
Question 2: Is your research making use of human subjects as sources of data? If your answer is YES, please complete Addendum 2.	YES	NO
Question 3: Does your research involve the participation of or provision of services to communities? If your answer is YES, please complete Addendum 3.	YES	NO
Question 4: If your research is sponsored, is there any potential for conflicts of interest? If your answer is YES, please complete Addendum 4.	YES	NO

If you have answered YES to any of the above questions, please append a copy of your research proposal, as well as any interview schedules or questionnaires (Addendum 1) and please complete further addenda as appropriate. Ensure that you refer to the EIR Handbook to assist you in completing the documentation requirements for this form.

I hereby undertake to carry out my research in such a way that

- there is no apparent legal objection to the nature or the method of research; and
- the research will not compromise staff or students or the other responsibilities of the University;
- the stated objective will be achieved, and the findings will have a high degree of validity;
- limitations and alternative interpretations will be considered;
- the findings could be subject to peer review and publicly available; and
- I will comply with the conventions of copyright and avoid any practice that would constitute plagiarism.

Signed by:

	Full name and signature	Date
Principal Researcher/Student:	Signed by candidate	10/06/2013
This application is approved by: Supervisor (if applicable):		E/6/2013
HOD (or delegated nominee): <i>Final authority for all assessments with NO to all questions and for all undergraduate research.</i>	Signed by candidate	
Chair : Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.	Signed by candidate	26/06/2013

ADDENDUM 2: To be completed if you answered YES to Question 2:

It is assumed that you have read the UCT Code for Research involving Human Subjects (available at <http://web.uct.ac.za/depts/educate/download/uctcodeforresearchinvolvinghumansubjects.pdf>) in order to be able to answer the questions in this addendum.

2.1 Does the research discriminate against participation by individuals, or differentiate between participants, on the grounds of gender, race or ethnic group, age range, religion, income, handicap, illness or any similar classification?	YES	NO
2.2 Does the research require the participation of socially or physically vulnerable people (children, aged, disabled, etc) or legally restricted groups?	YES	NO
2.3 Will you not be able to secure the informed consent of all participants in the research? (In the case of children, will you not be able to obtain the consent of their guardians or parents?)	YES	NO
2.4 Will any confidential data be collected or will identifiable records of individuals be kept?	YES	NO
2.5 In reporting on this research is there any possibility that you will not be able to keep the identities of the individuals involved anonymous?	YES	NO
2.6 Are there any foreseeable risks of physical, psychological or social harm to participants that might occur in the course of the research?	YES	NO
2.7 Does the research include making payments or giving gifts to any participants?	YES	NO

If you have answered YES to any of these questions, please describe below how you plan to address these issues:

Consent will be obtained from school learner's parents/guardians. This will be done by attaching a letter of consent to the questionnaires that learners will be required to complete.

Note: Letter of parental consent attached.
Letter to principals attached.

