# Exploring sustainable urban automobility transitions: a transdisciplinary inquiry into the case of an isolated enclave in Cape Town, the South Peninsula.

by

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# Declaration

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Date: March 2018

# Abstract

Automobility, the overarching socio-technical system that maintains global automobile dependence, is a quintessential illustration of the twentieth century taking its revenge on the twenty-first (Dennis & Urry 2009).  The reliance on private cars as the dominant mode of transport is having significant social, environmental and economic impacts on societies and hindering the global quest for sustainability. The research draws on sustainable transition theory, current approaches to sustainable cities, and sustainable transport literature to explore alternative transitions for a local manifestation of automobile dependence. The literature subsequently suggests that local socio-technical systems warrant a local response given its potential to either 'accelerate, reshape or even disrupt' a citywide or national mobility transition (Hodson & Marvin 2010: 480). The literature further points to the benefit of employing new ways of researching to recognise the complex nature of urban transportation.

Transition theory has emerged as an academic field that explores ways in which such sustainable transitions can take place over time, with the 'Multi-Level-Perspective' (MLP) as a trusted theoretical framework. However, critics have pointed to potential shortcomings of this framework, in calling for transition analyses that are more sensitive to spatial and scalar characteristics - urging researchers to ask not only how transitions take place, but also where it takes place.  This study is a direct response to this critique in presenting a 'geographically embedded' (Coenen, Benneworth & Truffer 2012) analysis of an isolated enclave in Cape Town. The South Peninsula is characterised by areas of spectacular natural beauty, yet constrained regarding urban expansion and accessibility due to the mountainous terrain and areas of protected biodiversity.  The transport challenges are consequently plentiful, and social dynamics around increased development pressure and basic service delivery needs are tense.

The research followed a participatory approach in conducting a transdisciplinary inquiry exploring potential short-term solutions to everyday reliance on the car. It included a pluralistic methodological approach combining a variety of research methods including the case study method (Yin 2009), netnography to study societal behaviour on a purposive social media group (Kozinets 2010), and a theoretical thematic analysis to reflect on the application of a transition theory framework, the MLP (Geels 2002).

In support of transdisciplinary research (Hadorn et al. 2008; Brown, Harris & Russell 2010; Pohl 2010), principal findings are grouped into potential societal and scientific contributions. To this end, the research uncovered an interest for bottom-up societal solutions such as a local school bus and modern carpooling systems based on mobile phone technology. The study contributes to knowledge (science) in providing a transition analysis, using the MLP, that shows a myriad of forces and actors at play that renders a transition to a sustainable alternative in the near future doubtful. On the other hand, the research supports a critique of

the MLP in showing that physical space (isolated enclave) and relational space (shared beliefs and perceptions) are significant factors that sustain inaction on the part of residents and authorities situated across geographic and institutional scales.

## Opsomming

Voertuiggebruik ("automobility"), die oorhoofse sosio-tegniese stelsel wat globale voertuigafhanklikheid in stand hou, is die beliggaming van die 20ste eeu wat wraak neem op die 21ste eeu (Dennis & Urry 2009). Die afhanklikheid van privaat motors as die dominante vervoermiddel het beduidende sosiale, omgewings-, en ekonomiese uitwerkings op samelewings en belemmer die globale soeke na volhoubaarheid. Hierdie navorsing maak gebruik van volhoubare oorgangsteorie, hedendaagse benaderings tot volhoubare stede, en literatuur oor volhoubare vervoer om alternatiewe oorgange vir die plaaslike manifestering van voertuigafhanklikheid te ondersoek. Die literatuur stel voor dat plaaslike sosio-tegniese stelsels 'n plaaslike reaksie vereis; gegewe die potensiaal om 'n stadswye of nasionale beweeglikheidsoorgang te "versnel, hervorm of selfs ontwrig" (Hodson & Marvin 2010: 480). Die literatuur dui voorts die voordeel daarvan aan om nuwe navorsingsmetodes te gebruik om erkenning te gee aan die ingewikkelde aard van stedelike vervoer.

Oorgangsteorie het na vore getree as 'n akademiese veld wat ondersoek instel na maniere hoe volhoubare oorgange plaasvind oor tyd; met die Veelvuldige-vlakke-perspektief (VVP) as betroubare teoretiese raamwerk. Kritici het egter moontlike tekortkominge van hierdie raamwerk uitgewys deur oorgangsontledings wat meer sensitief is vir ruimtelike en skalêre kenmerke te vereis, wat navorsers aanspoor om nie slegs te vra hóé oorgange plaasvind nie, maar ook wáár. Hierdie studie is 'n direkte reaksie op hierdie kritiek en verskaf 'n "geografies-vasgelegde" (Coenen et al. 2012) ontleding van 'n afgesonderde ingeslote grondgebied in Kaapstad. Die Suid-Skiereiland word gekenmerk deur areas van asemrowende natuurlike skoonheid, maar stedelike uitbreiding en toeganklikheid word beperk deur die bergagtige terrein en beskermde biodiversiteitsareas. Gevolglik is vervoeruitdagings volop, en sosiale dinamika rondom verhoogde ontwikkelingsdruk en basiese diensleweringsbehoeftes is gespanne.

Hierdie studie het 'n deelnemende navorsingsbenadering gevolg deur middel van 'n transdissiplinêre ondersoek wat moontlike korttermynoplossings soek vir die alledaagse afhanklikheid van die motorkar. Dit het ingesluit 'n pluralistiese metodologie-benadering wat 'n verskeidenheid navorsingsmetodes kombineer; insluitende die gevallestudiemetode (Yin 2009), netnografie om gemeenskapgedrag op 'n doelgerigte sosiale media-groep te bestudeer (Kozinets 2010), asook 'n teoreties-tematiese ontleding om die toepassing van 'n oorgangsteorieraamwerk (die VVP) (Geels 2002) te oorweeg.

Ter ondersteuning van transdissiplinêre navorsing (Hadorn et al. 2008; Brown et al. 2010; Pohl 2010), word die hoofbevindinge gegroepeer volgens moontlike gemeenskap- en wetenskaplike bydrae. Die navorsing het vervolgens 'n belangstelling ontdek in onder-na-bo gemeenskapoplossings, soos 'n plaaslike skoolbus en moderne saamrystelsels gebaseer op selfoontegnologie. Die studie dra voorts by tot bestaande kennis (wetenskap) deur 'n oorgangsanalise te verskaf, deur gebruik te maak van die VVP, wat aandui dat tallose magte en rolspelers 'n spoedige oorgang tot 'n volhoubare alternatief twyfelagtig maak. Daarteenoor ondersteun hierdie navorsing kritiek jeens die VVP deur aan te toon dat fisiese ruimte (afgesonderde ingeslote grondgebied) en verwante ruimtes (gedeelde oortuigings en persepsies) belangrike faktore is wat gebrek aan aksie deur inwoners en owerhede op teenoorgestelde geografiese en institusionele skale in stand hou.

# Acknowledgements

It is this section, the acknowledgements, that I must have written a thousand times in my head throughout this challenging process of compiling an academic thesis. This visioning exercise, of reflecting and giving thanks at the end kept me motivated from the start and every step after that.  So here it is, the acknowledgements – in the past tense! There are three groups of people that unequivocally earned a mention here – the participants of this study, my academic supervisors and my family and friends.

Firstly, I wish to express sincere gratitude to the numerous men and women who so willingly participated in this study. Twenty-one of which offered me an hour of their precious time to discuss solutions to traffic, one of the most prominent ailments of urban life today. Then there are the 124 members of the social media group that so vigorously partook in an online discussion around solutions, despite living in a world where it is much easier to complain than to contribute constructively. From you all, I learned that urban life is utterly complex and messy. Where one lives, where one works and how one travels between these two places remains a personal choice – even more reason for a city to offer a 'multiplicity of choice' to its citizens, as Jane Jacobs once said. When finding yourself in an isolated enclave devoid of choice – travel patterns become entirely predictable, but the most interesting social dynamics emerge. Thank you for giving me a sneak preview of this.

Secondly, I was fortunate enough to have had two academic legends on my side throughout this journey and am deeply beholden to each of them for their significant contribution. I have been a staunch follower of Professor Mark Swilling's work throughout my career as a professional in the city space. To draw from his experience, knowledge and passion for sustainability during this personal journey has thus been invaluable, for which I am truly grateful for.  I also need to thank him for his assistance with obtaining funding from the National Research Foundation for this study. Marjorie Naidoo, as my co-supervisor and editor, brought a keen design eye, constructive criticism, sound editing and a personal touch to my research. Being a resident of the study area herself, I valued her nuanced local knowledge. I thank her for her enthusiasm and hard work during the final hours that brought much-needed reassurance and an element of fun to the whole process.

Lastly, I am eternally grateful for the love, support, tolerance and faith my husband Tom showed me during this challenging year. It took many personal sacrifices from us both to make this a year of individual successes. Let this be our last 'research and development' year for a while to come.  A special thank you must also go to my friend, Vicki.  She has, while setting the academic bar high herself, continued to shower me with unwavering love, support and inspiration to strive for excellence.  To close, a particular word of thanks must go to my

parents for their love and encouragement and for all the help with our two boys when I had to outsource parenting all too often during this year.

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# List of Acronyms and Abbreviations

| | |
|---|---|
| BEV | Battery-electric vehicle |
| BRT | Bus Rapid Transit |
| CAQDAS | Computer Assisted Qualitative Data Analysis |
| CBD | Central business district |
| CITP | Comprehensive Integrated Transport Plan |
| COCT | City of Cape Town |
| CPD | Chapmans Peak Drive |
| CSIR | Council for Scientific and Industrial Research |
| DA | Democratic Alliance |
| DEA | Department of Environmental Affairs |

| | |
|---|---|
| DP | District Plan |
| eNaTIS | Electronic National Administration Traffic Information System |
| ETDR | Emergent Transdisciplinary Design Research |
| EV | Electric Vehicle |
| EVIA | Electric Vehicle Industry Association |
| FSPCF | Far South Peninsula Community Forum |
| FSTP | Far South Transport Plan |
| GABS | Golden Arrow Bus Service |
| GDP | Gross Domestic Product |
| GHG | Greenhouse Gas |
| GIS | Geographical Information Systems |
| GLA | Gross Leasable Area |
| HEV | Hybrid-electric vehicle |
| HOV | High occupancy vehicle lanes |
| ICE | Internal Combustion Engine |
| ICT | Information and Communication Technology |
| IEA | International Energy Agency |
| INDC | Intended Nationally Determined Contribution |
| IPCC | Intergovernmental Panel on Climate Change |
| IPTN | Integrated Public Transport Network Plan |
| IRP | International Resource Panel |
| IRT | Integrated Rapit Transit |
| ITS | Intelligent Transport Systems |
| MLP | Multi-Level-Perspective |
| MPA | Marine Protected Areas |
| MPBL | Municipal Planning By-law |
| MSDF | Municipal Spatial Development Framework |
| NDP | National Development Plan |
| NGO | Non-Governmental Organisation |
| NHTS | National Household Travel Survey |
| NIMBY | Not-in-my-backyard |
| NLTA | National Land Transport Act |
| NMT | Non-motorised Transport |
| NPC | National Planning Commission |
| ODTP | Organisational Development and Transformation Plan |
| OECD | Organisation for Economic Co-operation and Development |
| OICA | Organization Internationale des Constructeurs d'Automobiles |
| OKW | Ou Kaapse Weg |
| PPA | Pedal Power Association |
| PPD | Peak plateau decline |

| | |
|---|---|
| PRASA | Passenger Rail Agency of South Africa |
| RDP | Reconstruction and Development Programme |
| RTMC | Road Traffic Management Corporation |
| SACN | South African Cities Network |
| SANParks | South African National Parks |
| SAPS | South African Police Service |
| SDG | Sustainable Development Goal |
| SEA | Strategic Environmental Assessment |
| SOE | State Owned Entity |
| SPLUMA | Spatial Planning and Land Use Management Act |
| SPTC | South Peninsula Transport Chats |
| ST | Sustainable Transport |
| STA | Spatial Transformation Areas |
| TaaS | Transport-as-a-service |
| TAP | Transit Accessible Precincts |
| TAZ | Transport Analysis Zones |
| TCT | Transport Cape Town |
| TDA | Transport and Urban Development Authority |
| TDI | Transport Development Index |
| TDM | Travel Demand Management |
| TDR | Transdisciplinary Design Research |
| TMNP | Table Mountain National Park |
| TOD | Transit Oriented Development |
| UITP | International Association of Public Transport |
| UNDP | United Nations Development Programme |
| UN | United Nations |
| UNEP | United Nations Environment Programme |
| UNESCO | United Nations Educational, Scientific and Cultural Organization |
| UNFCCC | United Nations Framework Convention on Climate Change |
| VOC | Vehicle Operating Companies |
| WCED | World Commission on Environment and Development |
| WLT | Western Leopard Toad |
| WWF | World Wide Fund |

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# 1. Introduction

## 1.1    Background to the inquiry

> You take delight not in a city's seven or seventy wonders, but in the answer it gives to a question of yours.
>
> <div align="right">Calvino 1974:44</div>

Due to the predominantly urban nature of the world (Hickman & Banister 2014; United Nations [UN] 2016), cities have become pivotal in the search for answers to the many pressing questions of our times. One such question, which is the focus of this research, concerns the unsustainable over-dependence of most modern cities on a century old technology, the automobile (Dennis & Urry 2009; Newman & Kenworthy 2015).

A century's reliance on an expanding 'system of automobility' (Urry 2004), fuelled by a deep-rooted 'car culture' (Schiller et al. 2010) is having far-reaching impacts on the environment and society and is coming to a head in cities. Current literature labels automobility as wholly unsustainable given environmental, social, economic and spatial impacts. Challenges range from motorisation, fossil fuel dependence, the impact of the resultant greenhouse gas (GHG) emissions from fuel combustion on climate change, road deaths and accidents, air pollution, land fragmentation, urban sprawl, loss of productive rural land, to physical and mental problems (Schiller et al. 2010; Geels et al. 2012). Yet, on the other hand, the global automobile industry (Organization Internationale des Constructeurs d'Automobiles [OICA] 2016) provide nine million direct and an estimated fifty million indirect jobs. These jobs undeniably fuel economies and sustain livelihoods.

International accords around climate change and sustainability highlight the need for a low-carbon transition in the transport sector (UN 2015a). The Intergovernmental Panel on Climate Change (IPCC) recently reported that GHG emissions from this sector are escalating despite the latest efforts in implementing mitigating policy and producing more energy efficient vehicles (Sims et al. 2014). Road based transportation makes up three quarters of the total $CO_2$ emissions within the global transport sector (International Energy Agency [IEA] 2016) and is, therefore, a key component of such a transition.

Path breaking innovations in the transport and technology arenas are leading to radical changes that suggest an imminent global transport transition. Newman and Kenworthy (2015) boldly argue that the world has entered a 'peak-car' period with most American and Australian cities showing signs of a decrease in reliance on the car since 2005. A global think tank, Rethinx, released an explosive report in May 2017 around the future of transportation (Arbib & Seba 2017). It predicts that the convergence of three emerging technologies will fan

a global disruption of the status quo, making way for viewing what this report refers to as 'transport-as-a-service' (TaaS).   These include the growth of the electric car industry, autonomous vehicles made possible by artificial intelligence, and the current trend of moving toward shared transportation which is in turn made possible by mobile phone technology (Arbib & Seba 2017).  These authors are making the bold prediction that the world will witness "… a largely carbon-free road transportation system by 2030", based on the belief that the current global energy transition (wind and solar) will continue (Arbib & Seba 2017).

When casting one's eye to Africa, the thought of autonomous electric cars roaming its bustling streets anytime soon is arguably less plausible given the auto-dependent nature of many African cities, one being Cape Town, which is the focus of this study. This city is shrouded in its complexities and not (yet) touched by the surge of such profound transformations in urban transportation. Private transportation (fossil fuel based) accounts for 64% of Cape Town's energy consumption (City of Cape Town [COCT] 2015a). The recent introduction of a Bus Rapid Transit (BRT) system, the MyCiti, has been a welcomed addition to the public transport landscape in this city.

Given this brief introduction, I - as researcher - focused my attention on a local manifestation of automobile-dependency in an urban enclave within Cape Town, the South Peninsula. I am embedded in this spatial context having been a resident of the area for the last ten years. I have witnessed and experienced the far-reaching impacts of a system of automobility in this context first-hand. Automobility can be viewed as a 'wicked problem', defined by Rittel and Webber (1973 in Schiller et al. 2010:189) as ill-defined problems that are not easily solved, nor are solutions ever uncontested. A personal interest in finding real solutions to this wicked problem drives this research.

The inquiry is accordingly framed within the transformative research worldview and follows a transdisciplinary research approach to explore ways in which actors in this spatial arena can bring about sustainable change. **Transdisciplinarity**, as a participatory research practice (Pohl & Hadorn 2007; Hadorn et al. 2008; Jahn 2008; Brown et al. 2010; Breda & Swilling 2016), is supported by many as an appropriate approach when exploring complex sustainability challenges (Scholz et al. 2006; Kajikawa 2008).

**A key research objective** is thus to conduct a transdisciplinary inquiry, as the overarching research methodology, to explore whether there are noticeable signs of a low-carbon transport transition within this local context. The established theoretical framework for sustainability transitions, the **Multi-Level Perspective** (MLP) (Geels 2011, 2012), is applied as a theoretical lens throughout the research design. The central premise of this theoretical framework is to understand the nature of 'forces of stability' that keep an unsustainable socio-technical system, such as automobility, on an established path and simultaneously analyse

'forces of change' that might be compelling change (Geels 2011, 2012).  It consists of three theoretical levels conceptualised as: the *niche* (space for the emergence of innovation), the socio-technical *regime* (comprising the established rules, regulations and cultural norms) and the *landscape* level (being the overarching big picture reality) (Geels 2012; Geels et al. 2012). These theoretical concepts were made tangible by eliciting **qualitative input** from the relevant institutions, resident communities and key local actors around what they perceived to be a) barriers (forces of stability) to change and b) short-term solutions to the transport related concerns in this area.

## 1.2    The spatial context: Cape Town's southern peninsula (Far South)

Cape Town is classified as a sprawling automobile city built around private car ownership (South African Cities Network 2016). Private vehicle usage in Cape Town accounts for 87% of the total GHG emissions (COCT 2015a). Automobile-dependency is intensified in an enclave that falls within the ambit of this city, the South Peninsula – or Far South, as it is colloquially known. The study area is experiencing challenges around mobility, access to quality public transport and car dependency that impact significantly on the quality of life of the residents, the local economy and the surrounding natural environment.

The South Peninsula lies in a natural amphitheatre, created by the Steenberg and Chapmans Peak mountains (Cobern 1984). The challenges of accessing the area over and around these mountains have shielded the area from the impacts of urbanisations for centuries. At first, a wagon trial meandered from Cape Town along the False Bay shoreline to one of the southernmost villages in this area, Simon's Town.  The first railway in the country was later constructed parallel to this trail in 1890 (Cape Town Heritage Trust 1990). Construction of two additional access routes (two mountain passes), namely Chapmans Peak Drive (CPD) in 1923 and later Ou Kaapse Weg (OKW) (meaning 'Old Cape Road') in 1960, lead to drastic changes in the landscape.

Today, life in this valley has changed significantly. The mountain ranges are protected natural areas forming part of the Table Mountain National Park (TMNP) and the population has increased by 73% to approximately 100 000 in a decade (2001 to 2010) (Statistics South Africa 2011). The rail service is unreliable while mini-bus taxis are filling a public transport void despite being limited to one access road. Non-Motorised Transport (NMT) facilities are limited (Council for Scientific and Industrial Research [CSIR] 2015) and restricted to the area given the geography. Also, the local schools are over-subscribed (Saffer 2016a) and local jobs are scarce making it a predominantly residential area with scattered commercial, industrial and public facilities, see Figure 1.1.
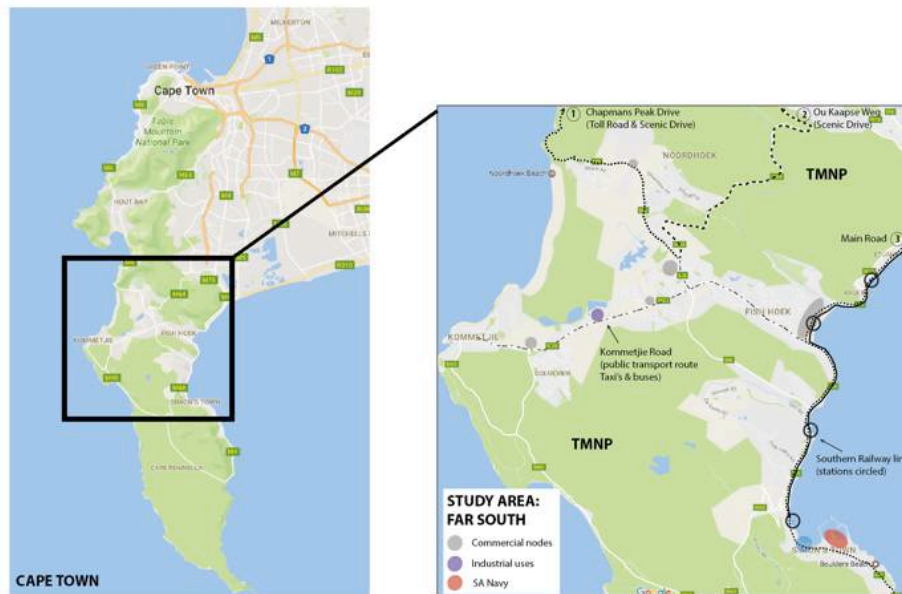
**Figure 1.1:** South Peninsula as study area.  Source: Google Maps. Adapted

The legacy of Apartheid spatial planning is deeply entrenched, with residential areas mostly separated according to racial groups and income levels, as detailed in chapter 3. Lower-income groups rely on public transport (rail, mini-bus taxi and a conventional bus service) for daily mobility needs, while the rest of the society relies on private transportation. Moreover, the area is experiencing tremendous development pressure often beyond the designated urban edge.  Heavy traffic congestion is the norm for many that commute in and out of the valley on a daily basis and road accidents are frequently occurring as a result (Yeld 2012; African News Agency 2016; Mdebuka 2017).

An active civil society has expressed their general dissatisfaction with the 'uncontrolled development' being approved by the authorities without the perceived due consideration for ailing transport infrastructure for some time (Rampele 2016). The City of Cape Town (COCT), hereafter referred to as 'the City', has responded in two significant ways, albeit somewhat in isolation of one other.  These being the Kommetjie Road Project and the formulation of a holistic, long-term transport plan for this area, Far South Transport Plan (FSTP) (Transport Cape Town 2015a; Saffer 2016b). Both these projects are currently underway and coincided with this research.

## 1.3    Rationale for the study

Transitioning to low-carbon transport alternatives remain a daunting task globally given the complexity of unsustainable automobility (Dennis & Urry 2009; Hickman & Banister 2014). This 'wicked problem' (Rittel & Webber 1973 in Schiller et al. 2010:189) is starkly apparent in this isolated urban enclave. As outlined in paragraph 2.2, recent literature compellingly motivates for applying a renewed perspective to the system of automobility. This viewpoint is

one that seeks local responses to unsustainable transport systems resulting from a **social process of co-evolution and knowledge generation.**  This is an apparent move away from the conventional engineering response encapsulated by the strategy to 'predict and provide' (Schiller et al. 2010), to applying a social sciences lens to twenty-first century transport challenges  - 'deliberate and decide' (Schiller et al. 2010; Schwanen et al. 2011, 2012; Geels et al. 2012; Hickman & Banister 2014).

The '**power of context'** is hailed as a vital concern when it comes to interventions, travel behaviour and the required lifestyle changes needed to transition to a sustainable alternative (Hickman & Banister 2014). Geels (2012) asserts that local conditions might well create unique socio-technical transport systems that would warrant a local response. The study aimed to test whether the unique spatial context of this enclave indeed warrants local sustainability-orientated responses, particularly within the context of citywide, national and international climate change action strategies. Yet, the seemingly obvious mass transit and transit-orientated development (TOD) solution, as pursued by the COCT as a new policy directive, are not set to materialise in the short to medium term in this area (Transport Cape Town 2015b). On the contrary, the COCT's short-term response, the costly Kommetjie Road expansion project and further road investments proposed in the FSTP, could entrench reliance on private transportation for years to come and increase the area's accessibility and in turn, its development potential. A perpetuation of the existing situation is likely to ensue, a phenomenon described by Zijlstra and Avelino (2012) as an 'irrational rationality.' Areas, such as the South Peninsula, could in fact 'disrupt' or restrain a purposive city-wide low-carbon transport transition as suggested by Hodson and Marvin (2010:480) unless a fresh approach is applied to automobile-dependent urban enclaves of this nature.

The research, therefore, aimed to explore whether this local real-world problem can benefit from using a social sciences lens to the causal relationship between transport and society (Lyons 2004; Schwanen et al. 2011). The focus was on developing a deeper understanding of the nature of this socio-technical system through creating a purposive platform for community dialogue through a 'transdisciplinary inquiry' (Brown et al. 2010).

## 1.4    An unfolding topic

As stated above, personal interest is the primary motivation behind the choice of topic.  I am furthermore a registered professional urban planner, with vast work experience in and around Cape Town and the South Peninsula and have dealt with some of the key community stakeholders, local authority officials and built environment professionals that participated in this study. I am familiar with the sustainability related literature and current urban thinking having been a student at the Sustainability Institute (Stellenbosch University) since 2015. Individual modules completed at this Institute, which have prepared me for this journey,

include Sustainable Development, Sustainable Cities, Complexity, Transdisciplinary Design and Globalisation, Governance & Civil Society. The topic of urban transportation intrigues me on a professional level, given its complexity and interconnectedness with other equally complex phenomena, such as climate change and urban form.

Urban transportation as a broad topic was initially refined by answering Mason's 'five important focusing questions' (2002 in Blaxter et al. 2010). These have to do with -

- the nature of the social reality one wishes to study
- what scientific evidence would support that particular reality
- what is the overarching area of knowledge
- what is the drive behind the research
- what type of 'intellectual puzzle' the researcher is trying to solve (Mason 2002 in Blaxter et al. 2010:34).

This exercise honed the topic initially around scholar transport challenges in this urban enclave and the social behaviour of actors (parents) entrenched in this context.

The City announced the commencement of the said transport study for the South Peninsula around the same time (August 2016) as this early personal exploration. The aim of the City's study was to provide a "… holistic overview of the specific problems in the area" (Herron 2016; Rampele 2016). It prompted me to contact the authorities to understand how research around the same topic in the same area could complement each other. I made initial email contact with Councillor Brett Herron, the Mayoral Committee Member for the newly created Transport and Urban Development Authority (TDA) within the City (Henshilwood 2016).  The iteration led to the first of many interactions with a key City official, *Interviewee 17,* on 9 September 2016.  During this meeting, the official showed a keen interest in this initial research idea around scholar transport in this area (Interviewee 17 2016).  We discussed the scope, aim, and objectives of the City's study and agreed that the two research processes could benefit each other in a way not yet identifiable at that early stage (Interviewee 17 2017a).

I was furthermore put in touch with the key community representatives, *Interviewee 13* and *Email participant 5,* who formed part of the community working-group for the formulation of the FSTP. Initial informal communications with these parties and others in the area highlighted the need to broaden the study as car dependency and congestion not only manifest around schools but is a systemic by-product of a much wider complex socio-technical system. I suspected that the predominantly quantitative FSTP study, which is based on predicted traffic demand modelling, could benefit from employing a complementary perspective, such as Lyons' 'transport and society' approach (2004). This approach hinges on the argument that "… transport does not merely serve society: it shapes society, as in turn society shapes transport." It invites the social sciences into a field traditionally dominated by the engineering and economic disciplines (Lyons 2004:485).

The City liaised with the umbrella community forum for the greater South Peninsula, the Far South Peninsula Community Forum (FSPCF) for the FSTP study. This community forum is regarded as "… the joint voice of several civic, community and environmental member organizations in the Far South Peninsula" (Far South Peninsula Community Forum Report : Facing Facts. 2015). In hindsight, I question whether this forum is 'the joint voice' of the area having noticed a consistent lack of representation from lower-income communities.   I attended the bimonthly gatherings of this forum during February 2017 to August 2017 after being invited by these key community representatives (Interviewee 12 2016; Email participant 5 2017a) and through my connection with *Interviewee 17*.  I was granted a short time slot to present the essence of my research to the FSPCF during the February 2017 gathering, during which *Interviewee 12* (community) and *Interviewee 17* (COCT) endorsed a bottom-up exploration of what the communities in this spatial context perceive as short-term solutions to this complex problem. The community expressed further support in subsequent personal correspondence (Email participant 5 2017b). What transpired was a useful 'transdisciplinary inquiry' over the course of ten months with both the COCT, community representatives structured around the formulation of the FSTP facilitated through the regular gathering of the FSPCF and related working-group.

The evolution of the research topic, in the manner described above, embodies the primary problem formulation methodological step typically associated with the transdisciplinary research approach (Pohl & Hadorn 2007:26) as discussed in paragraph 1.6.

## 1.5    Research aim and objectives

Transdisciplinary research methodology involves a collaborative process of shared learning between science and society (Hadorn et al. 2008; Jahn 2008; Brown et al. 2010; Bergmann 2012; Lang et al. 2012; Breda & Swilling 2016). Although the focus is on a real-world challenge, this process is inherently twofold. One part is devoted to searching for solutions (practice) while the other is concerned with how the process can contribute scientifically (science) in an iterative process of **producing science with society** (Lang et al. 2012), see Figure 1.2.

Having allowed an iterative evolution of the research topic, as detailed in paragraph 1.4, the **central question** posed in this dissertation asks: *What short-term sustainable transport solutions can be identified through a participative transdisciplinary inquiry.*
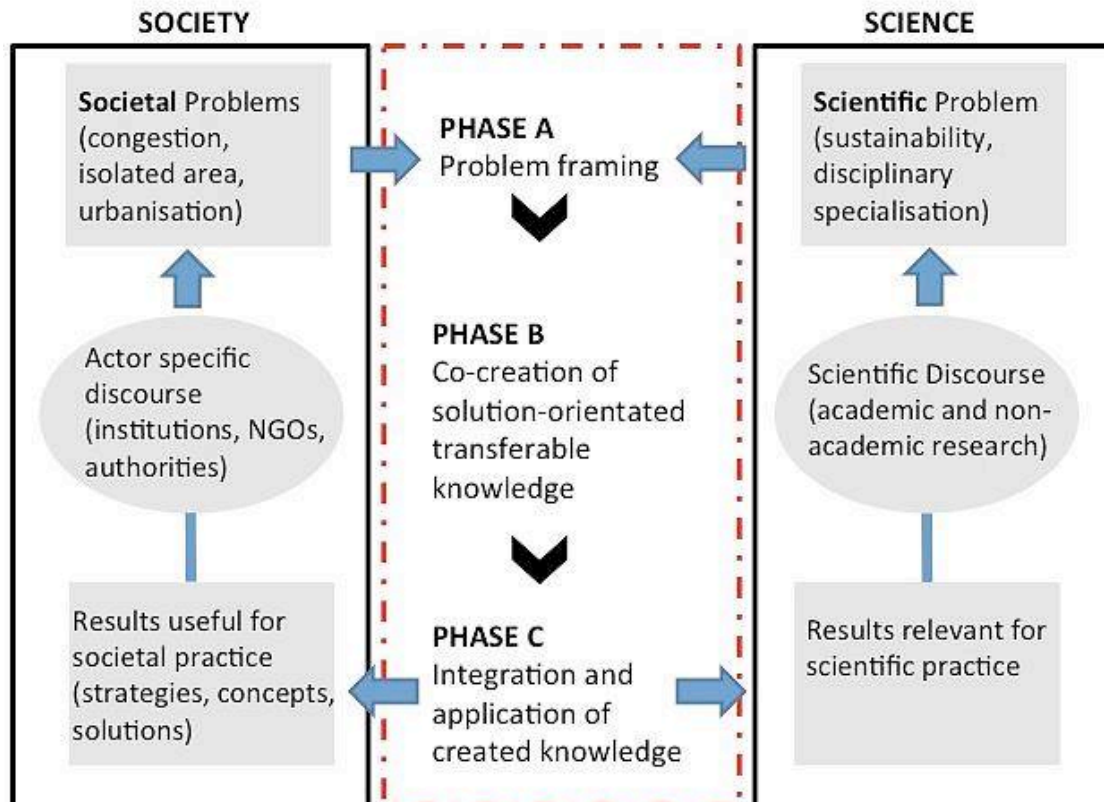
**Figure 1.2**: The transdisciplinary research process. Source: Lang et al. 2012. Figure 1. Adapted.

In addition, the study aims to address the following **sub-objectives** for the co-generation of both *societal* and *scientific* knowledge:

- To undertake a comprehensive literature and policy review applicable to the topic and to the study area (scientific).
- To identify a collection of international best practice sustainable transport interventions that is implementable in the short-term (scientific).
- To elicit a community narrative around change through establishing a community platform for discussion (societal).
- To develop a thorough grasp of the dynamics of the Far South transport system from the viewpoint of sustainable transport and transition theory with a specific focus on private car commuters.
- To identify existing barriers to establishing a more sustainable transport system in the Far South in a participatory manner (societal).
- To identify potential solutions with the receiving community and local authority through conducting a transdisciplinary inquiry (societal).
- To apply an established sustainability transition framework (Multi-Level-Perspective) to the local socio-technical transport system to assess the feasibility of a transition to a more sustainable alternative (scientific).

## 1.6    Research design and a pluralistic methodological approach

As briefly introduced above, the embedded nature of this sustainability challenge is volatile and complex.  A research approach that can absorb this volatility while remaining responsive to changes in the research environment and open to improvement is therefore warranted (Brown et al. 2010). Kates (2001 in Lang et al. 2012) maintains that sustainability challenges require unique responses that go beyond the conventional disciplinary or interdisciplinary problem solving and research approaches. This dissertation, therefore, follows a transdisciplinary research design, embedded within the transformative worldview (see 1.6.1), with the aim of generating socially relevant knowledge not restricted to scientific disciplines (Pohl 2010).

To this end, researchers are challenged to employ -

> … transdisciplinary modes of inquiry capable of meeting the needs of the individual, the community, the specialist traditions, and influential organizations, and allows for a holistic leap of the imagination.
>
> Brown et al. 2010:4

The intention of this transdisciplinary inquiry, which stretched over a period of ten months, is to harness what Brown et al.'s regard as the essence of transdisciplinarity - a shared understanding of the issue at hand (2010).  These authors maintain that such a mutual understanding is formed by "… including the personal, the local and the strategic, as well as specialized contributions to knowledge" (Brown et al. 2010:4).

The **embedded case study method** (Yin 2009) was identified as the central framework for the gathering of a range of mainly qualitative information and insights required by such a transdisciplinary inquiry, given that this method allows for a comprehensive variety of sources of evidence and data collection and analysis techniques. The research paradigm, design, and pluralistic methodological approach are schematically depicted in Figure 1.3.

## Transformative paradigm

Participatory paradigm geared around action and societal change. (Mertens 2007, Chilisa 2012, Creswell 2013)

### Ontology

Society in constant flux.
(Mertens 2007, Chilisa 2012)

### Epistemology

Knowledge is truth = practical transformative solutions.
(Chilisa 2012)

## Transdisciplinary Design Research Methodology

A research practice fitting for sustainability studies that is based around the quest to resolve real-world challenges. (Hadorn et al. 2008, Brown et al. 2010, Lang et al. 2012)

## Research Methods

### Data Collection

**Case Study Method**
Embedded single case study.
6 Sources of evidence

(Stake 1995, Scholtz et al. 2006, Yin 2009)

**Netnography**
Virtual etnography - study societal behaviour online.

(Kozinets 2010)

### Data Analysis

**Theoretical Thematic Analysis**
Deductive theoretical analysis -
aligned with the Multi-Level-Perspective.

(Braun & Clarke 2006)

**Qualitative Spatial Analysis**
Qualitative spatial analysis to complement the research findings (GIS).

(Cope & Elwood  2009)

**Figure 1.3:** Research design and the pluralistic methodological approach.

## 1.6.1  Research paradigm

Research paradigms can be viewed as lenses through which the disorder of real-world situations can be observed and studied (Blaxter et al. 2010). For this research, the transformative paradigm was selected (Mertens 2010 in Creswell 2013), as it embraces an agenda geared around action and societal change (Hadorn et al. 2008; Lang et al. 2012). This worldview centres on the premise that the researcher embarks on the research journey in a participatory manner, involving the participants throughout the research process (Creswell 2013).

Ontologically, this paradigm sees society in constant flux, endlessly influenced by a myriad of social, economic, political, cultural and other factors (Chilisa 2012a). From an epistemological viewpoint, a proponent of this paradigm regards knowledge as truth if it can be transformed into practical and transformative solutions (Chilisa 2012a).  Viewing the Far South as a microcosm of society with its complex realities that is in need of practical transport solutions, justifies the choice of paradigm. Paragraph 1.8 outlines details about the participatory nature of the research.

## 1.7    A transdisciplinary inquiry – the principles

The motivation behind a transdisciplinary research design was made explicit in paragraphs 1.3 and 1.4. This sub-section details the principles that support this approach and provides a succinct explanation of the execution of the inquiry.

Pohl (2010) maintains that transdisciplinarity and transdisciplinary research (TDR) are evolving concepts. Since its emergence in the 1990s in Switzerland, there has been an apparent shift **from** viewing transdisciplinary research as research that provides solutions **beyond** specialised disciplines **to** focusing on participation **between disciplines and real-world actors** (Pohl 2010).

Lang et al. (2012) provide a contemporary definition of transdisciplinarity:

> Transdisciplinarity is a reflexive, integrative, method-driven scientific principle aiming at the solution or transition of societal problems and concurrently of related scientific problems by differentiating and integrating knowledge from various scientific and societal bodies of knowledge.
>
> <div align="right">Lang et al. 2012:27</div>

Following from this definition, the authors construct **three requirements** for TDR:

- the need to centre the research around a real-world societal challenge
- to allow shared learning amongst the researcher(s) and real-world actors (science with society)
-     to generate knowledge that can lead to solutions that can be incorporated into the scientific and societal realms.

<div align="right">Lang et al. 2012.</div>

Pohl and Hadorn (2007) posit that the epistemological understanding underpinning this knowledge generation constitutes **three types of knowledge** that are jointly dependent on each other:

- 'Systems knowledge' concerns the current state of the system (see chapter 3 & 4)
- 'Target knowledge' relates to the desired end state of the system and (see chapter 2)
- 'Transformation knowledge' refers to knowledge about the evolution from the current state to the desired state (see chapter 5).

These three types of knowledge are further regarded as an accepted logic to follow when designing and ordering the associated research phases; a first phase being problem

identification, followed by a phase of examining the problem and the final phase of 'bringing results to fruition' (Pohl & Hadorn 2007; Lang et al. 2012). Brown et al. (2010) add a further explanation of knowledge generation concerning transdisciplinary inquiries of wicked problems when arguing the *partiality, plurality, and provisonality* of knowing.  Knowledge is partial, given the awareness that one can't know everything about everything. It is plural, as there are multiple ways of knowing given that an individual's values, culture, and reasons for knowing will influence the nature of the inquiry. This partiality of knowledge and the researcher's reflexivity is discussed in paragraph 1.8.5. Knowledge is provisional; due to it being partial and plural, meaning that the knowledge generated is imperfect thus calling for the realisation to treat it as such to allow for improvement (Brown et al. 2010).

It is with this understanding of knowledge generation in mind that researchers have modified TDR as a conventional approach to fit real-world contexts - other than the developed world for which it was originally developed. One such modification is Van Breda and Swilling's (2016) alternative approach to TDR relating to the developing world context, referred to as **emergent transdisciplinary design research** (ETDR). This alternative approach centres on the notion that the research process adapts to its context, best described in the authors' words: "it transforms as it emerges from and within the fluid context" (Van Breda & Swilling 2016:n.p.).

Reflecting on the nature of this transdisciplinary inquiry, I can note that although the intention was to follow the three distinct phases as outlined by Pohl and Hadorn (2007) (Figure 1.2), in reality, it more resembled ETDR in that the process unfolded from within the context. The process needed to retain flexibility around the other fairly significant established transport-related processes that occurred at the same time in the same area - the Kommetjie Road Project and the FSTP.  Both these projects involved a degree of public participation and liaison with City Councillors and key local actors. Establishing yet another platform specifically for this transdisciplinary research would not have succeeded given what I perceive as participation fatigue displayed by the public having attended many community meetings held for these projects[1].

I used my involvement with especially the FSTP process and the relationships I developed with the key players to obtain systems and target knowledge in an iterative manner. Attending the FSPCF meetings turned out to be a key platform in this regard.  However, to uphold the essence of transdisciplinarity, it was required to go beyond my involvement in these processes to ensure that I captured and integrated knowledge from the receiving communities and users of the transport system.  There was a need to create an avenue to allow for a

---

[1] I attended 6 public meetings over the course of 4 months and sensed a deep feeling from the public that these meetings were for compliance purposes and not truly there to absorb comment and input.  Further, I attempted to arrange a focus group for maximum 10 commuters from the area and despite advertising it wide (with prizes as incentive), yet I could not get anybody to commit to 2 hours of discussion.

'holistic leap of the imagination' (Brown et al. 2010:4) that could lead to transformative knowledge. I opted to create a dedicated social media community platform to enable an open and spontaneous dialogue around mobility challenges. The closed Facebook group is called 'South Peninsula Transport Chats (SPTC)' and has 124 members to date.

Observing proceedings and collecting information through moving between these platforms allowed me, as the researcher, to critically and iteratively elicit discussion around proposed solutions.  For example, I would construct a post in the social media group around the FSTP's provisional proposals that were in the public domain to get a response from the community and vice versa.  How the research unfolded in practice is outlined in paragraph 1.8 and depicted in Figure 1.4 below.
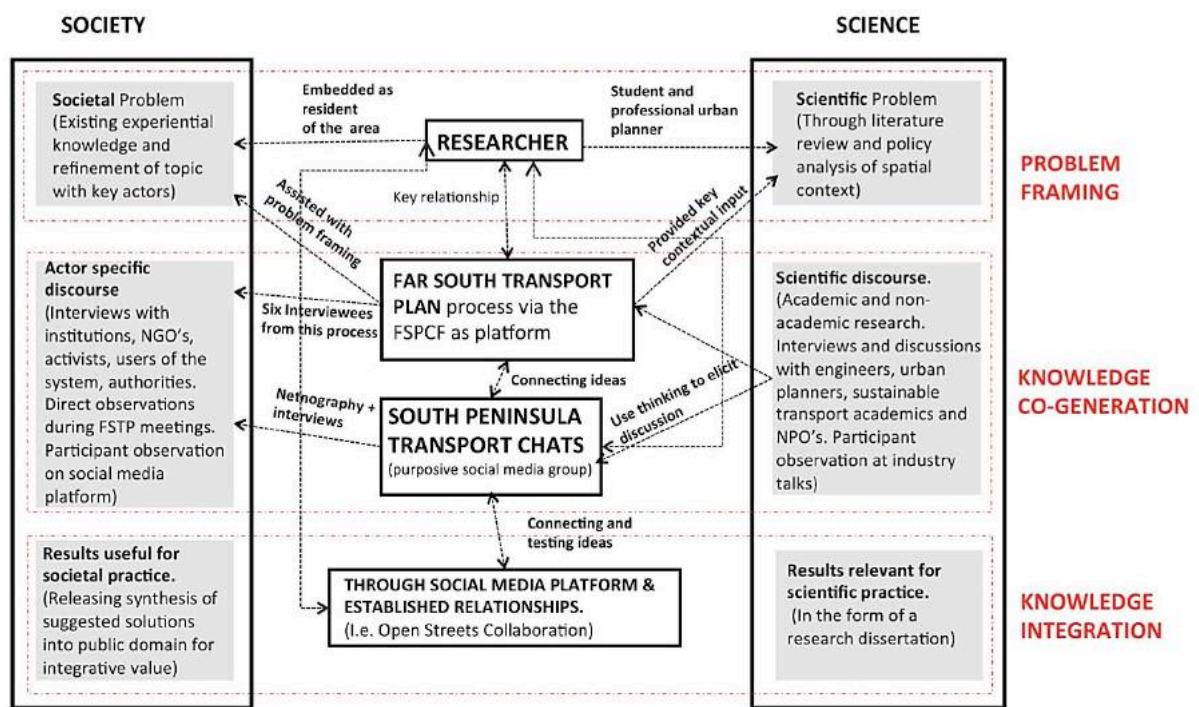


**Figure 1.4:** The iterative research process. Source: Based on Lang et al. 2012. Figure 1. Adapted.

## 1.8    Synopsis of the research design

Transdisciplinary research is a wide-ranging approach that allows for the use of a broad range of research methods and techniques.  For this research, a collection of complementary qualitative methods was used to collect and analyse the data.  The embedded single case study method was selected as the primary method as many regards it as a suitable option when the focus of the research cannot be removed from its real-world context (Scholz et al. 2006; Yin 2009) and a good academic fit for transition studies (Loorbach 2007).  Loorbach (2007) supports such a research combination by noting that case studies can provide the added benefit of providing room, in particular, a participatory environment, for assigning findings to practice within the ambit of transition studies.

The original proponent of the case study research method, Robert Yin (2003), acknowledges its evolution from a niche to an accepted method often used in combination with other research methods.  The case study method is here complemented by a traditional literature review (Potter 2004), virtual ethnography - known as netnography (Kozinets 2010) - during the data collection phase, and employing a theoretical thematic analysis (Braun & Clarke 2008), assisted by a qualitative spatial analysis (Cope & Elwood 2009) during the data analysis phase.  Each method requires a degree of academic rigour.

## 1.8.1  The use of theory

The aim of a traditional or narrative literature review is twofold (Potter 2004).  Firstly, it offers a critical overview of the collective intellectual views on research topic, while providing a rationale for the study through emphasising main areas for further research (Potter 2004). In using this method, literature was selected that would allow for an inclusive and relevant review aligned with the research question (Newell & Burnard 2006 in Potter 2004).

Strategic words such as sustainability development, sustainable transport, automobility, socio-technical systems, socio-technical transitions, transition theory, transport and complexity theory, climate change and transport, and land use and transport guided the literature search initially. A maximum time frame of ten years was placed on the search (Potter 2004), except for older seminal works. I applied the ancestry approach to narrow the search once principal authors and themes emerged, concentrating on the earliest publications first. Applicable literature was grouped around conceptual topics through applying the 'topical organisation' approach (Blaxter et al. 2010). For example, the MLP emerged as an applicable sustainability transition framework at this time.

In addition to providing an overview, the critical analysis of the literature was focussed around uncovering current responses to automobile dependence in cities that can be implemented over the short-term. Also, the research question is slightly slanted to exploring bottom-up responses (active citizenry), an element that further focussed the literature review.

Before proceeding with the review, it is important to note that transdisciplinary research requires an **iterative process between theory and practice**, which was the case here as the data collection phase required me, as the researcher, to revisit the theory especially when it became clear that power and politics were key factors at play.

## 1.8.2  The embedded single case

The motivation for the use of the case study research method was made explicit in paragraph 1.6. The following sub-sections conceptualise the embedded single case (units of analysis, boundaries, context) and discuss how the case lived up to two standard logic tests applicable to qualitative social sciences namely; *validity (internal, construct, external) and reliability* (Yin 2009; Creswell 2013).

The purpose of the embedded single case is idiographic in that it aims to "… describe, explain, interpret, and/or understand a single case as an end in itself" (Levy 2008:4). Levy (2008) provides a further classification for idiographic cases in that it is either guided by theory or not.  A theory-guided idiographic case is "… explicitly structured by a well-developed conceptual framework that focuses attention on some theoretically specified aspects of reality and neglects others" (Levy 2008:4). The well-established MLP in transition studies (Geels 2002) is the deep-rooted theoretical framework in this instance.

Concerning qualitative research, *validity* requires the researcher to use measures to ensure that the findings are accurate, while *reliability* requires a consistent research approach to minimise errors and biases (Yin 2009; Creswell 2013). Validity can furthermore be discussed under three sub-headings: *internal validity, construct validity and external validity.*  Yin (2009) notes that *internal validity* aims to explain causal relationships and is only applicable to explanatory or causal studies and not for descriptive or explanatory cases such as this.

*Construct validity* refers to recognising accurate measures for the phenomenon being studied (Yin 2009), see paragraph 1.8.3 for a detailed description of how the study addressed this test.  Creswell (2013) further proposes that researchers offer a 'rich, thick description' to deliver the outcomes of the study, to explicitly declare any bias the researcher might have, and to discuss findings contrary to emerging themes to adds to the credibility of the study. Chapters 4 and 5 were composed with the aim of providing a 'rich description', through adding numerous direct quotes from participant data and drawing on a broad range of sources of evidence.  With respect to bias, paragraph 1.8.5 offers a transparent and honest self-reflection on the part of the researcher to address how my background and worldview might have shaped the outcomes.

*External validity* is another logic test that requires the researcher to identify the area/domain to which a study's outcomes can be generalised (Yin 2009).  Yin (2009) acknowledges that a common criticism of case studies maintains that case study research cannot deliver generalisable outcomes.  Analytical generalisation, the process of testing theory using a single case, has become an accepted academic tactic to overcome this criticism (Yin 2009). Levy seemingly concurs in explaining, "The more case interpretations are guided by theory, the more explicit their underlying analytic assumptions, normative biases, and causal

propositions; the fewer their logical contradictions; and the easier they are to empirically validate or invalidate" (2008:5). As explained in paragraph 1.8.1, this single case generialises to an established theoretical framework.

As far as *reliability* is concerned, Yin (2009) proposes some techniques to ensure that case study research complies with this test.  These include rigorously documenting the research steps (such as data collection), such as formulating a case study protocol and case study database.  Other procedures include inspecting transcripts for errors and refraining from loosing focus of the meaning and applicability of codes during the coding process of the analysis phase (Yin 2009). A case study protocol was formulated for this research to document the data collection steps - although it is less common in single case studies - while Appendix A (documents) and B (spatial data) present a complete case study database.

In presenting the nature of the embedded case study, Yin (2009) provides a useful conceptual skeleton of the nature of an embedded case study consisting of multiple units of analysis and a clear designated boundary between the case (what is studied) and its context, see Figure 1.5 (a).
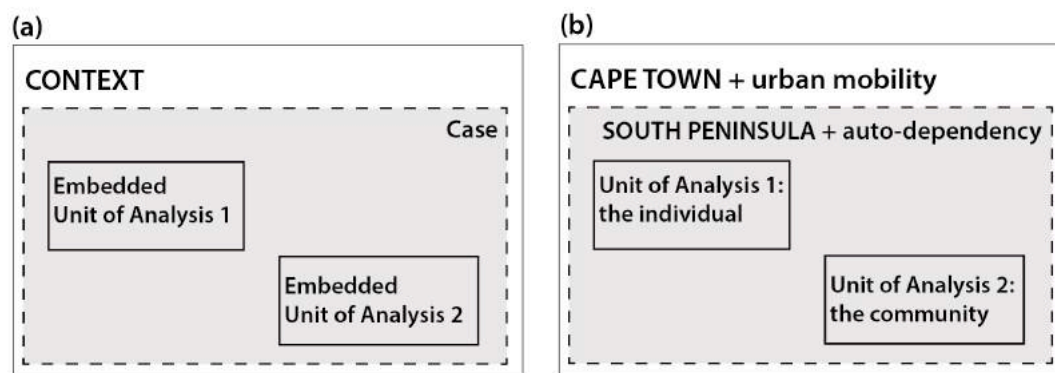


**Figure 1.5:** Embedded single case with multiple units of analysis (a). Source: Yin 2009, Figure 2.4. The South Peninsula as an embedded case (b).

In this instance, Figure 1.5 (b) depicts the case as bounded by a geographic area (spatial boundary), the Far South, as well as by the research topic of auto-dependency (topical boundary).  The broader context within which the research is located concerns the Cape Town as the city scale (spatial boundary) and urban mobility (topical boundary).

The first unit of analysis concerns the *individual* fulfilling respective roles within the bounds of the case (i.e. car commuters, local decision makers, key community figures, government officials and social activists).  The second unit of analysis is the *receiving community group* as a whole, being the users of the system of automobility.

Yin (2009) guards against concentrating data collection efforts at the level of one unit of analysis, without also focusing on the other. Although the unit of data collection was predominantly focused around the individual as the smaller unit through interviews, I guarded against losing sight of the larger unit, the community as a group, by eliciting a community dialogue through the social media platform and through observing how communities reacted to local events as portrayed in the press and social media.

### 1.8.3  Sources of evidence

As discussed, *construct validity,* concerns detecting the correct measures for the concepts being scrutinised (Yin 2009). One trusted strategy for achieving this in case research is to use **multiples sources of evidence to encourage convergence and triangulation of data** (Yin 2009; Creswell 2013) as it allows numerous measures of the phenomenon studied.  A variety of sources of evidence furthermore assist with providing a 'rich description' of the case (Creswell 2013), as discussed in paragraph 1.8.2.

The research subsequently draws from six data sources that are traditionally associated with case study research: documentation, archival records, interviews, direct observation, participant observation and physical artefacts (Yin 2009). A case study database is contained in Appendix A. The collected data is grouped into three broad categories as outlined in table 1.1 below:

- *participant account data* elicited by the researcher as primary data
- *data from parallel processes* as secondary data with some primary observational data
- *contextual data* relevant to the study area and the topic as secondary data.

All data were recorded, stored, coded and analysed with the assistance of Atlas.ti, a Computer Assisted Qualitative Data Analysis Software (CAQDAS) package.

It is important to acknowledge at this stage that the thesis encapsulates the collection of data that occurred during the research project. However, approaching the research with having lived in the research field for many years, there was not a precise moment when collecting data started. As Stake (1995), a case study proponent, explains:

> There is no particular moment when data gathering begins. It begins before there is commitment to do the study: back-grounding, acquaintance with other cases, first impressions. A considerable proportion of all data is impressionistic, picked up informally as the researcher first becomes acquainted with the case (Stake 1995:49).

I read local newspapers, experienced increasing congestion and witnessed a growing frustration by the communities around transport, especially noticeable on online social media platforms. This exposure to the real-world problem allowed me, as the researcher, to develop a degree of systems knowledge even before the formal research commenced. Notably, this knowledge was mostly impressionistic, one-sided and somewhat incomplete at the time.

**Table 1.1:** Data categories (primary and secondary) and sources of evidence.

| Type of Data | Participant group and corresponding data source | Extent |
|---|---|---|
| **Participant Account Data (Primary data)** | **A.  Community members (car commuters)** | |
| Qualitative data elicited by the researcher through<br>- Interviews,<br>- Direct observation,<br>- Participant observation | • Semi-structured interviews | 3 |
| | • Social media group discussion | 30 posts & 96 comments |
| | • Emails directed to me as a result of the invitation to participant | 11 |
| | **B.  Community representatives (Ratepayers associations and Municipal Councillors)** | |
| | • Semi-structured interviews | 4 |
| | • Emails directed to me as a result of the invitation to participant or around key issues such as the FSTP | (See Appendix A) |
| | • Informal conversations (in-person and telephonically with key actors and sustainable transport activists | 5 |
| | **C.  Government officials (COCT, SANParks)** | |
| | • Semi-structured interviews | 4 |
| | • Emails directed to me as a result of the invitation to participant or around key issues such as the FSTP | (See Appendix A) |
| | • Informal conversations (in-person and telephonically) | 2 |
| | **D.  Niche initiatives** | |
| | • In-depth interviews | 2 |
| | • Informal conversations (in-person and telephonically) | 1 |
| | • Email correspondence | (See Appendix A) |
| | **E.  Academics, Activists, Non-Governmental Organisation (NGOs)** | |
| | • In-depth interviews | 1 |
| | • Informal conversations (in-person and telephonically) | 3 |
| | • Email correspondence | (See Appendix A) |
| | **F.  Institutions (Schools, Developers, Estate Agents, Minibus-taxi association)** | |
| | • Semi-structured interviews | 4 |
| | • Informal conversations (in-person and telephonically) | 1 |
| **Data from parallel processes (Secondary data)** | • Far South Transport Plan (email correspondence, observations from being in meetings, field notes, presentations, draft proposals and online commuter survey) | (See Appendix A) |
| Qualitative data selected by the researcher through<br>- Direct observation<br>- Participant observation | • Kommetjie Expansion Project (email correspondence, observations from attending meetings, documentation and reports, field notes) | (See Appendix A) |
| | • Houmoed Avenue Expansion Environmental Impact Assessment (observations from being in meetings, field notes, documentation) | (See Appendix A) |
| **Contextual Data** | | |
| Qualitative data selected by the researcher as relevant<br>- Documentation<br>- Direct observation | News clippings (local and city-wide newspapers), media releases (COCT) and relevant websites (e.g. Open Streets Cape Town) | 33 |
| | Photographs (archival and current) | (See Appendix A) |
| | Formal studies (relevant to the area and to Cape Town) | (See Appendix A) |
| | Agendas, minutes of meetings | (See Appendix A) |
| | Attended relevant civic and academic gatherings (Open Streets event around Transit Orientated Development and Low-Carbon Transport) | 2 |
| | Spatial database (sourced from the City's Open Data Portal) | (See Appendix B) |

The interview and online social media group as data collection techniques are discussed in more detail below.

### *The interview*

Ontologically, the transformative paradigm acknowledges that people view the world differently thus making for a multitude of realities (Mertens 2007; Chilisa 2012b). Stake (1995) regards the interview as the primary technique available to qualitative researchers for teasing out these different views of a case.  I conducted 19 interviews (16 semi-structured and 3 in-depth) over a period of two months. The interviewees were selected through theoretical sampling, a type of purposive sampling to "… confirm the theoretical framework" (Bryman et al. 2014:186). The conceptual levels of the MLP, as introduced in paragraph 1.1, were used in this instance to interview actors at the regime (authorities, institutions, users of the system) and niche levels (user innovations, technological niches) reflected in Table 1.2.  Snowball sampling was used in cases to identify key people within these categories.

**Table 1.2:**  List of interviews and linkage with the theoretical framework (Note that direct quotes were anonymised to protect identities).

| Name | Date | Participant Group | Role in MLP |
|---|---|---|---|
| Interviewee 14 & 5 | 11 May 2017 | D. Niche initiatives | Niche (technological innovation) |
| Interviewee 17 | 18 May 2017 | C. Government officials (COCT TDA) | Regime (policy) |
| Interviewee 4 | 26 May 2017 | B. Community representatives (Ratepayers Association) | Regime (users + culture) |
| Interviewee 10 & 20 | 7 June 2017 | C. Government officials (COCT TDA) | Regime (policy) |
| Interviewee 7 | 8 June 2017 | D. Niche initiatives | Niche (technological innovation) |
| Interviewee 11 | 5 June 2017 | B. Community representatives (COCT Councillor) | Regime (users + policy) |
| Interviewee 13 | 5 June 2017 | F. Institutions (Business community - Civil engineer) | Regime (users + culture) |
| Interviewee 12 | 15 June 2017 | B. Community representatives (Transport representative on FSPCF) | Regime (users + culture) |
| Interviewee 16 | 1 June 2017 | B. Community representatives (COCT Councillor) | Regime (users + policy) |
| Interviewee 15 | 12 May 2017 | F. Institutions (Minibus-taxi association) | Regime (users + culture) and Niche (user innovation) |
| Interviewee 6 | 15 May 2017 | F. Institutions (School Deputy Principle) | Regime (users + culture) |
| Interviewee 1 | 17 May 2017 | F. Institutions (School principal) | Regime (users + culture) |
| Interviewee 2 | 23 May 2017 | A. Community members (commuter + transport engineer) | Regime (users + culture) |
| Interviewee 8 | 26 May 2017 | C. Government officials (COCT TDA) | Regime (policy) |

| Interviewee 3 | 29 May 2017 | A. Community members (commuter + environmental consultant) | Regime (users + culture) |
|---|---|---|---|
| Interviewee 9 | 9 June 2017 | A. Community members (commuter + lift club organiser) | Regime (users) |
| Interviewee 18 | 12 June 2017 | A. Community members (commuter and hitchhiking activist) | Regime (users + culture) and Niche (user innovation) |
| Interviewee 21 | 12 June 2017 | F. Institutions (Business community - Property Developer) | Regime (users + culture) |
| Interviewee 19 | 20 June 2017 | E. Academics, Activists, NGO's (Local NGO) | Niche (user innovation) |

### *The online social media group*

Social media research is an emerging and beneficial social research method often used in business research (Golder & Macy 2013). However, the potential of this research medium to extend to other fields is recognised:  "… (it) provides an opportunity to examine behavioural phenomena, including the provisioning of social support, establishment of trust and economic exchange, opinion formation and information dissemination, and beyond" (Golder & Macy 2013:628). Machin-Mastromatteo (2012) sees social media platforms and the discussions that take place on these platforms, as having the potential to create 'affinity spaces' that is presented as an alternative concept to the concept of 'communities of practice' (Wenger 2006 in Machin-Mastromatteo 2012). Questions have been raised around the use of social media as a research environment given its recent conception (van Osch & Coursaris 2014 in Golder & Macy 2013) as well as concerns around privacy and confidentiality (Moreno et al. 2013).

The purposive online social media group was created on Facebook, the most popular social networking site of current times, to elicit wider community participation on a platform seemingly instrumental to everyday life. Kozinetz (2010) argues that social scientists are turning more towards online communications to truly understand the nature of society. The group was created by myself, the researcher, and contained the required consent information from the University. A participant drive to invite people to be a part of the discussion was then embarked on. An invitation was published in the local newspaper, the False Bay Echo (Photo 1.1), posted on all the community Facebook pages I could get access to[2], and sent to all the ratepayers associations via the distribution channels of the FSPCF. Since the focus was on people in cars, twenty posters were erected along key routes, at intersections, and affixed to community notice boards, see Photo 1.2.

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[2] Invitations were posted on the following Facebook groups: Noordhoek Community, Ocean View/Slangkop, Simon's Town Community Group, South Peninsula Moms, Milkwood Park Community Forum, Capri Community Forum, Masiphumelele, The Glencairn Community Notice Board and Kommetjie Kommunity.
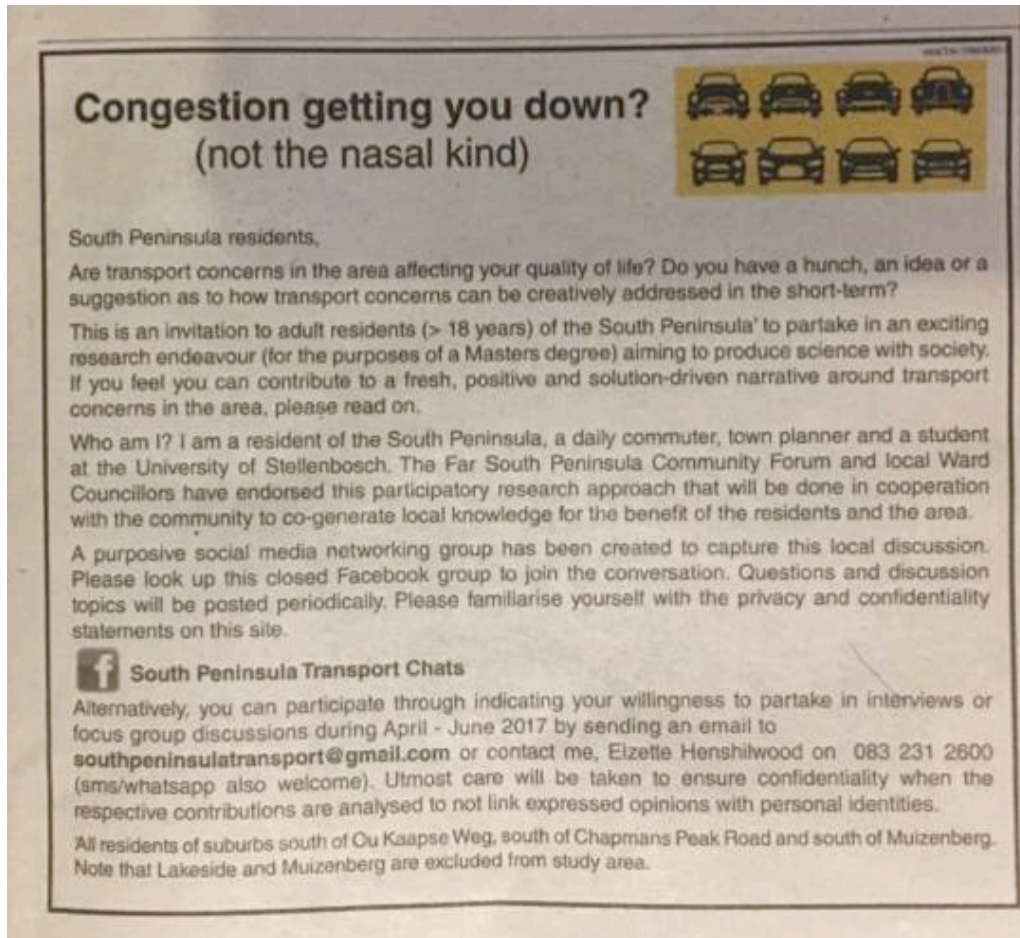
**Photo 1.1:** Invitation to partake in the study appeared in the False Bay Echo
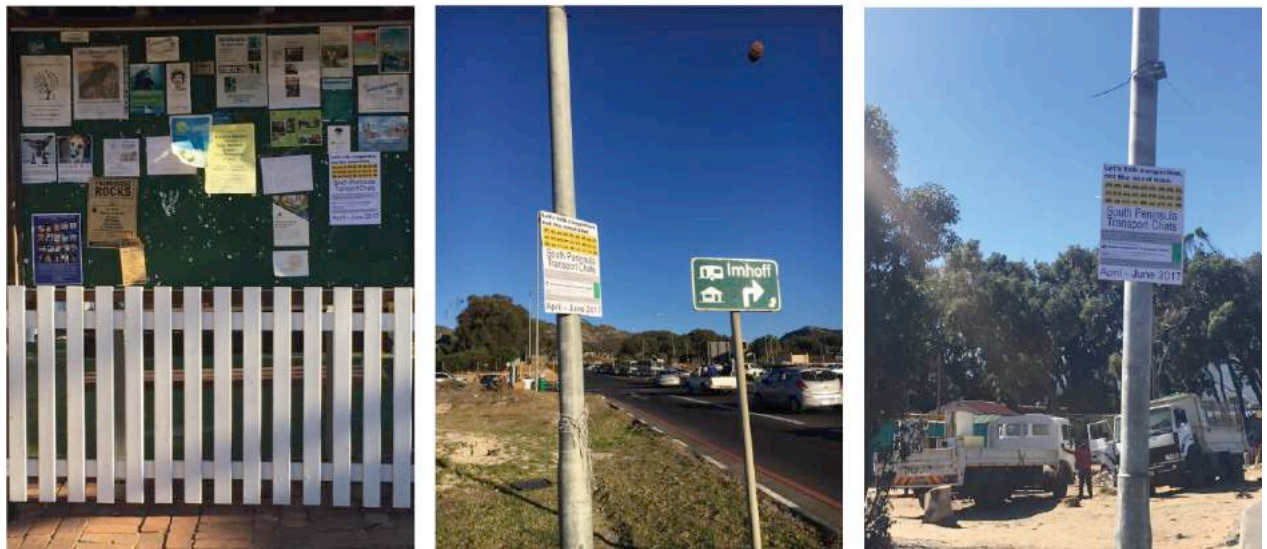


**Photo 1.2:** Posters erected at key notice boards (far left at Noordhoek Farm Village), along key routes (middle photo of poster at Kommetjie Road and Ou Kaapse Weg intersection) and at entrance points to neighbourhoods (far right photo at Masiphumelele entrance). Source: Own photographs.

**Netnography research**, a derivative of ethnography, is an established method of studying online communities (Kozinets 2010). This method supports the collection of online data through *watching* (studying past online communications), *asking* (elicits data specific to the study) and through *examining* (field notes – direct and participant observation) (Kozinets 2010).  I mainly relied on *asking* and *examining* when collecting qualitative data via this platform for inclusion into Atlas.ti, as I regarded studying past communication (*watching*) as potentially too time consuming. When eliciting online communications for a specific study, Kozinets directs the researcher to approach it as a 'conversation and not an interrogation (2010:109)", something that I applied throughout my participation in this technique. The newly created Facebook group page is a closed group, displaying the most stringent privacy settings of the types of groups. It consists of 124 members of which 25 are regular contributors. Figures 1.6 and 1.7 display particulars of the group and an example of a conversation thread respectively.
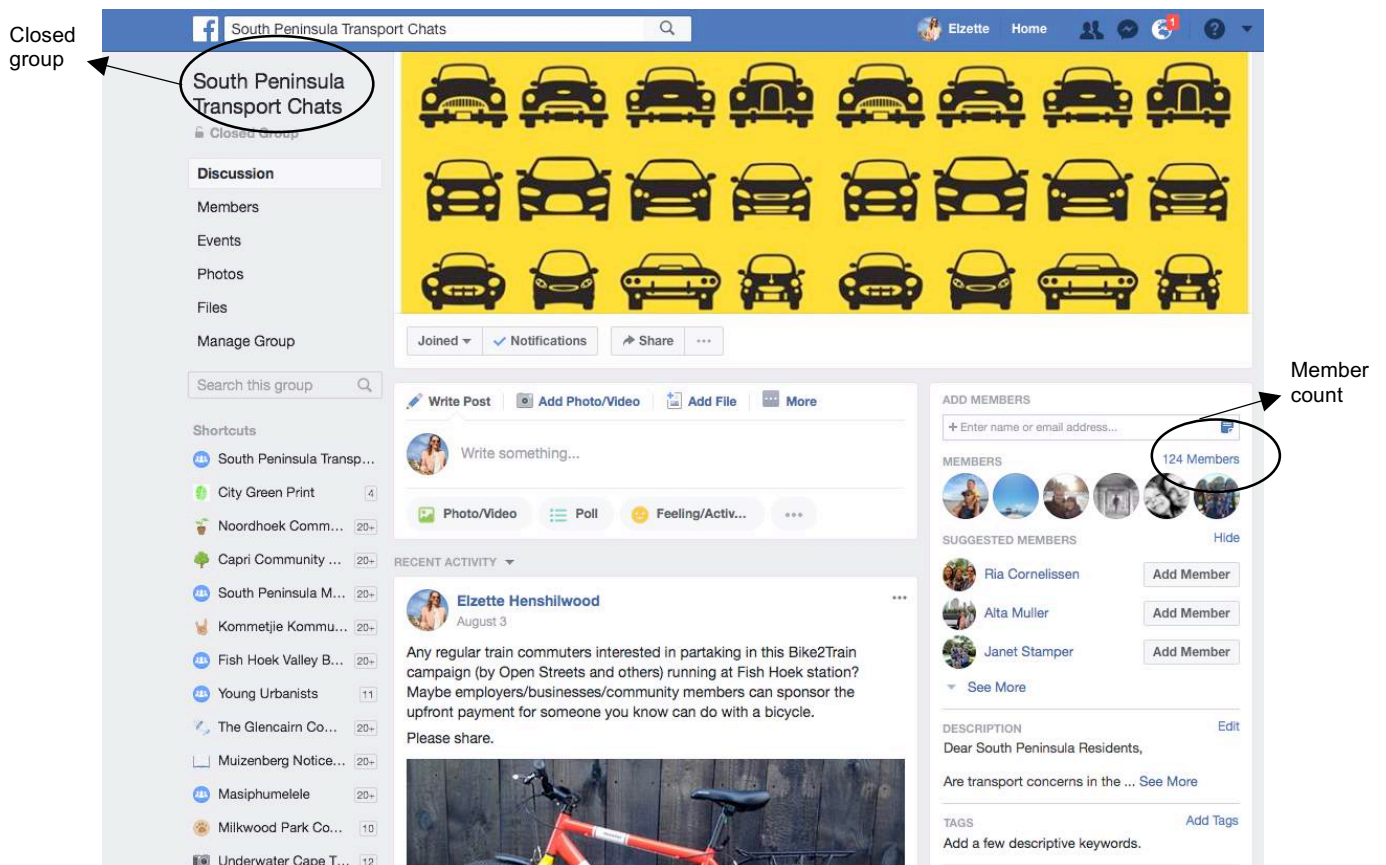


**Figure 1.6:** The online social media group: South Peninsula Transport Chats (SPTC).
Source: https://www.facebook.com/groups/722948037907949/

**Figure 1.7:** An example of a post and comment thread on the online social media group.
Source: https://www.facebook.com/groups/722948037907949/)

## 1.8.4  A thematic and spatially centred analysis

The data analysis stage of the case study method is often regarded as the least established component of the research process (Yin 2009).  In addition, this step in qualitative research is often criticised as being too lenient (Antaki et al. 2002 in Braun & Clarke 2008).

Many authors support adhering to clear analytical guidelines and procedures to counter this criticism (Braun & Clarke 2008; Yin 2009; Creswell 2013). Yin (2009) promotes a number of **analytical strategies and techniques to ensure internal and external validity**. One such analytical strategy is the use of theoretical propositions to direct the data analysis phase and influence the adopted analytical techniques (Yin 2009). Braun and Clarke (2008) support the use of theory during this phase by means of employing the rigorous **theoretical thematic analysis strategy**. This method is adopted here given the overarching deductive nature of this research.

### *The theoretical thematic analysis*

The theoretical thematic analysis method concerns the recount of the data in 'rich detail' through the identification of patterns in the data, the **theoretical themes** (Braun & Clarke 2008).  The coding of the extensive qualitative data set was thus **driven by the research objectives**, aiming to identify the 'forces of stability' and 'forces of change' (Geels 2002) within a local manifestation of a system of automobility.  It concerns a phased process of coding the data, identifying themes and sub-themes, reviewing and refining the themes and conducting an in-depth analysis of these patterns to be able to 'tell the story of the theme' (Braun & Clarke 2008). This process is not without judgement on the part of the researcher. A constant decision making process unfolded while conducting the analysis in this manner, guided by the three overarching questions being the overarching research question, the questions posed to the interviewees and the questions guiding the coding and analysis (Braun & Clarke 2008).  The questions guiding this research can be summarised as:

- What are the barriers to more sustainable transport interventions in the area?
- What short-term sustainable transport solutions can be identified?
- What are the underlying cultural norms/perceptions and forces that keep the system 'stable'?

Given the essence of transdisciplinary research approach - generating science with society - the aim is to generate a societal and scientific contribution. Data analysis therefore followed a similar two-pronged approach.

- Firstly, a search was conducted 'across the data' to determine specifics around the case, i.e. what the communities regard as the barriers to change and what potential sustainable solutions could be. A differentiation was made between *authority data* and and *citizen data.* **Systems** (what is wrong with the system) and **target** (where should we be) **knowledge** were obtained in this manner.
- Secondly, the data was searched to tease out the semantic themes relating to underlying actor perceptions and reasonings. Appendix C contains the list of Atlas.ti codes generated throughout the analysis.

*The qualitative spatial analysis*

As outlined in the following chapters, a review of the literature shows that one of the major critiques of the MLP sustainability transition framework concerns its lack of accounting for the role of space and scale (Hodson & Marvin 2010; Coenen et al. 2012; Raven, Schota & Berkhoutb 2012) - whereas others compellingly argue that one **cannot divorce a complex social phenomena from its spatial context** (Hodson & Marvin 2009; Coenen & Truffer 2012; Raven et al. 2012; Swilling et al. 2017).  Further, Rucks-Ahidiana & Bierbaum (2015:92) argue for the need to apply spatial analyses to qualitative social inquiries as it "… enhances depth and rigor to qualitative work across the social sciences".

Bearing these arguments in mind, the research focuses greatly on the spatial dimensions of the case given the constrained physical location. I have relied on my spatial perception abilities as an experienced urban planner and technical abilities in computerised spatial mapping with the help of Geographical Information Systems (GIS), to assist the analysis of the case.  Typically, if spatial data is used in qualitative studies, it is done to either produce a descriptive context or to assimilate spatial data into the qualitative analysis (Rucks-Ahidiana & Bierbaum 2015).

- The first approach concerns mapping certain physical characteristics of the space associated with the social phenomenon
- The second relates to identifying patterns and trends with the help of the spatial data.

Both methods are used in the analysis of the case study with the assistance of QGIS, an open source GIS application. In particular, spatial data was used to enrich the overarching themes that were identified during the thematic analysis by triangulating aspatial qualitative data, for example interview data, with spatial data. The spatial database is contained in Appendix B.

## 1.8.5  Role of the embedded researcher

The rationale of the study has been presented in paragraph 1.3 as predominantly resting on the call for innovative ways of researching complex sustainability challenges, being cognisant of space and local context and aligning with a discourse that promotes the application of social science to a once technocratic field.  This approach consequently impacts on the role of the researcher.  In reflecting on this personal path, this topic can best be treated under two pertinent headings: the researcher's role in a transdisciplinary inquiry (Brown et al. 2010; Pohl 2010; Van Breda & Swilling 2016), and reflexivity of a researcher studying a familiar context (Berger 2013).

Firstly, as mentioned before, this participative solution-driven research is located within the transformative paradigm.  This in itself has implications for the researcher. Mertens (2007) explains that the transformative researcher is "… one who recognizes inequalities and injustices in society and strives to challenge the status quo, who is a bit of a provocateur with overtones of humility, and who possesses a shared sense of responsibility" (2007:212).  It has been noted that I do 'share the responsibility' of the societal problem in this case as I am a resident of the area and a car commuter myself.   Many note that a transdisciplinary researcher assumes a similar role in confronting challenging wicked problems together with real-world actors (Brown et al. 2010; Pohl 2010; Van Breda & Swilling 2016):

> The transdisciplinary inquirer, whatever their field of operation, is regarded as being involved in crafting, philosophizing, inventing, exploring and coordinating collective inquiry as they deal imaginatively with a wicked problem.
>
> Brown et al. 2010:11

In other words, transdisciplinary researchers are required to 'build bridges' (Brown et al. 2010) or 'build trust' between the various participants (Pohl, Rist, Zimmermann, Fry, Gurung, Schneider, Speranza, Kiteme, Boillat, Serrano, Hadorn & Wiesmann 2010).   Yet, a prerequisite for this role is to accept that people see the world differently, leading to a multitude of worldviews, especially poignant in wicked problems (Brown et al. 2010). Brown et al. (2010) encourage researchers to identify the various worldviews as a first step of a transdisciplinary inquiry. In this case, as the research progressed, the different 'worldviews' of the participants became apparent. Intriguingly, it would appear that one's professional role (discipline) plays a fundamental role in shaping this worldview as I found that responses were very much aligned with what can be expected from the various professional disciplines. This consequently influenced how they interacted with me, the researcher. The following was observed around participant worldviews:

- The *transport engineer* insists that the long-term solution lies in infrastructure and efficiency, i.e. fix the railway and construct more roads (technological fix). Travelling outside of peak hours (a practical solution) is offered as a short-term solution.

- The *environmentalist* is concerned about minimising individual ecological footprints and acknowledges the interconnectedness of an over-reliance on a fossil fuel and environmental degradation. Attempts by this person to address this have included commuting via bicycle - over a mountain pass.

- A *freethinking post-capitalist* subscribes to the sharing economy when believing that sharing and giving lifts to hitchhikers have transformative value for both parties - which South Africa desperately needs.

- The *business person* measures the impact of a failing public transport system in quantifiable economic terms.  This person maintains that investment can happen anywhere, as long as the benefits outweigh the risks.

- *Local authority officials* seem overwhelmed at the mere thought of sustainability, given the spatial and societal complexities of Cape Town.  A general view amongst

them is that development and urban expansion are inevitable - so is community 'push back'.

- Local *Councillors* are knowingly in a precarious position caught between a duty to the City, to their constituency and to the political party. In their world, political power plays are at the order of the day.

- *Community representatives* are distrustful of attempts from the City to alter the status quo.  The City is often accused of siding with certain independent consultants when awarding tenders and the accuracy of their data is questioned.

- A local *mother* is concerned about the lack of schools and how to make sense of the demands on parents to coordinate children's schedules that inevitably involve car trips.  Moreover, it is believed that giving your child a good education is invaluable given the societal ills and political instability of the current times.

Swilling (2016) notes that in order to generate the third type of transdisciplinary knowledge (**transformation knowledge**), researchers ideally should be 'embedded' in the social settings being investigated. Not only was I, the researcher embedded in the case, it was also a familiar setting. The second reflection on the role of the researcher thus concerns *reflexivity* in studying the familiar (Berger 2013):

> Reflexivity is commonly viewed as the process of a continual internal dialogue and critical self-evaluation of researcher's positionality as well as active acknowledgement and explicit recognition that this position may affect the research process and outcome.
>
> Berger 2013:220

Reflexivity requires researchers to critically reflect on their own positionality in the research process and the impact it may have on the study, participants and outcomes (Berger 2013; Creswell 2013). One's positionality can be symbolised by gender, age, biases, personal experiences, beliefs, or political ideologies.  Berger (2013) notes that this will impact the study in three ways: 1) impacting on *entry into the field*;  2) influencing the *relationship between the researcher and researched*;  and 3) the researcher's positionality will influence *how questions are asked and how data is analysed*.

Firstly, in studying the familiar, *entry into the field* was easy and as mentioned before, I brought local knowledge to the study and could therefore relate to the participants.  Being an urban planner in Cape Town further assisted with entry and securing interviews with people who were, in fact, my peers.  Further, people could relate to me given the various roles I play in this context, i.e. urban planner, researcher, resident, commuter and parent.  For example, being a mother myself, I could commiserate with other parents in having to make tough decisions around children's education and organising busy schedules, which ultimately involves car trips.

Secondly, regarding the *relationship between the researcher and researched,* being an insider benefited the research process, as I often understood the implied intent when participants would describe a local situation, event or place. Further, I was biased towards finding solutions to this local problem, aligned with the transformative paradigm. Yet, I found that participants found it easier to discuss the problem than to look for solutions. Bearing this in mind, I consequently had to guard against not trivialising the way in which the participants saw the problem, nor lead the participants towards a specific solution. As an insider, the task of 'building bridges' between actors (Brown et al. 2010) was in my opinion more challenging as I found that different 'camps' (worldviews) saw real benefit in having an embedded student, urban planner and resident on their side of a particular argument. These different participant groups attempted to win me over - inviting me to join a certain faction to oppose others.  This was clear in wording such as 'so glad you are on-board' (attempting to involve me in a legal battle between the City and a community), 'you are one of us now' and another wanting my professional assistance to oppose a proposed road expansion project (see paragraph 3.4.5). I soon realised that power and politics are central to this wicked problem and had to be sensitive to these power-plays, as noted by Pieterse (2008:5) "… we cannot deny that power is at the heart of city development".  Research findings around social dynamics are presented in more detail in paragraph 4.4.

Thirdly, with regard to *how questions are asked and how data is analysed*, I found that being an insider helped framing questions in a manner that conveyed the researcher's familiarity (and shared responsibility) of the challenges.  Familiarity in this sense allowed me to refer to context specific idiosyncrasies that made it easier for interviewees to respond to questions. Similarly, having in-depth knowledge of the area assisted in analysing the data as places, events and people were recognisable and could thus be coded without having to spend time on familiarisation.

However, what Berger (2013) does not warn the researcher about, when studying the familiar, is the potentially touching journey of uncovering uncomfortable truths about an area that one might not have known. This was the case here as I reflect on this dualistic role, which Swilling sees resembling that of 'social hybrids' and 'activist-researchers' (2016:37). Here I can offer that it was a very emotional journey, having to apply academic theory to a familiar setting. For example, the literature made me aware of what could be possible (international best practice), but I uncovered the stark opposite in this setting.   Yet ironically, the theory and the scientific task at hand granted me the necessary perspective and distance from the local problem.

## 1.9 Significance of the inquiry

The significance of the study follows the logic of transdisciplinarity in that it presents possible contributions to science as well as to society.

As argued in chapter 2, there is a worldwide call for countries and cities to transition to sustainable modes of transport given the social, economic and environmental impacts of a system of automobility.  The research has been positioned to contribute to science, especially sustainability transition literature, through **being sensitive to geographical constraints in terms of space and scale** (Hodson & Marvin 2010; Coenen & Truffer 2012; Geels 2012). In addition, the research answers the call for applying a social sciences perspective to transport studies, employing a participatory and transformative research approach to a complex transport challenge (Schwanen et al. 2011). The transdisciplinary collaborative process has **encouraged social learning and a co-production of knowledge (science with society)** (Lang et al. 2012) that could shed light on the relationship between transport (automobility in particular) and lifestyle, an area identified by the IPCC for future research (Sims et al. 2014).

## 1.10 Limitations and ethical considerations

The following limitations and ethical considerations played a role in the outcome of the research:

- The focus on societal responses to a 'system of automobility' (i.e. private car users) precluded by implication the segment of society that has no other choice but to rely on public transport due to cost implications of owning a car. Yet, public transport is discussed at length as a sustainable alternative.
- As described in subsequent sections, automobility involves a range of industries, processes and actors. Due to practical constraints, time being one, this study cannot provide a comprehensive review of the role the car manufacturing industry plays nor could I include the fuel industry into this study.  In addition, the study could have benefited from a quantitative estimation of GHG emissions originating from this area to have determined whether the impact was noteworthy in relation to the rest of the city.  This is an onerous task that could be a study in itself as it would involve determining car types (emissions differ from car to car) and travel patterns for the entire study area.
- The reader should bear in mind that this study was conducted over a short time frame during an extremely political volatile time in South Africa. A general dissatisfaction with the country's political leadership erupted early in 2017 that led to large-scale social protests on 7 April 2017 in an attempt to cause a 'national shut down.' Many subsequent protests followed. I recall protesting myself on the streets of Fish Hoek in

the heart of the study area on that day overwhelmed with feelings of absolute devotion to this country, yet unable to shed growing concern about the timing of this research amidst this instability.

- The protection of confidentiality of participants in a social media research environment has been raised as an ethical research consideration (Moreno et al. 2013). I followed suggestions by other writers to overcome these concerns by instituting a level of privacy - creating a closed group on Facebook with myself, the researcher, as administrator (Golder & Macy 2013). I explicitly stated - on a public platform - that the discussion would be used for research purposes (Moreno et al. 2013). To this end, I uploaded the informed consent document in line with the University's ethical code and the social networking site's policy. It was further noted that care would be taken to refrain from citing participants verbatim in order to ensure that the participant cannot be identified personally (Moreno et al. 2013).  Further note that the type of data elicited is not considered sensitive.

## 1.11  Thesis outline & key concepts

The overall structure of the study takes the form of six chapters, including this introductory chapter. Figure 1.8 depicts the structure of the thesis as road map of the research process.

The first chapter introduces the research topic and spatial location of the case and gives a succinct description of the adopted research design and methodology. It includes reflections on the part of the researcher in undertaking a transdisciplinary inquiry into this context. Further, the chosen research methods are described in detail and assessed regarding its value to the broader research topic and the participatory process. It is concluded with reflections on the role of the researcher in terms of reflexivity, positionality, and biases.

Chapter 2 begins by laying out the theoretical limits of the research through presenting a review of the current body of knowledge around key concepts, such as; sustainability transitions, sustainable cities and urban mobility. A fundamental part of this section is the syphoning of the literature to one specific theoretical framework belonging to the sustainability transition discourse. It lays the theoretical foundation for a predominantly deductive analysis and provides a distinctive language to use throughout the interpretation of the case study research. A collection of international best practice sustainable transport interventions concludes this chapter.

The contextual scene for the case study is set in the third chapter through providing a rich description of the South African and city context, touching on current trends and policy developments that are having an impact on dynamics in this urban enclave. Chapter 4

describes and analyses the physical characteristics of the study area, the key actors and social dynamics at work. Although the chapter can largely be regarding as setting the scene, an effort was made to support this description with suitable qualitative data and quantitative spatial analysis (GIS). It furthermore comprises the findings of the research relating to barriers to sustainable change.

Chapter 5 presents the findings of the research aligned with the dual nature of TDR, i.e. producing science with society. Firstly, an analysis of the potential solutions obtained through primary research concerning the best practice interventions is offered.  Secondly, I draw on all the case study data to present a detailed analysis of the case concerning the theoretical framework, the MLP - as the scientific contribution.

The final chapter draws upon the entire thesis, tying up the various theoretical and empirical strands to argue that this urban enclave might hinder a city wide mobility transition, unless a collaborative local response to automobility is devised that does not include perpetuating the system through increasingly building roads.

| Society | Science |
| --- | --- |
| **Transformative paradigm** | |
| Ontology | Epistemology |
| **Transdisciplinary Methodology** | |
| Systems knowlege: Case study description and analysis (Chapter 3 & 4) | Target knowlege: Literature Review (Chapter 2) as scientific discourse |
| Transformation knowledge: Process of integrating societal and scientific knowledge (Chapter 1, 5 & 6) | |
| Societal contribution | Scientific contribution |
| - Community platform for continued dialogue (Chapter 1)<br>- Participatory identification of barriers (Chapter 3 & 4)<br>- Participatory identification of potential solutions (Chapter 5) | - Geographical embedded application of the MLP (Chapter 5 & 6)<br>- Reflective contribution to transdisciplinary research (Chapter 6) |

**Figure 1.8:** Research road map

The following key terms warrant clarification. These include:

- Urry (2004) defines the *'system of automobility' (shortened to automobility*) as the overarching system that maintains global automobile dependence.  The system includes cars, car-drivers, the fuel needed for energy, car manufacturers, policy makers and the countless other objects and technologies that have a role to play in creating the conditions for the system to self-mutate.
- Given the focus of the study, it is important to define the word '*commuter'*. The National Household Travel Survey (NTHS) provides a definition for the South African context that is adopted in this thesis: "a commuter is defined as any person who regularly travels to and from work whether on foot or by motorised transport" (Statistics South Africa 2014a: 104).
- The term *density*, in the urban planning sense, is used throughout this thesis. Turok (2011) explains that there are in essence two ways of viewing density in the urban context: the tangible population density (expressed as people per hectare) or referring to the density of physical structures in a particular area (expressed as dwelling units per hectare).
- *Greenfields* is an urban planning term that refers to undeveloped land, i.e. not yet transformed for urban uses.
- The Oxford English Dictionary defines the meaning of mobility as the 'ability to move or be moved freely. In the urban context, *sustainable mobility* goes beyond the notion of sustainable transport, as described by the United Nations (UN), "Sustainable mobility extends beyond technicalities of increasing speed and improving the effectiveness and efficiency of *transport* systems, to include demand-oriented measures" (UN-Habitat 2013a:1).
- *Motorisation* refers to a process of increased levels of car ownership.
- *Urban sprawl* is a common term in urban studies used to describe uninhibited urban expansion.
- The term *zoning* refers to a land use categorisation that regulates what parcels of land can be used for, and sets out specific regulations pertaining to each land use.

# 2. Literature Review

In acknowledging the dualistic nature of transdisciplinary research, this chapter is an exploration of existing **scientific** knowledge concerning sustainability, automobility, sustainable transport (ST) and urban studies (see Figure 1.8 for the research road map). Figures 1.2 and 1.4 depict this dualistic approach which ultimately contributes to society and science, the latter being the applicable academic discourse. This chapter, therefore, establishes an empirical and comprehensive literature review to inform the participatory research approach (society) in the quest for practical solutions.

## 2.1    Introduction: the global quest for sustainability

> Taking no action to solve these problems is equivalent to taking strong action. Every day of continued exponential growth brings the world system closer to the ultimate limits to that growth. A decision to do nothing is a decision to increase the risk of collapse.
>
> <div align="right">Meadows et al. 1972:183</div>

These words form part of the now seminal global inquest during the 1970s into what was believed to be the 'predicament of Mankind', commissioned by The Club of Rome, a group of people concerned for the future of our planet (Meadows et al. 1972). This concern was rooted in the fear that anthropocentric economic growth and industrialisation was starting to have a detrimental impact on the environment (Meadows et al. 1972).  The inquiry was the first of its' kind and did not bode well for the future of humankind on earth, citing "… world population, industrialization, pollution, food production, and resource depletion"  (Meadows et al. 1972:23) as the long-term global challenges. As a result, the report demanded urgent global action, as portrayed in the opening quote. Apart from appealing for action, the authors proposed a desired end-state: "… desirable, sustainable state of global equilibrium" (Meadows et al. 1972:180).  This state is one that can meet the "… basic material requirements of all of its people", invites technological innovations, advocate for 'nonconsuming and nonpolluting' human activities and stand for the eradication of inequality (Meadows et al. 1972:158).

Forty five years have passed and although this concept of 'global equilibrium' has morphed into what we now regard sustainability to be, the problems evident in 1972 are still at large and have intensified dramatically. Today, the intensity of the 'polycrisis' (Morin 1992 in Swilling & Annecke 2012), an assortment of complex social and ecological crises such as poverty and inequality, climate change, loss of natural resources and deteriorating ecosystems (Millennium Ecosystem Assessment 2005; United Nations Environmental Programme [UNEP] 2013; Rockström et al. 2014) are threatening the 'safe operating' space for us as humans on earth (Rockström et al. 2014). Once again, a call for action is observed

in the evolution of the concept of sustainable development and sustainability science as a discipline in the numerous international commitments, publications, conferences and press exposure over the last two decades.  Sustainable development (contested and varying definitions) is now presented as the alternative approach to development that would aim to "… meet the needs of the present without compromising the ability of future generations to meet their own needs" (World Commission on Environment and Development [WCED] 1987 in Mebratu 1998:501), strikingly resembling Meadows et al.'s 'global equilibrium' vision.

Transport enables development and vice versa.  Any talk of sustainable development therefore unequivocally involves an alternative development for transportation (UN 2016b,c). Most recently, momentous accords were struck in 2015 and 2016 around a 2030 Agenda for Sustainable Development and the resultant seventeen Sustainable Development Goals (SDGs). A world first United Nations Framework Convention on Climate Change (UNFCCC) (Paris Climate Agreement) (December 2015), as well as an agreement to implement the New Urban Agenda, have set a clear path for the transformation of unsustainable modes of production and consumption (UN 2015b, 2016a,c).  From these commitments, cities and transport emerged as key acupuncture areas where change should be realised.

## 2.1.1  Global trends, transport, and mobility

This sub-section briefly discusses five key global trends concerning global mobility and transport as identified by Dennis and Urry (2009).  These are *urbanisation and motorisation*, *natural resource depletion*, *climate change*, *inequality,* and the *information age*.

We live in an urban age. The world today is predominantly urban, with just over half of the world's population living in cities.  There seems to be no stop to this trend, while predictions towards 2050 point to a rise to 66% of the global population residing in cities (UN 2016a). The United Nations (UN 2016a) argues that planning for this influx of people have often lagged behind the pace at which cities are growing. It has led to an increase of urban sprawl and a short supply of infrastructure and transportation choices, especially in developing countries (UN 2016a). The IPCC (Sims et al. 2014) shows that urbanisation coupled with rising urban incomes are resulting in accelerated motorisation, which is entrenching an auto-dependence in societies.  Further, it was reported during 2010, that 1.2 billion passenger vehicles roam the streets of the world (UN Habitat 2011 in Cervero 2013) - a number predicted to increase to 2 billion by 2020 due to the availability of affordable oil, economic growth and rising personal incomes (Dennis & Urry 2009; Banister 2011; Cervero 2013). Yet, urbanisation can assist the individual in accessing work opportunities, education and health facilities (South African Cities Network 2016).

Black gold is king, or is it? The second and third global trends - *natural resource depletion* and *climate change* - are grouped as both relate to oil as a natural resource*.* The current world economy won't survive a day without oil. It was built around an abundant and cheap supply of this 'black gold' (Dennis & Urry 2009). This reliance on a fossil fuel to turn the economic cogs of society for over a century has resulted in serious repercussions for the twenty-first century and beyond (Dennis & Urry 2009; Grieco & Urry 2011; Sims et al. 2015). Dennis and Urry (2009) gravely point to a case of the twentieth century taking its revenge on the twenty-first.

There are three reasons for this definitive statement. First of all, a *finite resource* is being depleted. The IEA reports that globally the transport sector consumed more than half of the world's oil consumption in 2010 that met 94% of the demand, with the remainder coming from biofuels, gas, and other sources (IEA 2012b in Sims et al. 2014). An entire global sector is almost entirely dependent on a resource that is no longer abundant or cheap. The peak-oil hypothesis emerged on the premise that conventional oil, as opposed to unconventional oil, (tar sands, oil from fracking or deep-water drilling) has a 'beginning, middle and an end' (Dennis & Urry 2009; Grieco & Urry 2011; Newman & Kenworthy 2015).  The supply of conventional oil is said to have peaked in 2006 (Newman & Kenworthy 2015). The combustion of oil for energy is a large contributor to *climate change* through emitting harmful greenhouse gases. Although the demand for oil has dissipated globally, mainly due to price volatility of the last two decades (Newman & Kenworthy 2015), decarbonising the transport sector would nonetheless require 'dramatic trend-breaks' (Hickman & Banister 2014). The global accords mentioned above, **aim to reduce GHG emissions by 80% by 2050 and 100% by 2100** to prevent global warming over and above 2°C (IPCC 2014; UN 2016d). Recent research by McGlade and Ekins (2015 in Newman & Kenworthy 2015) shows that the world is likely to reach 'peak-carbon' before reaching peak-oil, given their estimation that to honour these global goals a third of the left-over oil reserves should remain untouched. Grieco and Urry (2011) contend that there is currently no alternative to oil that could be a substitute energy source for all transport-related machines.

Transport is not an end state, it enables.  The key function of transport is allowing people to access places; places of work, markets, goods, entertainment, education, hospitals to ensure their quality of life while supporting sustainable development.  The United Nation's High-Level Advisory Group on Sustainable Transport (2016) places ***access* at the epicentre of sustainable transportation**. A social consequence of inaccessible and inadequate transportation is reinforced socio-spatial exclusion from the type of places listed above (Cass et al. 2005; Simon 2016), leading to unwanted social outcomes and inequalities, which the SDGs have highlighted as a key aspect to address (2016b).

Transport and *inequality,* is however more complex.  Many authors have argued that the private car, with its associated high costs and maintenance, intrinsically divide society into two groups: the haves and the haves not (Freund & Marvin 2000 in Geels et al. 2012).  Schiller Bruun & Kenworthy (2010) add another dimension to this debate by pointing out that car-centred cities have created an automobile-friendly environment that is unsympathetic to non-car users. In addition, Tonkiss (2013) supports Schiller et al.'s (2010) statement that transport infrastructure has been used to enforce racial exclusion. Highways were purposively designed to contain individual communities. The case study will explain how Apartheid spatial planning employed the same tactic, still evident in the Far South today.

No one asks for directions anymore. The last global trend relates to the *information age* that the world is currently experiencing. Trivial daily tasks are more often than not dependent on virtual objects and back-end software such as setting up meetings, finding your way in a new city or looking up a telephone number. Information and communication technology (ICT) supported by sophisticated software has revolutionised the way we exist (Castells 2004 in Dennis & Urry 2009).  The digital revolution is hailed as especially beneficial to mobility and transport, with innovations both in production and consumption, positively impacting on the efficiency of transport systems (Goldman & Gorham 2006; UN 2016b).  However, the information age has brought about unintended consequences. For example, a study shows that the popular ride-hailing mobile phone application, Uber, has led to increased congestion in New York, which is contrary to what the company set out to achieve (Schaller 2016).

## 2.2    Embedding a systems' perspective in transport studies

> Reality is made up of circles, but we see straight lines.
>
> Senge 1990:73.

Senge strikingly captures the present-day disconnect between the nature of reality and the conventional linear way in which it has been perceived and studied for centuries.  This traditional Newtonian worldview, reductionism, which has been the basis of most modern scientific inquiry, has at its core the principle that all phenomena can be reduced to independent parts that act according to 'deterministic laws' (Heylingen, Cilliers & Gershenson 2007). Many authors contend that many of the global challenges today is a result of this persistent worldview (Swilling & Annecke 2012).

Transport studies is an example of such a scientific inquiry, which emerged after World War II as a direct response to the motorisation and highway-building boom in North America during the 1950s (Schwanen et al. 2011).  It involved a 'predict-and-provide' approach that relies on mathematical models to forecast transport demand from assessed trends, which would then be met with a supply of infrastructure, e.g. road expansion (Schiller et al. 2010; Schwanen et al. 2011).  Generating such a model requires a four-step process of totalling the estimated *trip*

*generation* of a land use or transport intervention, modelling the *trip distribution* within a given study area, grouping users into categories aligned with predicted *modal choices* and lastly *trip assignment* according to anticipated user behaviour (Schiller et al. 2010; Schwanen et al. 2011). Figure 2.1 shows the linearity of this process. This traditional approach to transport belongs to an era of transport planning that once maintained that transport is merely here to 'serve society' - with authorities and engineers only having to ensure that the capacity of these infrastructure systems could meet the demand (Lyons 2004, 2011; Geels et al. 2012).

1. Trip Generation

2. Trip Distribution

3. Modal Choice

4. Trip Assignment
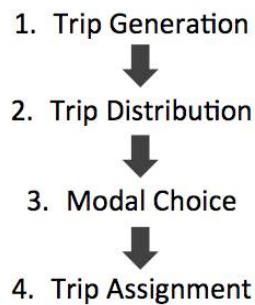
**Figure 2.1:** The conventional travel demand four-step process.
Source: Based on Schiller et al. 2010

Yet, life on earth is undeniably complex with societies constantly adapting to global phenomena, technological innovation, perpetuating information flows and forming new ways of viewing the world. This societal reality encouraged scholars to formulate new bases for scientific inquiry that can encompass the nonlinearity and complexity of real-world systems that consists of a group of self-ruling parts whose local relationships shape global trends (Heylingen et al. 2007) and vice versa (Meadows et al. 1972). System thinkers and complexity theorists encounter the interconnectedness of nature, people, organisations, systems and physical artefacts as a complex 'system of systems' wherein change and shocks are unpredictable (Heylingen et al. 2007).  Such parts are inherently subjective and can self-organise into 'complex adaptive systems' that allows the unit to display emergent qualities that did not exist outside of the whole (Heylingen et al. 2007).

Systems thinking, and its derivative complexity theory, is replacing the traditional 'analysis of individual parts' with the analysis of the dynamic whole across all scientific disciplines such as the natural sciences, physics, ecology and social theory (Holmes 2013). In probing these disciplines that conventionally operated in silos, Holmes asserts to 'have found complexity everywhere' (2013:39). Many authors are therefore optimistic about the potential of complexity thinking to enable the required collaboration of disciplines around sustainability concerns (Capra 2005; Holmes 2013).

The linearity of the conventional Newtonian view of urban transport came under fierce criticism during the late 1960s following the release of a traffic report by the British government in 1963, known as the Buchanan Report after its principal author (Lyons 2004; Schiller et al. 2010).  At the heart of the report was an engineering directive to cope with congestion through seeing to all traffic demand, supporting the endless supply of road infrastructure and traffic separation schemes (Schiller et al. 2010).  Criticism of this report related to the linear, supply-driven manner in which transport challenges were, and arguably still is, handled.  Plowden (1972 in Schiller et al. 2010) argued against this 'predict-and-provide' approach, asserting that the more a government supplies roads, the more the demand will rise, perpetuating congestion. This critic continued to link road expansion with urban sprawl on the premise that a growing road network will enable people to live further away from city centres - a seeming fixation on production and a complete non-regard for consumption patterns (Guy & Marvin 2001).

Many analysts have subsequently argued that conventional transport-modelling approaches (predict-and-provide) fall short in anticipating the real social, economic and environmental impact of an over-supply of infrastructure (such as continuous road building) within the real-world today (Banister 2008; Beimborn et al. 1996 in Schiller et al. 2010; Hajer 1996 in Dimitriou 2011; Atkins 1986 in Newman & Kenworthy 2015). These scholars contend that the essence of transport, and with it the discipline, is evolving with new paradigms emerging that allow for a variety of views and perspectives. Paragraph 2.9 outlines one such paradigm, Banister's 'sustainable mobility paradigm' (2008), in detail. These new understandings are based on a systems perspective, seeing transport as embedded in society, the real complex world. **Transport is increasingly viewed as shaping society and in turn being moulded by how society uses it** - and not simply in existence to serve society. This new thinking updates the top-down 'predict-and-provide' approach that merely sees transport as serving society (Lyons 2004, 2011; Geels 2012; Hickman & Banister 2014), and sides more with seeing circles instead of straight lines, in line with Senge's opening quote.

Applying a systems lens to automobility, Urry identifies six elements with associated actors that in combination have bred and nourished the global 'system of automobility' and caused it to evolve into a self-mutating dominant mode (2004).  Figure 2.2 depicts these elements and its sub-elements to illustrate the interconnectedness of the parts of this complex socio-technical system.

This theoretical lens is subsequently applied to automobility in the South Peninsula in Cape Town, to view it as a quintessential complex 'socio-technical system of systems' consisting of interconnected elements and actors (Hickman & Banister 2014).
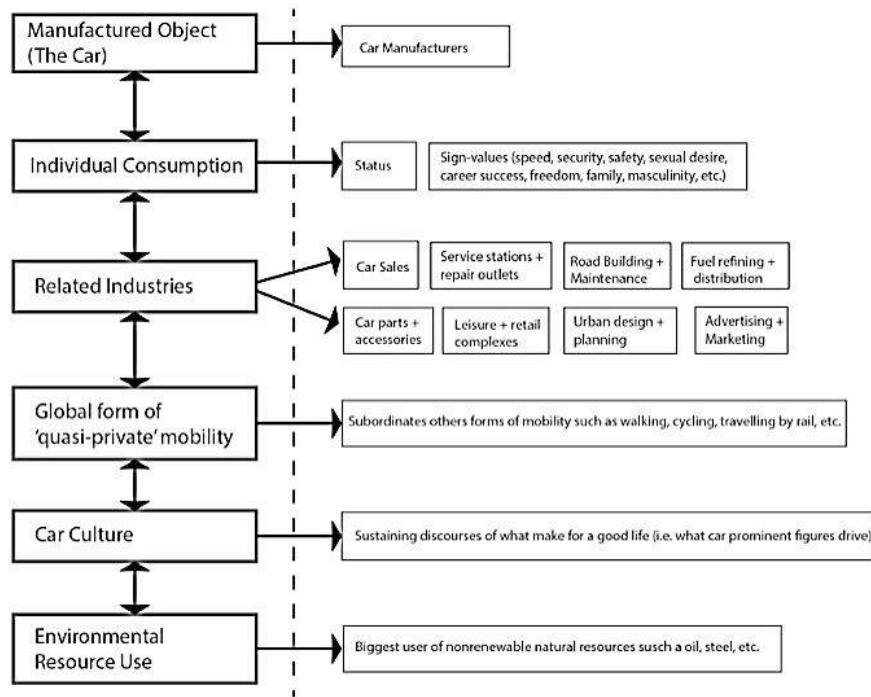
**Figure 2.2:** The components of the 'system of automobility.' Source: Based on Urry 2004

## 2.3   The city as focus

> The 21st century will not be dominated by America or China, Brazil or India, but by
> The City. In a world that increasingly appears ungovernable, cities — not states —
> are the islands of governance on which the future world order will be built
>
> Khanna 2011:1

The previous section highlighted the need for systemic change to bring about sustainable transport solutions for a low-carbon future. Such change will most likely occur in cities. The allure, as well as the repulsion of the city, has been studied and debated for decades. Nonetheless, it is in this century that cities are coming of age and overshadowing the nation state as the focus. Khanna appropriately refers to today's cities as "… humanity's real building blocks because of their economic size, population density, political dominance, and innovative edge" (2011: 1).  Italo Calvino (1974) historically saw the allure of the city contained in what the city as a space can offer the individual.  One could argue that Jane Jacobs (1961:340) follows this line of reasoning in asserting that the crux of cities is to provide a 'multiplicity of choice' (diversity) to its' inhabitants; and with that comes a sense of individual freedom.

Other recurring optimistic views point to cities as places of innovation that allow for efficient productivity, which create employment opportunities due to harnessing agglomeration economies (Simon 2016; UN-Habitat 2016). Yet, cities are exposed as places where natural resources are over-consumed leading to urban waste and pollution not readily absorbed by natural sinks (UNEP 2013; Simon 2016). Growing inequality in world cities, where access to

resources and prospects are not distributed equally (UN-Habitat 2013b), refutes Jacob's argument as it prohibits a large proportion of urban citizens from exercising free choice (Simon 2016; UN-Habitat 2016). The UN notes that cities are frequently seen as places of scarcity, inequality, and segregation and no longer as places of hope and success (UN-Habitat 2013b).

Nonetheless, city life is here to stay, with 54,5% of the world's population calling it home (UN Habitat 2016).  Swilling (2013) points to an increasing agreement between international bodies, academics and world leaders that cities are central in the quest of sustainable transitions of ways of producing and consuming. This articulation aligns with the 2030 Agenda for Sustainable Development and the SDG's and forms the essence of the adopted United Nation's New Urban Agenda, known as Habitat III.  This international political commitment strives for cities to be catalysts for a transformed world (UN Habitat 2016). Important to note that cities in themselves are becoming actors of change and not merely representing spaces where national strategies are implemented (Swilling 2013; Simon 2016).  Hodson and Marvin (2010) provide evidence of an increasing number of developed world cities that are purposively embarking on strategies to transition from unsustainable city services to more resilient alternatives - while developing world cities face the promising opportunity to invest in such alternatives without having been 'locked-into' unsustainable modes of urban infrastructure (UNEP 2013).

The adopted New Urban Agenda puts forward a vision and strategy for an urban transformation that is more just, accessible, equitable, inclusive, resource efficient and resilient (UN 2016a). This chapter expands four of these principles, which are: *urban planning and design* to enable a good quality of life for all urbanites, *embedding sustainability thinking* at the local government level, *harnessing the innovation and technology* that are akin to the Information Age we live in, and *concentrating on participatory processes* that allow 'bottom-up' niches to flourish (UN 2016a). The implications of the selected principles on transportation will become apparent in subsequent paragraphs.

### 2.3.1  City design as a social process

Concerning the first principle mentioned in paragraph 2.3, Tonkiss (2013) argues that city design is a social process. It is partly the realm of technical designers that intently create urban forms and arrange city spaces (planners, architects, engineers) and partly the result of everyday forces within the city such as social interactions and economic dealings (Tonkiss 2013).  Both Pieterse (2008) and Tonkiss (2013) explain how small designed acts implemented within the 'everyday' of city life, can carry transformative value as these acts have the power to 'disrupt the pattern' and to create a sense of wonder and surprise (Lynch 1984 in Tonkiss 2013). These acts are invariably context specific and do not only involve the

experts but sometimes more so the likes of "… producers and traders, consumers and lenders, organisers, go-betweens and foot-soldiers, blowins and diehards, householders and workers, children and the old heads (Tonkiss 2013:11)." Latour (2008) supports this notion in stating that all city designs are 'collaborative' in nature, yet sometimes the 'collaborators' are not 'visible, welcome or willing' meaning that city dwellers shape the design of their cities whether they are aware of it or not.  A local scholar transport service, the Living Hope School Bus is an example of such a 'small designed act' with significant impact, see paragraph 4.7.

Besides, the New Urban Agenda points out the importance of the **involvement of not just the normal urban players but the broad public** (community groups, marginalised groups, academics, private sector players) through 'participatory practices' (UN 2016a). The UN further notes in this Agenda that: "The so-called "bottom-up" approaches, practices and projects of urban development are also rising in profile as legitimate alternatives or complimentary catalysts for positive change. The success of bottom-up methods relies upon participatory and inclusive urban development" (2016a:5).

### 2.3.2  Urban experimentation, social learning, and active citizenry

Experiments have always been part of the urban landscape. It was, in fact, an experiment in London during 1934 that first led to traffic separation as a measure to curb congestion – authorities simply painted a white line down the centre of a street as an experiment, see Photo 2.1.



**Photo 2.1**: First white line experiment in London, 1934. Source: Geels et al. 2012. Figure 2.1.

An emerging urban discourse is revisiting urban experimentation in the light of sustainability challenges (Swilling, Pieterse & Hajer n.d.; Hoogma et al. 2005; Bos & Brown 2012; Broto & Bulkeley 2013a,b; Bulkeley & Broto 2013; Evans & Karvonen 2014; Bulkeley et al. 2015; Evans et al. 2016).

> Experiments act on the present, but in the name of (multiple) visions of the future. In so doing they are not only the key sites of current urban climate change governance, but also the spaces in which the very meaning of justice in the city is being negotiated, contested and enacted.
>
> Bulkeley et al. 2015:222

This body of work honours everyday urban practices, builds on the concepts of 'everyday urbanism' (Pieterse 2008) and 'ordinary urbanism' (Tonkiss 2013) while sharing Tonkiss' (2013) perspective that city design is a social process of a heterogeneous mix of actors (Broto & Bulkeley 2013b).

The idea of experimentation holds a significant space in the sustainability transitions discourse (Sengers, Berkhout, Wieczorek & Raven 2016).  Hoogma et al. (2005) see experiments at the niche level, be it technological or a variation of a socio-technical arrangement, as stimulants for co-evolution towards a possible systemic transition. Similarly, Sengers et al. (2016:15) regard urban experiments as "seeds of change," while others (Banister 2008; Newman & Kenworthy 2015) contend that 'demonstration effects' are essential to entice behavioural change in the transport arena.

## 2.4    Urban mobility and sustainability

Transportation is undisputedly interwoven with the daily lives and practices of the 7,5 billion world citizens.  Sustainable development is not possible without a sustainable global transportation system (UN 2016b,c,d). The seminal Brundtland Report acknowledged this systemic nature of transport through explicitly linking automobile transportation to excessive non-renewable fossil fuel consumption and resultant air pollution that is having detrimental impacts on human life and ecosystems (WCED 1987).  The relationship between transport and sustainability was clearly articulated in this report with the word 'transport' mentioned thirty-six times.  Given this clear link, sustainable transport as an academic discourse, emerged alongside the notion of sustainability during the 1990's (Schiller et al. 2010; Sims et al. 2014).

The IPCC pronounces the primary goal of ST to:

> … provide accessibility for all to help meet the basic daily mobility needs consistent with human and ecosystem health, but to constrain GHG emissions by, for example, decoupling mobility from oil dependence and light-duty vehicle use.
>
> Sims et al. 2014:609

The UN (2016) shows the interconnectedness of transport with six SDGs grouped around six sustainable transportation principles: *safety, affordability, accessibility, efficiency, resiliency and minimising environmental impact by curbing carbon and other emissions.*

Figure 2.3 depicts the linkages with these SDGs and related targets. For example, the SDG on health and wellbeing (Goal 3) includes a target addressing deaths and injuries from road crashes (Goal 3.6), and the SDG concerning cities includes a target on expanding public transport (Goal 11.2).

The UN (2016c) applies '**accessibility**' and '**enable**' as two recurring lenses through which to analyse forces of change. To this group, '*access through transport'* is vital to provide people with the means to access what they need to ensure a quality of life while achieving the targets set by the SDG's. This view resonates with Simon's (2016) renewed perspective on sustainable cities that upholds *accessibility* as a fundamental factor. It signals an apparent shift away from providing *'access to transport',* which focuses on increasing traffic speeds and expanding road networks to *'access through transport',* a concept that places people and access at the core of urban mobility (UN 2016c). It resonates with paradigm shifts discussed earlier, such as the 'deliberate-and-decide' approach (Schiller et al. 2010), transport as relational (Tonkiss 2013), the 'new realism' in transport studies (Dimitriou 2011) and the 'transport in society' approach (Lyons 2004; Grieco & Urry 2011). All these approaches stress the need to engage all sectors of society in participatory and transdisciplinary processes to encourage social learning, thus reiterating Kates' initial opinion around sustainability science (2001:641).
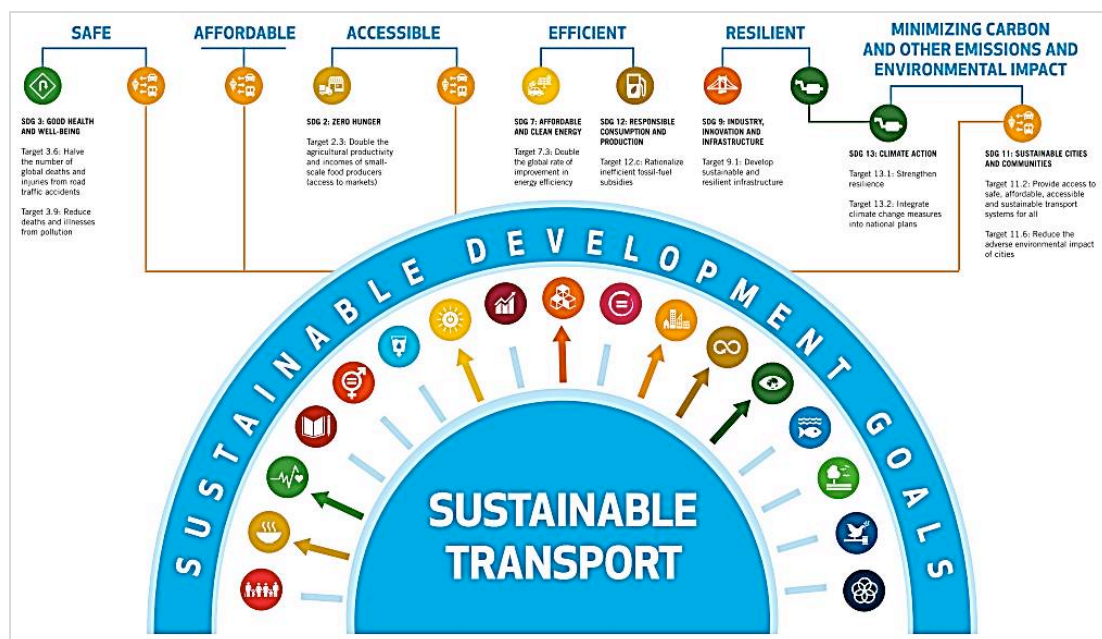


**Figure 2.3:** The alignment of Sustainable Transport to the SDGs.
Source: UN 2016c.

To understand the need for action, it is necessary to point out what makes automobility as dominant global transport mode unsustainable. The impacts of this socio-technical system are categorised into environmental, social, economic and spatial impacts - see Table 2.1 for a selection of possible impacts.

**Table 2.1:** The impacts of automobile dependency. Source: Schiller et al. 2010. Table 1.3

| Environmental problems | Economic Problems | Social problems |
|---|---|---|
| Oil vulnerability | Congestion costs | Loss of street life |
| Urban sprawl | High urban infrastructure costs for sewers, water mains, roads, etc. | Loss of community in neighbourhoods |
| Photochemical smog | Loss of productive rural land | Loss of public safety |
| Acid rain | Loss of urban land to pavement | Isolation in remote suburbs with few amenities |
| High greenhouse gases – global warming | Poor transit cost recovery | Access problems for those without cars or access to cars and those with disabilities |
| Greater storm water runoff problems | Economic and human costs of transportation accident trauma and death | Road rage |
| Traffic problems: noise, neighbourhood severance, visual intrusion, physical danger | High proportion of city wealth spent on passenger transportation | Anti-social behaviour due to boredom in car-dependent suburbs |
| Decimated transit systems | Public health costs from air and other pollution | Enforced car ownership for lower-income households |
| | Health costs from growing obesity due to sedentary auto lifestyles | Physical and mental health problems related to lack of physical activity in isolated suburbs |

## 2.5    Urban Infrastructure as socio-technical systems

> Through their endless technological agency, these systems help transform the natural into the cultural, the social, and the urban.
>
> Graham 2010:1

As introduction to this section, Mumford's metaphor of viewing infrastructure as 'life supporting arteries' and the city as proverbial skeleton is retained (1938 in Tonkiss 2013). A contextual discussion around the interconnectedness between infrastructure and city dwellers follows.

Urban arteries have come to allow the flow of essential services within most modern cities, that is energy, water, and waste (Guy & Marvin 2001). The management of this flow of energy, originating from a natural resource, has traditionally been undertaken from a

predominant production outlook (Guy & Marvin 2001), thus concentrating on managing the supply of such technological infrastructure systems (through objects), administered by public authorities for the interest of society (Graham & Marvin 2001). The technical supply perspective tend to rely on mathematical models to inform policy while viewing physical land use planning as the best way of putting strategies to action (Guy & Marvin 2001). From this perspective, attempts to enable urban sustainability are carried out on the premise that city decision makers will make rational 'technical' decisions. Should non-decision making actors object, educational campaigns are launched or parties are punished through regulation to realise the rationality behind the technical solution - for example, aimed at reducing energy use (Guy & Marvin 2001).  Guy and Marvin criticise this seemingly 'narrow' view of achieving a shift in resource consumption patterns for not taking into account that "… attitudes, decisions and lifestyle patterns are always shaped and framed within wider social processes" (2001:27). Chapter 3 highlights the applicability of this statement for the case, when discussing the impact of political turmoil and crime on everyday decisions.

In fact, embedded infrastructure systems have become central to the lives of billions of urbanites, where eating, cooking, working, travelling, communicating and removing waste from homes are all actions reliant on infrastructure (Graham & Marvin 2001; Guy & Marvin 2001). Graham and Marvin (2001) argue that this dependence on infrastructure has become synonymous with the very makeup of urbanisation, with production and consumption shaping one another (Graham & Marvin 2001; Guy & Marvin 2001). Some critical thinkers have thus prescribed to perceiving networked urban infrastructure as **complex socio-technical systems** (Guy & Marvin 2001) and **dynamic processes** (Graham & Marvin 2001) that form part of other complex cultural and political systems. This view is now supported by a range of academics and international bodies (Loorbach 2010; Geels 2012; Raven et al. 2012; Bos, Brown & Farrelly 2013; United Nations Environment Programme [UNEP] 2013; Auvinen & Tuominen 2014; Moss 2014).

This shift in thinking requires the acknowledgement that socio-technical change steers clear of headstrong views of technological determinism (technological fixes to environmental crises) and similarly of views that promote only individualistic behaviour (cultural fixes to environmental crises) (Guy & Marvin 2001; Hoogma et al. 2005).

As a response, **a coordinated dualistic approach is promoted to transform the way infrastructure is designed and operated as well as how it is consumed by the end user** (Guy & Marvin 2001), with the city as the 'stage' (Graham & Marvin 2001).  Hoogma et al. (2005) apply this new perspective to urban transport and argue that technological fixes in urban transport could assist in addressing transport challenges if presented in a socially embedded manner (cultural fix).  Others add to this debate in asserting that one should see infrastructure as an urbanism that is both 'ecological and relational' (Graham & Marvin 2001;

Tonkiss 2013).   **Relational** in the sense that it facilitates interaction "between people, between things, between people and things (Tonkiss 2013:141)" and **ecological** because infrastructure shapes the physical spaces within which these interactions take place (Tonkiss 2013).  In this sense **infrastructure can be viewed as objects of 'political and economic design'** and not merely being technically designed objects, such as a road bridge (Tonkiss 2013).  Tonkiss (2013) argues that infrastructure is still, as was in the colonial times, used as a pawn to embed urban inequality by supplying to one group of society (the privileged) which ultimately excludes and segregates this group from others (the unprivileged) (Tonkiss 2013). This argument reiterates one of the key connections between modern infrastructure networks and urbanism being the notion that infrastructure symbolises 'congealed social interests' (Bijker 1993 in Graham & Marvin 2001:11).

In addition, the long-term nature of networked infrastructure signifies sunken capital investment into an area and with it **embeddedness of political power-plays** between national and local authorities and private markets (Graham & Marvin 2001). Life in the city is notably shaped by these networked infrastructures (Graham & Marvin 2001), with the 'car culture' phenomenon a key example. Expansion of infrastructure, such as road networks, has become symbolic with development and advancement for the city it holds together.  Yet, many authors point to a well-established trend of cities neglecting to upkeep these systems mainly due to **its 'invisible' and 'taken-for-granted' nature** (Graham & Marvin 2001; Graham 2010; Tonkiss 2013).  It is only when failure sets in that networked infrastructure becomes 'visible' be it an incidental break down or a deliberate attack (Graham 2010). An example is the current systematic neglect of the Cape Town passenger rail service, which is now under constant vandalism and arson attacks. Authorities have therefore gotten accustomed to responding to crises instead of sustaining these systems (Graham 2010).

## 2.5.1  Resource decoupling and passenger transport

As introduced in previous sections, cities symbolically embody living organisms that are sustained by inputs in the form of energy and natural resources (water, energy, food) and produce outputs in the form of urban waste (Kennedy, Pincetl & Bunje 2011; UNEP 2013). This conceptualisation is academically known as 'urban metabolism'.  Unsustainable cities constitute wasteful metabolisms in that most inputs originate from the neighbouring rural areas or even further afield, only to travel through a city via resource conduits, such as infrastructure, and excreted as unwanted 'waste' in the form of pollution, sewerage, and solid waste.  The United Nations Environment Programme's (UNEP) International Resource Panel (IRP) has been probing cities from this perspective for some time (UNEP 2013).  This point of view also regards urban infrastructure as complex socio-technical systems.  The IRP has put a plea to cities to 'decouple' unsustainable resource consumption from urban development and in effect economic growth (UNEP 2013). Decoupling has since been embedded in the

world agenda as a means of achieving sustainable development (Swilling 2013; Newman & Kenworthy 2015).

Swilling (2013) differentiates between two types of decoupling, being 'resource decoupling' and 'impact decoupling'.  The first kind demonstrates a **reduction in the use of natural resources** as a unit of economic prosperity, achievable through being more resourceful with these finite sources ('resource efficiency') and/or increasing the consumption of renewable sources instead ('substitution').  'Impact decoupling' points to **limiting the destructive effects** of current-day economic activity, such as the loss of productive land, $CO_2$ emissions and pollution.  Swilling (2013) links the two types of decoupling by stressing that the success of impact decoupling is dependent on resource decoupling, including both resource efficiency and substitution.

In the case of road transportation, resource decoupling would entail decoupling the use of fossil fuels, i.e. automobile dependence, from capital accumulation, typically measured as the Gross Domestic Product (GDP) of a country (Newman & Kenworthy 2015). Despite reducing a finite natural resource (fossil fuels), decoupling in this sector has the added benefit of lowering $CO_2$ emissions simultaneously.  Although Goldman and Gorham (2006) seemingly agree with resource decoupling, they challenge sustainable resource use as a concept, as more than one resource is at play. They continue to note that the transport sector not only exhausts energy reserves, but likewise reduces habitable land (for people and biodiversity needs), the capacity of the atmosphere to store carbon and an individual's time to his/her disposal (Goldman & Gorham 2006).  According to these authors, the danger lies in adopting solutions that lessen the reliance on one resource, only to lead to an intensified depletion of another (Goldman & Gorham 2006). What is more, it is reasoned that decision making in this sector is made to fulfil broader policy ends, i.e. job creation (Goldman & Gorham 2006). They continue by asserting "… these powerful but often unstated agendas mean that approaching sustainable transport simply as an exercise in resource optimization is somewhat naïve" (Goldman & Gorham 2006:262–263).

Another significant aspect of decoupling is the established link between rising mobility and the income of countries, with resultant increasing GHG emissions (Schafer & Victor 2000; Sims et al. 2014; Sousa, Roseta-Palma & Martins 2015).  The IPCC illustrates this established trend in a recent publication, see Figure 2.4 (Sims et al. 2014).  It is evident from this data that **GHG emissions from the transport sector are increasingly proportionate to the GDP of most world regions**, with road transportation being the biggest culprit within this area (Sims et al. 2014).  Sousa, Roseta-Palms and Martins (2015) recently found the relationship between personal income and increased $CO_2$ emissions from transport in a Portuguese case study to be monotonic, meaning that $CO_2$ emissions rise proportionately to the growth of earnings (Sousa et al. 2015). This group of scholars consequently point to the importance of

customised public transport policy to enable decoupling especially through focussing on the **travel behaviour of the richer section of society** that mostly relies on road transport (Sousa et al. 2015).

Newman and Kenworthy (2015) provide an optimistic view in illustrating a decline in automobility in developed countries between 1995 and 2005, despite growing their economies in GDP terms. To use their words, "… decoupling is well under way in the developed world and the first signs are there in the emerging world as well" (Newman & Kenworthy 2015:77).
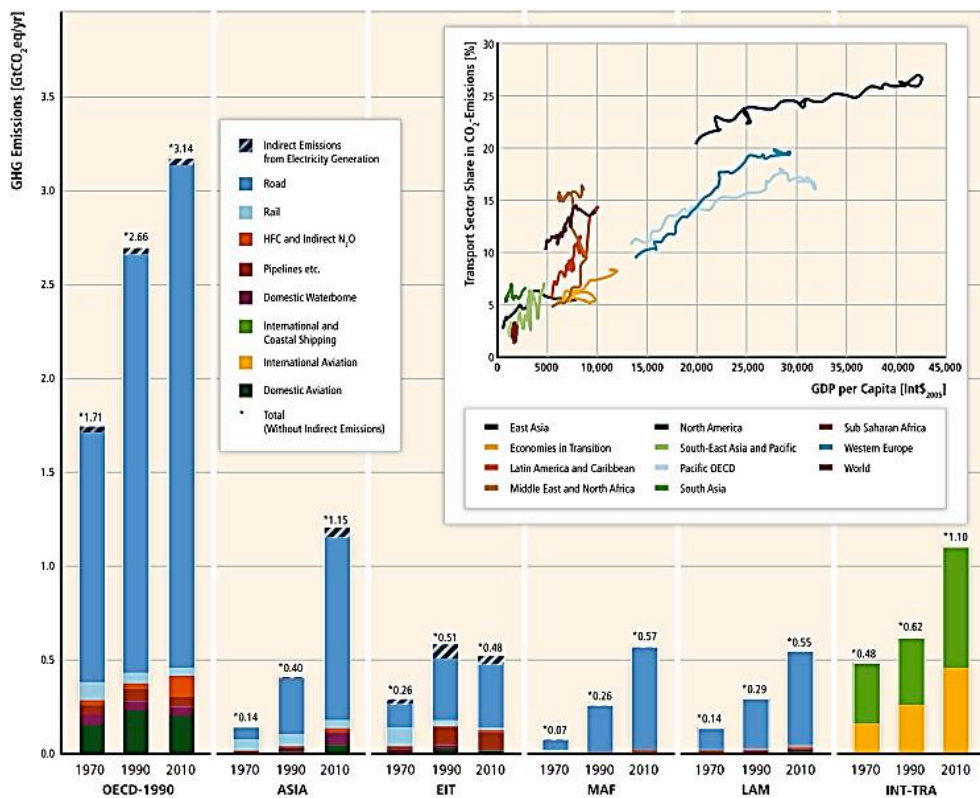


**Figure 2.4:** Transport sectors by world regions and associated GHG, respectively in 1970, 1990 and 2010. International shipping and aviation are depicted separately.
Source: Sims et al. 2014. Figure 8.3). [Note the abbreviations:  EIT = Economies in Transition, MAF = Middle East and Africa, LAM = Latin America, INT-TRA = International Transport]

## 2.6   Automobility: A self-mutating socio-technical system

> Today, we experience an ease of motion unknown to any prior urban civilization . . . we take unrestricted motion of the individual to be an absolute right. The private motorcar is the logical instrument for exercising that right, and the effect on public space, especially the space of the urban street, is that the space becomes meaningless or even maddening unless it can be subordinated to free movement.
>
> Sennett 1977 in Urry 2004:25

Having introduced complexity theory and the notion of urban infrastructure as socio-technical systems, an assessment of automobility, as a socio-technical system, follows (see Figure

2.5). This topic is addressed with two objectives in mind; to provide a brief description and historical account of automobility and to succinctly amalgamate views on how the car has come to dominate urban landscapes.

As far as the nature of automobility is concerned, Sheller and Urry (2000) offer a respected overview of this system, which at its core constitutes the relationship between people (social) and cars (technical). The dissection of the term 'automobility' is used as an introduction here. At the very root, the prefix 'auto' refers to the self as in autobiography, autocrat or autograph. Yet, auto is commonly used to describe the movement ability of a machine or object, most notably in words such as automation, automatic and of course automobile (Sheller & Urry 2000). This double meaning points to the resultant 'hybrid assemblage' between autonomous people and autonomous objects (machine/technology), its infrastructure (roads, signage) and the culture it creates. To use systems thinking terminology, the autonomy of this system lies not necessarily with the manufactured object, the car, but within the complex interconnections with other elements of the system as outlined above (Urry 2004). As a result, the emerging properties of the system, such as 'car culture', equally perpetuate its autonomy.
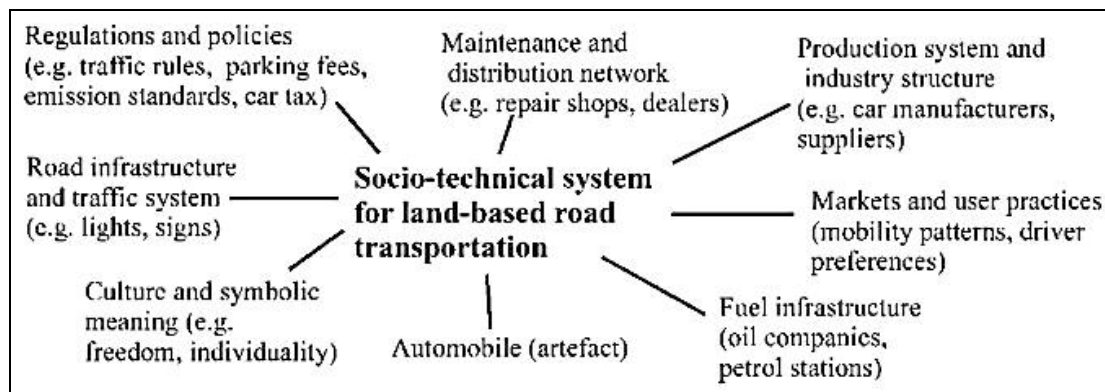


**Figure 2.5:** A socio-technical depiction of automobility. Source: Geels 2005. Figure 1.

Urry defines automobility "… as a self-organizing autopoietic, non-linear system that spreads world-wide, and includes cars, car-drivers, roads, petroleum supplies and many novel objects, technologies and signs. The system generates the preconditions for its own self-expansion" (Urry 2004:27).  To fully comprehend the sense of this definition, it is important to note that this author draws from complexity theory when referring to non-linearity (Capra 2001 in Urry 2004:27) and from Luhmann (1995 in Urry 2004:27) when referring to 'autopoiesis'. An autopoietic system (from Greek words 'auto' meaning 'self' and 'poiesis' meaning 'produce') relates to a social system that is adept in reproducing and sustaining itself.  Geels et al. (2012) share a similar view when referring to the 'co-evolutionary' nature of various elements and actors within the system of automobility. Although Zijlstra and Avelino (2012) concur that an 'autopoietic' system is a fitting representation of the car regime, these authors argue that it does not fully acknowledge the **role of agency** in such a system.  For these authors, the focus needs to be on the actors that play a part in rearranging the physical (spatial)

environment in support of the car regime. These are the '… system builders', such as the transport engineers, spatial planners, and policymakers, that replicates the car regime" (Zilstra & Avelino 2012).

## 2.7    Sustainability Transitions

The first chapter briefly introduced the emergence of the scientific field of sustainability science and its connection with transdisciplinarity. The seminal work by Kates et al. (2001:641) position sustainability science as a field that "… seeks to understand the fundamental character of interactions between nature and society". This field concerns the need to *address a variety of trends* occurring across spatial scales, interpret the *lethargy to act in the face of urgent crises*, *absorb complexity* of the various social and environmental challenges, while *acknowledging the disparities in perspectives* when it concerns societal and scientific knowledge (Kates et al. 2001).  The role of research within this field is crucial to promote social learning along this path of transitioning to a more sustainable world (Kates et al. 2001).  This quest to understand the interactions between nature and society has led to the emergence of sustainability transitions literature alongside that of sustainability science over the last decade (Farla et al. 2012; Markard et al. 2012).

Transition studies assign a systems perspective, the basis of complexity theory, to a variety of sectors when viewing it as complex socio-technical systems (Farla et al. 2012; Markard et al. 2012). This body of literature maintains that socio-technical systems can be reconfigured and transformed (technologically, institutionally and organisationally) during what is referred to as **socio-technical transitions** to bring about more sustainable modes of production and consumption (Farla et al. 2012; Geels 2012; Geels et al. 2012).  In applying the socio-technical approach to transitions to transport, Geels et al. (2012:16,49) theorise it as a formation of elements comprising technology, policy, markets and consumer practices, infrastructure, spatial configurations, cultural meaning and scientific knowledge, see Figure 2.8. Moreover, there are a variety of actor groups within these elements that preserve, replicate and alter such elements.  These include, but are not limited to, "… firms and industries, policy makers, politicians, consumers, civil society, engineers and researchers" (Geels et al. 2012:49).

Empirical research suggests that such transitions occur over a long period and comprises an assortment of actors that either reconfigure the existing socio-technical system or replace elements of it (Farla et al. 2012).  Loorbach and Frantzeskaki (2010) point to a standing argument that societal transitions have occurred historically due to external shocks or technological innovation and that society will continue to adapt and evolve in that way.  Still, never before has the world faced a polycrisis of environmental and social crises as experienced presently (Millennium Ecosystem Assessment 2005; Rockström et al. 2014).

Purposive transitions are urgently required to realise the sustainable development commitment made by the international community in 2015. Given the centrality of the modern day city, as explained earlier, Marvin and Hodson (2010) see cities taking the lead in such purposive transitions.

The field of transition studies has thus far produced four theoretical frameworks.  Markard et al. (2012) identifies these as *transition management* (Rotmans & Loorbach 2009; Loorbach 2010), *strategic niche management* (Hoogma et al. 2005), *technological innovation systems* (Bergek et al. 2008 in Markard et al. 2012) and the *multi-level perspective on socio-technical transitions* (Geels & Kemp 2007; Smith, Voß & Grin 2010; Geels 2012). As discussed in Chapter 1, the MLP was chosen as the theoretical framework for this research, despite standing critique (Hodson & Marvin 2010; Geels 2011; Coenen et al. 2012).  The motivation for this choice is based on recent applications of this framework to transport matters and in particular the system of automobility (Geels 2012; Geels et al. 2012).  The research responds to the critique in particular those relating to **lack of agency** (Smith et al. 2010), **space and scale** (Hodson & Marvin 2010) and **geography** (Coenen et al. 2012).

## 2.7.1  The Multi-Level Perspective

The previous section has introduced transition studies and briefly introduced the theoretical frameworks that emerged alongside it. This paragraph focuses on the nature of the chosen framework, the MLP. This established conceptual framework is considered as suitable for understanding the 'forces of stability and change' within an existing socio-technical system (Geels 2002, 2012; Geels et al. 2012), see Figure 2.7. It is important to note here that 'stability' in this sense refers to a system that is not likely to change or fail - it remains firmly established. The MLP revolves around the premise that such forces of stability and change operate across three conceptual levels, being the *niche* (space for the emergence of innovation), the socio-technical *regime* (comprising the established rules, regulations and cultural norms) and the *landscape* level (being the overarching big picture reality) (Geels 2012; Geels et al. 2012). The proponents of the MLP maintain that for socio-technical transitions to occur, action in all three tiers is needed. Geels (2002) notes that this is hardly ever an easy process given the interconnected nature of the elements in the non-linear system (Geels 2002).

The three conceptual levels interact within a nested hierarchy, with the regimes rooted in landscapes and the niches either nested in the regimes or outside, see Figure 2.6 (Geels 2002; Geels & Kemp 2007; Geels et al. 2012).
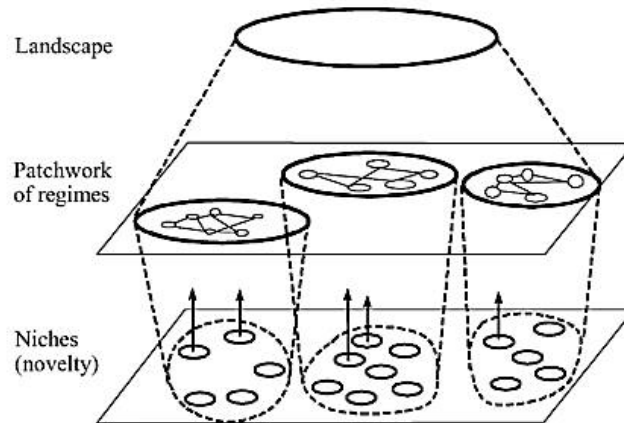
**Figure 2.6** – The three levels conceptually is shown as a 'nested hierarchy'.
Source: Geels 2002. Figure 3.

A brief description of the three levels is as follows. *Niches* are sheltered spaces such as innovation hubs, research and development laboratories or minor market projects that produce 'radical innovations' (Geels 2002; Geels et al. 2012). Actors involved at this level are optimistic that their radical innovations will eventually be used in the regime or substitute it entirely (Geels et al. 2012). This optimism is often questioned given the lock-in mechanisms that have developed within the regime around a particular technology or innovation.  Niches are essential to any transitions as it is where innovation sprouts.  Niches are the seeds for change (Geels et al. 2012).  These spaces have often found traction through means of demonstration or experimentation which allow the actors to apply the novel innovations to the real-world context (Geels et al. 2012).  Evidence suggests that niches develop when visions are shared between the local niche actors and a broader global set of actors (i.e. community or field), when social networks grow, and when learning processes lead to the refinement of the niche (Hoogma et al. 2005).

At the *regime level*, embedded technologies have an advantage over niches as it has co-evolved, or 'self-mutated' (Urry 2004), to create a path-dependence with the supporting systems around it, such as infrastructure, industries, regulations, policy, user patterns and cultures (Geels et al. 2012). In this light, Rib and Kemp define a regime as follows:

> A technological regime is the rule-set or grammar embedded in a complex of engineering practices, production process technologies, product characteristics, skills and procedures, ways of handling relevant artefacts and persons, ways of defining problems; all of them embedded in institutions and infrastructures.
>
> Rib and Kemp 1998 in Geels et al. 2012:1259–1260

These 'intangible' rules can include a broad range of organisational practices within a range of industries and institutions, user habits, shared beliefs, norms, prevailing mentalities, professional practices all of which can relate to specific regimes within the broader socio-technical regime.  To this end, Geels et al. (2012) list a policy regime, science regime, technological regime, user and market regime and socio-cultural regime as possibilities.  The

central understanding of the regime as an analytical level is that the actions of an individual (the user of the system) is inhibited by the combined regime rules (Rib & Kemp 1998 in Geels et al. 2012).  In short, a socio-technical regime provides stability for a socio-technological system to persist through shaping and coordinating the behaviour of related actor groups. This stability can still render innovations of an incremental nature, but not radical.

A discussion around the nature of the *socio-technical landscape* follows.  The character of this level relates to the literal meaning of the word landscape in that it represents the environment and other physical features, such as built infrastructure.  Moreover, it has a metaphorical meaning in that it constitutes societal norms and current global trends, such as macroeconomic trends (Geels et al. 2012).

But how does a transition occur within the MLP?  The answer seems to lie in the battle between 'forces of stability', rooted in the regime, and 'forces of change' noticeable in niches and landscapes, as depicted in Figure 2.7 (Geels 2002). This figure depicts the dynamics between these levels during an ideal transition.  Primarily it involves niches gaining force while changes on the landscape level exert pressure down on the regime that brings about 'windows of opportunities', the regime destabilises as a result and allow the niches to take root (Geels 2002).
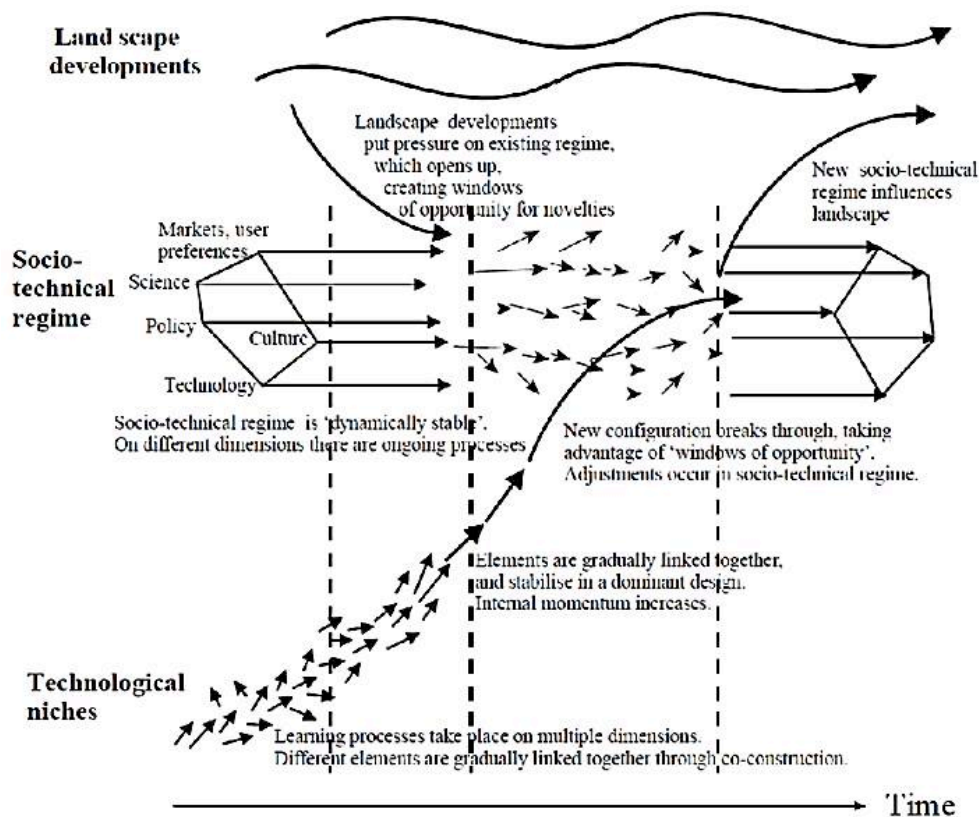


**Figure 2.7**: Geels' Multi-Level Perspective on socio-technical transitions. Source: Geels 2002. Figure 5.

### 2.7.2  Space, scale and the Multi-Level Perspective

For an urban planner, such as myself, space, scale, and context are important.  One of the main critiques of the MLP is its **perceived inability to account for space and scale** especially when a city purposefully undertakes a socio-technical transition (Hodson & Marvin 2010). Hodson and Marvin contend that up till now, socio-technical transitions and the MLP as a favourite framework, have been pitched at the national level, with the role of cities left underexplored (2010). The relationship between **national and city-wide** transitions are thus an important one, given the normal hierarchal nature of governance and variations in emissions at these scales (Banister 2008). The case study seeks to address this shortcoming, by taking this analogy one step further, in assessing the relationship between **city-wide and local transitions.**

Returning to cities, attention to scalar particularities is seemingly required to establish or to foresee whether a local transition (or a local stagnation) can 'accelerate, reshape or even disrupt' a city-wide or national transition (Hodson & Marvin 2010: 480). Others have attempted to address some of these spatial and scalar concerns. Raven, Schot, and Berkhout developed a "second generation, multi-scalar MLP" (2012:69), while Coenen, Benneworth and Truffer (2012) paid homage to geography and socio-technical transitions. The rationale for presenting a modified MLP rests on the argument that "… any transition to sustainable development will require interaction between spatially distributed actors, institutions and economic structures that exercise power within and across heterogeneous and uneven spaces of innovation" (Raven et al. 2012:65). Support for this argument comes from Coenen et al. (2012) when contending that spatial context is not receiving the attention it is due; they assert that a deliberate emphasis on 'territorial embeddedness' is needed to fully interpret and unveil the specifics around socio-technical transitions (Coenen et al. 2012). Collectively these authors (Hodson & Marvin 2010; Coenen et al. 2012; Raven et al. 2012) consequently value the need to respond to local particularities, fittingly articulated by Hodson and Marvin (2010) when calling for urban research that is perceptive to context, especially in cities of developing countries.

Equally important when analysing a sustainability transition, is thus **asking the 'where' question** instead of focusing only on the 'by whom' or 'how' questions (Raven et al. 2012; Swilling et al. 2017). Swilling et al. (2017:316) emphasise the importance of the 'where' when stating that "… key factors like productivity, technological upgrading and human wellbeing are inseparable from their urban spatial contexts".  Coenen et al. (2012) explain the potential benefit of paying attention to the 'where' question in supporting analyses that are sensitive to geography, to augment and strengthen transition studies.

Space and scale are likewise important concepts when it concerns urban mobility. Not only in the sense of an **'absolute spatial scale'** (cities, regions, nations) but moreover within the

meaning of 'relative spatial scale', carrying a different meaning. Relative spatial scale is explained through arguing that sustainability transitions do not merely transpire from a particular geographical space (i.e. a city) but more likely to emerge as a result of the interactions between networks of actors located across scales and territorial space territories (Raven et al. 2012).  Concerning sustainable transport transitions, being perceptive to both these spatial concepts are paramount as noted by the UN's High-Level Advisory Group on Sustainable Transport in this quote:

> Well-intentioned policies formulated at the global or national level may not be adopted or properly implemented at the local level if they are not coherent with local priorities. This is particularly important for the SDGs, as they will need to be implemented on the ground, in many cases at the sub-national and local levels.
>
> UN-Habitat 2013a:23

This research is partly a response to this call by honing into a local area seemingly caught within the web of automobility, despite the noticeable city-wide (and national) attempts to transition to low-carbon and just alternatives.  To this end, a thorough spatial analysis (absolute spatial scale) presented in chapter 3 and 4 complements the analysis of the interactions of the actors in chapter 5 (relative spatial scale).

## 2.8    Automobility: Forces of stability

One has to admire the power of the system of automobility to have self-mutated the way it did.  The sub-section below describes, through applying the MLP language, some global forces that have kept this regime stable (not likely to change) across centuries.  Geels et al. (2012) argue that by examining the stabilising factors, one starts to uncover the 'cracks in the system'.  This research consequently aims to follow this strategy by teasing out the elements of stability and change at play in the case study in subsequent chapters.

### 2.8.1  The political economy and governance

Despite having argued in previous sections that transport's role in society is more than just a service, governments are nonetheless tasked with delivering it as a service. It involves providing, regulating and funding the production arm of transport, i.e. transport infrastructure. Over time, policy visions and objectives will vary accordingly to the broader political, economic and social landscape within a country and beyond (Geels et al. 2012). Cape Town is a case in point, whereas the spatial transformation of the Apartheid city form is a National directive that has largely driven the adoption of TOD as a responding land-use strategy. On this point, Dimitriou (2011) cautions that too many governments have made urban transportation decisions based on political and economic reasons rather than on achieving real systemic change. The way in which transport is governed is thus not only a direct response to transport problems experienced on the ground, such as congestion and inaccessibility (Geels et al. 2012), but also a result of political ideals of the time.

Nevertheless, global evidence shows a change in the conventional structure of transport governance. Geels et al. (2012) point out two global trends: marketisation of transport supply and the devolution of transport.

The first trend, **marketisation**, is rooted in today's neoliberal world economics. Traditionally, transport policy was concerned with fulfilling a range of societal goals, such as equal access and safety.  This welfarist approach has at its core the understanding that everyone has the 'right to mobility' (Voight 1960 in Geels et al. 2012), something Schumpeter back in 1909 never believed the private market would be able to honour (1909 in Geels et al. 2012). Geels et al. (2012) further note that private investors never regarded infrastructure provisioning as a potential market given the considerable financial investment required for large scale technological interventions.

It has since changed.   Graham and Marvin (2001) argue that the urban infrastructure provision environment has systematically 'been opened up' to the private market, a concept referred to as 'splintering urbanism'. McGowan (1999 in Graham & Marvin 2001) support this argument in highlighting the crumbling of an era where governments held a monopoly over infrastructure provision. Many cities across the world have allowed the market to assist in supplying and operating transport modes, such as buses and rail (Geels et al. 2012), enabled by the regulatory nature of governments under neoliberalism (Mazzucato 2013). An example in Cape Town is the privately contracted vehicle operating companies (VOC) responsible for operating the buses of the city's BRT system.

However, Harvey (2014), a fierce critic of neoliberal policies, warns that governmental regulation tends to support big firms and disadvantage smaller companies given the cost of compliance, thus allowing the rise of monopolies in the process. Mazzucato (2013) shares Harvey's scepticism through labelling the nature of the relationship between private capital and the state as parasitic and not symbiotic. Bulkeley et al. (2010) note that splintering urbanism is as much about 'unbundling' infrastructure in this manner, as it is about 'rebundling' of the city space through establishing areas that enjoy superior services, such as gated communities. Paragraph 2.8.4 elaborate on the rise of this urban form.

The second trend, the **devolution of transport** transition, involves a change in governmental institutions and practices, often to allow a local response to a local need (Geels et al. 2012). It comprises the transferring of responsibility, such as transport policy and operations, from national governments to local authorities, often regulated by a local transport agency (Geels et al. 2012). It is illustrated in chapter 4 how the City encourages devolution to allow it to own and operate the ailing rail system, which is currently a function of national government.

## 2.8.2  Transport planning and policy

Previous sections touched on the evolution of traditional transport planning practices. Conventionally, this discipline has favoured planning for the car in the urban environment. Treating traffic as a fluid phenomenon that needs to be accommodated by increasing the road capacity, has had devastating effects on the walkability and transit potential of towns and cities (Urry 2004; Newman & Kenworthy 2015).  This neglect is evident in many automobile cities and suburbs, one being the South Peninsula in Cape Town.  The conventional 'predict-and-provide' approach was developed to anticipate the volumes of traffic in a certain spatial location, to then respond with increased road capacity once congestion becomes unbearable (Schiller et al. 2010; Newman & Kenworthy 2015).  Apart from road expansion, other techniques were used to increase the capacity; such as building bigger highways and using devices to ensure that all roads are used optimally (signals and one-way systems).

As mentioned earlier, many authors have identified the inadequacies of these conventional approaches (predict-and-provide), methods (mathematical modelling) and corresponding policy to respond to the complex real-world, mostly because such attempts hope to find the 'single-best (top-down) solution' (Hajer 1996 in Dimitriou 2011). Many authors now call for a renewed relationship between experts and communities (Lyons 2004; Sagaris 2010; Dimitriou 2011; Swilling 2016) and support new ways of researching, see paragraph 2.9.4 (Schwanen et al. 2011).  Pieterse (2008:133) supports this change in thinking when advocating for moving from 'single solutions', to crafting local responses that utilise diverse local knowledge to address sustainability relevant to the context. Yet, this author cautiously notes that local responses that are still sensitive to broader political influence require a "… vibrant political sphere and radical democratic culture to emerge in all their richness (Pieterse 2008:133)."  In contrast, the case study portrays a volatile local politics in this enclave, largely coming to the fore in land development matters.

## 2.8.3  The culture of the car

This sub-section discusses the love/hate relationship with the car as a possible factor of stability across the various regimes.

*Is it a love affair?*

A seminal paper by Steg (2005) examined whether people's motives for driving a car are purely a 'must' or rather a 'lust'.  The analysis was based on Dittmar's social psychology of material possessions, claiming that such possessions signify instrumental, affective and symbolic values (Dittmar 1992 in Steg 2005). The latter refers to the self in two ways:  how one conveys oneself, and one is regarded in society (Dittmar 1992 in Steg 2005).  Applying this theory to the use of the car, the implication is that: while the instrumental function of this

material possession is to enable activity, the symbolic purpose of the car serves the two levels of the self, and the affective purposes of the car is seen as "deeper, non-instrumental needs and desires" and as "emotions evoked by driving a car" (Steg 2005:149-150).

In the light of the above, Urry (2004) contends that a stabilising factor of the automobility regime has been the embodiment of the car in terms of its *instrumental value* to the user/owner, (such as speed, flexibility and convenience) that provides an unparalleled individual freedom of movement. Modern cities and cars have co-evolved to the extent that they offer freedom and flexibility for individuals to undertake journeys at any time to any place via the roads that authorities have been compelled to supply (Sheller & Urry 2000; Urry 2004; Geels et al. 2012).  The individual is 'freed' from public transport time schedules, allowing a 'time-less' or immediate experience (Urry 2004).  Steg (2005) argues that this view has since been refined with evidence to suggest that the car signifies more than instrumental value alone. The author provides concrete empirical evidence showing that car use is not just instrumental, but symbolic and affective (Steg 2005).  The evidence was drawn from studies that looked at different elements of car use (such as commuter use and annual car usage) in the Netherlands during the early 2000s. Motives for car use extended deep into the individual's psyche, which could explain the love affair between people and cars (Newman & Kenworthy 2015).  It is well-known that the car has the power to become a status symbol to its owner/user through the sign-values it implies, such as "speed, security, safety, sexual desire, career success, freedom, family, masculinity" (Urry 2004:26).  This phenomenon is explained by indicating that cars are often personified and assigned human characteristics such as people giving names to cars (Miller 2001 in Urry 2004).

Many other psychological theories support Dittmar's theory.  Two theories resonate with the case study. Firstly, the theory of *planned behaviour* (Ajzen 1985 in Steg 2005) contends that intent underpins behaviour and hinges on 'people's attitudes and social norms'.  Concerning car use, understanding people's *attitudes* are vital when it comes to choosing a particular travel mode above another. Many transport behavioural studies have consequently applied this theory and argue that *attitudes* reveal a person's stance on how likely a certain behaviour will produce certain outcomes and how desirable those outcomes are to the self (Bamberg & Schmidt 1993, 2001, 2003 in Steg 2005).

The second related theory, the *self-presentation theory* (Schlenker 1980 in Steg 2005), suggests that people want to depict themselves consistent with how they see themselves, i.e. self-image.  Driving a car might enhance a person's identity.

Steg (2005) found that people do not only favour car use as they see it as essential (instrumental value), but the author also determined that symbolic and affective aspects considerably add to the positive function of the car. People seem to love driving. Steg (2005)

warns that these aspects are crucial to policy as it might explain the general resistance to policy directed at reducing car use.  Also, different groups might have different motives for favouring the car, **which might also depend on context**.  For example, Steg (2005) notes that people might choose to commute long distances 'because they love to drive' or people might justify car use when a situation is more likely to point to the instrumental value of the car, i.e. in car-dependent suburbs.  Freudendal-Pederson (2005 in Grieco & Urry 2011) refers to this justification as **'structural stories that people tell themselves'** that ultimately entrench the use of a certain technology. Steg (2005) calls for innovative policy that aims to influence people's non-instrumental as well as instrumental motives. The case study analysis highlights 'structural stories' uncovered in the Far South.

*Or is it a habit?*

In contrast, Schwanen et al. (2012) critique the interpretation of travel behaviour from a psychological - such as Steg's analysis - and economical point of view alone. These authors look towards a new direction in behavioural studies that provide a counter-argument to such attitude-based theories (Ajzen 1991 in Schwanen et al. 2012). This new view **sees *human habit* as a potential driver of behaviour,** transcending the idea that intent and attitude alone shape behaviour (Orbell & Verplanken 2010 in Schwanen et al. 2012). The proponents of this view regard habit as 'automatically elicited behaviour' triggered by cues, such as a particular spatial location (e.g. making different travel choice in different cities), while in the company of certain people (e.g. car-sharing with friends only) and through preceding steps in succession. Such decisions might have been intentional at first, based on one's attitude and social norms, but easily become a habit if it has a recurring benefit (Schwanen et al. 2012).

In applying this to prompt behavioural change for low-carbon mobility, Schwanen et al. (2012) attempt to answer the question of breaking unsustainable travel habits.  They draw from the 'general law of habit' (Ravaisson 2000 [1838] in Schwanen et al. 2012), based on two human abilities. Firstly, the capacity to *undergo change*, termed receptivity (passive), and secondly, the ability to *initiate change*, termed spontaneity (active).  Ravaisson's law maintains that one's receptivity declines with every repetition whereas ones spontaneity increases with every repetition to the point where the self is transformed (2000 [1838] in Schwanen et al. 2012). For traffic congestion, this implies that the unpleasantness of this situation would decrease every time one experiences it (receptivity) to the point where the repetition leads to one adapting and using this time for other purposes such as contemplation or phoning friends (spontaneity) (Schwanen et al. 2012).  Others have shown how this can ultimately lead to private car commuters missing congestion as they have become accustomed to the habit of using that time for contemplation for example (Salomon & Mokhtarian 1998 in Schwanen et al. 2012).

For sustainable transport policy, it then becomes necessary to understand how to substitute a habit with new ones.  Verplanken and Wood (2006 in Schwanen et al. 2012) point to the need to replace it with 'reasoned action', either done through changing the cues to the response or disturbing the involuntary response (Darnton et al. 2011 in Schwanen et al. 2012). To this end, Schwanen et al. (2012:523) note that **transport-related experiments are vital** to 'facilitate the emergence of new travel habits', similar to what authors have argued in the city arena (Broto & Bulkeley 2013b; Evans & Karvonen 2014; Bulkeley et al. 2015; Moloney & Horne 2015), see paragraph 2.3.2.

The age of the studies in Steg's (2005) car culture analysis above can be considered as a limitation. Newman and Kenworthy (2015), on the other hand, present current research to suggest that the symbolism associated with the car is changing, especially among younger generations.  They point to a study under young people in America that showed how this group would rather possess a mobile phone than a car (Davis et al. 2012 in Newman & Kenworthy 2015). In Australia it was found that car use under the 16-34 year group declined by 23% between 2001 and 2009 while the modal share of other transport uses have increased (122% in biking and 37% in walking) (Newman & Kenworthy 2015). One reason for this phenomenon appears to be that while walking, and biking to a degree, one can be connected to one's mobile phone and social media (Davis et al. 2012 in Newman & Kenworthy 2015).  What is more, some studies have shown that younger and older generations are moving back to the city, despite having lived or grew up in car-dependent suburbs (Peuntes & Tomer 2009, Florida 2010 in Newman & Kenworthy 2015). The former group arguably because of the need for forging new connections with likeminded people, and the latter group because of an empty-nest syndrome (Florida 2010 in Newman & Kenworthy 2015). The case study presented here seems to suggest that the opposite is true for this urban enclave.  Not only is it a popular retirement location, but it also attracts young families and young professionals that are seeking a certain lifestyle.

### 2.8.4  Is density destiny?

> Density is not the main barrier to providing public transport that offers a real alternative to the car; rather, it is a rationalization for inaction.
>
> Mees 2010:199

One of the biggest debates in the thinking around sustainable cities concerns land use patterns and transport, and the policies and plans that guide these.  Despite decades of research and discussion, the topic remains contested (Gakenheimer 2011; Simon 2016).

Newman and Kenworthy (1989) took a critical look at the relationship between land use and car usage in the late 1980s. Their study entailed the examination of the fuel consumption of American cities in relation to other world cities, which pointed to an evident connection

between urban form (land use and density) and fuel consumption (Newman & Kenworthy 1989). This controversial paper found that of the thirty-two American cities studied, characterised as sprawling automobile-dependent in nature, they consumed up to twice, four and ten times as much fossil fuel energy for transport per capita than Australian, European and Asian cities respectively (Newman & Kenworthy 1989). The authors suggested then that urban planners needed to play a proactive role in promoting urban rail and re-urbanisation (compact urban form) and not resort to suburbanisation that heavily rely on the car (Newman & Kenworthy 1989). The paper criticised the American car culture and sprawling urban form that emerged as a result. This article was not only rejected by journal editors but also attracted a harsh academic reaction when finally published. In an attempt to defunct the study, Gordon and Richardson (1989) note:

> Perhaps Newman and Kenworthy would be well advised to seek out another planet, preferably unpopulated, where they can build their compact cities from scratch with solar-powered transit.
>
> Gordon & Richardson 1989:345

This debate over land use and transport has ensued ever since (Gakenheimer 2011). Some authors and international bodies promote denser compact urban forms with higher residential densities, TOD and smart growth (Newman & Kenworthy 1989, 2015; Cervero & Kockelman 1997; Jenks & Burgess 2000; Turok 2011; Sims et al. 2014; UN Habitat 2016). This support is premised on the following arguments:

- a compact urban form is an efficient way to use land and energy thus preventing urban sprawl
- it lowers the need to travel by car and encourages sustainable mobility such as walking and cycling
- it makes for more diverse and vibrant neighbourhoods
- it can preserve land for agriculture and prevent loss of biodiversity
- it harnesses agglomeration economies.

Other authors contend that higher densities do not necessarily decrease car dependency as it can have the unintended consequence of creating more traffic congestion and even pedestrian congestion around public transport locations as observed in Asian cities (Holman et al. 2015 in Simon 2016).

In studying this debate, Gakenheimer (2011) identifies two options for planners and experts across the world: *firstly*, regulate land uses to decrease a number of trips and support this directive with public transit options or *secondly*, allow the private market to dictate travel demand which is then addressed with transport planning and new technologies.  To this end, Gakenheimer (2011) supports the first option especially in the developing world to protect against the creation of sprawling 'single-use development'.

In examining the socio-spatial nature of automobility, Zijlstra and Avelino (2012) take a closer look at the 'system builders' that seemingly keep the physical urban form and related

transport of the automobility regime stable. These scholars see 'transport planners, traffic engineers, transport economists, spatial planners, project developers and policymakers' as the key actors, the 'system builders' (Zijlstra & Avelino 2012). As argued in previous sections, many of these actors still view urban mobility as a purely quantitative exercise with linear steps.  It is furthermore argued that the inadequacies of this narrow technocratic approach can lead to 'irrational rationalities' - that by concentrating on a single-solution, rebound effects are going unnoticed. For example, addressing a challenge such as congestion by road expansion, entrenches automobility still more, as investment favours private transportation and not public alternatives (Sheller & Urry 2000; Zijlstra & Avelino 2012). Many authors support the view that addressing mobility challenges with road schemes are counter-productive as car usage is in fact encouraged and supply will never be able to keep up with the induced demand (Banister 2000).

UN Habitat (2013a) agrees when arguing that many governmental policies encourage more of the same suburbanisation and auto-dependence, such as fuel subsidies, spatial planning practices, parking requirements, gated residential communities and large shopping malls, which essentially promote the car culture. The spatial analysis of the case study area supports this argument. This institution further notes that weak integration between urban planning and transport planning, i.e. operating in disciplinary silo's, often maintains the status quo (UN-Habitat 2013a).

Mees (2010) takes an even more unsympathetic look at these 'system builders' as noted in the opening quote of this section.  This author asserts that this debate has become **a blame game between urban planners and transport planners**, which is ultimately used as a reason for inaction on both sides (Mees 2010).

The City recently adopted the TOD land use model as the key policy directive in the 2015 review of the Comprehensive Integrated Transport Plan (CITP) 2013-2018 (COCT 2015b). Moreover, the City's transport authority, Transport Cape Town (TCT), was expanded in 2017 to now include the urban planning department, to become the TDA.  This authority has since released the City's TOD Strategic Framework produced by urban and transport planners amongst others (COCT 2016c). It would thus appear that the City is attempting to overcome the disciplinary inertia and silo-thinking referred to by Mees (2010).

One dominant view within this land use versus transport debate maintains that low-density sprawling suburbs cannot sustain viable public transport and is therefore dependent on the automobile. Mees (2010) provides a counter argument to show that providing public transport to suburbs is an easier undertaking than "rebuilding entire cities at many times their current densities" (Mees 2010:199). A densification strategy in democratic societies seems rather unlikely, given entrenched private property rights. This author presents evidence from

numerous cities that have succeeded in providing successful public transport networks for suburbs at densities perceived by many to be unviable for public transport (Mees 2010). Mees contends that collective action from a range of stakeholders has managed to "… adapt public transport to the existing urban form rather than attempting the impossible task of rebuilding themselves as completely different place" (2010:199). This author does not disregard the role of urban planners in shaping more sustainable urban forms, but nevertheless note that such policy directives can never be as effective as a public transport system that provides **'anywhere to anywhere' mobility** – a system that does not require "mass outbreaks of heroism" on the part of the user (Mees 2010:199).

This argument might be particularly applicable to sprawling cities.  One particular popular urban typology, gated communities, is exacerbating the unsustainable impacts of urban sprawl (Landman 2000, 2007; Landman & Plessis 2005; Pieterse 2008; Beall & Fox 2009). The proliferation of gated communities, or urban fortification, has been that severe in the South African context that it has been duped the new urban Apartheid due to its fragmenting nature, largely driven by the fear of crime (Lemanski 2004; Landman & Plessis 2005).  Many concede that this typology has led to an unsustainable urban transformation (Landman 2000, 2007; Landman & Plessis 2005) as it encourages sprawl, is car-centred, adds to pollution and congestion through its closed road designs (limited access) and undermines the prospects of sustainable transport. Dennis and Urry (2009) note that gated communities resemble the 'walled cities' of medieval times to protect against 'invaders'. In a similar light, Pieterse (2008) sees gated communities as a prime example of 'infrastructure consumerism' where developers allow residents to live utterly exclusively with access to quality services, such as security.

The fear of crime is a primary driver behind this land use trend and it relates to crime reduction, displacement of crime and response times (Landman 2000).  Landman (2000) notes that studies across the globe have shown varying proof that it actually reduce crime, hence the reference to the **'fear of crime'** instead of recorded proof of crime statistics.  Beall and Fox (2009) agree in stating that including and excluding people in this manner breeds 'a geography of fear'. There is more agreement around the fact that these gated complexes deflect crime to neighbouring areas, which in turn lead to a snowball effect of enclosing entire suburbs retrospectively (Landman 2000). Retrospective conversions have in turn resulted in direct routes being closed off, impacting on the public security services' ability to respond in time (Landman 2000). Salat (2008) notes that China is attempting to reverse the emergence gated communities that have led to entire walled suburbs, 'super blocks', in order to improve traffic congestion. This research study found that concerns about personal safety and a 'fear of crime' are significant contextual issues that influence personal mobility choices as well as choices around where people live, see paragraphs 3.2.7 and 4.4.

## 2.9    Automobility: Forces of change supporting sustainable transport

The literature presents a myriad of potential and existing ST interventions (Hoogma et al. 2005; Goldman & Gorham 2006; Banister 2008; Schiller et al. 2010; Grieco & Urry 2011; Geels et al. 2012; Hickman & Banister 2014; Sims et al. in 2014; Newman & Kenworthy 2015; UN 2016c; Partnership on Sustainable Low Carbon Transport 2016).

These interventions and innovations have traditionally pointed to two approaches: the '*technology fix*' and the '*social or cultural fix*'. Although the first has received more attention to date, many academics agree that both approaches are now needed (Guy & Marvin 2001; Hoogma et al. 2005; Dimitriou 2011; Lyons 2011; Schwanen et al. 2011; Geels et al. 2012).  It is largely agreed that the path to ST needs to a) substitute or *avoid* the need to travel, b) encourage a *shift* to more efficient modes of transport and c) *improve* the impact of transport systems on the environment, in short referred to as the **'avoid-shift-improve'** approach (UN 2016c; Meyer & Shaheen 2017).  This concept is comparable to the previously discussed **sustainable mobility paradigm** (Banister 2008, 2011) that lists four areas of impact being; substitution (avoid), modal shift through transport policy (shift), distance reduction through land use policy (avoid and shift) and increase efficiency of private and public transport through technology (improve).

Table 2.2 presents a selection of current ST interventions cited in the literature, grouped around the avoid-shift-improve approach that further illustrate synergies with Banister's 'areas of influence.'

**Table 2.2:**  Examples of ST interventions. Sources: Banister 2008; Schiller et al. 2010; Partnership on Sustainable Low Carbon Transport 2016; UN 2016c.

| Category | Examples | Supporting concepts |
|---|---|---|
| **Avoid** **(Substitution)** Technological Fix & Social/ Cultural Fix | – Internet shopping, changes in work trends, car-free days and temporary car-free streets, encourage localism and carpooling <br> – Travel Demand Management (TDM) interventions could assist with this as well as private sector niches | Information and Communications Technologies (ICT) |
| **Modal Shift** through Transport policy Social / Cultural Fix | Prioritising public transport over private transport through (TDM measures): <br> – **Transport measures** (NMT policy, speed restrictions, car-free zones, parking controls, enable ease of car-sharing or carpooling and public transport use with ICT, improve reliability of BRT and rail systems) <br> – **Economic measures** (road pricing, congestion charge, fast-track cancellation of fossil fuel subsidies, carbon pricing) <br> – **Institutional measures** (school travel strategies, corporations supplying alternative transport options to employees, integrating government functions) | Enabling political climate & proficient authorities |

| | | |
|---|---|---|
| **Shift and Improve** through Land use policy (Distance reduction)  Social / Cultural Fix | – Increasing densities, concentrate mix use development around transit stops, decisions around the location of new housing allocation, design of buildings and spaces, car-free development, adjusting standardised planning thresholds | TOD & Densification policy. Enabling political climate & proficient authorities |
| **Shift** through behavioural changes 'Soft psyche' (Schwanen et al. 2011)  Social / Cultural Fix | – Ecological driving (eco-driving). Awareness campaigns (information, education and the use of media)<br>– Raise public acceptability as it drives political acceptability (impact on quality of life and business practices) – through experimenting with innovative policy measure (as mentioned above)<br>– Active involvement of users encouraged in policy debates and interventions | Participative approach of 'deliberate & decide' (Schiller et al. 2011) |
| **Improve** Through Technological innovations (Increase efficiency)  Technological Fix | – Alternative fuels (ethanol, biodiesel, hydrogen, electricity)<br>– Alternative vehicle design for fuel economy and by lowering emissions - Hybrid-electric vehicles (HEVs) and Battery-electric vehicles (BEVs)<br>– Innovation in public transport infrastructure (smart public transport)<br>– Physical infrastructure provisioning for public transport and EV (electric vehicle) industry | ICT Renewable energy sources |

Having analysed numerous innovations in this field, Newman and Kenworthy (2015) identified six recurring elements that make for successful mobility innovations.  These are:

- 'Legacy politicians' that drive radical change
- Bureaucrats that are change agents from within institutions
- Active citizens advocating for solutions
- A narrative of change that is steadily punted by 'thought leaders' be it in academia community or government
- A capacitated research fraternity
- 'Demonstration' projects as catalysts for change.

The remainder of the section touch on three key 'niche' areas in the sustainable transport field that are applicable to the case study, being policy innovation, technology and user innovation.

## 2.9.1  Policy innovations

Policy becomes a key lever to navigate possible solutions in all spheres of an 'avoid-shift-improve' approach, as depicted in Figure 2.8 (Newman & Kenworthy 2015).
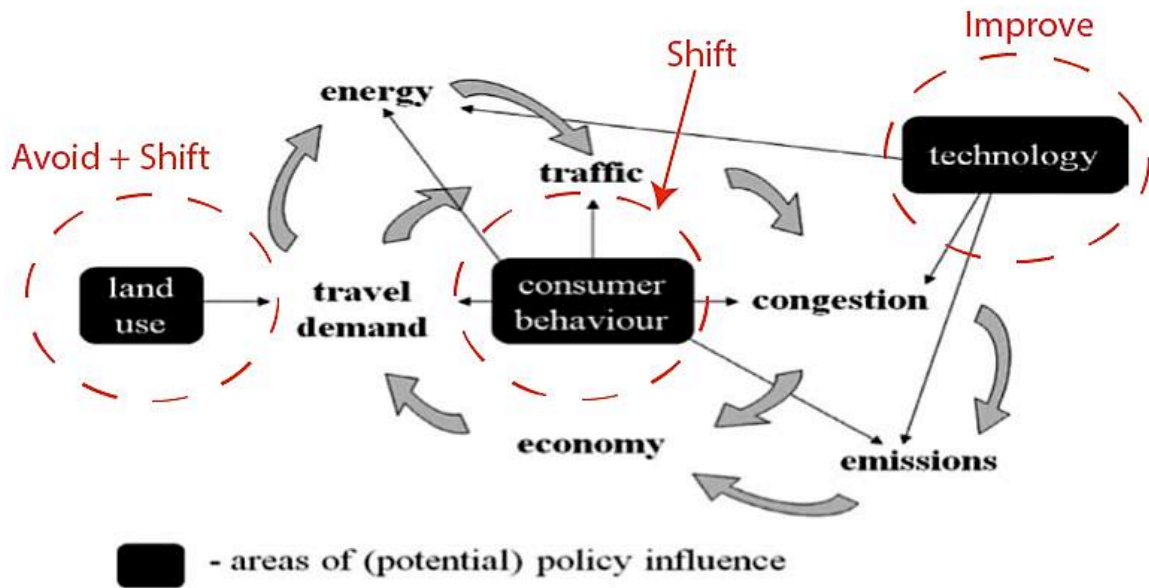
**Figure 2.8:** Areas of (potential) policy influence.
Source: Newman & Kenworthy 2015. Figure 8.1. Adapted.

Previous sections highlight the differing views on land use and transport.  Although this space remains contested, many authors agree that land use policy has a fundamental impact on car dependency and traffic (Zijlstra & Avelino 2012; Newman & Kenworthy 2015).  The TOD land use model is a policy directive aimed at altering both land use and transit. It is hailed as an appropriate strategy for developing world cities to ensure more sustainable pathways (Cervero & Kockelman 1997; Cervero 2013; Simon 2016), and to potentially address spatial transformation in the South African context (Wilkinson 2006; Bickford & Behrens 2015; COCT 2016c).  This model aims to locate a number of land uses (higher density housing, work opportunities and social services) around existing or new railway stations or other public transport stops (Cervero 2013; COCT 2016c).  It is premised around three key mobility intentions, which corresponds to the 'avoid-shift-improve' approach, being

   a) decrease the amount of private transport trips (avoid)
   b) of those generated, encourage a larger share of NMT (shift)
   c) increase the vehicle occupancy of generated private transport trips and reduce the distances travelled by private car (improve) (Cervero & Kockelman 1997).

The City's recently adopted TOD Strategic Framework represents the implementation plan for this approach in Cape Town (see Figure 2.9) (COCT 2016c), which is discussed in more detail in chapter 4. This framework led to Cape Town receiving an acclaimed award in the International Public Transport Strategy category from the International Association of Public Transport's (UITP) World Summit held in Montreal during May 2017 (TDA Cape Town 2017a).
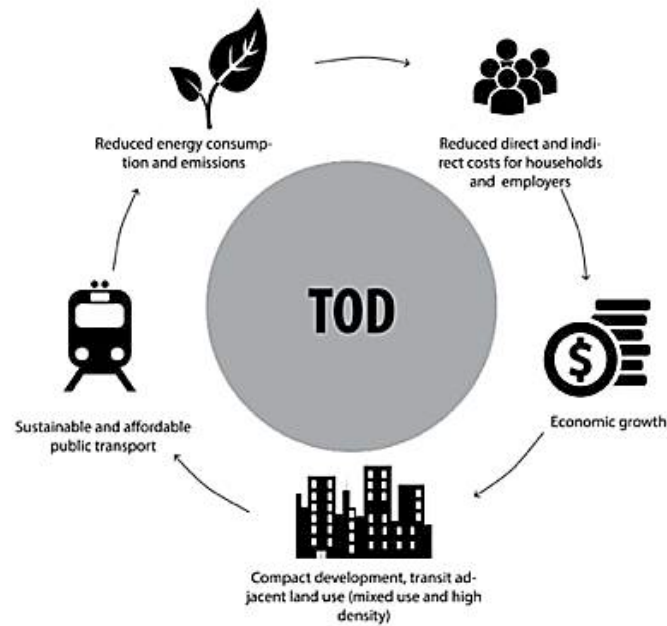
**Figure 2.9:** The virtuous cycle of Transit-Orientated Development.
Source:  COCT 2016c. Figure 6.

Although Newman and Kenworthy (2015) support the notion of TOD, these scholars do however caution about the applicability of this model to all urban areas. They note:

> There are, however, some automobile urban fabric areas that will need to be respected for what they are: automobile-and-truck-centric urban fabric with little flexibility to be anything else. Not all automobile city areas can become TODs based around new transit lines. The right balance is different for each city.
>
> Newman & Kenworthy 2015:119

The case study takes a closer look at this land use strategy and its applicability in the Far South, see paragraph 3.2.4.

## 2.9.2  Technological innovations

BRT, as a public transport service, is a highly acclaimed initiative across the globe (Cervero 2013; Hidalgo, Pereira, Estupiñán & Luis 2013; Wirasinghe, Kattan, Rahman, Hubbell, Thilakaratne & Anowar 2013).    The major benefit of this service is "… its ability to provide a high-quality public transit service with limited infrastructure and at a relatively low capital and operating cost" (Wirasinghe et al. 2013:1). The Global BRT data platform reports that this service is available in 164 world cities, transporting 32 million passengers each day. The MyCiti in Cape Town is an example of a BRT that was introduced in 2009 and has since proven to be a popular service with high customer satisfaction scores (TDA Cape Town 2017b).  Chapter 3 and 4 explore the challenges around rolling out a service of this nature in Cape Town and in a local context such as the Far South.

### 2.9.3  User innovation and Traveller Information Services

The way in which the information age has proliferated everyday life was introduced in paragraph 2.1.1.  This global trend has led to regime changes, in the form of the growth of the ICT industry and with it Intelligent Transport Systems (ITS) in the transport arena (Lyons et al. 2012).  It is a rapidly changing field with data and information becoming more accessible to the average user, both to access it, and to self-contribute to generating data. User innovation (Von Hippel 2005 in Lyons et al. 2012) is a key term in the development of ICT. It loosely translates to the notion that users of a specific system are the experts in that area and are able to respond to familiar user needs that outside innovators (such as manufacturers) have not responded to. Lyons et al. (2012:271) offer a definition: "… the creation and application of an invention initiated by affected individuals that stems from user need or curiosity to address a problem or challenge within social practice".

User innovation should not be confused with producer innovation. Lyons et al. (2012) differentiate between the two by stating that user innovation concerns innovation by users for their benefit, while producer innovation concerns products that could result in profits.  For example, in the transport arena, one would find governments acting as producers of ITS for the benefit of all 'users' but still gaining a profit from it, such as journey planners (Lyons et al. 2012). Another example is traditional car manufacturers now offering mobility subscriptions for users that do not wish to own a car, such as car-on-demand schemes (Newman & Kenworthy 2015).

There is a vast array of transport-related ITS user and producer innovations relating to car ownership, car sharing, bike sharing and parking, a selection is presented in Table 2.3.

**Table 2.3:** Examples of User Innovation in Traveller Information Services. Sources: Lyons et al. 2012; Newman & Kenworthy 2015

| Producer Innovations | Description | City |
|---|---|---|
| Car Ownership Schemes | Car manufacturers offering a car hire/car share solutions instead of private ownership models, for example, car-on-demand offered by BMW and Daimler-Bentz's Car-2-Go | Most European and American cities |
| Real-time Travel Journeys | WhereIsMyTransport open platform that allows real-time public transport information and also mapped the informal minibus-taxi network | Cape Town, South Africa |
| Real-time multimodal transit information and route-planning mobile phone applications | Helsinki Capital Area informs users of their real time impacts | Helsinki, Finland |
| Car-sharing / carpooling or find-a-lift applications | Applications that connect car users with similar travel journeys in the hope of them taking  up car-sharing arrangements, for example, U-Go-My-Way in Cape Town, CarTrip and PickupPal in the United States | Cape Town, South Africa<br><br>United States |
|  | UberPool – a newly added feature to the global taxi company that allows people to share an Uber ride | Cities where Uber is a service |

|  | Slugging is an informal carpooling system that commenced in the United States of America with the introduction of High-Occupancy-Vehicle lanes |  |
| --- | --- | --- |
| Eco-driving programmes | Programmes that entice car users to use cars efficiently through eco-driving techniques, such as the Discovery Drive initiative headed by a South African health care insurance company | South Africa |
| **User Innovation** | **Description** | **City** |
| Community Bus systems | Community owned and operated bus service, The Big Lemon, powered by cooking oil waste from local restaurants | Brighton, United Kingdom |
|  | Jamie Bus Shuttle, a university local bus solution for off-campus residents;  a local example is the Living Hope school bus discussed in chapter 3. | Cape Town, South Africa |
| Train Delays app | TrainDelays in the United Kingdom developed by a disgruntled commuter allowing easy access to train delay information | United Kingdom |
| Bicycling awareness | MyBikeLane application driven by a cyclist to raise awareness of the importance of keeping bicycling lanes clear of cars | New York, United States |
| Parking | ParkatmyHouse was started by a British tourist while visiting the United States and forever having to search for parking.  This allows people to rent out their driveways as parking bays during the day | United States |

The case study analysis outlines a number of examples of producer and user innovation in Cape Town and within the study area.  These are discussed in paragraphs 4.7 and 5.3.3 and include a low-key school bus solution, people using existing platforms innovatively and a local NGO providing a charitable transport solution to scholars.

## 2.9.4  New ways of researching

Schwanen et al. (2011) provide a critical reflection on the status of research in the field of transport studies by analysing the core epistemological undertones and research methods used for research dealing with transport and climate change mitigation.  This subset of transport research is found to primarily focus on the following five elements of a transport system (Schwanen et al. 2011):

- Transport technologies (the technological fixes)
- Economic instruments (i.e. fuel prices, carbon taxes)
- 'Hard' transport infrastructure provisioning combined with land use realignments (i.e. high speed rail, bus rapid transit, transit-oriented-development)
- The 'soft psyche' and societal behaviour such as behavioural studies - the 'cultural fix'
- The institutions governing transport systems.

Most studies in this field is quantitative and many researchers employ a forecast-based scenario approach (i.e. futuring and backcasting exercises) (Schwanen et al. 2011).

Moreover, most of the research in this field assumes a positivist epistemological position, which maintains the normal hierarchal position between the researcher and the research community (Schwanen et al. 2011).  Schwanen et al. (2011) thus call on researchers to assume participatory research outlooks to empower the research community during the research process (Schwanen et al. 2011). In a similar light, Dimitriou (2011) argues that it is important to review the role of the experts and that of the members of the receiving community.  Banister (2008) furthermore highlights the need to create a 'public acceptability' of sustainable transport, denoting a 'participatory and inclusive approach' whereas there might just be a need to 'sell' the requirement to change habits to communities. Recent research around how people make choices show that a hands-on approach needs to be assumed in supplying people with information about alternatives, not assuming that they will source it themselves (Brög et al. 2004 in Banister 2008) - a research approach adopted in this study, see paragraphs 1.6 and 1.8.

Schwanen et al. (2011) conclude their analysis by asserting that transport studies can significantly benefit from applying a social sciences lens to real-world transport problems. By doing so, they aim to re-align transport within the larger system of society, through examining the relations between transport and society, as these two elements are mutually dependent and supportive (Lyons 2004).  The focus is on soft measures such as social norms and habitual behaviour of both the users and professionals that deliver transport interventions (Lyons 2004).  Herein lies an apparent gap in the knowledge, with the IPCC admitting that more research is required to "… assess the willingness of people to change" (Sims et al. 2014:613).

## 2.10  Conclusion

> Just as good medicine depends on the interaction between doctor and patient, successful urban planning involves triggering healthy responses within the city, probing here and there to stimulate improvements and positive chain reactions. Intervention is all about revitalization, an indispensable way of making an organism function and change.
>
> Lerner 2014:1

The literature review provided a glimpse into the complexities surrounding excessive car use in cities.  The social, economic, environmental and social impacts and externalities of this century-old dominant regime are staggering.  Urgent action is needed.  The UN has noted that sustainable development cannot occur without sustainable transport, given the interconnectedness of this vital urban function.  The literature suggests that local socio-technical systems (automobility), warrants a local response given its potential to either 'accelerate, reshape or even disrupt' a citywide or national transition (Hodson & Marvin 2010:480). Transition theory has emerged as an academic field exploring ways in which such sustainable transitions take place over time, with the MLP as a trusted theoretical framework.

However, critics have pointed to potential shortcomings of this framework, in calling for transition analyses that are more sensitive to spatial and scalar characteristics - urging researchers to ask not only how transitions take place, but also where it takes place.

In addition, a clear shift in thinking is observed in transport and urban design studies that call for participatory approaches and that highlights the power of urban experiments to allow communities to experience a glimpse of what is possible (Banister 2008; Pieterse 2008; Hoogma et al. 2005; Schiller et al. 2011; Tonkiss 2013; Evans et al. 2016).  Social sciences and participatory research approaches could assist in this quest (Schwanen et al. 2011; Swilling 2016). Geels et al. (2012) conducted a global transition analysis on automobility and noted that the political economy and local governance, an entrenched culture of the car and low urban densities are keeping this socio-technical system from changing. On the other hand, policy, technological and user innovations are promising signs of change on the regime and niche levels (Geels et al. 2012).  In summary, the key argument from the literature review is that sustainable transport would need to recognise complexity, local context and acknowledge a smorgasbord of perspectives and views (Schiller et al. 2010; Lyons 2011; Hickman & Banister 2014; UN 2016a). It would furthermore require novel ways of researching (Schwanen et al. 2011), that break from the traditional linear inquiry (Kates et al. 2001) and silo thinking (UN-Habitat 2013a).

Having provided a comprehensive scientific basis for the research in this chapter, the next chapter provides real-world background to the case in concentrating on the national and city contexts.

# 3. Case Study – National and City Context

The theoretical framework developed in chapter 2 provided an overview of the nature of the entrenched global system of automobility, its impact on societies and the environment, and presented a rationalisation for the urgent need to transition to a 'sustainable mobility paradigm' (Banister 2008).  It detailed key global forces that impede a global transition (barriers) and those shaping a new urban transport era.  As shown on the research road map (Figure 1.8), this chapter focuses on the transport dynamics within the study area. This cannot be done without taking an initial broader view of the national and city contexts.

Although chapter 5 offers an analysis of the specifics of the case through applying the MLP as the overarching theoretical framework, chapters 3 and 4 already adopt the language provided by this framework to provide structure and coherence to the dissertation. Further, while chapters 3 and 4 are organised according to geographical scale, i.e. national, city and local context, chapter 5 provides an analysis that gives effect to Raven et al.'s (2012) argument concerning the MLP and scale. These authors uphold that there is no requirement for MLP analyses to portray the landscape as international influences, regime as the national context and niches as developments on city scales (Raven et al. 2012).

## 3.1   The South African context - trends and barriers

The global trends introduced in chapter 2 give structure to the framing of the national context. Beside from these trends, there are four dynamics currently at play in South Africa that impact on urban transitions beyond automobility: the *spatial legacy* left by Apartheid, the realities of an *economic recession*, *political turmoil* due to state capture, and *intensifying crime* rates. In discussing these trends, this chapter outlines barriers to sustainable transport across institutional and geographical scales.

### 3.1.1  The Apartheid spatial legacy

South Africa's past continues to haunt it.  It has been twenty-three years since the abolishment of the authoritarian Apartheid regime that gripped the country for five decades, following on from centuries of colonial rule. Given the complex relationship between urban form and transport demand as discussed in paragraph 2.8.4, it is impossible to discuss a low-carbon sustainable urban mobility future without acknowledging the spatial legacy left by this autocratic regime.

The colonial and Apartheid regimes exercised political control over the spatial form of towns and cities in South Africa through controlling the movement of people to cities and controlling the urban form itself (Turok 2011; Harrison & Todes 2015). It was done through:

- *Curbing migration* to cities by means of a pass law system (Harrison & Todes 2015)
- The urban form was manipulated via land use policies and other spatial interventions, *to settle the indigenous populations at the peripheries of cities* considerable distances away from the central business areas (Watson 2001; Ferro, Behrens & Wilkinson 2013). As a result, South African cities have an inverse density profile when compared to other cities, i.e. densities increase rather than decrease with distance from the central business district (Turok 2011; Harrison & Todes 2015; South African Cities Network [SACN] 2016)
- In addition to political influence, cities were at the same time subjected to Western capitalism and Modernist planning principles that favoured *low-density sprawling car-centred suburbs* (Harrison & Todes 2015)
- Public infrastructure, such as road and rail networks, was employed as '*political and economic design' objects* (Tonkiss 2013), to entrench the intended urban segregation and fragmentation, leaving in its wake a highly unequal spatial form (Savage et al. 2003 in Pieterse 2008:143)
- Apartheid spatial policies had a profound impact on public transport systems (Ferro et al. 2013). Rail and road transport services were designed to control the flow of the marginalised black communities on the peripheries to and from economic areas (SACN 2016), with investment in private cars heavily dwarfing that public transport. The minibus-taxi industry emerged during the 1970s as an informal service to low-income residents and soon surpassed all public transport modes in modal share (Clark & Crous 2002 in Ferro et al. 2013).

South African cities are consequently left with a **dualistic transport system.** Commuters who rely on public transport or walking constitute low-income earners belonging to previously marginalised racial groups (Coloured and African population groups), while those using private transport as main travel mode belong to wealthier groups (Wilkinson 2006). As noted in paragraph 2.5.1, the South African reality corresponds with the established link between rising income and motorisation (Sousa et al. 2015) and with the argument that the private car divides society into the 'haves and the haves not' (Freund and Marvin 2000 in Geels et al. 2012). Although, it differs in that the dichotomy is along racial lines (Wilkinson 2006). This dualistic mobility reality is visible in Cape Town, as described in following sections.

## 3.1.2 The urban mobility reality

Having introduced the entrenched dualistic nature of transport in South African cities, this section gives an overview of the private and public transport services on offer. Currently, the commuting population in South Africa's major cities, such as Cape Town, either rely on public transport, private motorised passenger transport or rely on own-steam transport, such as walking and cycling. Nationally, 39,1% of the working population make use of public transport, 38,4% use private transportation, while walking accounts for 21,1% (Statistics South Africa 2014b). This picture changes significantly in cities as discussed in the following sections.

**Private Transport**

Passenger motorised transport in South Africa is primarily road-based, using the country's extensive road network of over 534 000 kilometres in length (Wakeford 2016). As of May 2017, there were around 10,8 million registered self-propelled vehicles in the country, of which over 7 million belong to the motorcar and station wagon category (65,1%) (eNatis 2017).

According to the latest National Household Travel Survey (NHTS), the percentage of households who either own or have access to cars has increased by 5,6% (from 22,9% to 28,5%) between 2003 and 2013 (Statistics South Africa 2014b), see Figure 3.1.



| | Motorcycle | Company car | Cars | Kombi | Truck | Other |
|---|---|---|---|---|---|---|
| 2003 | 1,1 | 4,2 | 22,9 | 1,1 | 0,5 | 0,3 |
| 2013 | 1,9 | 3,6 | 28,5 | 0,8 | 0,6 | 0,4 |
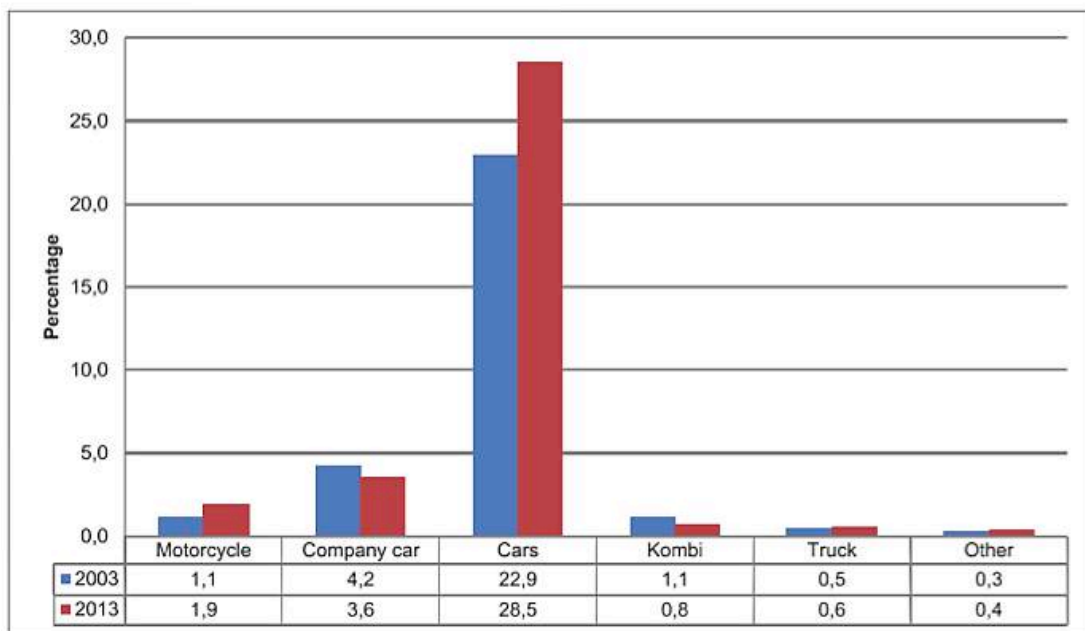
**Figure 3.1:** Percentage of households that have access to private transport.
Source: Statistics South Africa 2013.

**Photo 3.1:** The private car reality in the Far South showing cars driving up Ou Kaapse Weg. Source: https://image.iol.co.za/image/1/process/620x349?source=https:/inm-baobab-prod-eu-west-1.s3.amazonaws.com/ public/inm/media/file/1/2082196/ 1477030540/image/361301115.jpg.

**Public Transport**

The South African public transport system consists of the following services:

- Commuter bus industry - conventional bus operators and BRT services in certain cities
- Commuter rail (Metrorail) - operated by the Passenger Rail Agency of South Africa (PRASA)
- Paratransit services - the minibus-taxi industry (Photo 3.2)

Within the metropolitan areas of the country, the *minibus-taxi* is the preferred public transport mode (66,69%) with trains being preferred only slightly (19,6%) over buses (18,87%) (Statistics South Africa 2014b). Despite the popularity of minibus-taxis, the biggest concerns noted by households in 2013 relate to the quality of facilities at taxi ranks (54,9%), cost of taxi fares (51,1%), safety from accidents (45,8%), roadworthiness of vehicles (44,6%), and the way the passengers are treated by drivers (44,8%) (Statistics South Africa 2014b).

**Photo 3.2:** The taxi rank at Masiphumelele, an informal settlement in the Far South.
Source: http://cdn.primedia.co.za/primedia-broadcasting/image/upload/c_fill,h_289,q_70,w_463/
t1fx2cwqtwsbc5jvu3jm

Commuter *bus services* have seen an increase in popularity between 2003 and 2013, nationally. Users in this category displayed dissatisfaction with services at bus stations (48,4%), over crowding (44,7%), security at bus stops (35,6%) and safety concerns when walking to the stops (35%) (Statistics South Africa 2014b:106). Photo 3.3 shows the new MyCiti service in Cape Town.



**Photo 3.3**: Cape Town's BRT service, the MyCiti.
Source: http://48hours.co.za/nuevo/wp-content/uploads/2012/08/A-MyCiTi-bus-terminal.jpg

According to the NHTS the biggest concerns for *train users*, are overcrowding (80,1%) (see Photo 3.4), security concerns when walking to and from the train station (65,2%), and reliability of the trains (60,6%) (Statistics South Africa 2014b:106).  A large proportion of train commuters (83,6%) in the Western Province walk anything between 1 and 30 minutes to reach a station.



**Photo 3.4:** The public transport reality in Cape Town.
Sourcehttps://image.iol.co.za/image/1/process/620x349?source=https://inm-baobab-prod-eu-west-1.s3.amazonaws.com/public/inm/media/image/2017/03/15/57526258620x3491.jpg&operation=CROP&offset=0x6&resize=611x343

### 3.1.3  South Africa's climate change pledge

> By any measure, South Africa is a significant emitter of GHGs.
>
> Republic of South Africa 2011:29

Climate change and peak oil are macro phenomena with major implications for transportation and in particular automobility, as discussed in chapter 2. South Africa is considered a significant contributor to global GHG emissions (Republic of South Africa 2011), contributing 1,09% to global levels (2012 data) (Friedrich, Ge & Damassa 2015). Transportation accounts for 10,8% of the country's GHG emissions (DEA 2010), largely as a result of apartheid spatial planning as discussed in paragraph 3.1.1 (Republic of South Africa 2011).  The energy needed to fuel the country's various transport fleets is derived almost solely from petroleum (98,%) of which 70% is imported (Wakeford 2016).

The country has prepared an Intended Nationally Determined Contribution (INDC) as required by the UNFCCC. The INDC is grounded in 'science and equity' and acts as a pledge for the country's intended emissions peak plateau and decline (PPD) trajectory. This trajectory proposes that GHG emissions in South Africa will peak between 2020 and 2025, from an

upper limit of 614 Mt $CO_2$-eq[3], to reach a total annual measure of around 212 to 428 Mt $CO_2$-eq by 2050 (Department of Environmental Affairs [DEA] 2015). This equates to a 34% departure from existing emissions growth by 2020 and a 42% deviation from the 'business as usual' trajectory by 2025 (UN 2015a). To maintain this trajectory, mitigation and adaptation interventions relating to urban transportation include substantial investment in **public transport infrastructure** and the shift to **alternative vehicle design.** These commitments will require domestic as well as international funding (DEA 2015). Table 3.1. contains details about these commitments.

**Table 3.1:** South Africa's UNFCCC commitments relating to GHG emissions from the transport sector. Note that the Remarks and Assumptions column has been added by the researcher.  Sources: Department of Environment and Natural Resources. White Paper 2010; Department of Environmental Affairs 2015.

| Intervention | INDC Commitment | Supporting policy / funding source | Remarks and Assumptions |
|---|---|---|---|
| Public transport infrastructure | R5 billion in 2012, growing at 5% per annum | **Transport Flagship Programme** Promoting low-carbon mobility in five metros and ten smaller cities.<br><br>- Includes the **Rail Re-capitalisation programme** to allow for passenger and freight modal shifts from road to rail. | It would equate to a total of R6.3 billion investments by 2017.<br><br>Modal shift from private to public transport by the user is an essential action. |
| Alternative vehicle design and variable speed drives | Total incremental investment needed:<br><br>BEVs of $513 billion (2010 to 2050)<br><br>HEVs of $488 billion (of which 20% will be required by 2030) | **Efficient Vehicle Programme** To create significant improvements to vehicle efficiency of the South African fleet by 2020. INDC notes that domestic and international funding is required. | It would equate to a total of R6.3 billion investments by 2017.<br><br>This would require alternative vehicles to be competitively priced for consumers to shift from ICE (Internal Combustion Engine) vehicles. |

An electric vehicle revolution in South Africa is vital to a long-term low-carbon transport reality. However, the South African electrical vehicle (EV) industry is in its infancy, despite the country having produced a prototype electric vehicle, the Joule, between 2004 and 2012 (Electric Vehicle Industry Association [EVIA] 2016). There are currently three commercial EVs available, but the charging infrastructure is lacking (Greyling 2017). Cape Town is serviced with only two public charging stations (at shopping centres) and car-manufacturing companies offer charging privately.

The newly formed Electric Vehicle Industry Association (EVIA) is a collaboration of a multitude of stakeholders that aim to grow the local industry (Electric Vehicle Industry

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[3] This unit refers to megatons of carbon dioxide ($CO_2$) equivalent. This is the accepted common baseline unit to compare the impacts on climate change of different greenhouse gases.

Association 2016). Despite promising local initiatives[4], the EVIA highlights several challenges that prohibit the growth of this industry. These include a lack of political will (government) to ensure that EVs become a competitive low-carbon alternative and no legislated incentives (tax rebates, subsidies) (EVIA 2016).  The affordability of the EV models currently available is a deterrent, averaging at R500 000 per EV. A Far South resident sums it up in a few words: "Completely out of reach" (Interviewee 3 2017).

Although electric vehicles are a low-carbon alternative in the long term, it will have little effect on other symptoms of automobility, such as the congestion experienced within the study area, unless the vehicle occupancy rate is increased simultaneously. The ideal is to electrify public transport options, noticeable in the recent electrical additions to the MyCiti fleet. The uptake of private car EVs is, however, not a viable short-term solution for the Far South as discussed in paragraph 5.2.1.

South Africa's climate change pledge may seem significant judging from the investment figures listed in Table 3.1.   However, the country's attempts are currently rated as 'inadequate' by a global climate change tracking institution (www.climateactiontracker.org 2017), see Figure 3.2. This scientific institution argues that the policies put forward will not be adequate in meeting the climate change targets.
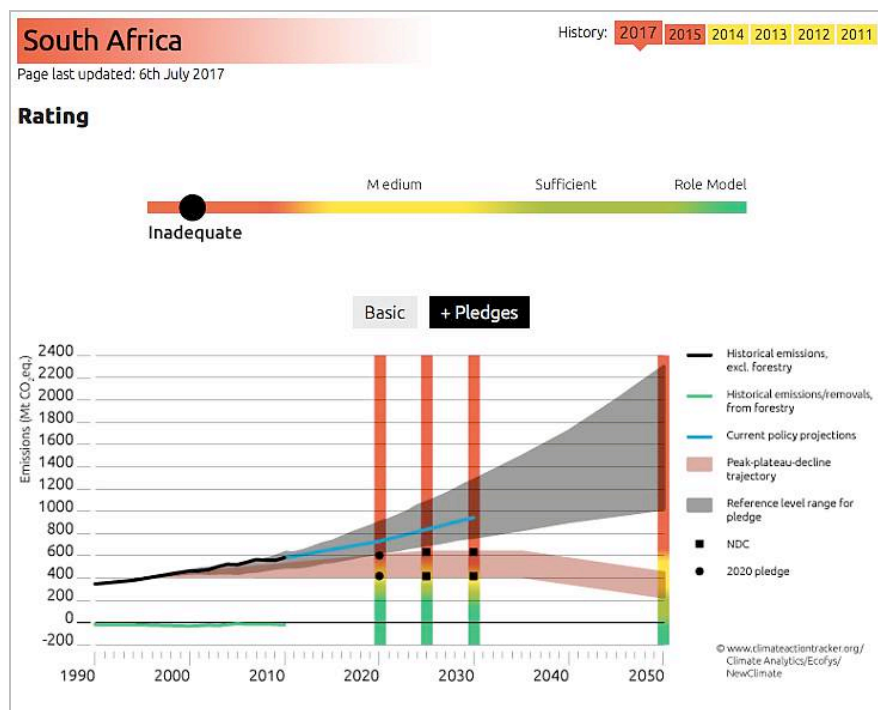


**Figure 3.2:**  South Africa's climate change action rating.
Source:  www.climateactiontracker.org 2017b

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[4] For example, Gridcars that aim to manufacture local EVs.

### 3.1.4  The national spatial transformation agenda

The need to transform the Apartheid city form has been a key directive for the overall societal transformation of the country even before democratic freedom was obtained in 1994 (Watson 2001; Harrison & Todes 2015). Key policy instruments at the time included the Reconstruction and Development Programme (RDP). This policy framework was set to lead urban transformation, together with the White Paper on National Land Transport that supported the shift from private to public transport and the promotion of denser cities to make public transport more viable (Wilkinson 2006; SACN 2016). Although, the RDP era of housing delivery was successful in providing access to formal housing for over three million families, it resulted in situating low density housing on the peripheries of cities where land was affordable (Harrison & Todes 2015). During the same time, the private sector largely invested in office and commercial centres (i.e. shopping malls) and residential development mainly in the form of gated communities for the rising middle class (Landman 2007; SACN 2016). Both urban creations are car-centred, entrenching automobility and impacting directly on traffic congestion (Landman 2007). Paragraph 3.2 shows that the socio-spatial segregation of the past is still present in Cape Town.

Today, the country's highest policy directive, the National Development Plan (NDP) 2030 guides all development. The NDP proposes ten critical actions to achieve the overarching spatial transformation goal, of which three are pertinent to this study:

- Public infrastructure investment at 10 per cent of gross domestic product (GDP) financed through tariffs, public-private partnerships, taxes and loans and focused on transport, energy and water
- Interventions to ensure environmental sustainability and resilience to future shocks
- New spatial norms and standards – densifying cities, improving transport, locating jobs where people live, upgrading informal settlements and fixing housing market gaps.

National Planning Commission [NPC] 2011:34

These actions point to a national policy directive that aligns with Gakenheimer's (2011) preferred option of encouraging a dual approach to regulate land uses to reduce travelling distances while providing public transit alternatives. It seems just when bearing in mind that South Africa has in fact underinvested in public transport infrastructure for over four decades (Republic of South Africa 2009; NPC 2011; Department of Transport 2013). The NDP reports a 14% decline in public capital investment of GDP in sectors such as rail, roads and public transport between the 1980s to 2000s (NPC 2011).

In response, the NDP particularly prioritises investment in commuter rail as a viable public transport strategy (NPC 2011; Department of Transport 2013; Department of Cooperative Governance and Traditional Affairs 2016). Recently, investment in the national public transport sector has been more prominent, with significant capital spent on the rapid rail in Johannesburg, BRT systems in the major metros (including Cape Town), and PRASA's

recapitalisation programme that is underway (Department of Transport 2015). Investing in transport infrastructure has the added benefit of creating much needed jobs. Continued investment in public transport that is "effective, safe and affordable" (NPC 2011:34) will, however, largely depend on a prospering economy.

## 3.1.5  Sustainable transport and an economic recession

Efficient transport is vital to urban economies. It delivers the infrastructure that allow the flow of people and goods and with it supports economic development (Sousa et al. 2015). Transport can moreover provide a glimpse into the wellbeing of an economy since economic growth drives the demand for good and people to be transported (Sousa et al. 2015). But, inefficient or failing transport will undoubtedly damage an economy.  Congestion, for example, impacts an urban economy through resulting in direct costs such as time spent in traffic, hindering access to economic opportunities, and impact on the quality of life of commuters (Joubert 2017).  It can moreover indirectly impact on the productivity of a region and lead to a misalignment between people and employment as congestion becomes a deterrent when job-seeking (Joubert 2017). It is evident from paragraph 3.1.4 that the South African government regards efficient transport as fundamental to a healthy economy and likewise sees it as a vital catalyst to bring about the required spatial transformation.

Except, South Africa has entered an economic recession. The Organisation for Economic Co-operation and Development (OECD) (2017) reports that South Africa is experiencing the lowest economic growth in 16 years, not taking the 2009 global recession into account, see Figure 3.3. Investor confidence is low and reflected in the recent rating downgrades by four major credit rating agencies during the second quarter of 2017. The OECD (2017) predicts that these downgrades will hurt already high inflation, might lead to increases in interest rates, and will put more pressure on government spending to deliver infrastructure for socio-economic prosperity and to grow the economy.
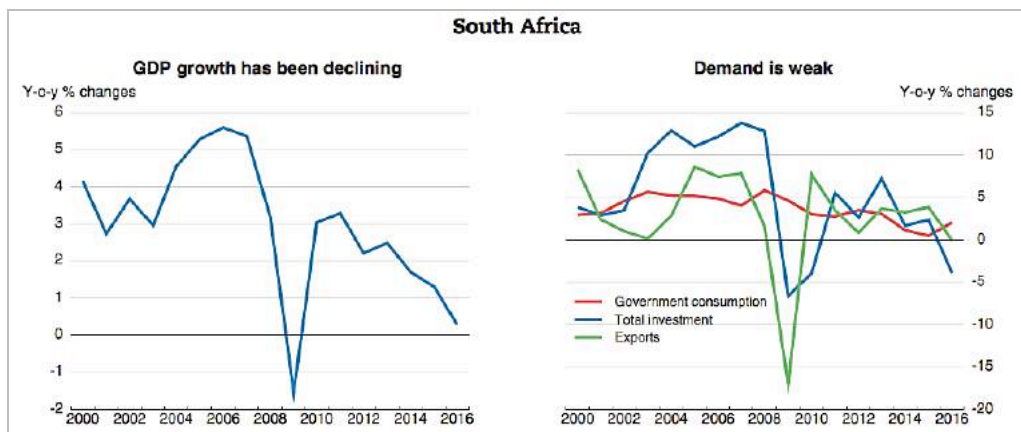


**Figure 3.3**:  South Africa's economic outlook. Source: OECD 2017:238

Nonetheless, the national budget for 2017 shows a continued support to provinces and municipalities with an 8,8% growth in transfers and conditional grants for public transport which includes commuter rail (National Treasury 2017). However, allocations to local municipalities have been reduced through a revision to the *public transport network grant*, see Figure 3.4. This grant assists municipalities in subsidising conventional bus services, to establish the infrastructure for NMT, and to provide bus rapid transit services (National Treasury 2017).  Municipalities are asked to do more with less, evident in this quote: "Grant administrators and municipalities will need to maximise efficient spending to minimise the effect of these reductions on service delivery" (National Treasury 2017:29). It is worrisome when so much of the country's spatial transformation is dependent on public transport infrastructure spending.

| R million | 2017/18 | 2018/19 | 2019/20 | 2017 MTEF Total revisions |
|---|---|---|---|---|
| **Additions to baselines** | – | 1 000 | 3 285 | 4 285 |
| Direct transfers | – | 1 000 | 3 285 | 4 285 |
| Local government equitable share | – | 1 000 | 2 285 | 3 285 |
| Integrated national electrification programme | – | – | 1 000 | 1 000 |
| **Reductions to baseline** | -878 | -925 | -951 | -2 754 |
| Direct transfers | -816 | -841 | -857 | -2 514 |
| Municipal infrastructure grant | -100 | -106 | -106 | -312 |
| Water services infrastructure | -400 | -400 | -423 | -1 224 |
| Urban settlements development | -90 | -96 | -96 | -282 |
| Public transport network | -200 | -211 | -211 | -622 |
| Expanded public works programme | -25 | -29 | -19 | -73 |
| Indirect transfers | -63 | -84 | -95 | -241 |
| Regional bulk infrastructure | -33 | -51 | -58 | -142 |
| Integrated national electrification programme | -30 | -33 | -36 | -99 |
| **Total change to local government allocations** | | | | |
| Change to direct transfers | -816 | 159 | 2 428 | 1 771 |
| Change to indirect transfers | -63 | -84 | -95 | -241 |
| **Net change to local government allocations** | -878 | 75 | 2 333 | 1 530 |

*Source: National Treasury*

**Figure 3.4:** Revisions to local government transfers.
Source: National Treasury 2017. Table W1.21

The macroeconomic situation of the country as a landscape pressure, might impact on a city's transport demand; citizens might reconsider relying on private transportation as the cost of owning a car during an economic recession is predicted to rise in the long term (Businesstech 2017a). For example, as shown in paragraph 3.2.3, motorisation in Cape Town has declined over the first quarter of 2017 (eNaTis 2017). Macroeconomics further plays a role in housing supply, which in turn impacts on transport demand, as discussed in paragraph 3.2.2.

## 3.1.6  Political turmoil and commuter rail

South Africa is currently facing a political crisis threatening its democratic future. The notion of 'state capture', a term assigned to the notion of a state being captured by an elite few for their benefit, has been brought to the fore by a report issued late in 2016 by the former Public Protector (Bhorat et al. 2017).  It has since infiltrated the public debate with the anonymous release of evidentiary emails implicating many prominent politicians, government departments

and private individuals. Leading South African academics provide a glimpse into how this 'political project' is unfolding, best described as a 'de facto silent coup' (Bhorat et al. 2017). These authors argue that state capture is detrimentally affecting the people of South Africa, especially the poor, for the benefit of a corrupt few. It is further asserted that large State Owned Entity (SOE) procurement projects are targeted for corrupt self-enrichment and rent-seeking (Bhorat et al. 2017) - the very same capital infrastructure projects the NDP regards as essential for the eradication of poverty and inequality.

A preview into the workings of state capture can be explained by looking at one SOE, PRASA.  This example further aims to show how political turmoil and corruption at the highest landscape level, influence the transport status quo in the South Peninsula. PRASA is a SOE that is entirely owned by the South African government and is regarded as an implementation arm of the Department of Transport.  It is legally mandated to, amongst others, provide commuter rail in metropolitan cities (as is the case in Cape Town), with Metrorail being the responsible subsidiary company (PRASA 2015).

Currently, Metrorail is known as 'Metrofail' in the public domain (Gontsana 2013). Reports of overcrowding, frequent delays and cancellations of scheduled trains, vandalism to trains and infrastructure, poor customer service and safety concerns are common in Cape Town (De Waal 2012; Gontsana 2013; Elliot 2015; Furlong 2015; Geffen 2015; Khaya 2016; Mnyakama 2017), see Photos 3.5 and 3.6. A study participant shares the following concerning a recent train journey to the South Peninsula during afternoon peak hour (Interviewee 8 2017):

> "*Interviewee 8*: So now you've got this train that arrives, it is already, people are bulging. I've never seen people like at the…there were people in the front of the train, four guys on the front, on the top, in between.
> *Interviewer*: Where is the driver?
> *Interviewee 8*: The driver is watching these four guys, there are people in between the carriages, they're bulging out the doors, all bulging out the sides, and now you've got to try and get on."

PRASA is not oblivious to the state of the commuter rail service. Their Corporate Plan (MTEF 2014-2019) indicates that "… the service is poor, unreliable, unpredictable and unsafe, thus resulting in the decline of customer and stakeholder confidence in PRASA's capability to deliver on its Mandate" (PRASA 2014:19).  To substantiate this statement, many relevant statistics from the financial year 2016/2017 are noteworthy; 40% of the entire Metrorail fleet is out of service, 10% of all trains are cancelled, reported security cases involving assets and passengers have increased by 16% and 53% year on year respectively. Further, the service lost a quarter (73 million) of its passenger trips nationwide for the first half of 2016/2017 when compared to the same time in 2015 (PRASA 2014).  PRASA attribute the decline of the service to ageing rolling stock, assets vulnerable to vandalism due to the 'open nature' of the

stock and infrastructure, difficulty in sourcing ageing spares, a history of disinvestment in rail, rapid urbanisation, and community unrest (PRASA 2014; Mnyakama 2017).



**Photo 3.5:** Overcrowding on a Metrorail train in Cape Town.
Source: https://www.groundup.org.za/media/uploads/images/photographers/
Mandla%20Mnyakama / PRASA-2017051805-MandlaMnyakam.jpg



**Photo 3.6:** Torched Metrorail train on the Southern Line close to Fish Hoek station.
Source: http://www.bigissue.org.za/wp-content/uploads/2016/02/metrorail1.jpg.

In response, PRASA is proposing a 'Turnaround Strategy' valued at R173 billion, over the next 20 years, for new rolling stock, upgrading of rail infrastructure and modernising the corridors (PRASA 2014). This investment in 'Metrofail' is certainly needed, but the existing ailing system still causes much despair, visible in protesting, arson and looting at Cape Town station during June 2017 (Evans & Mathebula 2017), see Photo 3.8. A tender to procure six hundred commuter trains over ten years, as part of this turnaround strategy, was awarded to

a newly formed Gibela rail consortium valued at R51 billion in 2012 (Gibela Rail Transport Consortium 2017).

The first train has since been launched in May 2017 and upgrading of the main stations has started, see Photo 3.7. The new train sets will surely assist in improving the system, but the challenge is more systemic, as remarked by an interviewed research participant, "… you getting this Ferrari type of train to drive on a gravel road" (Interviewee 13 2017).  With this, he means that other critical elements of the rail system, such as the signalling system and capabilities of staff, need equal attention.



**Photo 3.7:** The launch of the new PRASA Metrorail train on 8 May 2017.
Source:  https://investide.co.za/wp-content/uploads/2017/05/New-PRASA-TRAINS-730x438.jpg

However, PRASA is under scrutiny for alleged corruption and irregularities of many procurement processes (Public Protector South Africa 2015). A National Treasury inquiry into the matter confirmed such corruption allegations (Van Wyk 2017).  It emerged that 203 out of 216 PRASA tenders investigated, awarded between 2012 and 2015 and valued at R19 billion, were irregular (Van Wyk 2017).  National Treasury has subsequently recommended that members of the PRASA board be held liable for criminal charges (Van Wyk 2017). Further, evidence suggests that the PRASA tender mentioned above, benefitted the state capture project via a preferred bidder situated in China, although it was awarded to another tenderer (Bhorat et al. 2017). The question remains how corruption within this SOE will influence the already dire reality for train commuters.

### 3.1.7  Living with crime and deadly roads

A global focus on safety and security receives firm mention in the SDGs. Road safety is specifically referred to in two goals, with SDG 16 containing a general safety target aiming to "… significantly reduce all forms of violence and related death rates everywhere" (United Nations Development Programme [UNDP] 2015).

As discussed in paragraph 2.4, the UN outlines six principles of sustainable transport as part of SDG Goal 11, of which safety is one. This focus is evident in this statement:

> With the people-centred approach of the 2030 Agenda for Sustainable Development, safety must be the prerequisite of all sustainable transport effort.
>
> UN Secretary-General's High-Level Advisory Group on Sustainable Transport 2016:10

South Africa is home to a notoriously violent society. This phenomenon can be explained through two key statistics, murders and house break-ins. The UN reports that the global rate of intentional homicide was at a rate of 5 per 100 000 people in 2013 (United Nations Office on Drugs and Crime 2013).  South African, in comparison, displays a rate of 31 per 100 000 people in the same year, having peaked at 64,9 in 1995 (United Nations Office on Drugs and Crime 2013). A recent analysis of the official crime statistics by the South African Police Service (SAPS) about house break-ins shows that the Western Cape Province, which is home to Cape Town, is the worst affected proportionate to population size (Lightstone Property 2016). The impact of crime on cities and its functioning is vast.  The South African Cites Network (2016) notes that crime can dampen foreign investment and can divert spending (for government, households and businesses) away from factors that would ensure growth (education and public transport).

Concerning road safety, road accident rates in South Africa are consistently increasing year on year. The Road Traffic Management Corporation (RTMC) reports that road accidents led to 14071 fatalities on South African roads during 2016, the highest toll since 2007 (www.wheels24.com 2017).

This research shows that safety and crime are critical factors for residents on three accounts. Firstly, safety on the current public transport options is lacking, see paragraph 3.1.6.  The perception survey undertaken to inform the FSTP shows that reliability, availability and feeling secure while on private transport are factors that would induce the private car users to shift, see Figure 3.5 (The Billboard 2017).

Answered: 352   Skipped: 371

| | 1 | 2 | 3 | 4 | 5 | Total | Score |
|---|---|---|---|---|---|---|---|
| Improved reliability or availability of public transport | 55.42% 138 | 26.10% 65 | 8.03% 20 | 3.61% 9 | 6.83% 17 | 249 | 4.20 |
| Greater time saving | 7.31% 16 | 18.26% 40 | 23.29% 51 | 26.48% 58 | 24.66% 54 | 219 | 2.57 |
| Feel secure/low level of crime at the pick up point and in the public transport | 39.13% 90 | 25.22% 58 | 17.39% 40 | 11.30% 26 | 6.96% 16 | 230 | 3.78 |
| More flexible or accessible service | 12.11% 27 | 19.28% 43 | 30.49% 68 | 23.77% 53 | 14.35% 32 | 223 | 2.91 |
| Increased comfort or cleanliness | 20.31% 53 | 11.49% 30 | 14.56% 38 | 20.31% 53 | 33.33% 87 | 261 | 2.65 |

While avoiding congestion would get people out of cars, greater time saving is seen as the least significant improvement needed in public transport.
Reliability / availability, and feeling secure are important.

**Figure 3.5:** FSTP perception survey results concerning factors that would encourage public transport usage.  Source: The Billboard 2017.

Secondly, burglaries from residential properties in Cape Town are a common occurrence. Figure 3.6 depicts the rate of burglaries over the last decade for some SAPS precincts. Note that there are three SAPS precincts in the Far South: Ocean View, Fish Hoek and Simon's Town.  When comparing these precincts with nearby precincts (Muizenberg and Hout Bay), it is noted that the Far South is less affected by this crime category.  There was an average of 295 (Ocean View), 474 (Fish Hoek) and 233 (Simon's Town) house break-ins in the respective precincts per year over the last decade.  Hout Bay and Muizenberg show significantly higher averages of 550 and 819 incidences respectively.  A study into urban safety in Cape Town notes that the actual statistical information about crime of this manner is not a accurate reflection of the public's perception held over crime, the 'fear of crime' is in actual fact shaping our cities (Lemanski 2004).  Lemanski remarks that efforts to mitigate this fear of crime "… have resulted increasingly in the creation of fortified enclaves and a withdrawal from public space" (Lemanski 2004:101).  It is having a significant impact on residential urban form as these 'fortified enclaves', i.e. gated communities, result in added segregation and urban fragmentation with "frightening similarities to old apartheid structures" (Lemanski 2004:101).  Paragraph 4.4 outlines the impact of gated communities on the Far South.

Thirdly, there is a high rate of road accidents on one of the gateway routes into the study area, Ou Kaapse Weg (OKW), with SAPS confirming one road accident on average every third day on this road (Mdebuka 2017).  It will become apparent in following sections just how much safety and security is influencing resident's decisions about where they live and how they travel.
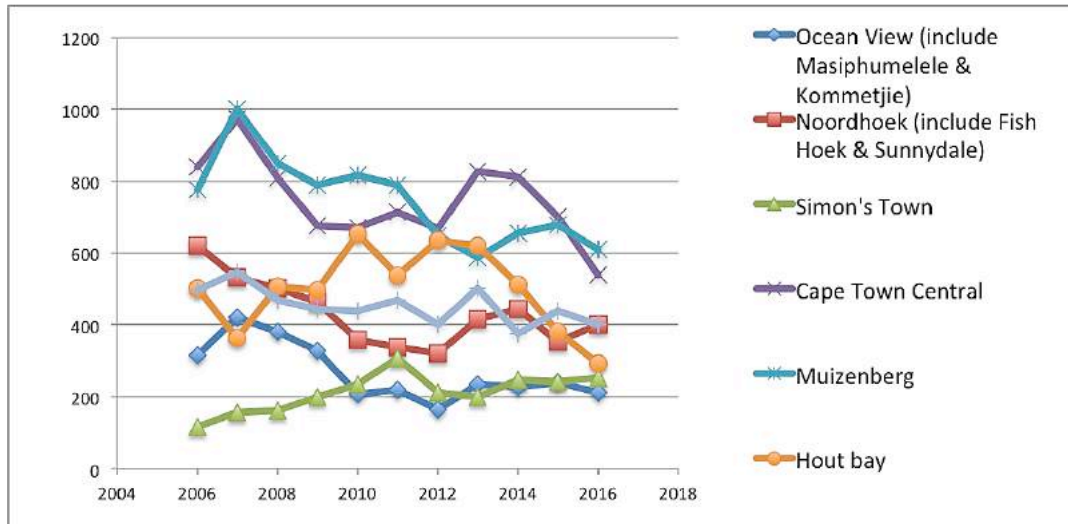
**Figure 3.6:** Burglaries at residential properties. Source: Crime Stats SA 2017

## 3.2    The city context: Cape Town

Cape Town is a city that speaks of two worlds. On the one hand, its immense natural beauty consistently attracts wealth and tourists.  Its unique flora, impressive coastlines and mountains are protected areas bound by international treaties, being a United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Site. Protecting this natural asset is a key city priority with 60,8% of the entire city biodiversity network conserved as of 2014 (COCT 2016b). Permanent settlement has historically occurred around the slopes of the Table Mountain range that resulted in highly priced real estate in these areas. Further, the city consistently draws substantial foreign direct investment that assists economic growth, contributing 9,8% to the GDP of the country (COCT 2016b).

On the other hand, having been subjected to the Apartheid regime, coupled with a restricting terrain (mountains and coastline), Cape Town's spatial form remains fragmented and segregated along racial and income lines (Lemon 1991; SACN 2016). Historically urban growth was concentrated along the foot of the Table Mountain chain and around the earliest railway lines (TDA Cape Town 2017c). Figure 3.7 depicts how the 'Apartheid city' form (Davies 1981) took hold over the following three decades (Lemon 1991). This process forced the Coloured, Indian and Black African populations to the eastern part of the city, known as the Cape Flats, now known as the Metro South East. Spatial manipulation, in this manner for this long, structured the city in inconceivable ways, placing densely populated poor communities on the outskirts of the cities removed from economic opportunities, validating Turok's (2011) argument in paragraph 3.1.1.
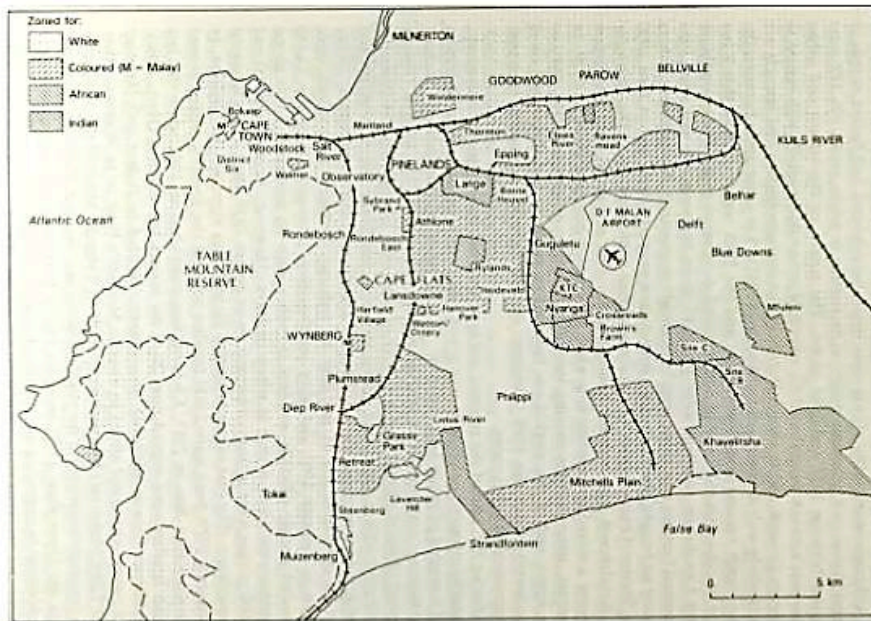
**Figure 3.7:** Cape Town as Apartheid Model City with designated areas for racial groups. Note that the Far South is only partly visible in this map. (Lemon 1991)

A Cape Town property economist, Francois Viruly, interprets this phenomenon by calling it the 40x40x40 concept, meaning that many South Africans need to spend 40% of their income on travel, while living in a 40sqm house, which is 40km away from job opportunities (Property24 2017a). Urbanisation and in-migration are compounding the spatial inequalities in the city. A recent community survey indicates that Cape Town is home to 4 million people as of 2016, an increase of 7% since the last national census in 2011 (COCT 2016b). The population is projected to grow to 4,5 million people by 2030 (TDA Cape Town 2017c). The number of households in the city is furthermore increasing, displaying a growth rate of 18,4% between 2011 and 2016, while the size of it is shrinking from 3.92 people to 3.17 (COCT 2016b). **These statistics show that households are forming at a higher rate than population growth.** These compounding factors remain a fundamental challenge to the city with pressure building for resources to accommodate urbanisation, in-migration and informality, i.e. land for housing and new development and public services, such as public transport (COCT 2016b).

As a result, densifying the city has been a policy strategy for decades. Interestingly, the spatial implications of such a strategy have seemingly remained unchanged since 1991, see Figure 3.8.
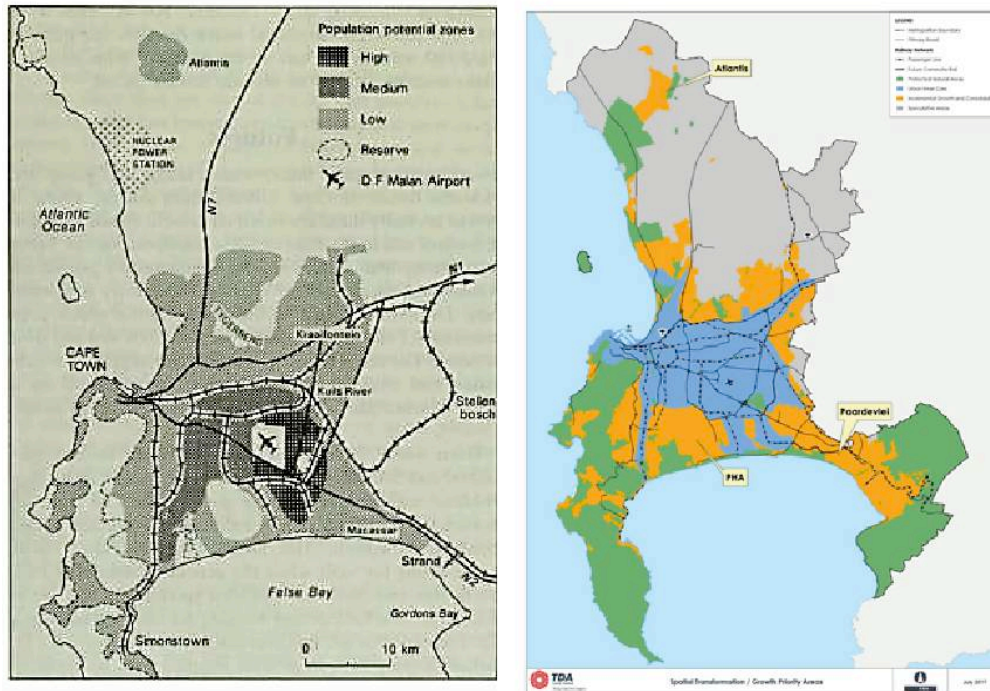
**Figure 3.8:**  Potential for urban densification as identified during 1991 compared to the Draft MSDF (2017) indicating a similar densification scenario with the blue indicating areas for increased densification. Source: Lemon 1991. Figure 2.3 & TDA Cape Town 2017c. Map 5.1

## 3.2.1  Institutional changes

For municipal planning, 2017 was an important year.  It marks the beginning of a new political term-of-office following the municipal elections held in 2016 during which the Democratic Alliance (DA) retained the political leadership of the City. This study coincided with the internal process of assessing the City's strategic focus for the upcoming political term, which meant that many frameworks, plans and policies were updated during 2017. These organisational and policy changes signal key regime changes within Cape Town that seemingly aim to unsettle the current entrenched system of automobility and align with the literature on sustainable transport that recommends a combination of technological and cultural fixes.

Institutionally, two amendments to the City's organisational structure are noteworthy: the implementation of the internal Organisational Development and Transformation Plan (ODTP) and the formation of the TDA.

- The City has commenced with the implementation of the ODTP in 2016 to "… reverse the legacy of apartheid spatial planning, modernise government, improve service delivery, and become more customer-centric" (COCT 2017b:n.p).

- In essence, the City's new strategic direction aims to set a resilient and sustainable growth trajectory for the city, constructed around the transformation of the spatial form through TOD and related densification (COCT 2017b:n.p). To reap the benefits of TOD, the City assimilated the municipal functions of integrated transport and urban

development through the formation of the TDA at the beginning of 2017 (TDA Cape Town 2017b).  This is clear from the TDA's mission of "social, economic and spatial transformation of Cape Town" and vision of "… an efficient, integrated transport system for all – implemented sustainably" (TDA Cape Town 2017b:xv).

Two municipal planning tools are vital to this process of integration; a) the **Municipal Spatial Development Framework (MSDF)** as required by the Municipal Systems Act (Act 32 of 2000) and the Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013) and b) the **Comprehensive Integrated Transport Plan (CITP)**, as required by the National Land Transport Act (NLTA) (Act 5 of 2009). Both documents were reviewed in 2017 and provide a glimpse into the City's current desired growth direction.

## 3.2.2  Land use trends

An understanding of the urban form of any city is required to clarify patterns of transportation usage (Cervero & Kockelman 1997; Newman & Kenworthy 2015).  With regard to the South African context, such an understanding is contained in the MSDF, as briefly introduced in paragraph 3.2.1. The **Draft MSDF (2017-2022)** released during the middle of 2017 for public comment, highlights existing land use trends that set the tone for the analysis of the Far South, namely; *housing demand and supply*, *residential densities,* the *spatial location of non-residential development and the space economy,* and *resource sustainability*.

- Concerning *housing demand and supply*, the Draft MSDF earmarks a shift from meeting the demand for formal market-led housing to a supply of informal solutions (TDA Cape Town 2017c). Housing in Cape Town is supplied either through the market, government-assisted or provided informally. The supply status quo has changed over the last decade with the market-led housing declining and informal housing supply rising (TDA Cape Town 2017c).

  An understanding of where new houses are located influences transport demand. Figure 3.9 shows that market-driven densification occurs in accessible locations with high land values (>R2,500/m$^2$) while low-density residential development are provided on the urban periphery on cheaper land (<R1000/m$^2$) (TDA Cape Town 2017c).  Housing provision through government means, clearly contrasts this pattern in that it leans towards locating new housing closer to economic opportunities, but still within traditional low-income areas (land values of <R1000/m$^2$), see Figure 3.10. Despite a continuous supply of state-assisted housing, it appears that most new households are catered for informally, in the form of informal backyard units or informal settlements (TDA Cape Town 2017c).
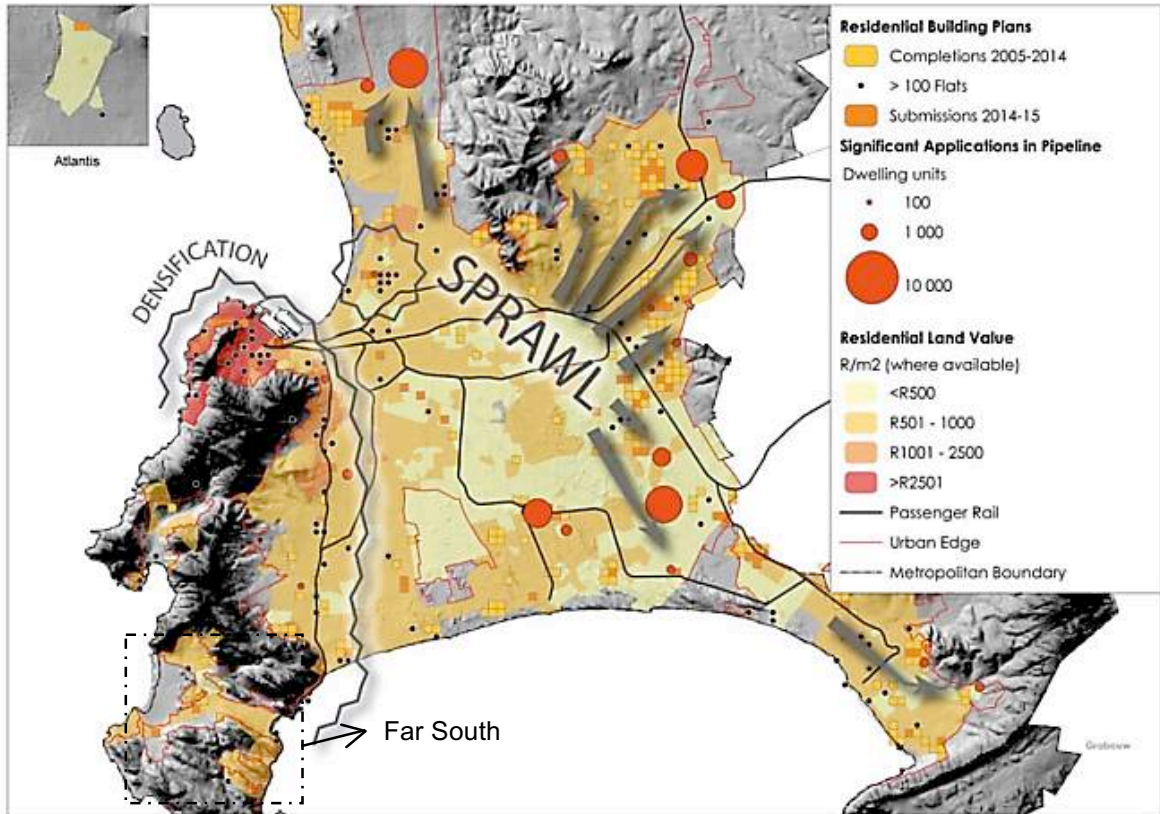
**Figure 3.9:** Direction of market-led housing supply in Cape Town.
Source: TDA Cape Town 2017c. Diagram D6
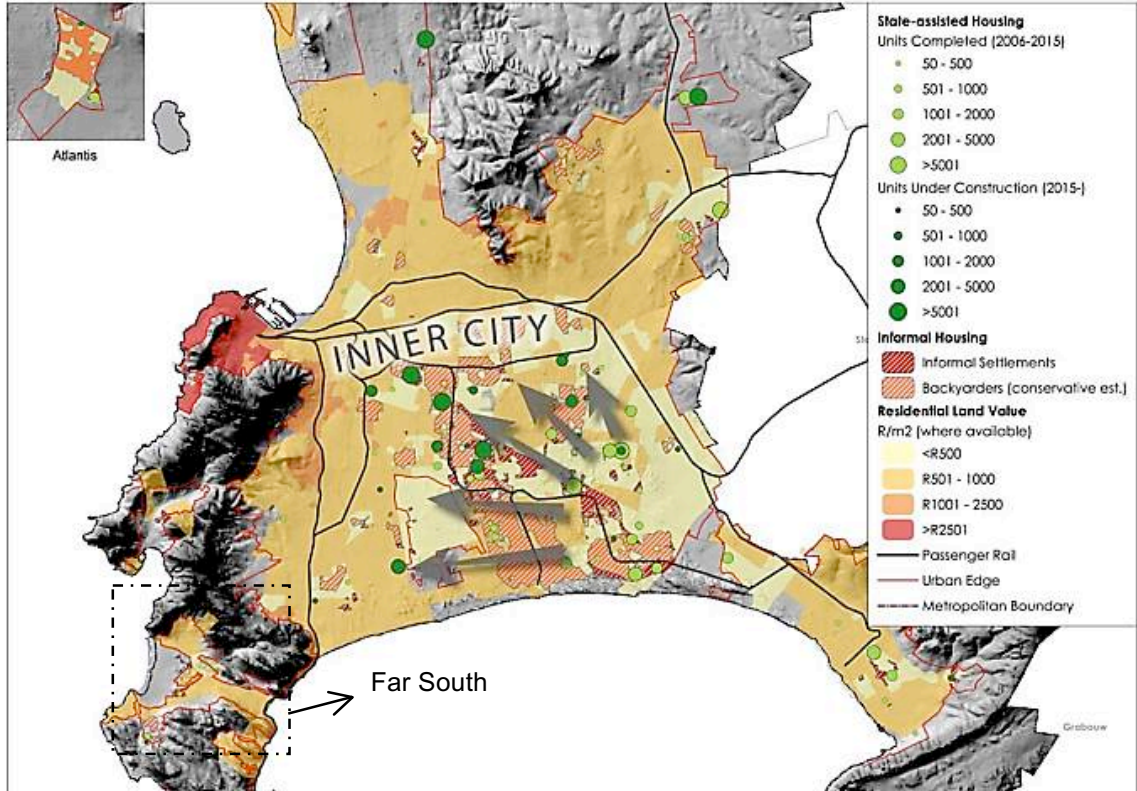


**Figure 3.10:** Informal and State-assisted housing delivery in Cape Town
Source: TDA Cape Town 2017c. Diagram D7

- There has been a marginal increase in city-wide *residential densities*, growing from 40 persons per gross hectare in the 1970s to 60 persons per gross hectare in 2015 (TDA Cape Town 2017c).  The draft MSDF notes that an **acceptable threshold for a scheduled bus service is 100 persons per gross hectare** (TDA Cape Town 2017c). The City notes that even if all the remaining land is developed at much higher densities, this threshold remains elusive (TDA Cape Town 2017c).  However, concentrating new growth to transport corridors (33% of the total urban area), it would be plausible to reach this threshold by 2040 in these areas, a key factor driving the TOD policy response (TDA Cape Town 2017c). **Urban growth, intensification and densification, is thus directed inwards**, this being the biggest change between this draft MSDF and the current MSDF (2012) that shows outward growth paths, see Figure 3.11.



**Figure 3.11:**  Long-term urban growth vision shift from outwards portrayed in the current MSDF (2012) and the latest draft MSDF (2017) indicating an inwards growth vision.
Source: TDA Cape Town 2017c. Diagram iii

- The ***private sector dominates Cape Town's economy***, comprising 74% of the economy in 2014 (TDA Cape Town 2017c). Spatially, new *office developments* are concentrated around three key business nodes: the Central Business District (CBD) and Salt River-Woodstock, Tyger Valley and Century City as shown in Figure 3.12. In addition, there is a clear trend in new industrial development settling on the urban fringes (north and north eastern direction), partly to avoid congestion in other areas.

- The Draft MSDF includes the results of a review of **natural *resource consumption* that occurred over the last decade**. Figure 3.13 shows that Cape Town is alarmingly dependent on fossil fuels. Two-thirds of the city's energy consumption (64%) are used for transport purposes as per 2012 calculations; of that two-thirds (66%) can be accredited to passenger transport (COCT 2015c). In turn, private passenger vehicles are the biggest consumer of fossil fuels within the passenger transport category, see Figure 3.14 (COCT 2015c).
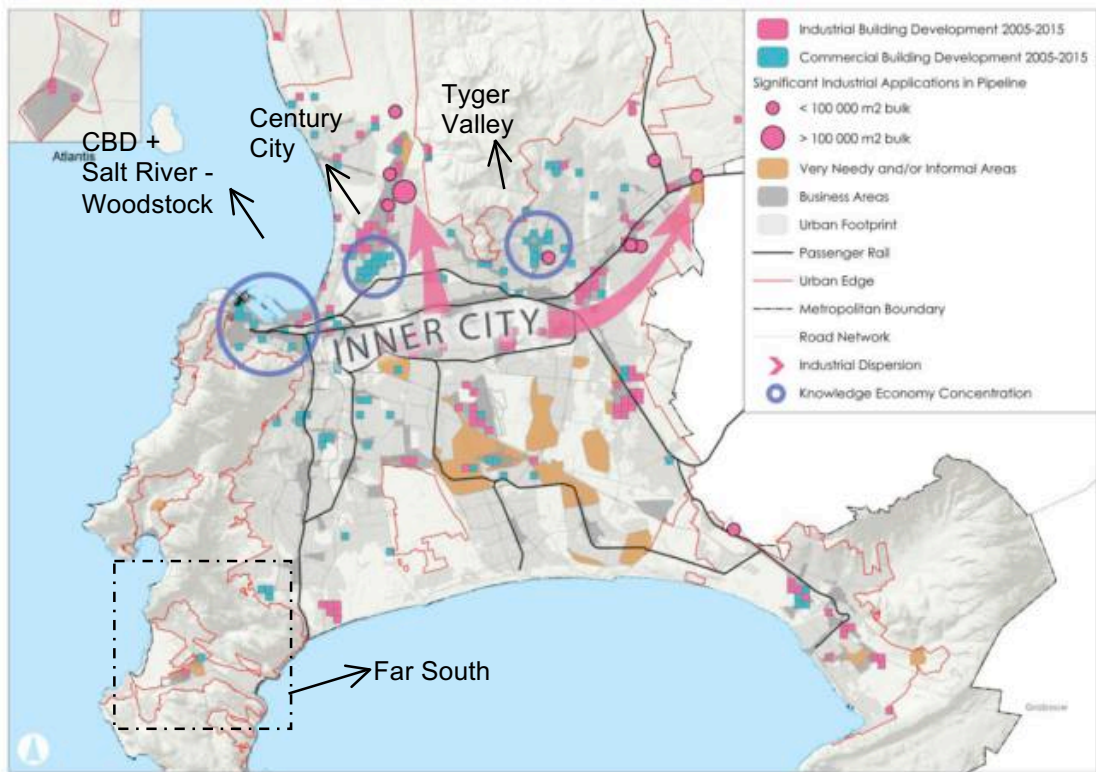
**Figure 3.12:** Spatial concentration of non-residential development in Cape Town.
Source: Cape Town 2017c. Diagram D11
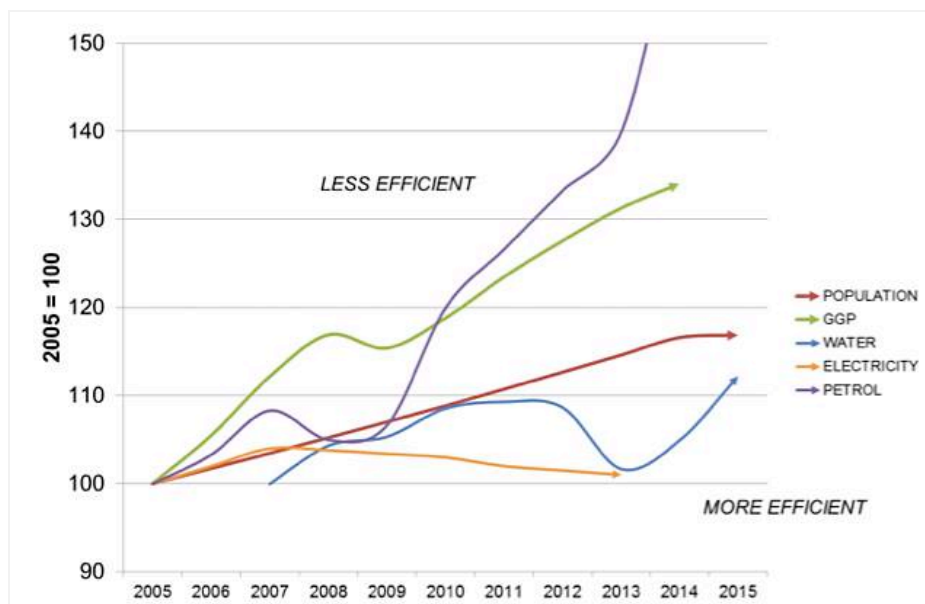


**Figure 3.13:** Cape Town's resource consumption over a decade between 2005 and 2015.
Source: TDA Cape Town 2017c. Diagram D19
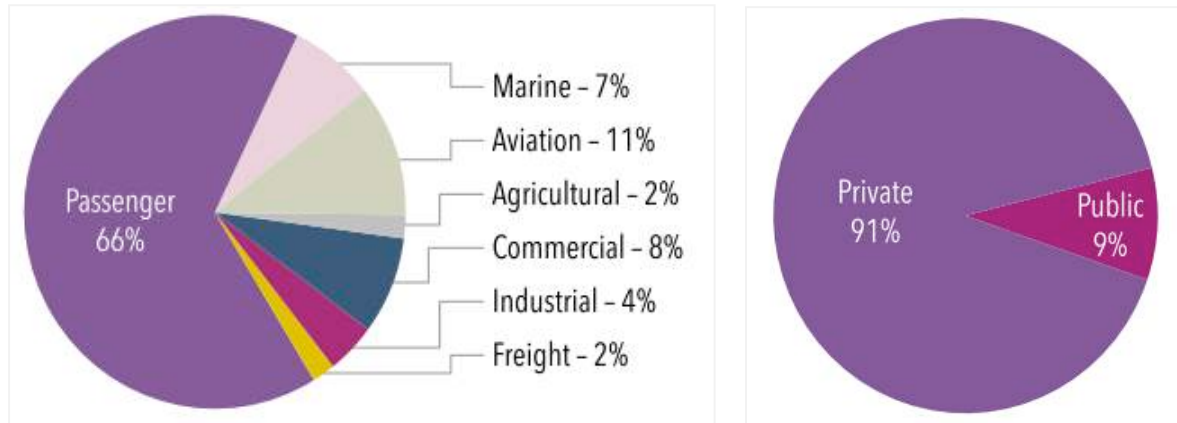
**Figure 3.14:**  Petrol and diesel consumption in Cape Town during 2012, the image on the left. Breakdown of passenger transport consumption between private and public transport, the image on the right.  Source: COCT 2015c. Figures 64 and 69.

## 3.2.3  Transport trends

> Cape Town's local transportation sector is currently undergoing a transition, both in policy and in practice.
>
> Cape Town Partnership 2014:80

The Draft CITP (2017-2022) is seen as a catalyst for spatial change in the city and for this purpose it aims to deliver transport that is 'integrated, intermodal and interoperable' (TDA Cape Town 2017b). According to the CITP *integrated* refers to offering multiple modes aligned with the longer term (2032) Integrated Public Transport Network Plan (IPTN) as well as to integration with land use (see Figure 3.23). *Intermodality* refers to one entity, the City, having the mandate over all modes within the local municipal ambit and *interoperable* requires different modes to correlate through integrated ticketing and scheduling (TDA Cape Town 2017b).

Similar to other South African cities, the transport modes on offer in Cape Town are road based private transport, NMT and public transport, see Figure 3.15. The latter consists of commuter rail, contracted conventional bus services (subsidised systems with two private operators, Golden Arrow Bus Services (GABS) and Sebanye), the local Integrated Rapid Transit (IRT) MyCiti service, and unscheduled minibus-taxis.

Figure 3.15 depicts the existing transport network.
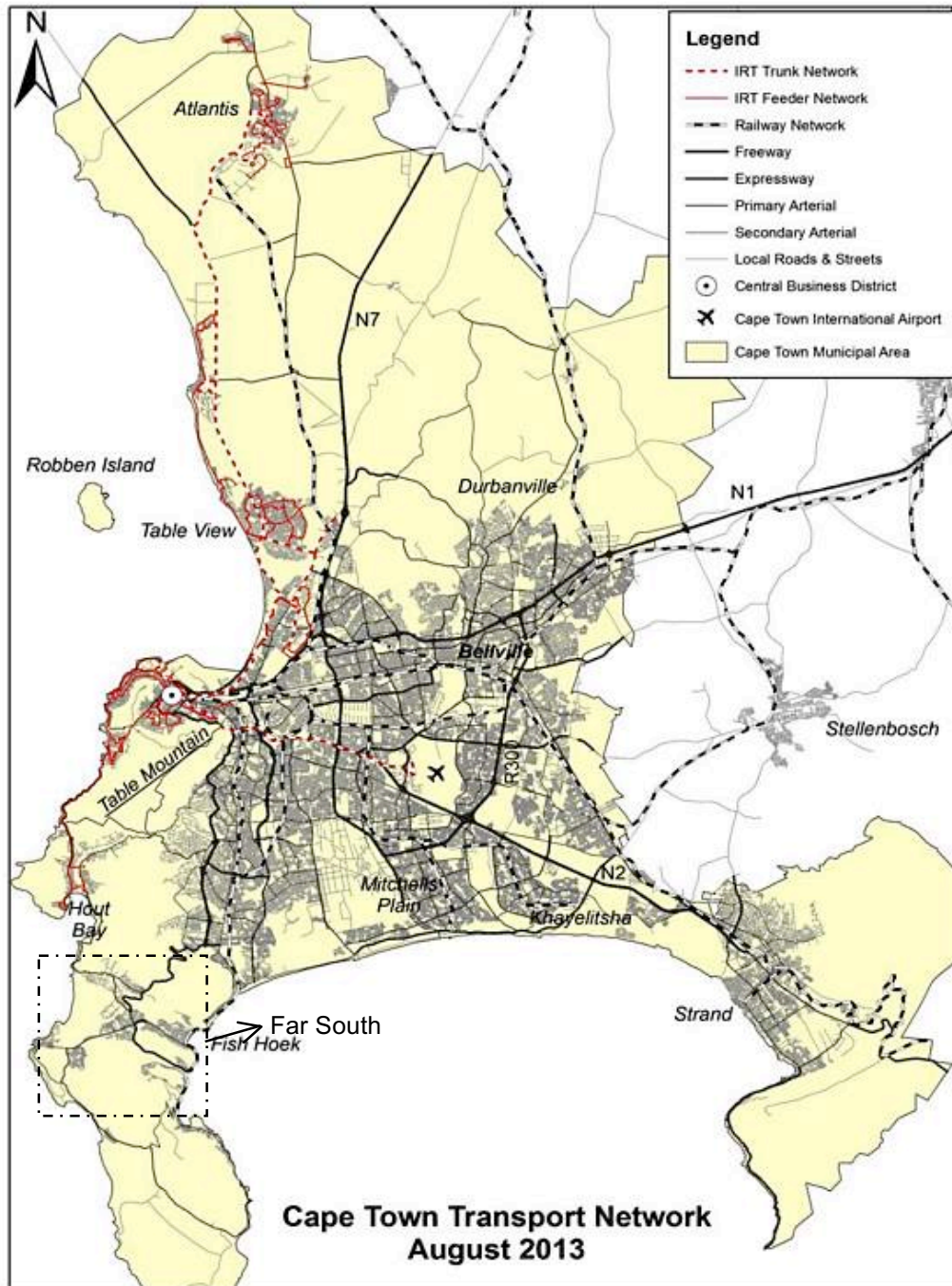
**Figure 3.15:**  Cape Town's Transport Network. Source: TDA Cape Town 2017b. Figure 3-1

Table 3.2 depicts the modal share of these transport modes in the City on a standard weekday during the morning peak period (based on 2013 demand calculations) (TDA Cape Town 2017b). Cape Town needs to improve on the public transport to private modal ratio, as the national target is set for 80%:20% (TDA Cape Town 2017b).

**Table 3.2:** Cape Town's modal share during weekday morning peak period.
Source: TDA Cape Town 2017b. Table 3-2

| Typical Weekday Morning Peak Period | | | | | |
|---|---|---|---|---|---|
| Private | Public | | | | NMT |
| | Rail | Contracted bus | BRT | Minibus-taxi | |
| | 18% | 6% | 2% | 12% | |
| 53% | 38% | | | | 9% |

Three transport trends present significant challenges, namely the *stagnation of the Metrorail* commuter rail service, the *unmaintainable high costs of transport for the marginalised communities,* and the increasing *disconnect between land use and transport* (TDA Cape Town 2017b). A discussion on these trends follows below:

- Paragraph 3.1.6 outlines the concerns around commuter rail in South Africa, such as arson, vandalism, overcrowding, unreliability and ageing infrastructure. These concerns are echoed about Metrorail in Cape Town in the draft CITP (TDA Cape Town 2017b). As a result, Metrorail in this City has experienced a 30% loss in rail passenger numbers during 2016, with **commuters shifting to road-based transport options such as minibus-taxis which has an adverse impact on traffic congestion** (TDA Cape Town 2017b). Figure 3.16 shows the decline in passenger numbers since 2012. It also depicts the drop in functional train sets, from 92 full sets to the current 72 sets (not even the required length) - bearing in mind that 88 full sets are required to operate optimally (TDA Cape Town 2017b).
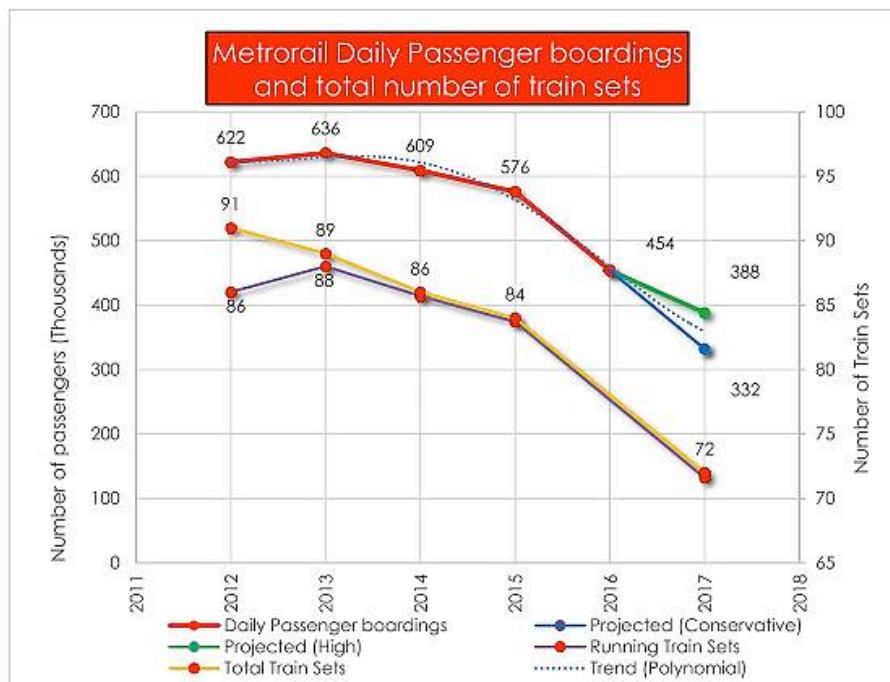


**Figure 3.16:** A comparison of the number of passengers boarding Metrorail and the number of functional trainsets since 2012. Source: TDA Cape Town 2017b. Figure 3-3

Apart from the negative economic impact that this failing system is having on the City, the social ramifications are severe. Frustrations with the unreliable service led to civil protest action at Cape Town station during June 2017 with carriages torched and shops looted, see Photo 3.8 (Evans & Mathebula 2017).



**Photo 3.8:** Frustrated commuters do damage to carriages and shops at Cape Town station on 12 June 2017 in protest to poor service.
Source:  http://www.groundup.org.za/media/_versions/images/photographers/ Natalie%20 Pertsovsky/aftermath_extra_large.jpg

• The City developed a statistical tool to measure the state of transport in the city and to gauge Cape Town's performance against other cities, the *Transport Development Index* (TDI). It incorporates geographic zones, Transport Analysis Zones (TAZ), and measures the cost of the 'access priorities' of transport user groups (i.e. private car, public transport and NMT). Figure 3.17 indicates that the City's overall mobility index is below average and ranks 73rd out of a study of 84 world cities (Whitehead 2015).
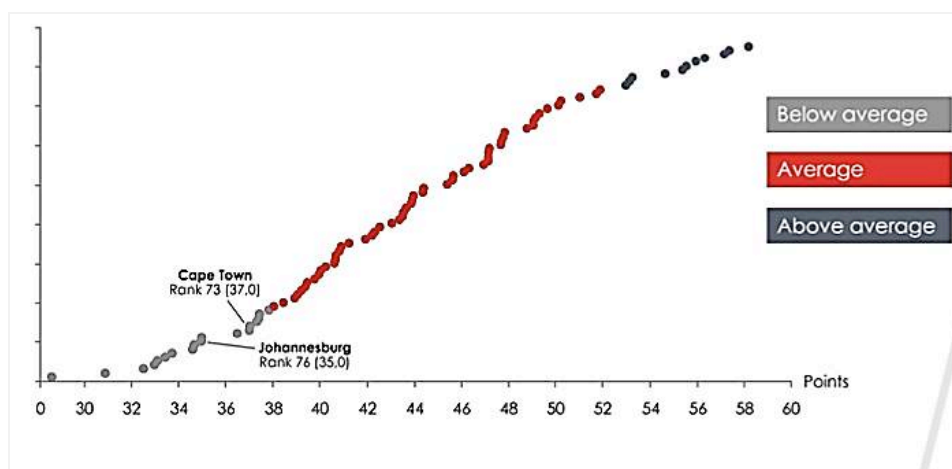


**Figure 3.17:** Cape Town's mobility index rating compared to 84 world cities.
Source: Whitehead 2015

- Access priorities consist of direct costs such as the cost of a fare and indirect cost such as flexibility, safety, congestion and crime (Whitehead 2015). A key finding of the TDI is that an average public transport user with a low income (<R4000 a month) spend 43,1% of monthly income on direct transport costs (TDA Cape Town 2017b). Further, the **TDI results show that private car users, the focus of this study, are mainly medium to high income earners (>R31610 per month) with indirect 'access priorities' of congestion, crime and safety,** as illustrated in Figure 3.19 (TDA Cape Town 2017b).  The qualitative analysis undertook during this research support these quantitative results, see chapter 5.

The findings of the TDI highlight the transport inequalities between income groups in Cape Town.  The urban poor is spending a disproportionate portion of their income on transport, being located on the peripheries, a direct result of urban planning as discussed in the previous section.  The Draft CITP calls for urban public intervention to ensure that this disconnect between land use and transport does not continue to increase (TDA Cape Town 2017b).

On the other hand, private-car ownership is growing year on year, see Figure 3.18 (COCT 2015b). The latest data from the Electronic National Administration Traffic Information System (eNaTIS) shows that despite this consistent growth, the rate of growth has reduced in percentage; from a 4% annual increase in 2013 to a 2,7% increase in 2016.  In fact, a decline of 1,5% is detected for the first six months of 2017 which could be a result of the current economic recession (eNaTis 2017). Despite this slight decline in motorisation, the latest NTHS confirms that 53% of the households in Cape Town own at least one car (COCT 2014). The NTHS confirms that private-car ownership per household increases with household income (COCT 2014) - thus confirming a trend highlighted by the literature review in paragraph 2.5.1.  It is important to note that 90% of households in the high middle range own at least three cars, see Table 3.3.
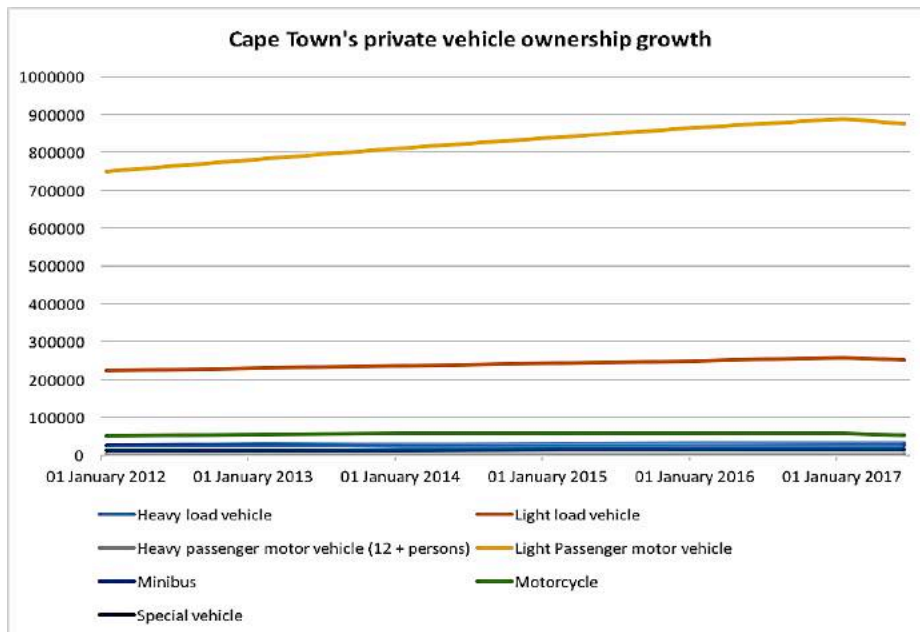


**Figure 3.18:**  Private vehicle growth in Cape Town. Source: eNaTis 2017
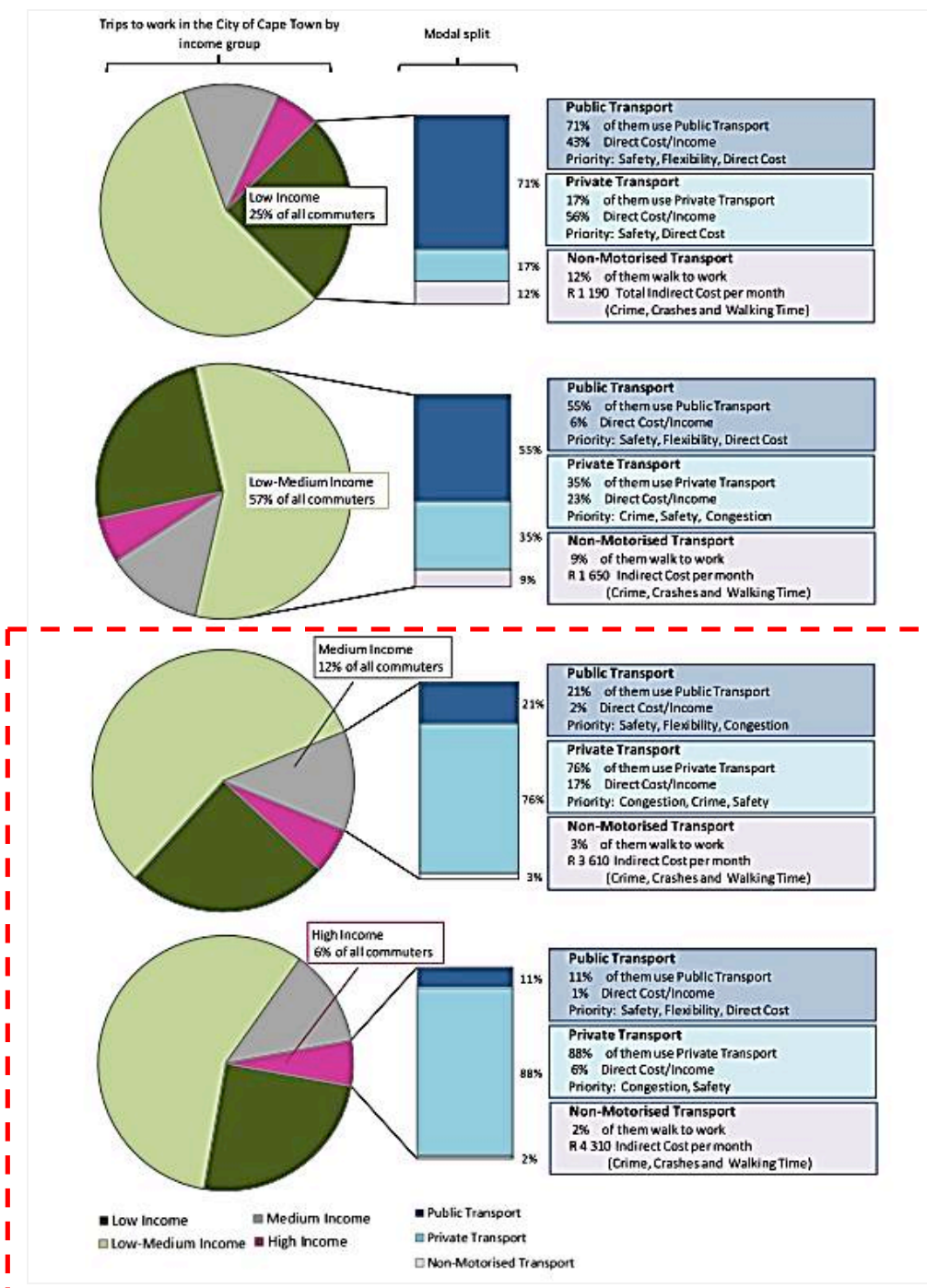
**Figure 3.19:** Cape Town's Transport Development Index results per income group and user group.  Source: TDA Cape Town 2017b. Figure 5-5

**Table 3.3:** Car ownership per household, per income group.
Source: COCT 2014 Table 20. Adapted

| Income group | | All | Low | Low middle | High middle | High |
|---|---|---|---|---|---|---|
| | | | R0 – R3200 monthly | R3201 – R25600 monthly | R25601 – R51200 monthly | R51201 or more, monthly |
| Own a car | Total (%) | 52,6% | 21,6% | 65,7% | 96,7% | 94,4% |

- The spatial reality of Cape Town has an **adverse impact on the financial sustainability of public transport given the low densities and long travel distances**. Cape Town's BRT is a case in point. Despite the successful implementation of phases thus far, the high operational costs of the BRT resulted in a R52 million shortfall for the 2016/2017 financial year (COCT 2016c) - a factor that reinforces the need to direct more compact growth around public transport corridors (TDA Cape Town 2017c).

## 3.2.4  Policy innovation

The enactment of SPLUMA in 2013 replaced archaic and outdated land use legislation and is widely seen as a means of achieving the National spatial transformation agenda (SACN 2015), as introduced in paragraph 3.1.4.  This legislative tool rests on five core principles: *sustainability, equality, efficiency, fairness* and *good governance* in the realm of urban planning (SACN 2015).  The Act allows for the formulation of land use management schemes (zoning schemes) that direct development on a site basis, through zonings, as well as for the development of a spatial planning vision encapsulated in the MSDF as mentioned before. Innovation within both these mechanisms has occurred within Cape Town.

The City adopted a **Municipal Planning By-Law (MPBL)** in 2015, aligned with SPLUMA, which replaced the numerous zoning schemes that once governed development in this city. The MPBL contains nuanced changes that have gone unnoticed by many property owners. For example, the previous zoning scheme for Fish Hoek, a suburb in the study area, allowed three-storey apartments in the General Residential zone (GR2). The bearer of that right can now construct apartments up to five storeys in height. Further, if this GR2 property is located along a designated public transport route (PT1 and PT2 areas), parking requirements have drastically been reduced, see Figure 3.20.

**Minimum off-street parking requirements**

| Land use | Standard areas | PT1 areas | PT2 areas |
|---|---|---|---|
| Main dwelling house (SR1 Zoning) | 2 bays per dwelling unit (1 bay per dwelling for erven < 350 m$^2$) | 1 bay per dwelling unit | Nil |
| Main dwelling house (SR2 Zoning) | 1 bay per dwelling unit (Nil per dwelling for erven < 100 m$^2$) | Nil | Nil |
| Second dwelling | 1 bay per 2$^{nd}$ dwelling unit | 1 bay per 2$^{nd}$ dwelling unit | Nil |
| Group dwelling | 1,75 bays per dwelling unit, plus 0,25 bays per dwelling unit for visitors | 1 bay per dwelling unit, plus 0,25 bays per dwelling unit for visitors | Nil |
| Flats | 1,75 bays per dwelling unit, plus 0,25 bays per dwelling unit for visitors | 1 bay per dwelling unit, plus 0,25 bays per dwelling unit for visitors | Nil |

**Figure 3.20:** Extract of parking requirements for residential zoned properties.  PT1 and PT2 areas are designated zones around public transport routes. Source: COCT 2015c.

Commenting on this topic, an interviewee indicated that developers are gradually realising the significance of these changes and developing buildings that allow for higher densities.  It has, however, led to a built form different to what neighbours were used to, leading to constant resistance to this level of integration (Interviewee 8 2017).

As introduced in paragraph 2.9.1, the City's approach to achieving a desired urban form is encapsulated in the **TOD Strategic Framework** of 2016, which in turn informs the MSDF and CITP.  Essentially TOD, as a comprehensive land use strategy, "… is about changing, developing, and stimulating the built form of the city in such a way that the movement patterns of people and goods are optimised to create urban efficiencies and enable social equality and economic development" (COCT 2016c:7).
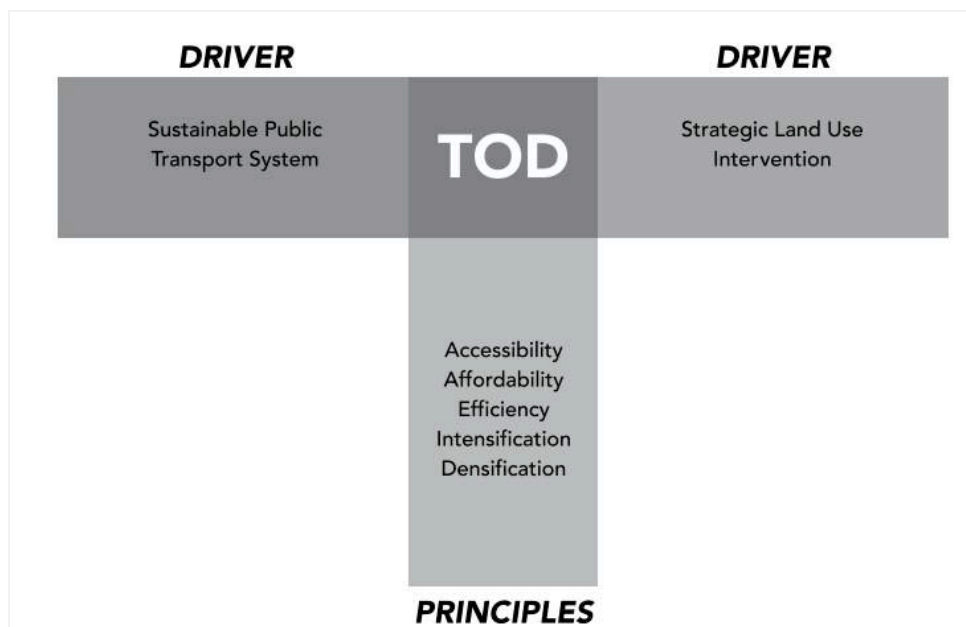


**Figure 3.21:**  Transport and Land Use integration through TOD.
Source: COCT 2016c. Figure 7

Core principles of this long-term development strategy are (COCT 2016c):

- *Affordability* –for users and producers (the City)
- *Accessibility* – to enable equal access to economic opportunities
- *Efficiency* – helps eliminate the reliance on private vehicles and to shorten the travel distances
- *Intensification* and *densification* – direct appropriate densification to areas benefiting from quality public transport.

The approach to TOD is two-pronged (Figure 3.21 and 3.22), providing not only public transport but influencing the urban form to 'connect need with opportunity' (COCT 2016c; TDA Cape Town 2017b,c).

Firstly, regarding public transport, the City's long-term vision is encapsulated in the IPTN for 2032 with commuter rail and the MyCiti IRT (BRT service) as the primary public transport services. Conceptually, the aim is to direct future public investment to connect 'areas of need' - areas on the peripheries - with economic nodes, see Figure 3.22.  Figure 3.23 shows the concrete future expansions of the BRT network and a new rail link (the Blue Downs Rail Corridor) in these areas (TDA Cape Town 2017c). The IPTN makes provision for the designation of BRT feeder routes if and when detailed planning around trunk corridors are complete (TDA Cape Town 2017b).
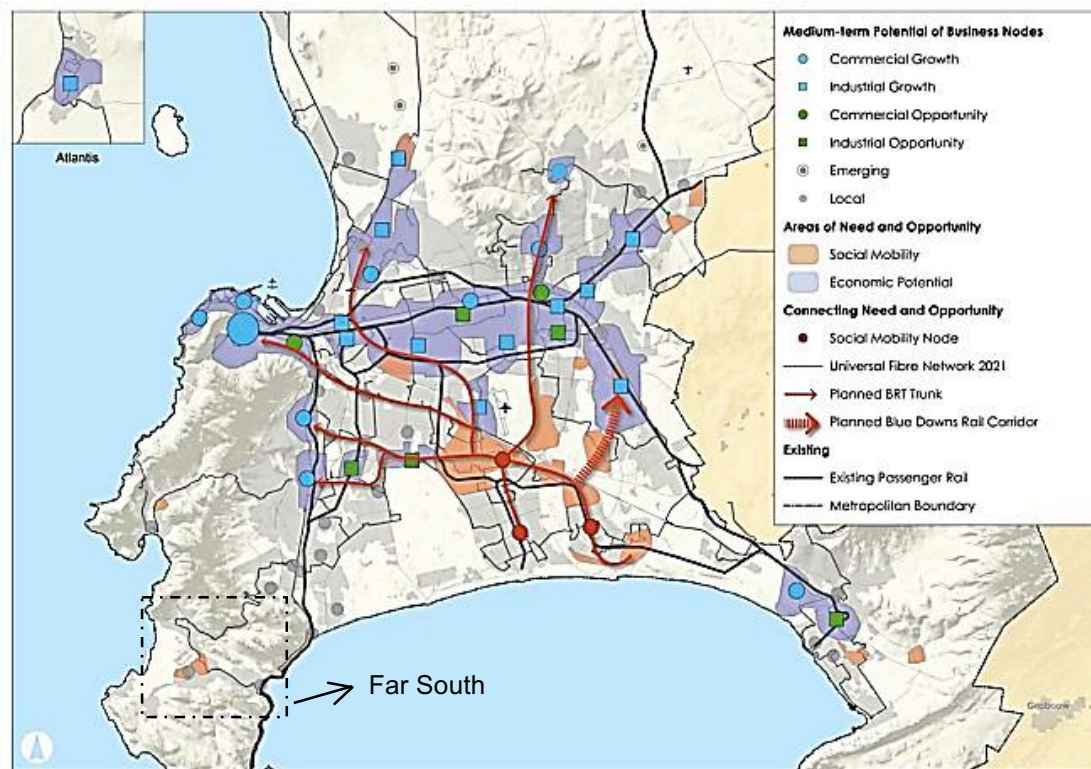


**Figure 3.22:**  Proposed public transport investments in Cape Town.
Source: TDA Cape Town 2017c. Diagram D13
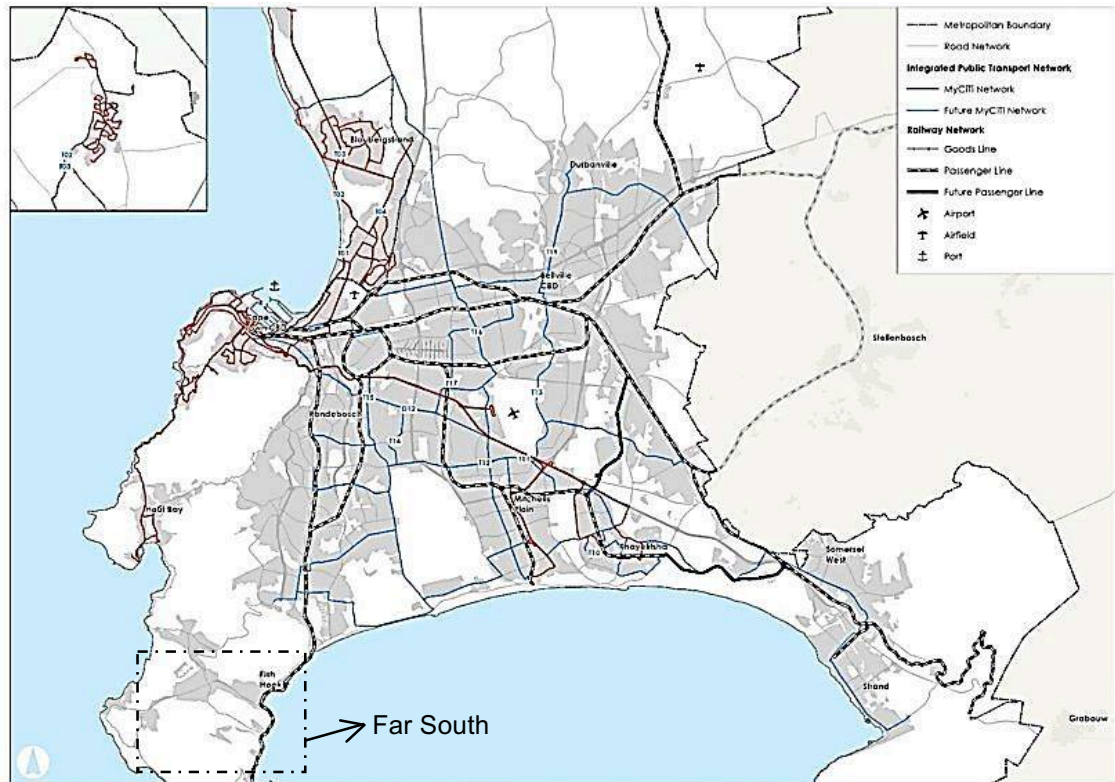
**Figure 3.23:**  Cape Town's Integrated Public Transport Network (2032).
Source: TDA Cape Town 2017c. Diagram 3.1

Secondly, in support of TOD, the MSDF proposes a series of 'development corridors' with associated 'nodes' now referred to as 'transit accessible precincts' (TAPs) (TDA Cape Town 2017c). TAPs are demarcated areas 500 metres walking distance from the City's 98 rail stations and 42 BRT stations. Densification, intensification and diversification of land uses (mixed) are encouraged along the corridors and TAPs to make public transport more viable (TDA Cape Town 2017c). Figure 3.24 is a conceptual depiction of the TOD strategy that shows where public investment will be prioritised.  It is vital to note that the study area is not included in this diagram, which suggests little future investment in public transport in this area.

Given the City's focus on inward growth, the Draft MSDF furthermore proposes four main Spatial Transformation Areas (STAs) that will form the basis for decision making around urban growth. These are Protected Natural Areas, Urban Inner Core, Incremental Growth and Consolidation and Speculative Areas (TDA Cape Town 2017c), see Figure 3.25. The Far South falls within the Incremental Growth and Consolidation STA.
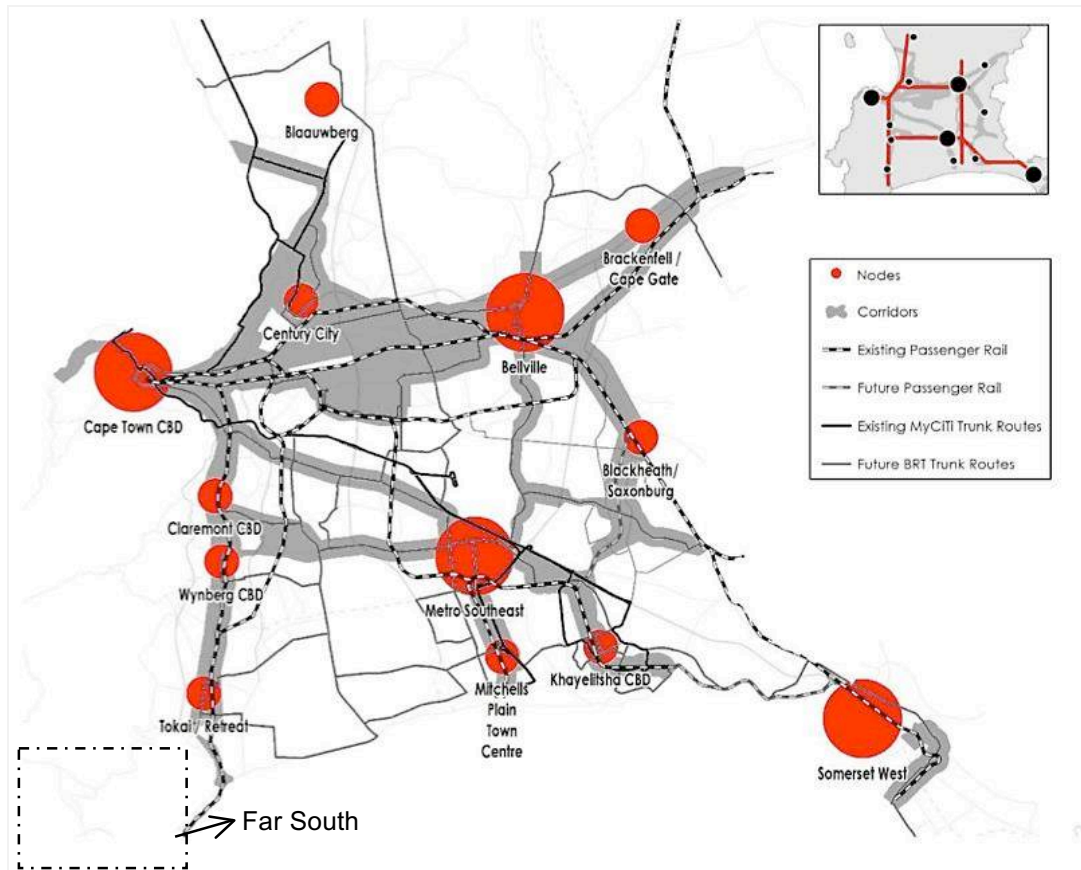
**Figure 3.24:**  Conceptual TOD approach showing the development corridors and nodes (current and emerging) in relation to the existing and planning IPTN (2032).
Source: TDA Cape Town 2017c. Diagram 3.4

As discussed in paragraph 2.8.4, TOD is a current international best practice example of policy innovation. The City's attempts to restructure its spatial form in this manner is thus aligned with the literature that encourages the integration of land use and transport for sustainable urban growth (Cervero & Kockelman 1997; Gakenheimer 2011; Newman & Kenworthy 2015; UN 2016c).  The adoption of TOD might, therefore, signal key regime changes. However, as the preceding maps and diagrams indicate, the question remains: what happens to urban enclaves, such as the Far South, that are not earmarked for public transport interventions in short to medium term and need to rely on a failing rail network as a trunk public transport route?  Should this area be seen for what it is, as referenced by Newman and Kenworthy (2015:119): "**automobile-and-truck-centric urban fabric with little flexibility to be anything else**?"
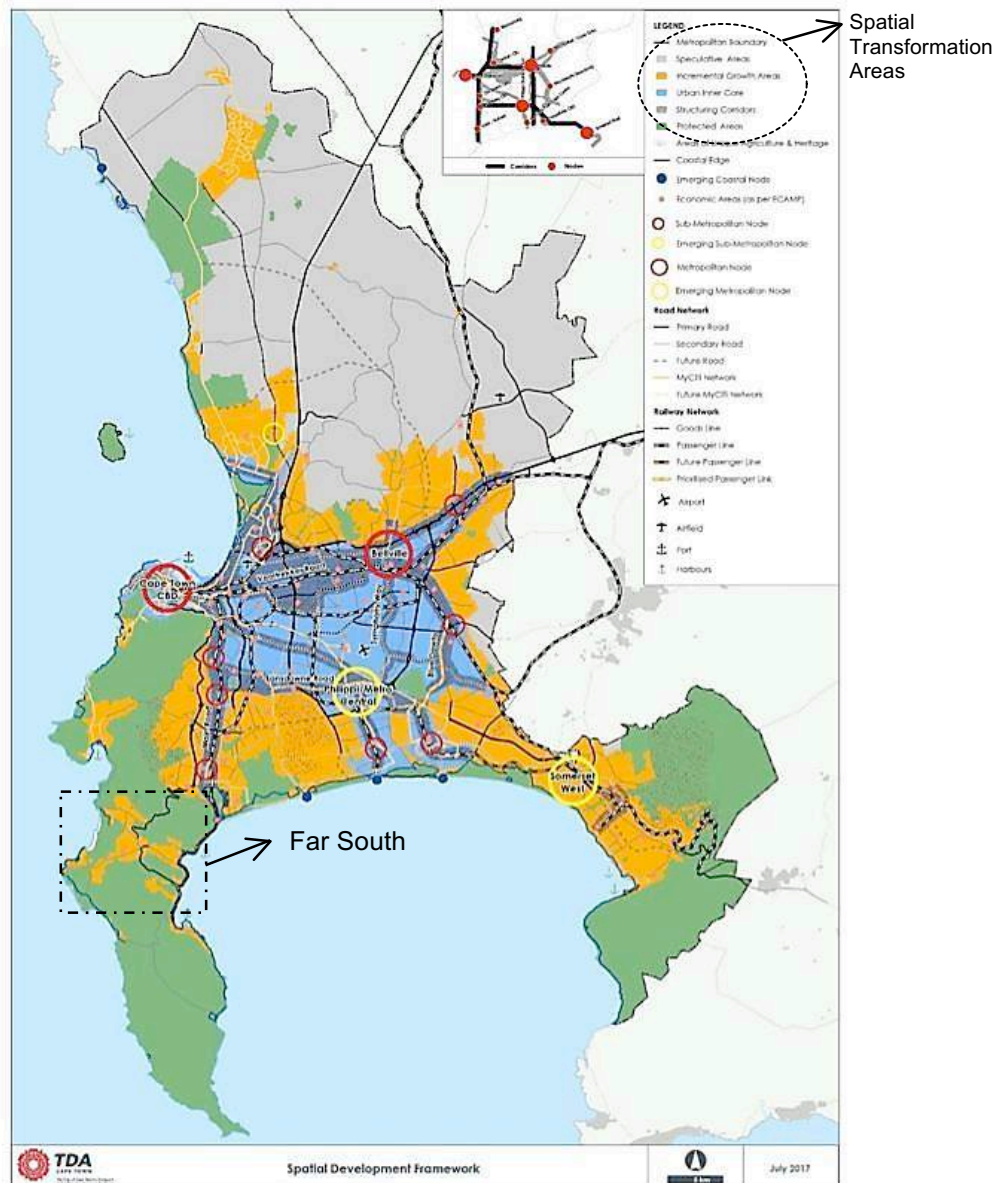
**Figure 3.25:** The draft Spatial Development Framework for Cape Town.
Source: TDA Cape Town 2017c. Map 6.1

So, rather than wait for pragmatic change (densification, rail improvements, BRT feeder routes) to filter down to this enclave, this research put a question to the local communities: What can we do while we wait?

## 3.3   Conclusion: Summary of trends and barriers

The preceding paragraphs attempted to illustrate how complex the South African and Cape Town milieus are. The country's international pledges and innovative policy frameworks (national and city level) put a firm focus on integrated planning, sustainable mobility and equity, thus aligning with much of the literature as discussed in chapter 2.  Yet, a wholly

unsustainable urban form remains decades after post-Apartheid. The country relies on a finite resource, most of it imported, to keep the population moving, which exposes the country and users to price fluctuations on the global oil market and significantly impacts on climate change strategies.  In addition, an economic recession together with the dangers of state capture, are threatening the very core of the democratic society and casting lasting shadows on ambitious policy and infrastructure investment strategies to bring about much-needed spatial transformation.   The South African public transport system is further plagued with legacy concerns, suffers from disinvestment, and faces institutional fragmentation (see Figure 3.26) with the various services operating in isolation of each other.
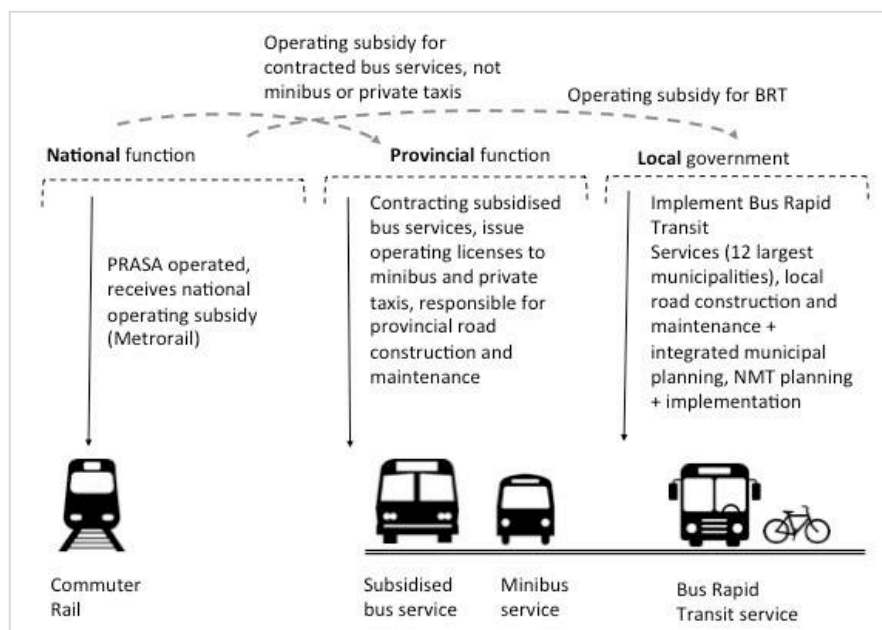


**Figure 3.26.** Institutional fragmentation of the South African transport landscape. Source:  Own diagram.

What this status quo analysis shows is that Cape Town is still a quint-essential Apartheid city. Land use challenges include rapid urbanisation, population growth, and urban sprawl. The average city population density remains too low for the minimum threshold of a scheduled bus service.  The transport modal share is skewed towards private car usage, resulting in Cape Town's unsustainable reliance on fossil fuels - a finite natural resource.  Public transport challenges in this city relate to the stagnation of the rail service (national mandate), the unmaintainable high costs of transport for the poorer communities, and the increasing disconnect between land use and transport.

On the other hand, innovative organisational and policy changes are cause for optimism in the City.

# 4. Case study - the Far South, an urban enclave in Cape Town

It is argued in previous sections that one cannot divorce complex social phenomena from its spatial context (Hodson & Marvin 2009; Coenen & Truffer 2012; Raven et al. 2012; Swilling et al. 2017). In support of this argument, this chapter presents a rich description of the spatial context of the case study. In doing so, a variety of sources of research evidence, in particular documentation, personal interviews, spatial data and archival resources are applied. From the assessment of this data, it is argued that the Far South face some systemic and some unique challenges that impede the establishment of a sustainable transport trajectory.

The South Peninsula is an urban enclave situated to the south of the Chapman's Peak and Steenberg mountains, wedged between the False Bay and Atlantic coastlines (see Photo 4.1). The area comprises the suburbs of Noordhoek, Sunnydale, Sunvalley Fish Hoek, Capri, Clovelly, Kalk Bay, St James, Glencairn, Da Gama Park, Simon's Town, Kommetjie, Imhoff's Gift, Ocean View, Masiphumelele, Misty Cliffs, and Scarborough.  From Noordhoek and Scarborough, it is 35km and 50km respectively to Cape Town's CBD. A locality map shows where these towns and suburbs are in relation to each other, see Figure 4.1.



**Photo 4.1:**  Bird's eye view of the South Peninsula depicting all the suburbs within the study area. Source: Google Earth 2017

## 4.1    Background and History

A brief look back in time reveals that although humans have inhabited the South Peninsula for thousands of years[5], permanent settlement occurred since the late 1600s (Cobern 2003). On orders from the colonial rule of the time, people settled around Simon's Town, which provided a safe anchorage in False Bay to passing ships (Cobern 2003). It would later develop into the South African Naval Base (Cobern 2003). Cattle and vegetable farms were established at Noordhoek to supply these fleets (Cobern 2003) - whereas, Fish Hoek and Kalk Bay, located on the False Bay shore, were known for providing good fish supplies Kommetjie played a similar, yet lesser role being located on the colder Atlantic Ocean.

During the Apartheid era, the authorities of the time established the township of Ocean View in 1968 under the infamous Group Areas Act.  Coloured communities were forcibly removed from their homes in the established towns (Simon's Town, Glencairn, Noordhoek) and relocated here (The Friends of Kommetjie Library 2002). Masiphumelele had its origins as an informal settlement when about 500 families settled in the area to be close to their places of employment during the 1980s. The authorities insisted on moving these families back to Khayelitsha, a township designed for the African population, about 30km from the South Peninsula. The growth of Masiphumelele could however not be contained and it was legitimised post-1994 and incorporated into the local Municipal Ward (www.masicorp.org 2014).



**Photo 4.2:** Historical view of the Noordhoek valley looking north towards the Chapmans Peak Mountains taken in 1974. Source: Cape Archives Depot, CA Photo Collection. (CA1648, CA1651, CA1652)

Today, the character of these towns and suburbs are still mostly reminiscent of their origins. For example, Noordhoek has retained a rural feel although very few actual farms remain. Simon's Town's streets evoke images of centuries of colonial rule and military presence. Kalk

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[5] The archaeological finds in a cave in this area dated back to 12000 years ago.

Bay has retained some remnants of a fishing village with the traditional harbour as a key tourist destination. Fish Hoek developed in the mid 20<sup>th</sup> century in line with the Modernist and Art Deco architecture of the time and is thus not visually as appealing as Simon's Town and Kalk Bay that developed during the Victorian era. Ocean View and Masiphumelele, on the other hand, are archetypal South African townships that reflect decades of underinvestment and neglect. These varied sub-areas, each with a distinct sense of place, contribute to the South Peninsula's appeal as a special destination within the larger Cape Town.
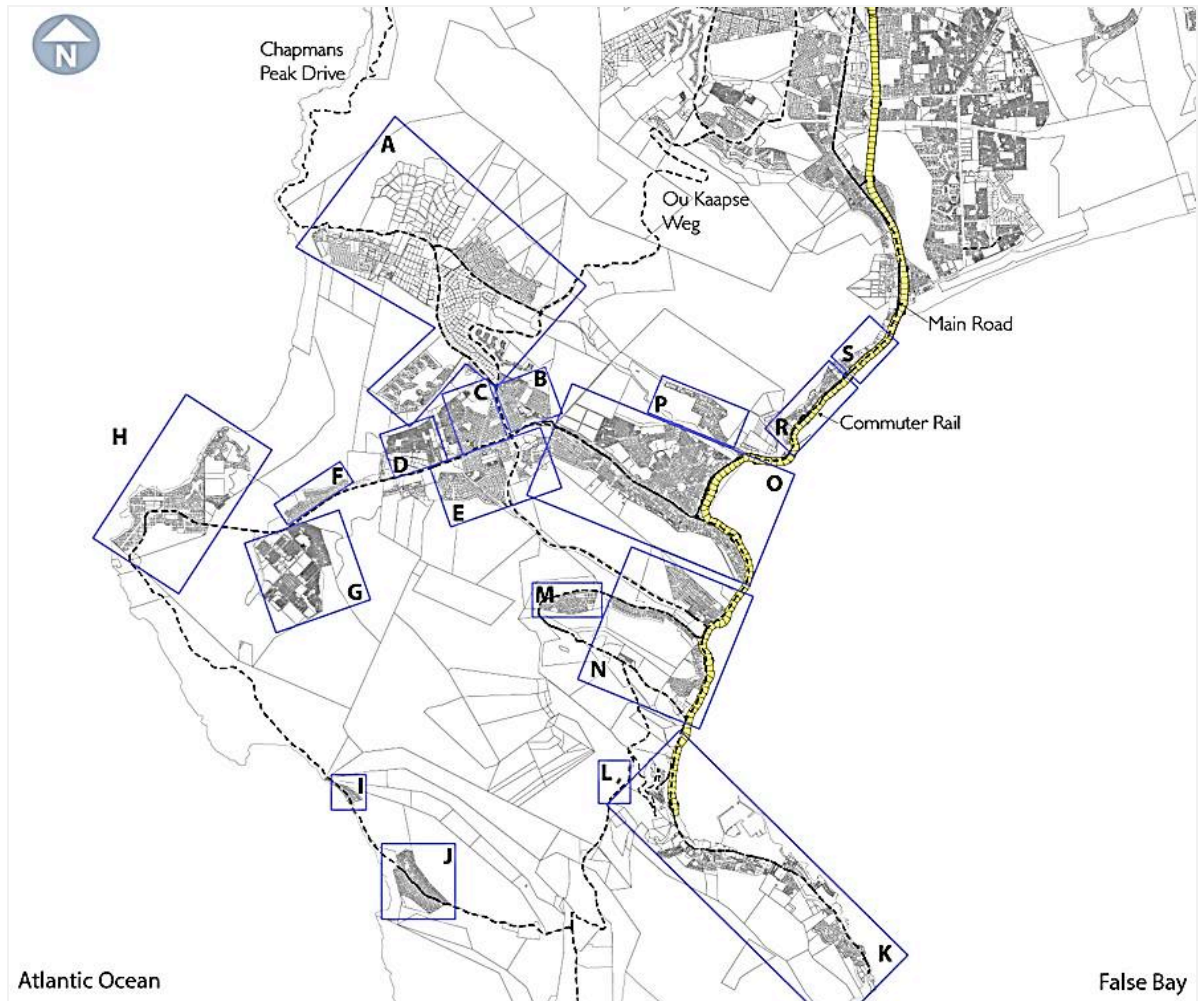


**Figure 4.1:** The Far South's towns and suburbs. To be read with Table 4.1.

Figure 4.1 and Table 4.1 illustrate where these suburbs are located within the study area and give a brief character introduction to each.

**Table 4.1:** Far South towns and suburbs. To be read in conjunction with Figure 4.1.

| Locality Map key | Town/suburb | Character images |
|---|---|---|
| A | **Noordhoek**<br>A rural village, with a strong equestrian feel, nestled at the foot of Chapmans Peak. The iconic Noordhoek beach along the Atlantic coastline is shown here.  The suburb is predominantly White (76%). Property prices are of the highest in the study area mainly due to the location and size of the land parcels (i.e. 4000m$^2$ rural zoned properties). Noordhoek is home to the biggest continuous wetland system in the area providing a home to the endangered Western Leopard Toad.<br><br>Limited farming activities remain with Avondrustvlei Farm and Cape Point vineyards being of the last remaining productive units. | <br>Source: http://www.pamgolding.co.za/ Uploads/areaguides/54d1fc6d-ff0f-4637-b73c-c0e2a754d5f2/Header /noordhoek.jpg |
| B + C | **Sunvalley (B) and Sunnydale (C)**<br>These predominantly White residential suburbs are situated in the heart of the South Peninsula having developed around the biggest commercial node in the area.  The node now offers two shopping malls and associated facilities such as a gym, petrol garages, storage facilities, and motor vehicle service. | <br>Source: Google Maps |
| D | **Masiphumelele**<br>This vibrant settlement originated from a few informal dwellings in the 1980s.  Although it has been formalised and serviced since 1992, informality remains evident with backyard dwellings a common occurrence.  Formal housing provision is on-going. The population is predominantly Black African (91%), and only 27% of the population live in formal housing (Statistics South Africa 2011).  The low-lying nature of the settlement causes frequent flooding. Social unrest and service delivery protests are common occurrences given the dire living conditions of some of the residents in this settlement. | <br>Source: Google Maps |
| E | **Capri**<br>Capri is an elevated low-density residential suburb overlooking the lower-lying areas towards Chapmans Peak mountains. | <br>Source: Google Maps |
| G | **Ocean View**<br>A township created during Apartheid for the Coloured communities who used to live in all the other parts of the area. This racial group remains the dominant group in Ocean View today (91%).  Most households are accommodated in formal housing, yet nearly half of all households (48%) earn less than R3200 per month, which leaves this community largely poor.  Social ills are rife with drug-related gang violence having intensified since the beginning of 2017 (Kotze 2017a). | <br>Source: Google Maps |
| H + F | **Kommetjie + Imhoff's Gift**<br>Both suburbs originated on the farm with the name Imhoff's Gift that was originally granted in 1743 to a Baron with the same name, on condition that fresh produce from here is | |

| | | |
|---|---|---|
| | supplied to the fleet at Simon's Town.  It was actively farmed for centuries and subdivided areas later developed into Kommetjie in 1903, Ocean View in 1968 and even more recently the suburb of Imhoff's Gift.  Both suburbs are well-established and home to middle and upper-income families. | <br>Source: http://kommetjie-accommo dation.com/wpcontent/uploads/2010/04 /P10105931.jpg |
| I + J | **Misty Cliffs + Scarborough**<br>These two rural villages are fairly isolated from the rest of the study area, being situated along the Atlantic coastline on the slopes of the southern mountains of the TMNP. | <br>Source: http://www.villagehomes.co.za/ wp-content/uploads/2015/09/15-Scarborough-Bay-600x400.jpg |
| K | **Simon's Town**<br>Simon's Town is a bustling town with a sense of place that speaks to its strong colonial and military past having been the base of the Royal Navy during the two British occupations.  It has been the base for the South African Navy since the mid-1950s. | <br>Source: http://www.capetown. travel/wpcontent/uploads/2016/07/Simo ns_town_street.jpg |
| L | **Red Hill**<br>This informal settlement formed during the 1980s on the slopes of Red Hill, between Simon's Town and Scarborough. The community is small with only 387 households at the 2011 Census count.  The informal dwellings are supplied with electricity and water. About 63% of the labour force is employed, but the community remains poor with 83% of households not earning more than R3200 per month (Statistics South Africa 2011). | <br>Source: http://i.telegraph.co.uk/ multimedia /archive/01203/2nestled_ 1203960i.jpg |
| M | **Da Gama Park**<br>A residential suburb established in the mid-1950s to accommodate navy personnel (GEESE Glencairn n.d.). | <br>Source: Google Maps |

| N | **Glencairn** This settlement is situated between Fish Hoek and Simon's Town on the False Bay coast.  Original farms in the area are traced back to the 1800s having had developed around the river and wetland system that traverses this area (GEESE Glencairn n.d.).  Today, it is a predominantly White community make up the 687 households that live here. |  Source: http://www.geeseglen cairn.org/images/stories/valley.jpg |
|---|---|---|
| O + P | **Fish Hoek + Clovelly** The towns of Fish Hoek and Clovelly are situated in a scenic valley along the False Bay coastline.  Fish Hoek that translates to 'Fish Corner' from Dutch was evidently a favourite for fishing going back many centuries.  The first land for farming was granted to a recipient in 1818 (Cobern 1984).  Today, the town remains a favourite under tourists and families that come to enjoy the beach and other amenities on offer.  It accommodates many schools and a commercial node in the form of a 'Main Street' situated parallel to the railway line. |  Source: https://www.wheretostay.co.za/ _wts4/locations/town/0/0/000353/362_ 730x490.jpg |
| R + S | **Kalk Bay + St James** The story of this traditional village is one of people and fishing.  A rich history of settlement first by the Khoikhoi tribe and many others after that, can be accredited to an ample supply of fish in the area (Walker 2002).  Kalk Bay still boasts a traditional fishing harbour that is a valuable tourist destination. |  Source: https://c2.staticflickr.com /2/1159/790583621_fc429358b7_z.jpg ?zz=1 |

## 4.2    Biophysical characteristics

The South Peninsula is located in an area practically surrounded by the footprint of the Table Mountain National Park (TMNP), thus offering significant environmental value. The TMNP, a national treasure, is protected in perpetuity under South African law. The renowned Cape Floral Region Protected Areas World Heritage Site furthermore extends into the study area (CSIR 2015; South African National Parks [SANParks] 2015). A recently conducted Strategic Environmental Assessment (SEA) for the study area note that the Far South possesses an "… unique environmental character which offers significant benefits as well as severe developmental constraints" (CSIR 2015:7).

The following biophysical features of the study area are significant:

- The area's *coastline* is unique as it forms a distinct peninsula with the famous Cape Point as the most south-western corner of the African continent. Beaches, rocky shores, human-made harbours, dune systems and Marine Protected Areas (MPA) are key elements of this coastline. The built environment of the Far South has

traditionally developed close to the shore, due to the mountainous terrain, thus leaving these area exposed it to the impacts of climate change (CSIR 2015).

- The Cape Peninsula's *topography* forms part of the Table Mountain and Cape Point mountain chains and is regarded for its topographical diversity (SANParks 2015). The Noordhoek wetlands fulfills an important discharge function for nearby treatment plants (SANParks 2015).

- The area is acclaimed to be one of the richest *floral kingdoms* in the world, with 2,285 indigenous plant species identified within the Cape Peninsula (SANParks 2015).

- There are 113 endemic invertebrate *faunal species* to the larger Cape Peninsula. The endangered Western Leopard Toad (WLT) is indigenous to the Noordhoek area (SANParks 2015).
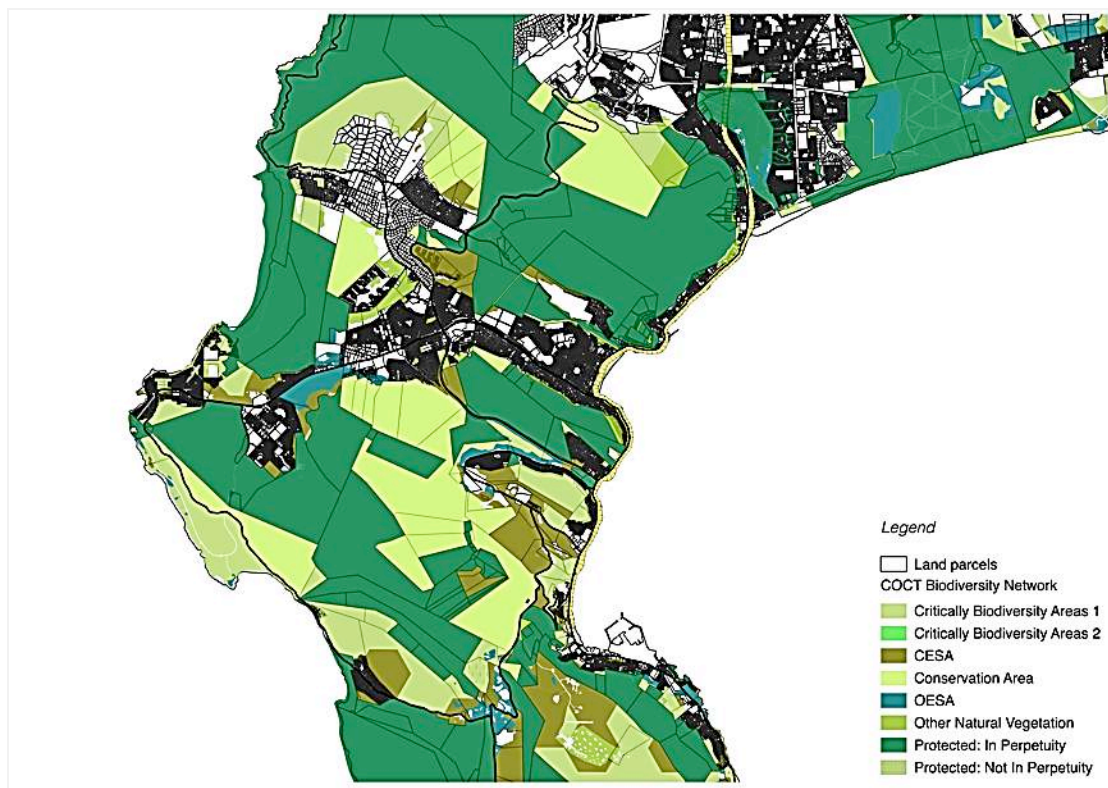


**Figure 4.2:**  The City of Cape Town's Biodiversity Network in the study area.
Source: Image generated by the researcher (See Appendix B for the spatial database).

This rich natural wealth holds cultural, heritage and economic benefits for residents and visitors to this area. The park is largely within urban boundaries and access is mostly unrestricted and thus offers a variety of tourism and recreational opportunities (SANParks 2015).  Although, access to the park remains unequal as poorer communities live further away from access points (SANParks 2015).

These scenic qualities and the ease of accessing these protected natural areas and coastlines are valued qualities of life. Sentiments to this effect are evident from Interviewee responses contained in Textbox 4.1. To ground this qualitative data spatially, Figure 4.3 illustrates the participant responses within the spatial context of their places of residence[6]. This illustration bolsters the validity of their remarks in showing how accessible these natural features are to them.

**Textbox 4.1:** What do you value most from living in the Far South?

*Interviewee 9:* "The opportunity to be so close to nature, mountains, the sea. To be able to walk out the door, take the dog for a walk in a beautiful spot, you know."

*Interviewee 18:* "What do I like about it? Well, it's beautiful."

*Interviewee 11:* "You can ride to the beach and that means there are not many places in the world where you can come home and get on your horse and then ride to the beach it's really stunning."

*Interviewee 23:* "Living in Noordhoek represents a slightly more rural (or semi-urban) lifestyle, and high up on list would be lack of street lighting, proximity to the mountains, nice running routes, friendly people overall, lovely eateries at the farm village, and of course one of the best beaches in cape town (sic)."
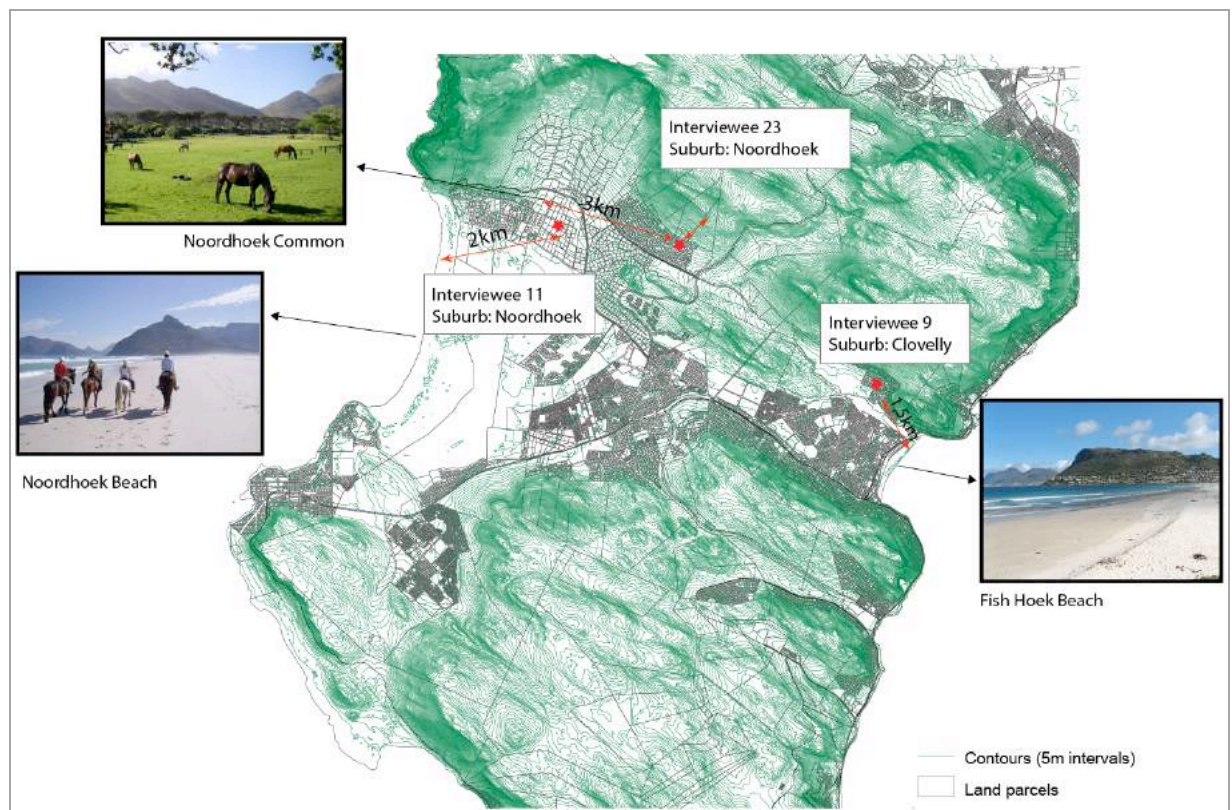


**Figure 4.3:** Natural amenities in the Far South as earmarked by research participants.
Source: Image generated by the researcher (See Appendix B for the spatial database).

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[6] Indicative locations are shown. Exact addresses of participants were not elicited.

Nevertheless, when asking participants what they value from living in the area, some reminisce about days gone by and others disclose reservations about the changing nature of the study area and in doing so question their motivations for living here. It is especially clear in the last quote, see Textbox 4.2.

These excerpts are beginning to uncover the

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**Textbox 4.2:** What do you value most from living in the Far South?

*Interviewee 11:* "Well its rural lifestyle which is sort of...Ja you know I mean it's not what it was, it was really farming and rural and it is now unfortunately…there is one part of Noordhoek left which is off Silvermine Road which keeps the sort of soul of Noordhoek.  But once that is developed it will just be rich people with big plots really that's all."

*Interviewee 23:* "There's no simple answer. In the old days, the immediate answer would be that when returning "from the other side", the moment one hit ou kaapse weg, (sic) one would feel as if one is in nature and switch off. These days, it's just a simple nightmare and risky travel, and stress levels and mental exhaustion from crossing ou kaapse (sic) on the back of traffic all the way from town) rise massively whenever one travels back or out of the Far South."

*Interviewee 4:* "But everything that we do, then also needs to be tempered by treading lightly, which is one of my other goals, which is at – we cannot just do this for the sake of doing it. We have got to consider the environmental factors in this valley, because we are in a very environmentally sensitive zone. Not only from a tourist point of view, but also because it is an environmentally sensitive space."

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conflict between conservation and urban growth palpable in the area. It is moreover conspicuous in two development applications that are currently debated publicly, one being a private school in the heart of Noordhoek (Generation Schools) and the other a proposed road extension (Houmoed Avenue), see paragraph 4.5. In both cases, resident groups are lobbying against approval of these land use applications citing environmental concerns (wetlands and WLT habitat) as primary concerns (Kotze 2017b; McCain 2017). Public opposition of this kind raises questions around what residents regard as priorities, as both applications are in fact trying to address two key challenges in the area, i.e. the lack of schools in the area (Saffer 2016a) and growing congestion (Saffer 2016b).

## 4.3    Socio-Economic

Next, this section offers a glimpse into the people and the local economy of the Far South.  It is done through examining the socio-spatial implications of the demographics, income levels, and employment opportunities in the study area.

### Demographics and Income

An analysis of the demographics of the study area shows a total population of 76513 in the study area, as per 2011 Census data, a mere 2% of the total Cape Town population at the time (Statistics South Africa 2011). The table shows that the Black African population is the dominant group (38,3%), followed by the White group (34,2%), and the Coloured community (23,5%). This picture would change quite significantly if recent informal counts of especially Masiphumelele were to go by, as many put the official population for this suburb between

38000 and 40000 (www.masicorp.org 2014; ARG design 2015).  It would put the total Far South population at approximately 100000 (TDA Cape Town 2017d).  The Draft FSTP determined that the population is housed in 31050 dwelling units with a 30% concentration in Masiphumelele and 10% in Ocean View (2017d).

From Table 4.2 it can be deduced that **eleven of the fourteen suburbs** display a homogenous racial profile (dominant group >65%).  Of these, eight suburbs are predominantly White, two predominantly Black African and one predominantly Coloured.  The suburbs of Da Gama Park, Simons Town and the TMNP area show a more even racial mix.  Apart from these three sub-areas, racial socio-spatial fragmentation and separation are thus still evident, decades after the abolishment of Apartheid.

**Table 4.2:** Population per racial group per suburb (Statistics South Africa 2011). Yellow highlights the dominance of a racial group, whereas grey highlights show a more balanced racial distribution.

| Map Key | | Black African | Coloured | Asian | White | Other | Total |
|---|---|---|---|---|---|---|---|
| A | Noordhoek | 948 | 49 | 14 | 3368 (76%) | 44 | 4423 |
| B + C | Sunvalley + Sunnydale | 406 | 297 | 53 | 3946 (81%) | 167 | 4869 |
| D | Masiphumelele | 20015 (91%) | 318 | 29 | 32 | 1511 | 21905 |
| E | Capri | 285 | 176 | 57 | 2489 (81%) | 55 | 3062 |
| F + H | Kommetjie + Imhoff's Gift | 107 | 201 | 17 | 2966 (89%) | 50 | 3341 |
| G | Ocean View | 923 | 12399 (91%) | 86 | 36 | 126 | 13570 |
| I + J | Scarborough + Misty Cliffs | 174 | 105 | 8 | 748 (70%) | 40 | 1075 |
| K | Simon's Town | 3602 (44%) | 2828 | 88 | 1643 | 83 | 8244 |
| L | Red Hill | 815 (80%) | 167 | 3 | 6 | 23 | 1014 |
| N | Glencairn | 121 | 102 | 24 | 1279 (81%) | 49 | 1575 |
| M | Da Gama Park | 658 (40%) | 494 | 222 | 943 | 29 | 2346 |
| O + P | Clovelly + Fish Hoek | 1017 | 490 | 119 | 7808 (81%) | 168 | 9612 |
| R + S | Kalk Bay + St James | 93 | 260 | 1 | 773 (65%) | 64 | 1191 |
| | Cape Peninsula National Park Population | 109 (38%) | 78 | 2 | 97 | 0 | 286 |
| | | 38,3% | 23,5% | 0,9% | 34,2% | 3,1% | **76513** |

## Local economy

The Southern District Plan (DP) (2012), as a local spatial vision, is relevant to the study area but has yet to be reviewed in light of the City's TOD strategic focus. Nonetheless, the South Peninsula falls within a sub-district in the DP, termed the 'Far South'. The vision given to this local area is as follows:

> An area renowned for its natural and cultural beauty, with a well-defined and protected natural environment, and recognised for its collection of areas of distinct sense of place and urban character, vibrant tourism and service orientated economy, and with world class natural amenity areas accessible to all city inhabitants.
>
> COCT 2012b:134

The tourism economy is a local driver but also an important part of the City's formal economy, as reflected in the quote from the DP.  Distinct attractions include the TMNP, the many beaches, Simon's Town and Kalk Bay harbour.  The value of these attractions are evident with Cape Point (in the TMNP) earmarked as the third most visited attraction in Cape Town during 2017 and Simon's Town being one of the top five visited attractions in the Western Cape (Cape Town Tourism 2016).  It is thus vital to protect the study area's 'sense of place' for local and city-wide economic growth (CSIR 2015). The opportunities to grow the local tourism economy seem endless when talking to an enthusiastic local politician, who identifies some derelict areas in the study area desperate for intervention (Interviewee 11 2017).

One such opportunity is the historic railway line along the False Bay coast and the associated train stations, which are dependent on PRASA's Rail Revitalisation strategy, as noted in this remark:

> *Interviewee 11:*  "Well we must look that that's going to be driven hard [rail revitalisation] and we must say no more development until you've sorted out that (sic) we need to keep the economy going and the economy is recreational tourism."

Although, the high levels of congestion impede access to these attractions (CSIR 2015; Interviewee 11 2017), as noted by a participant:

> *Interviewee 11:*  "I've been tracking the stats at Cape Point for six years and they hit the million mark last year [2016] for the first time. A million people through the gate and that's a tip of the iceberg because if we grow tourism we have to take out cars and move people in."

The City projects that the local economy consists of 15248 jobs, determined from the current Gross Leasable Area (GLA) for the existing non-residential land uses (TDA Cape Town 2017d). The jobs are distributed amongst the following sectors, see Table 4.3:

**Table 4.3:**  Employment in the study area.   Souce: TDA Cape Town 2017d Table 3.1. Adapted

|  | Business Retail | Business Office | Industrial | Community Facility | Total |
|---|---|---|---|---|---|
| Non-Residential (GLA $m^2$) | 139 385 | 30141 | 118660 | 262 741 | 550 927 |
| Employment (Jobs) | 4810 | 1596 | 1504 | 7339 | 15248 |

The dominance of the 'community facility' sector is arguably due to large public employment generators such as the South African Navy in Simon's Town and the City's municipal office in Fish Hoek.   As a result, the Draft FSTP reports that 25% of all jobs in the study area is located in Simon's Town and 20% in Fish Hoek (TDA Cape Town 2017d).

## 4.4    Socio-Spatial status quo

As argued in the literature review, understanding land use patterns is key to understand the movement of people, as the former offers the 'physical rationale' for transport (Hickman & Banister 2014:Kindle Locations 3438-3441).  This section explores the nature of the urban structure in this area, in terms of land use distribution, residential densities and income distribution. This analysis was conducted through using current spatial data supplied by the City supported by the quantitative traffic counts undertaken as part of the FSTP process.

Historically, urban expansion occurred around the railway line, which meanders alongside the False Bay coastline. The subsequent construction of Main Road, parallel to the railway, increased the accessibility to the villages of Kalk Bay, St James, Fish Hoek and Simon's Town.  The Noordhoek Valley (now including Sunvalley, Sunnydale, Capri, Ocean View, Masiphumelele and Kommetjie) was less accessible, and the conversion from farmland to urban occurred at a slower rate.  It was only with the construction of two roads being, CPD in 1923 and OKW in the 1960s that this part of the study area was exposed to urban development pressure.  Photo 4.2 shows that Sunnydale, Ocean View, Capri, Masiphumelele, Imhoff's Gift and Ocean View all developed post-1974.

**Land use distribution**

In the absence of a detailed land use analysis of the area, zonings are used to analyse built form. In doing so, it is recognised that zonings provide a broad category for uses, i.e. General Business, whereas the land use might be any use permitted in that zone, i.e. a restaurant versus offices.  Nonetheless, land uses are thought of as having the potential to be trip generators (i.e. residential), trip attractors (non-residential uses such as businesses, industries and community facilities) or both (i.e. mixed uses).

There are 22331 land parcels in the study area, of which 18719 **(83%) are zoned for residential** purposes. There are a mere 271 business-zoned (1%) and 135 industrial-zoned properties (0,6%). The spatial distribution of the residential (generators) and non-residential (attractors) within the study area is shown in a series of images (see Figure 4.4).  It is construed from the spatial analysis that the Far South is a predominantly residential enclave with two key economic nodes. These nodes are the commercial activity in Sunvalley (two shopping malls) and the business activity along Fish Hoek Main Road.  A lower order business node is located at Imhoff's Gift and industrial activity is contained within two areas along Kommetjie Road (shown on Figure 4.4). Fish Hoek is home to a cluster of community facilities that comprises many schools, a public library and municipal offices.

**Residential land use patterns**

There are two measures often used in urban planning to determine residential density; it is either an expression of the number of persons or the number of physical dwellings per spatial

unit of analysis (i.e. hectare or a census suburb). Turok (2011) argues that the latter, dwelling unit density (du/ha), is deceiving in that a dwelling unit can be a four bedroom mansion or a studio apartment.  It poses a problem when a city like Cape Town proposes an average gross base density target of 25du/ha across the City over the long term (20-30 years) (COCT 2012a).  Turok (2011) therefore advises the use of actual population density of an area.
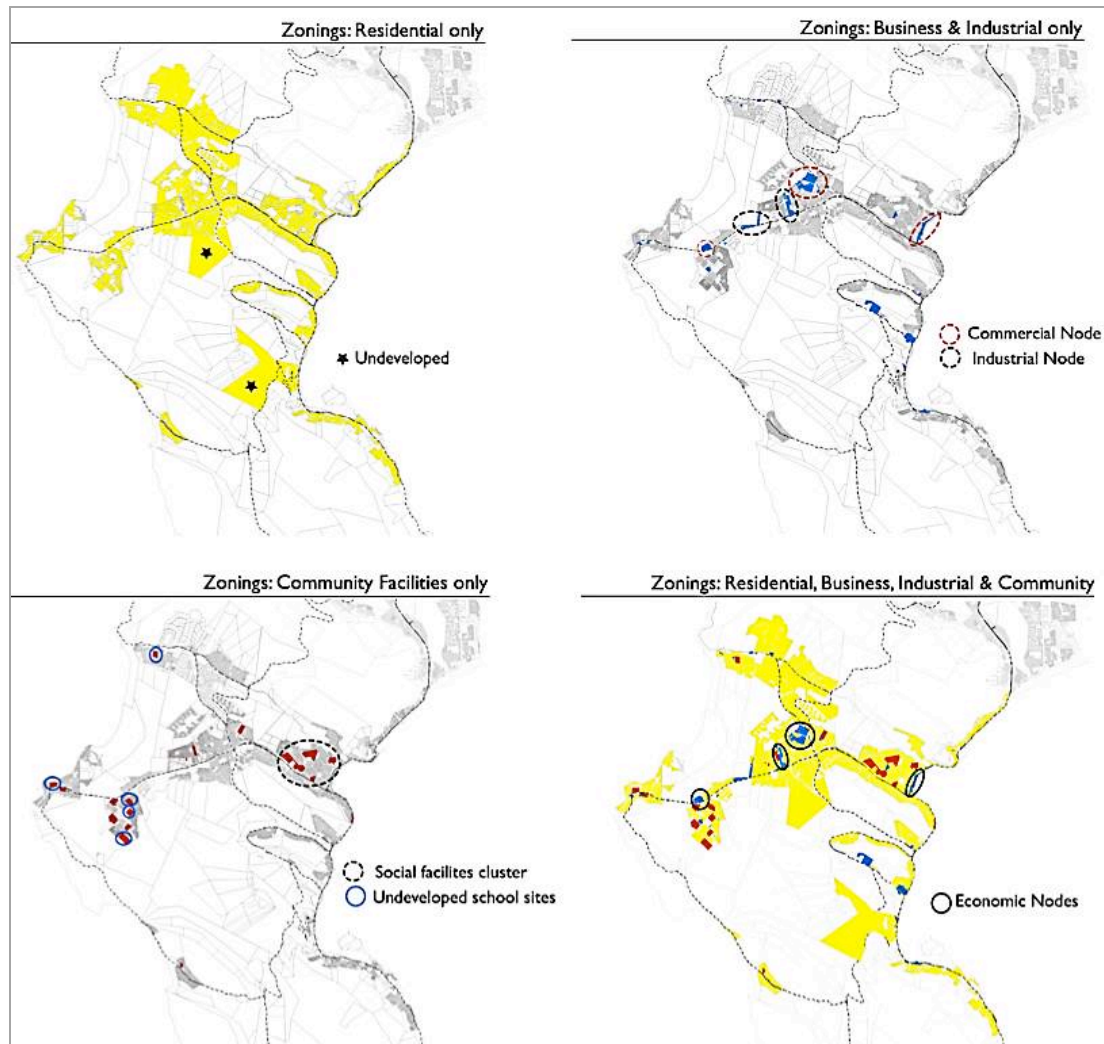


**Figure 4.4:**  Land use distribution of residential and non-residential properties.
Source: Image generated by the researcher (See Appendix B for the spatial database).

Table 4.4 shows the gross population densities for the suburbs (Census suburbs) as a measure of persons per hectare. The population densities were furthermore calculated excluding the agricultural and natural areas from the Census sub-places, to produce an accepted variant and density as noted in the City's Densification Policy (COCT 2012a). Regardless of which spatial unit was used, the densities remain extremely low for the majority of the suburbs. Those with low densities correspond with the wealthier predominantly White suburbs as discussed earlier. It is only Masiphumelele, Ocean View and Red Hill, all poorer communities with predominant Black and Coloured residents that display higher densities, see Figure 4.5.

**Table 4.4:** Population density per suburb. Source: Statistics South Africa 2011. Adapted

| Map Key | | Population (Census 2011) | Spatial unit = Census Sub-Place | | Spatial unit = Census Sub-Place excluding agricultural and natural areas | |
|---|---|---|---|---|---|---|
| | | | Area (ha) | Population density (People/ha) | Area (ha) | Population density (People/ha) |
| A | Noordhoek | 4423 | 1627,1 | 3 | 805 | 5 |
| B + C | Sunvalley + Sunnydale | 4869 | 285,5 | 17 | 285,5 | 17 |
| D | Masiphumelele | 21905 | 41,3 | 530 | 41,3 | 530 |
| E | Capri | 3062 | 454,4 | 7 | 325,6 | 9 |
| F + H | Kommetjie + Imhoff's Gift | 3341 | 570,3 | 6 | 463,8 | 7 |
| G | Ocean View | 13570 | 175,5 | 77 | 175,5 | 77 |
| I + J | Scarborough + Misty Cliffs | 1075 | 385 | 3 | 130,3 | 8 |
| K | Simon's Town | 8244 | 1707 | 5 | 444,5 | 19 |
| L | Red Hill | 1014 | 38 | 27 | 38 | 27 |
| N | Glencairn | 1575 | 155,5 | 10 | 155,5 | 10 |
| M | Da Gama Park | 2346 | 163,9 | 14 | 33,2 | 71 |
| O + P | Clovelly + Fish Hoek | 9612 | 1224,8 | 8 | 926,7 | 10 |
| R + S | Kalk Bay + St James | 1191 | 71,7 | 17 | 71,7 | 17 |
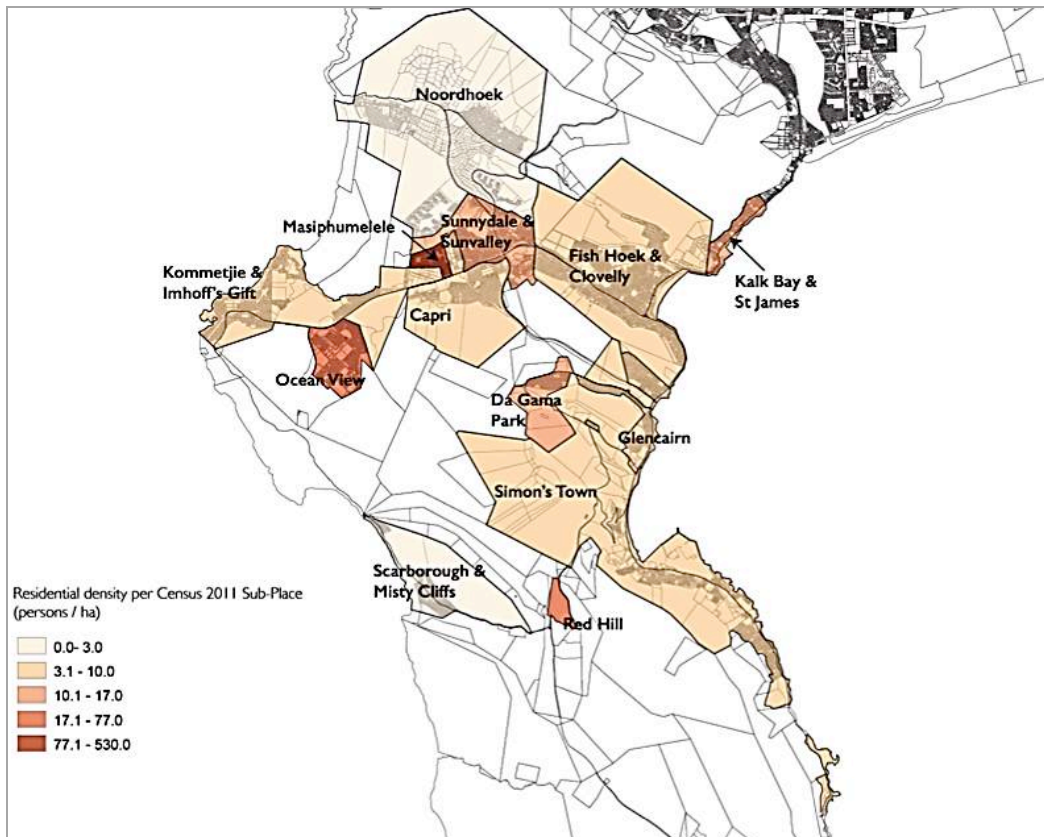


**Figure 4.5:** Population density per Census sub-place (persons / hectare).
Source: Image generated by the researcher (See Appendix B for the spatial database)

**Residential typologies**

In dissecting the predominantly residential nature of the study area, it is observed that 81,7% of residential properties are zoned for Single Residential (freestanding dwellings) purposes. A smaller proportion (15,8%) is zoned for higher order General Residential (that would allow apartments), situated mainly in Fish Hoek nearby the railway station.

As discussed in paragraph 2.8.4, the proliferation of gated communities is having a profound impact on urban sustainability (Landman 2000, 2007; Landman & Plessis 2005; Pieterse 2008; Beall & Fox 2009). This specific urban typology entrenches automobility in that is encourages sprawl, is car-centred, adds to pollution and congestion through its closed road designs (limited access) and undermines the prospects of sustainable transport (Landman 2000, 2007). Landman (2000) identifies two sub-types abundant in South Africa, being security estates and enclosed neighbourhoods. The foremost is designed as such, whereas the latter is a retrofit of an existing residential area into a gated suburb, i.e. walled and roads closed. There are twenty-one purpose-built gated suburbs (security estates) situated in the expanding Noordhoek valley, the 'newer' urban area, see Figure 4.6 and Table 4.5. Together, it constitutes 9,1% of the number of residential properties in the study area and 17% (354,8 hectares) of all land zoned residential.  Thus currently for every ten residential properties in the area, one is in a gated community. This ratio might not seem excessive; however, the popularity of this typology is clear when considering the number of new developments that are also gated communities. An additional 144,3 hectares of greenfields will be converted to gated communities shortly, see Figure 4.6. This map is based on Draft FSTP projections (TDA Cape Town 2017d) and was verified by the City for this study (Hennessy 2017).
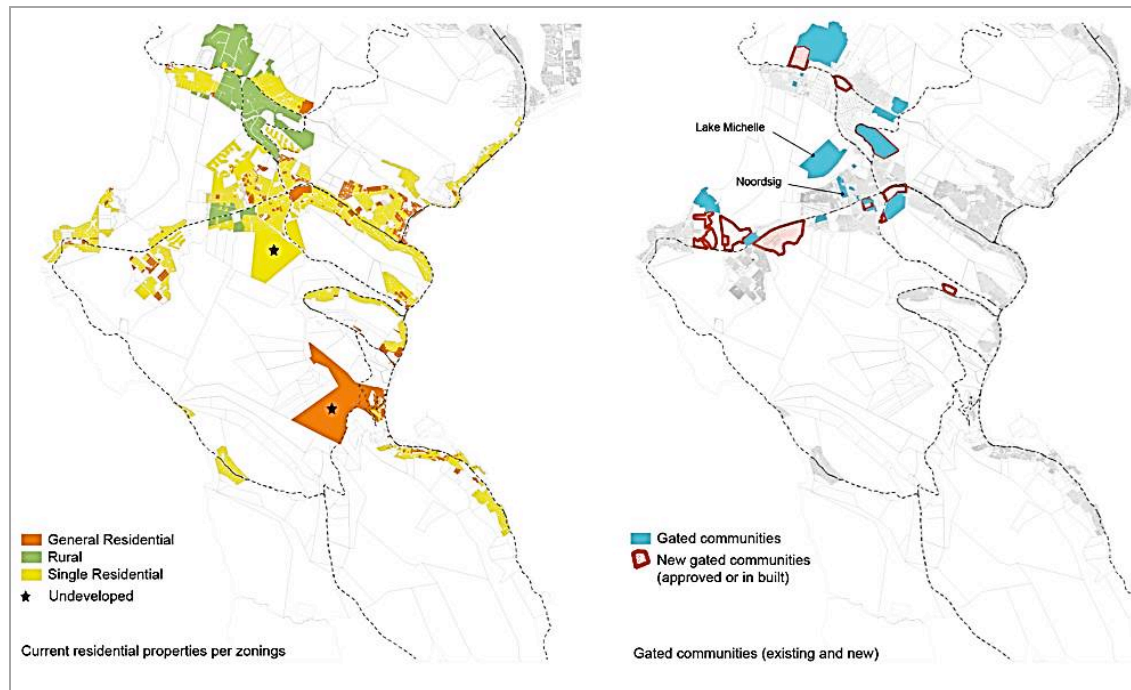
**Figure 4.6**: Residential typologies in the Far South.  The image on the left shows all residential properties (Single Residential, General Residential & Rural use). The image on the right shows the existing and proposed gated communities. Source: Image generated by the researcher (See Appendix B for the spatial database)

**Table 4.5**: Residential densities of gated communities (dwelling units/hectare).

| Name | Area (ha) | Number of units | Average plot size (m²) | Density (du/ha) | Suburb |
|---|---|---|---|---|---|
| Salamander Heights | 0,97 | 27 | 360 | 27,8 | Capri |
| Aspen Close | 1,59 | 41 | 388 | 25,8 | Capri |
| Wingate Heights | 0,56 | 7 | 794 | 12,6 | Capri |
| Bodenzee | 3,00 | 36 | 832 | 12,0 | Capri |
| Cape Capri | 5,04 | 55 | 916 | 10,9 | Capri |
| Stonehaven | 29,49 | 141 | 2092 | 4,8 | Fish Hoek |
| Bluewater Estate | 8,79 | 99 | 888 | 11,3 | Imhoff's Gift |
| Klein Slangkop | 29,55 | 195 | 1516 | 6,6 | Kommetjie |
| De Goede Hoop | 118,45 | 49 | 24174 | 0,4 | Noordhoek |
| Rupert Way | 1,63 | 13 | 1254 | 8,0 | Noordhoek |
| Lindum Close | 0,84 | 7 | 1196 | 8,4 | Noordhoek |
| Chapmans Bay | 47,03 | 158 | 2976 | 3,4 | Noordhoek |
| Lake Michelle | 76,35 | 371 | 2058 | 4,9 | Noordhoek |
| Zilmermyn Village (retirement village) | 5,07 | 43 | 1179 | 8,5 | Noordhoek |
| Silvermine Village (retirement village) | 14,60 | 214 | 682 | 14,7 | Noordhoek |
| Kelvin Close | 0,63 | 26 | 242 | 41,3 | Sunnydale |
| Milkwood Ridge | 1,21 | 28 | 433 | 23,1 | Sunnydale |
| Santorini | 4,01 | 90 | 446 | 22,4 | Sunnydale |
| The Milkwoods | 1,62 | 28 | 580 | 17,2 | Sunnydale |
| Noordsig | 3,47 | 93 | 373 | 26,8 | Sunnydale |
| Noordhoek Chalets | 0,93 | 28 | 331 | 30,2 | Sunnydale |
| **Total existing gated communities** | **354,84 ha** | **1749 units** | | | |
| **Total new gated developments (approved or in construction)** | **144,3 ha** | | | | |

Gated communities in the study area cater for the first time middle-class buyer as well as for the most well-off members of society.  Table 4.6 illustrates this point comparing the Noordsig development and the Lake Michelle eco-estate (Property24 2017b).

**Table 4.6:** The range of gated communities in the Far South

| Name | Current market value (Property 24 2017) | Average plot size (m$^2$) | |
|---|---|---|---|
| Lake Michelle (Noordhoek) | R6, 2 million | 2058 |  Source: http://teamworks-sa.com/wp-content/ uploads/ 2016/05/DJI_0712.jpg |
| Noordsig (Sunnydale) | R1, 5 million | 373 |  Source: Google Earth |

There is an additional trend emerging with residents of some suburbs attempting to 'enclose' these residential areas to limit access, thereby falling in the 'enclosed neighbourhood' sub-type identified by Landman (2000). It is evident in attempts to retrospectively convert a neighbourhood into a gated community in line with the City's Gated Development Policy. As discussed in paragraph 2.8.4, this is a form of infrastructure consumerism that would in effect privatise the public roads and open spaces within. The residents of the suburb of Capri (a suburb with approximately 850 houses) is currently investigating the viability of such a retrospective conversion (Capri Community Group 2017). Other suburbs like Sunnydale and parts of Imhoff's Gift, have taken it upon themselves to control access illegally, either by erecting fences across unconstructed road reserves (see Photo 4.3) or employing security guards to interrogate visitors entering the area (see Figure 4.7).  As discussed in paragraph 3.1.7, fear of crime and safety concerns seem to be the main driver behind these efforts. This level of intervention is made possible in a sense by the closed road designs and hierarchal road classification that limits access in itself, such as off Kommetjie Road (see Figure 4.7).

**Photo 4.3:** Attempts at controlling access to suburbs in the Far South by erecting fences across unconstructed public road reserves or cul-de-sacs.   Source: Own photographs.
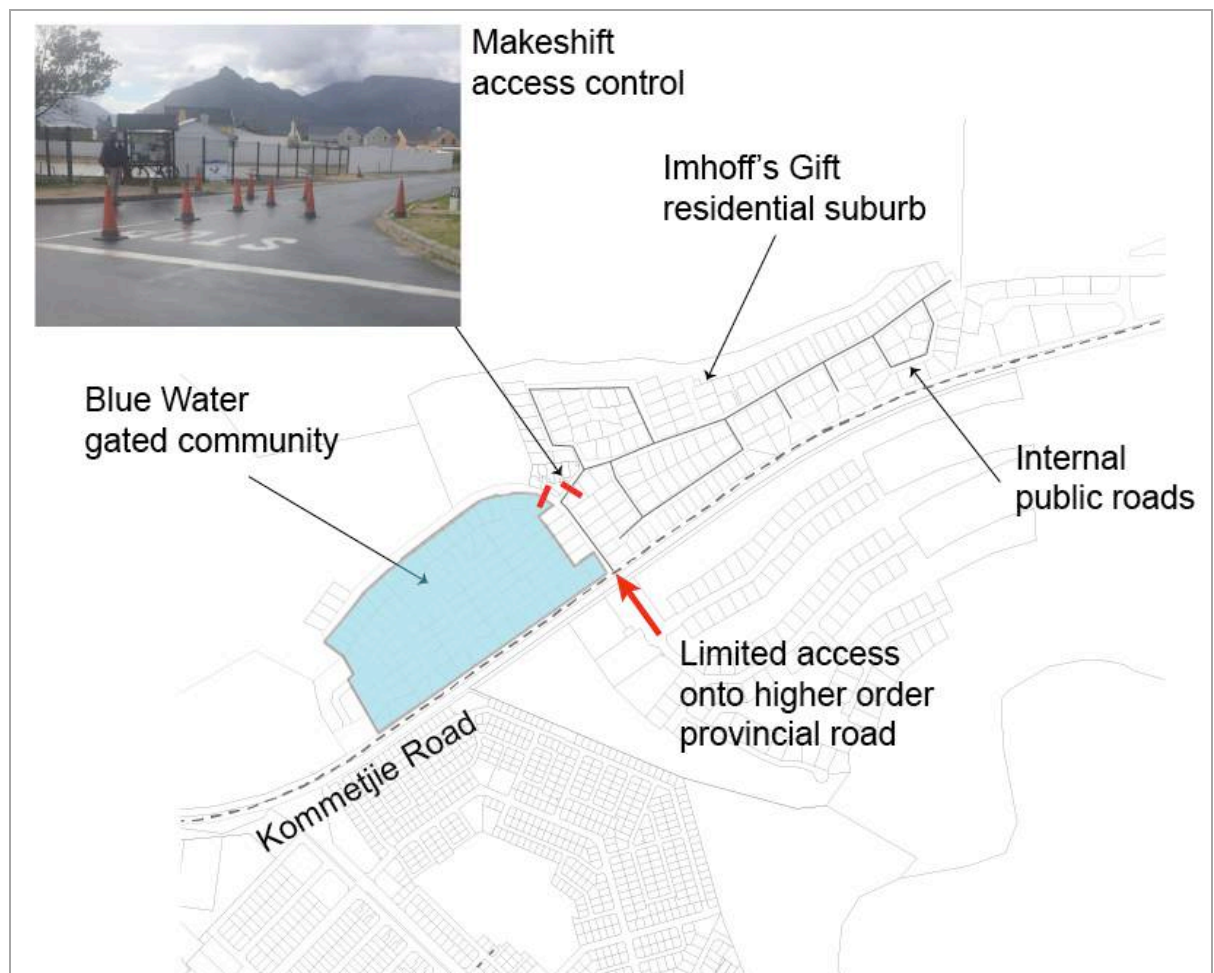


**Figure 4.7:**  Attempts at enclosing suburbs retrospectively (Imhoff's Gift).
Source: Image generated by the researcher (See Appendix B for the spatial database)

**Non-residential land use patterns**

The economic activity in the study area is concentrated to a few main nodes. The City questions the accessibility of these nodes in relation to the rest of the city as noted in the District Plan:

> However, those in the isolated valley enclaves of Hout Bay and the 'far south' (Fish Hoek through to Kommetjie) are relatively inaccessible. This, combined with limited growth opportunities, constrains development of further economic opportunity in these areas.

<div align="right">COCT 2012b:26</div>

As shown in earlier sections, the draft citywide MSDF does not regard economic nodes in this area as having metropolitan significance. Nonetheless, the Fish Hoek node developed alongside the old railway line and resembles a high street commercial strip along the Main Road that encourages pedestrian movement. Its viability as an economic node has declined since the construction of the Sunvalley and later Long Beach shopping centres in Sunnydale. The public transport interchange at Fish Hoek train station, complemented with a minibus-taxi rank, continues to support this node.

On the other hand, the commercial node in Sunnydale is entirely car-centred. It consists of two shopping centres, a gym, two petrol stations (for vehicles), two drive-through fast food restaurants (built for car traffic), a mini-bus taxi rank (also road based) and some car-related service industry uses (auto-electricians). Higher order roads surround this node, and access (pedestrian and vehicle) is limited to a few designated entrances. This design encourages even the closest of residents to visit the area by car (see Figure 4.8). Having been a resident of the suburb bordering this node (Sunnydale), myself, as researcher, can attest to the vast parking lots only used to capacity over a couple of days per year. A redevelopment of the Sunvalley mall recently took place when the property traded hands from one major supermarket chain (Pick and Pay) to another (Checkers). Many have perceived this redevelopment as a squandered opportunity to provide the community with what is actually required, i.e. office space to be able to work locally (Interviewee 11 2017; Interviewee 20 2017).

**Figure 4.8:** Sunnydale's car-centred commercial node.
Source: Image generated by the researcher (See Appendix B for the spatial database)


**Community uses**

Educational facilities are important land uses to consider when analysing travel patterns, as they are important trip attractors that functions on static timetables. The availability of schooling in an area will furthermore impact on peak hour travelling, internally and back and forth from the area. A travel perception survey, undertaken in the Far South as part of the FSTP, revealed that school trips are already an accompanying trip (on the way to work) for 30% of respondents and 10% travel by car only for school trips (TDA Cape Town 2017d).

The Western Cape Education Department conducted a needs assessment of public schools in this area during 2015 and noted that of the fourteen primary schools, only one is operating 'under capacity' whereas the rest are 'at capacity' or 'beyond capacity' (see Figure 4.9) (Cupido 2015).   Only four high schools are servicing the entire area, all oversubscribed (Cupido 2015; Saffer 2016a). The priority for the responsible provincial department is to identify land for another primary school in Masiphumelele, evident in this extract from the needs assessment:

> We foresee that we are going to have similar problems in January 2016 as we had in January 2015: We are not jesting when we say we are going to stock up our fridge as we expect we might be held hostage again - unless we have the assurance that another school will be built in the area very soon and we have a temporary solution to host the expected influx.

> Cupido 2015:n.p.
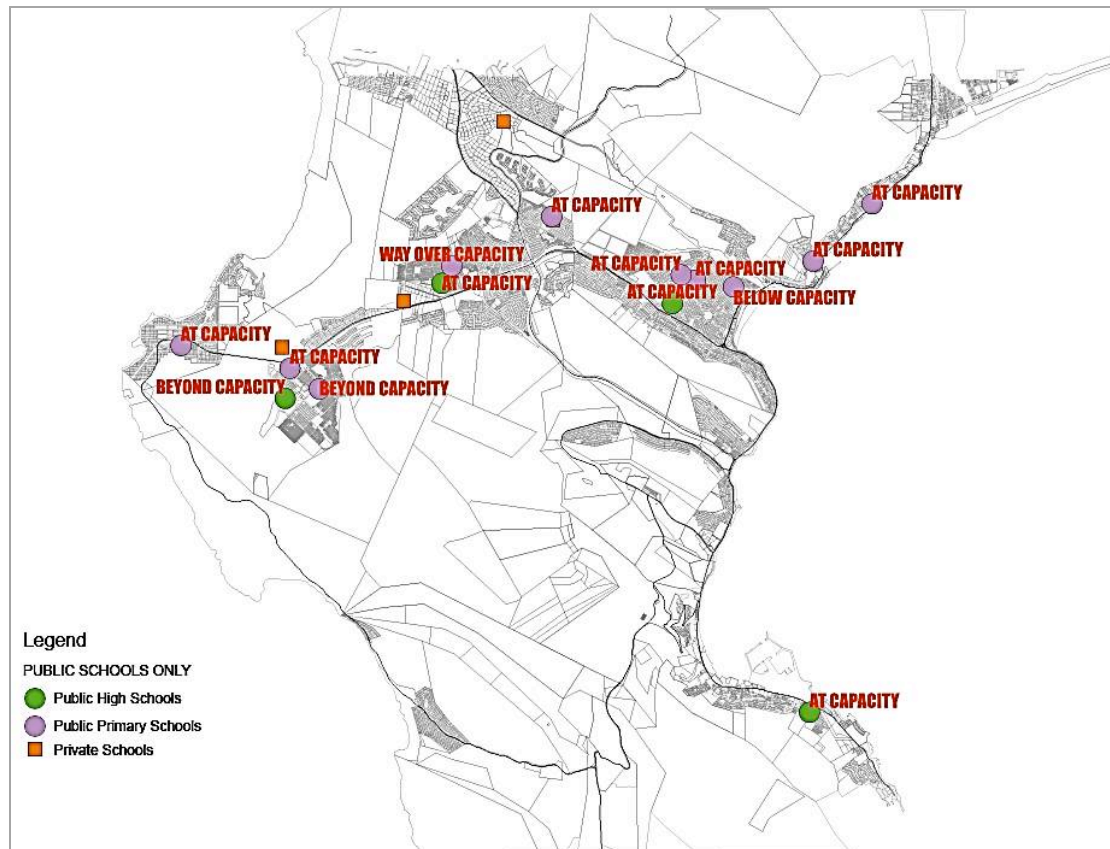
**Figure 4.9:** Public schools capacity levels (Source: Cupido 2015. Adapted.)

Local principals have expressed concerns when on average one in three applicants are unsuccessful for high school placements in the area (Saffer 2016a). The question is then where do pupils attend school. As pointed out by Mr Gavin Keller from Fish Hoek High School, the only options are either private schooling or attending public schools situated outside of the area (Saffer 2016a). Further, there is a limited private school offering, with only one school offering a combined primary and secondary option, the Waldorf School in Imhoff's Gift, although the school has announced that the high school will close in 2018. An application for a 600-pupil private school in Noordhoek commenced recently, yet is facing substantial public opposition amidst traffic and environmental concerns (Western Leopard Toad breeding and movement activity). The affordability of the private schooling options, in comparison with public school fees, is likely to exclude a significant portion of the general public.

When interviewing residents, the lack of schooling (especially high schools) coupled with increasing development, have been cited as fundamental drivers of peak hour congestion leaving the area. A local schoolteacher expresses concern about the impact of a gated community, that is currently under construction: "I can promise you by the time Chapman's Bay Estate is fully built up, we don't have place for those kids in the schools" (Interviewee 6 2017).

A local principal echoed similar concerns in the local press: "With the continued housing developments in the valley, and near surrounds, I fear that there is completely insufficient high school place" (Saffer 2016a).

It seems to come down to alternatives, personal choice and the individual "structural stories" (Freudendal-Pederson 2005 in Grieco & Urry 2011) which compel certain personal decisions as echoed in one parent's justification for attending a school outside of the area:

> *Interviewee 9*: "In response to my suggestions & questions in a conversation with CTCC's Brett Herron (Mayoral Committee Member), on the Cape Talk Keeno Kammies Show, a few months ago, Brett indicated that all these commuting learners should be going to schools close to where they live. This opinion is correct, but there are insufficient schools in our valley to accommodate these learners, as well as those already attending the valley schools AND those from the ever expanding suburbs, e.g. Masiphumelele, Ocean View, etc. By my daughter choosing to attend Westerford, she made space at Fish Hoek High for another child, possibly from one of the previously mentioned suburbs."

## 4.5    Mobility in the Far South

To conclude the spatial analysis or the area, this section offers an overview of existing travel patterns (private and public transport), modal shares, existing congestion levels and traffic flows relating to the area internally as well as to flows out of the area.   Information is obtained from the Draft FSTP as it represents current data and further complemented with qualitative data from this study.

**Existing Transport Network**

As acknowledged before, road access to the study area is restricted to three routes, due to the mountainous topography, being CPD, OKW and Main Road, see Figure 4.10. One interviewee remarked that "Trump's wall's got nothing on this at all" (Interviewee 17 2017b), using Donald Trump's[7] intention to build a wall between the United States of America and neighbouring Mexico as a metaphor for describing how inaccessible this area is. Both CPD (a toll road) and OKW are mountain passes traversing the TMNP, 12km and 10km in length, respectively.  Kommetjie Road is a significant east-west route that connects the low-income suburbs (Ocean View and Masiphumelele) with the commuter railway line in the east. It is one of the main road-based public transport routes for this reason (minibus-taxi and conventional bus service).  These services do not make use of OKW or CPD at present. The historical railway line (Southern Line) serves the area and terminates at Simon's Town.

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[7] The current President of the United States of America
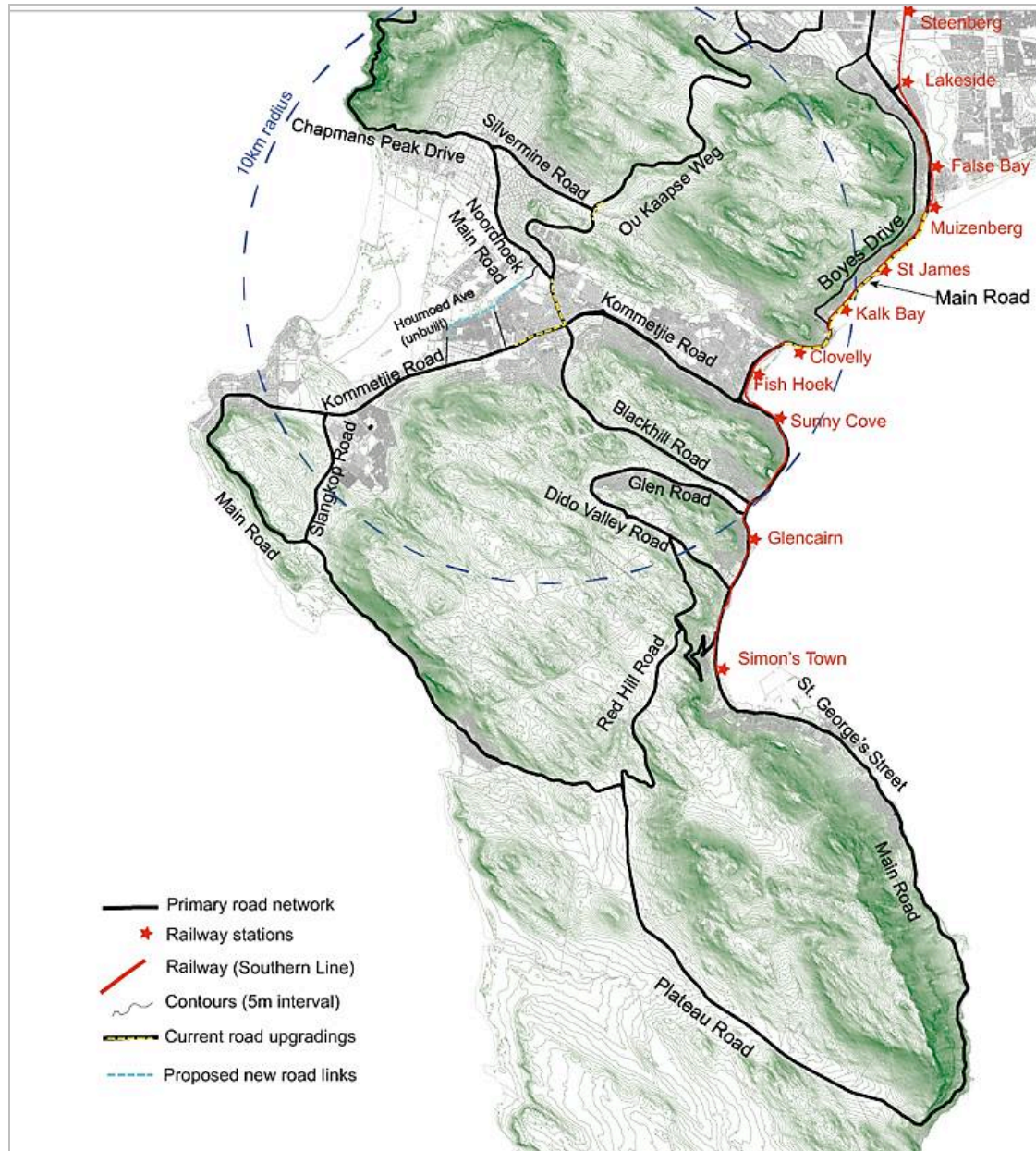
**Figure 4.10**:  Far South transport network.
Source: Image generated by the researcher (See Appendix B for the spatial database)

**Existing travel trends and modal share**

Recent TomTom Traffic Index data suggests that Cape Town is now the worst congested city in South Africa and ranks 48th out of 390 world cities (TomTom Traffic Index 2017).  It is estimated that on average, commuters in this city would squander 42 minutes per day due to traffic congestion, totalling 163 hours every year (TomTom Traffic Index 2017).  The Far South was identified as one of three 'congestion hot spots' across the entire city during a congestion study undertaken by the COCT in 2016 (TDA Cape Town 2017d). Figure 4.11 shows the severity of the area's road congestion during the peak morning period compared to the rest of the city (Transport Cape Town (TCT) 2017).
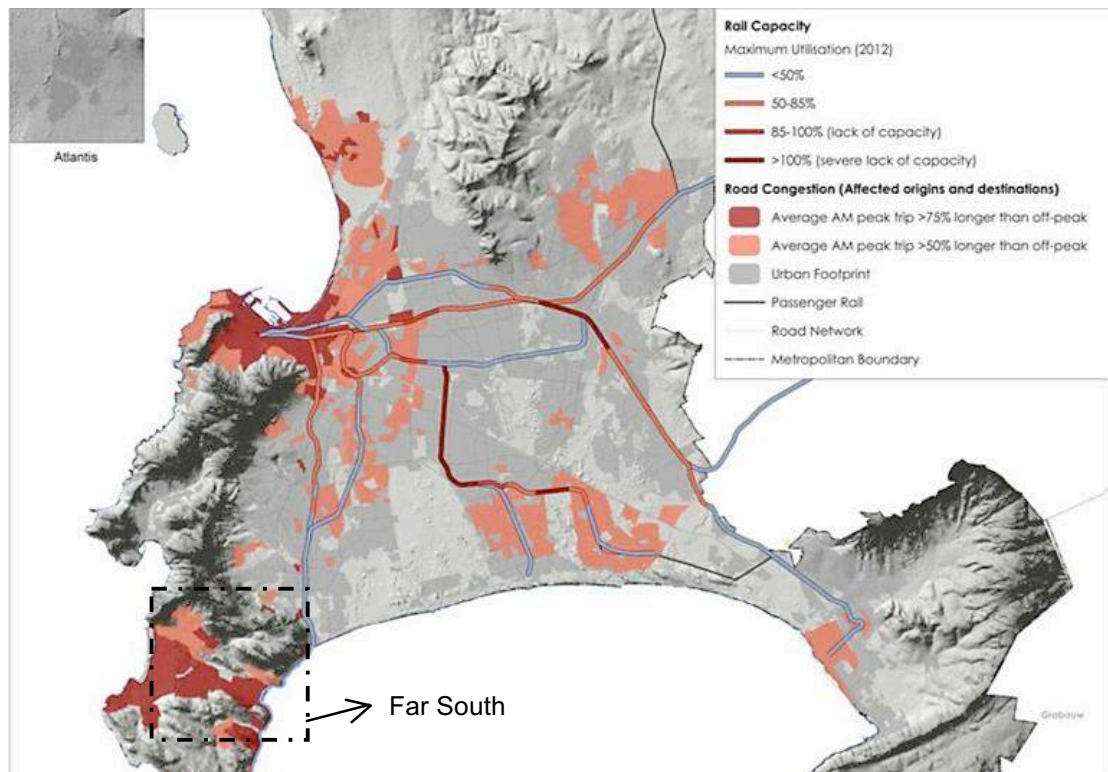
**Figure 4.11:** Road congestion in Cape Town. Source: (Transport Cape Town (TCT) 2017)

Based on traffic modelling figures, the Draft FSTP predicts that there are ± 21050 commuters generated from this area, bearing in mind that there are 31050 households (TDA Cape Town 2017d). The modelling done for the Draft FSTP further approximates that 63% of commuters travel to work opportunities outside of the area. Table 4.7 and figures 4.12 and 4.13 show the work- related estimated trip distributions, with Cape Town's southern suburbs and the CBD being the main destination points for those travelling from the Far South.

**Table 4.7:** Estimated travel trends in the Far South (TDA Cape Town 2017d).

| Commuters generated in Far South (21050) | |
|---|---|
| Work OUTSIDE of area | Work LOCAL |
| 13720 (63%) | 7930 (37%) |
| **Local Jobs (15 250)** | |
| Filled by external people | Filled by local residents |
| 7320 (47%) | 7930 (52%) |
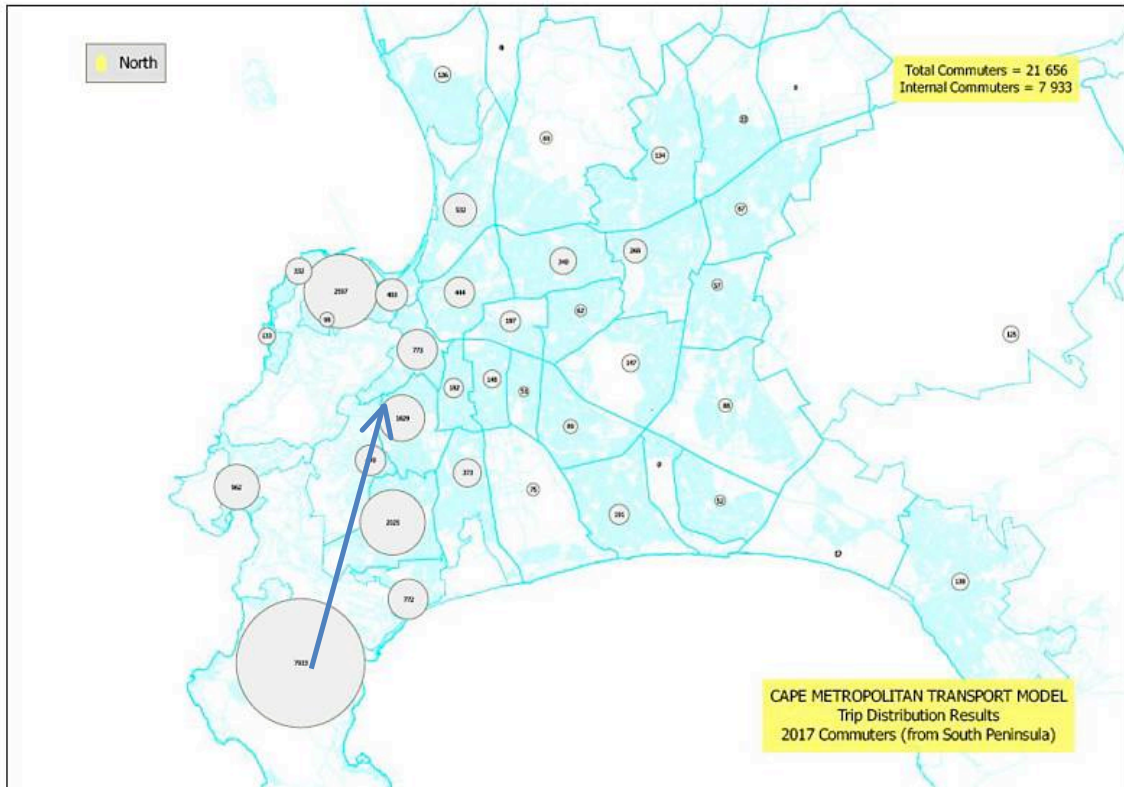
**Figure 4.12**: Trip distribution of commuters travelling from the Far South. Source: TDA Cape Town 2017d. Figure 2.1(a)
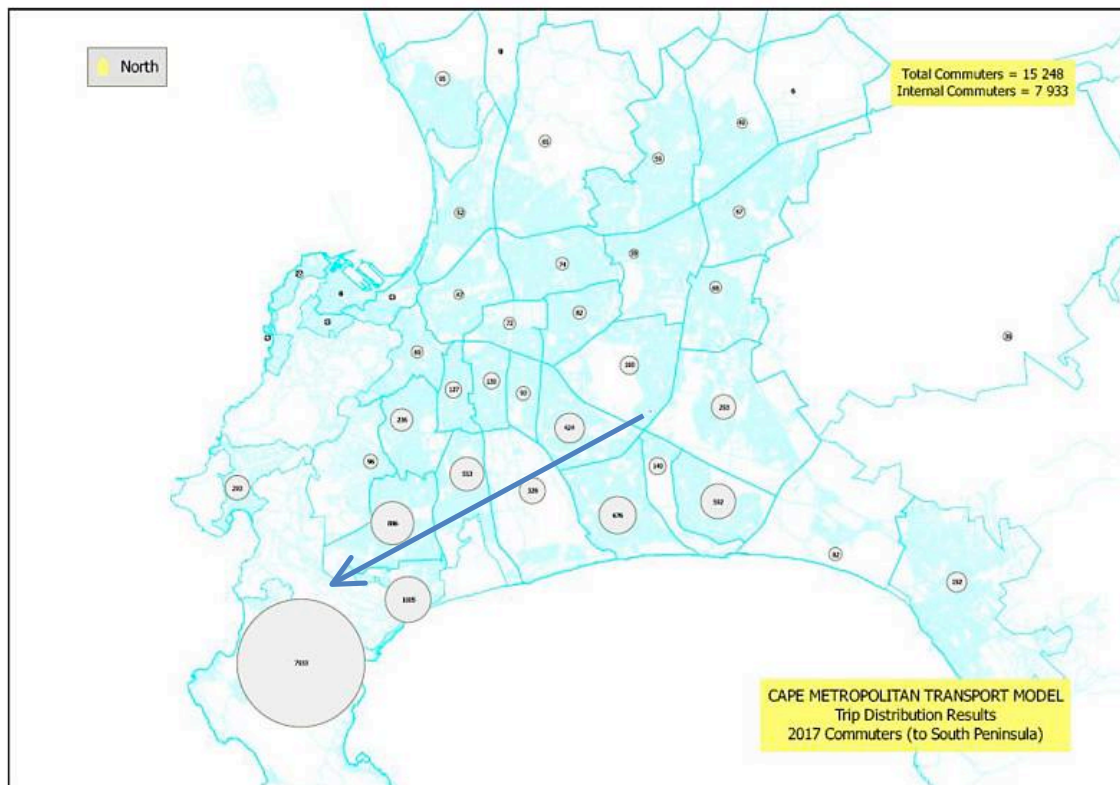


**Figure 4.13:** Trip distribution of commuters travelling to the Far South. Source: TDA Cape Town 2017d. Figure 2.1(b)

These commuters evidently access and exit the area either via road or rail.  In terms of modal share, the Draft FSTP determined that OKW is the preferred route for those travelling from the area (northbound) in the morning peak, while those accessing the area (southbound) mostly travel via Main Road for the same period.  The following table presents a breakdown of the modal splits between the different routes and between private and public modes (TDA Cape Town 2017d).   According to these figures, the public (20%) versus private modal (80%) share during morning peak is more than the city's average and is essentially the reverse of the ratio the CITP aspires to (80%:20%) (TDA Cape Town 2017b).  Table 4.8 reveals that this ratio is even less balanced the higher the income group. It remains a key concern when considering the anticipated development growth, especially in the form of car-centred gated communities as illustrated in previous sections.

**Table 4.8:**  Peak morning-period person trip-movements accessing and exiting the area. Source: TDA Cape Town 2017d. Table 2.1

| Direction | Mode | Chapman's Peak | Ou Kaapse Weg | Main Road | Rail | Total | % |
|---|---|---|---|---|---|---|---|
| Northbound | Cars, LDV's & Heavies | 697 | 5 862 | 4 869 | - | 11 427 | 80% |
| | Public Transport | 0 | 120 | 279 | 2 501 | 2 900 | 20% |
| | Total | 697 / 5% | 5 982 / 42% | 5 148 / 36% | 2 501 / 17% | 14 327 | 100% |
| Southbound | Cars, LDV's & Heavies | 242 | 2 652 | 4 231 | - | 7 124 | 68% |
| | Public Transport | 0 | 183 | 1 268 | 1 828 | 3 278 | 32% |
| | Total | 242 / 2% | 2 835 / 27% | 5 498 / 53% | 1 828 / 18% | 10 403 | 100% |

Sources :       Vehicle occupancy surveys along Ou Kaapse Weg, Main Road & Kommetjie Main Road.
                Rail Survey (2012).

**Table 4.9:**  Current modal shares per income group. Source: TDA Cape Town 2017d. Table 2.

| Income Group | 2016 Person Trips | | | | | | |
|---|---|---|---|---|---|---|---|
| | Car | % | Pub Trans | % | NMT | % | Total |
| High Income | 11 923 | 87% | 873 | 6% | 907 | 7% | 13 703 |
| Low middle Income | 2 766 | 55% | 1 987 | 39% | 278 | 6% | 5 031 |
| Low Income | 505 | 17% | 2 135 | 73% | 282 | 10% | 2 922 |
| Total | 15 194 | 70% | 4 995 | 23% | 1 467 | 7% | 21 656 |

Note 1 : Based on survey data and calibrated in Emme/4 model.

Congestion in the Far South is a frustration for a variety of users as illustrated by excerpts from interview transcripts, see Textbox 4.3.

**Textbox 4.3:** Interviewee comments on congestion

*Interviewee 23:* (A private commuter): "Unmitigated development and lack of public transportation (i.e. My City) [sic] have created a transportation nightmare in the Far South. Noordhoek slightly less affected compared to others who have to travel further. Biggest challenge is Chapmans Peak fickleness in terms of closing and traffic nightmare over Ou Kaapse [sic] 7 days a week, with few "safe times" any more."

*Interviewee 15:* (A public transport operator – mini-bus taxi): "Yes, you know what is happening in the mornings, you will come and see in Masi... [Masiphumelele] people are standing in queues I am telling you and then all the vans are on the road and the traffic jam... It is killing us."

*Interviewee 5:* (An occasional visitor to the area): "I had a girlfriend in Kalk Bay, she would come and visit me, because I just ... it was literally like I would love to come and visit you but Jesus. It is not the drive in, now it is evening. It is the next morning; I need to get out of there. Now oh my God, you know what I mean, I love you and everything but we are talking about serious commitment here and I do not know if I am willing to go that far (laughing)."



**Photo 4.4**: Congestion visible stretching up Ou Kaapse Weg (heading southbound) during afternoon peak (taken on 23 May 2017 at 18:00). Source: Own photograph.

**Road Expansion**

There are two significant road construction projects underway in the area. *Firstly*, construction work along Main Road has been on-going since 2008 when the City embarked on rehabilitation of a 4,5km stretch of this road (between Muizenberg and Clovelly). It involves installing new services and resurfacing but not increasing the road's actual capacity.  The roadworks have been on-going for nine years during which time parts of the road were one-directional (stop/go system).  Having looked at past traffic counts, the Draft FSTP notes that the traffic flows fluctuated between the various gateway routes during this time, directing

traffic away from the compromised Main Road to other gateways, impacting on the overall road capacity and congestion levels (longer peak periods) in the area (TDA Cape Town 2017d).  Contrary to what can be expected in such circumstances, the Draft FSTP reports that commuters did not opt for rail as an alternative mode (TDA Cape Town 2017d). Traffic was merely directed to other gateways. Figure 4.14 illustrates the significant increase in traffic on OKW, beyond its 1200cars/hour peak capacity, during the time of the Main Road project (TDA Cape Town 2017d). Road accidents on OKW are a common occurrence with the South African Police Service recording 109 accidents in 2015 and 96 in 2016 on this road (Mdebuka 2017). During Main Road construction in 2012, this number rose to 111 accidents in only ten months (Yeld 2012).
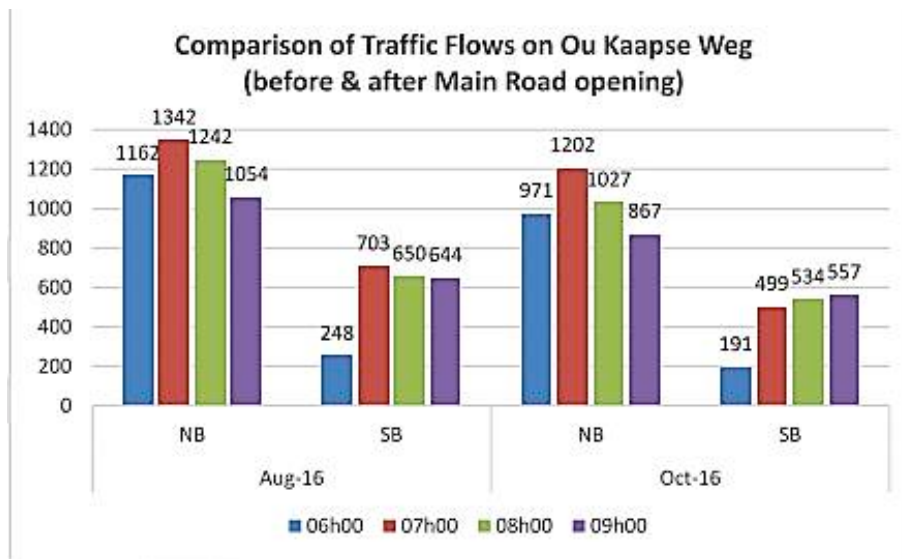


**Figure 4.14:** Traffic flows on Ou Kaapse Weg during Main Road construction.
Source: TDA Cape Town 2017d. Figure 2.2(b).

*Secondly*, the City commenced with an R195 million upgrade of sections of Kommetjie Road (between Capri and OKW) in October 2016, after the City earmarked it as a priority road infrastructure project in line with the Congestion Management Programme (COCT 2016a). The City envisages that construction will end during 2019. The project includes upgrading the road to a four-lane dual carriageway in sections, adding embayments and designated lanes for public transport at key intersections and the improvement of the existing pedestrian sidewalks and cycle lanes (Transport Cape Town 2016). The Draft FSTP recognises the relief this project could bring to internal congestion, but notes that "… the upgrading project will not address the capacity constraints at the gateways linking the Far South with the rest of the city" (TDA Cape Town 2017d:12).

The City is further proposing to temporarily extend an unconstructed portion of Houmoed Avenue in Sunnydale to provide an alternative route linking Kommetjie Road with OKW or CPD to alleviate additional congestion levels expected during the upgrade of Kommetjie Road

(see Figure 4.15). The aim would be to construct a permanent road after that (CHAND 2017a).  The proposal triggered the need for an environmental impact assessment (e.g. proximity to wetlands) in terms of the National Environmental Management Act (NEMA), which is currently in the public domain for comment.  Being a resident of the suburb directly affected by this proposal (Milkwood Park which is part of Sunnydale), I am aware of the local uproar that this is causing.  However, adjacent communities that have to endure the current Kommetjie Road congestion, which is only set to worsen during construction, are welcoming this road link. Arguments for the road link include an improved internal road network, access for emergency vehicles, alleviation of congestion along Kommetjie Road and quicker pedestrian and cyclists' access to the economic node for residents from Masiphumelele (CHAND 2017b).  Comments in opposition to the proposal are plentiful. Objections include the following: security concerns around allowing residents from the informal settlement access to Sunnydale (with limited road access at present), fear of service delivery protests in Masiphumelele affecting this suburb, concerns that this would encourage informal settlement to extend onto the wetlands and into the adjacent established areas, and loss of wetlands and impact on the Western Leopard Toad habitat (CHAND 2017b).  Also, the impact on sense of place and depreciation of property values are cited as concerns, i.e. properties that currently adjacent to nature will in future abut a busy road (it must be added that the road reserve has always been there) (CHAND 2017b).
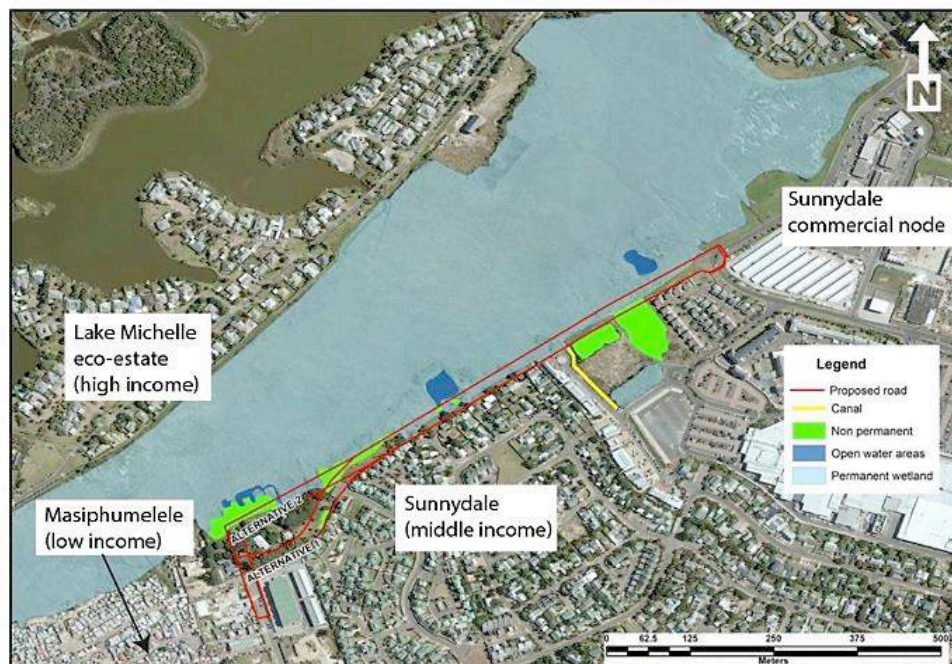


**Figure 4.15**:  Proposed temporary (to become permanent) Houmoed Avenue road extension. Source: CHAND 2017a. Figure 3 Adapted.

From aerial photography, it is evident that this road link will no doubt be situated within metres of residential properties.  But one must ask the question if this is not a classic case of not-in-my-backyard (NIMBY) given the fact that many of the properties have extended their gardens onto this road reserve and thereby encroached onto public land (see Figure 4.16).

**Figure 4.16:** Houmoed road extension impact on properties and natural surroundings. Source: Google maps.

Road infrastructure projects affect traffic flows in the area in numerous ways. Apart from the temporary delays caused in the immediate vicinity, traffic is directed to the other gateways, already operating at capacity.  This has a direct impact on road accidents and as shown in the Main Road case and does not necessarily act as an incentive to shift to rail (Interviewee 17 2017a).  The Houmoed Avenue example shows how contested and difficult attempts at improved access and with it, spatial integration, can be.

**Public transport trends in the Far South**

The Southern Line (rail) that links the CBD with Simon's Town, is the oldest railway line in South Africa and dates back to 1890 (Cape Town Heritage Trust 1990).  The once historic charm of this meandering train service is currently overshadowed by the deteriorating nature of the Metrorail service as discussed in previous sections. In the words of *Interviewee 6:* "It might have been an asset years ago but it is definitely not anymore. Apart from the unreliability, it's not safe."

The Draft FSTP reports that the share of this mode, compared to private and other road-based public transport services, has consistently declined in the area. However, the total ridership numbers departing Fish Hoek has increased with 1% per annum since 1997 (TDA Cape Town 2017d).  The split between the Metro Plus service (first-class service) and the cheaper Metro class service, is telling, as Metro Plus' ridership has declined by 34% over this period, see Table 4.10 (TDA Cape Town 2017d).  It would thus appear that the biggest loss in ridership is amongst 'discretionary' users, which are commuters who prefer the train service despite being able to afford private transport as the alternative (TDA Cape Town 2017d). Enticing these users back to a more sustainable option such as rail is crucial.

**Table 4.10:** Passenger numbers on trains departing Fish Hoek Station during morning peak (06h30 - 07h30). Source: TDA Cape Town 2017d. Table 2.3

| Factor | 1997 | | | 2012 | | | 2016 | | |
|---|---|---|---|---|---|---|---|---|---|
| | Metro + | Metro | Total | Metro + | Metro | Total | Metro + | Metro | Total |
| No of Trains | 6 | | | 6 | | | 6 | | |
| No of Pax | 393 | 553 | **946** | 394 | 671 | **1065** | 258 | 864 | **1122** |
| Capacity | 2977 | 2608 | **5586** | 3702 | 3702 | **7404** | 3702 | 3702 | **7404** |
| Load Factor | 13% | 21% | **17%** | 11% | 18% | **14%** | 7% | 23% | **15%** |
| % Change | | | | 0% | 71% | 13% | -34% | 56% | 19% |

Primary qualitative data suggests that the dissatisfaction with the rail service is the main barrier for 'discretionary' users, who once used this service, to shift to a more sustainable transport mode. Still, the FSTP local perception survey, indicates that there is a significant

> **Textbox 4.4:** Interviewees' perceptions of Metrorail
>
> *SPTC member 20:* "I caught the train to Cape Town for two years 2010 - 2012 - when it worked, it worked well, but unfortunately 90% of the time it didn't work. Trains were overcrowded, cancelled or delayed. No communication with commuters made people very angry."
>
> *SPTC member 27:* "I've not used any public transport for around a decade as all forms are unreliable and the charges vs [sic] return are simply not worth it."
>
> *SPTC member 17 2017:* "Every day Im [sic] thankful that I dont [sic] have to use trains, besides being so unsafe, they are never on time, thats [sic] f they turn up at all. Something is wrong, it wasnt [sic] always like that. Maybe start at the top and root out the dead wood? Just a thought."

number (45%) of participants that would contemplate shifting to public transport (mainly rail) (TDA Cape Town 2017d). Another resident showed full appreciation for having an alternative (private transport), while alluding to corrupt practices at Metrorail, see Textbox 4.4.

A resident questions the constitutionality of offering class-based services on the train (i.e. Metro and Metro Plus), distinctly separating the haves from the haves not, when in his opinion the level of service are the same in both services (Interviewee 12 2017). While another member of the social media group hints that perceptions around public transport might be changing, yet point to systemic concerns around the viability of public transport in low density areas:

> *SPTC member 12 2017*: "People are so committed to 'independence' and instant flexibility in SA when it comes to transport - but mind sets are changing. The main concern I have with trains and buses is their infrequency (so that limits flexibility). But frequency requires higher density suburbs and thus more users - which Noordhoek et al is opposed to ..."

**Road-based**

The road-based public transport in the area comprises minibus-taxis and a conventional bus service (GABS). These services are concentrated around Kommetjie Road, as the principal east-west route, carrying 61% of persons in this corridor during the morning peak towards Fish Hoek. Minibus-taxis are the mode of choice by far, constituting 50% of the 61% public

transport split for this road during the morning peak. These services mostly cater for the lower-income settlements (Ocean View and Masiphumelele), connecting commuting passengers with rail and with another minibus-taxis rank in Fish Hoek on their journey out of the Far South.  There is only one scheduled GABS route to the CBD from Ocean View over Ou Kaapse Weg (travelling via Retreat as a major transport interchange), offering only one trip in the morning (5:45 arrive 7:35). Other GABS routes into the Far South are via Main Road.

The popularity of minibus-taxis over GABS can be accredited to some proven advantages, these being flexibility as an unscheduled service and the size of the fleet allows for easy manoeuvrability in dense informal settlements (Ferro et al. 2013) such as Masiphumelele.  A prominent local actor praised the efficiency and affordability of this service for a significant proportion of the population (Interviewee 12 2017). Clark and Crous (2002 in Ferro et al. 2013) further note that these services have shown to react fast to a change in demand.  This point resonates with recent events here in the Far South. During February 2017, a vehicle collided with a train at a level crossing along the Southern Line. This accident caused signalling delays to trains on this line for months. Despondent train users quickly turned to minibus-taxis as an alternative. This industry, in turn, responded quickly by adding more buses to this route (Interviewee 15 2017).

Having interviewed a minibus-taxi operator-owner, it was noticeable that the interviewee took pride in being able to offer this advantageous service over conventional buses. In his words:

> *Interviewee15:*  These services are "restrictive, you see, taxi's don't have time...it is only you personal person that needs to be on time at the taxi rank so that the taxi can take you there. But and the other thing again, the taxi can stop here, and take you out and pick you up but the bus will go and drop you at a bus stop, whether you are coming here. So that advantage give us time to get more people."

Minibus-taxis undoubtedly play an important transport role in the area.  But is it an attractive alternative for private car users?  The City's perception survey, which targeted car users in the Far South, shows that only four respondents regularly use minibus-taxis (0,5% of the total number of respondents), see Figure 4.17 (TDA Cape Town 2017e).  The survey further shows that while escaping congestion is the key factor that would persuade people to substitute their cars, improvements in the reliability and availability of public transport, and feeling secure, are the most important elements that would entice users to switch (TDA Cape Town 2017e).
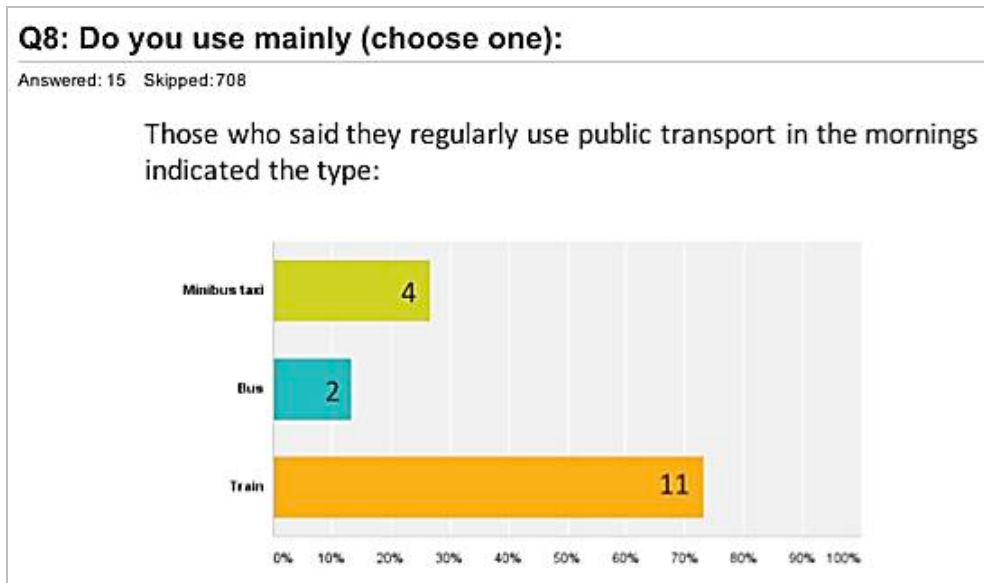
**Figure 4.17:** Far South perception survey results relating to regular public transport usage. Source: The Billboard 2017.

Further, residents in the Far South have expressed the following concerns relating to minibus-taxis: reckless driving, the roadworthiness of vehicles, unlicensed drivers, and the violent uncompetitive stance of this industry (Interviewee 13 2017; Interviewee 21 2017; Interviewee 4 2017; Interviewee 9 2017). Concerns about safety and security therefore extend to

**Textbox 4.5:** Interviewees' perceptions of minibus-taxis

*Interviewee 4:* "You are going to – if you are going to pick up what is normal taxi routes, you are going to have barriers from the normal taxi drivers."

*Interviewee13:* "You know you have these taxi accidents and that there is no third party insurance that the taxi takes out so third party insurance is a big thing. That is why these things are run on a shoestring and say right when they fail they fail, so what, move on, get another one."

*Interviewee 15:* "Because you know the taxi drivers, some of them, especially the young ones...they are hell drivers. So you give them a route like that you going to kill most people. So we don't want to go that way."

having to share the road with minibus-taxis, while driving private cars. Excerpts from citizens and a local taxi owner echo some of these concerns, particularly when it concerns operating a minibus-taxi route along a mountain pass such as CPD, see Textbox 4.5.

## 4.6    Development growth

Urban development has emerged as a contested and complex issue in the Far South, especially in light of the added pressure on social facilities and infrastructure, such as transport.  In fact, it was a general discontent with perceived 'overdevelopment' of the area, which led to the 'gatvol' (meaning 'fed up' in Afrikaans) petition, signed by over 4000 Far South residents. The petition was handed over to the Mayor of the City in July 2016 (Saffer

2016b). This civic pressure eventually led to the commissioning of the FSTP, an exercise that has largely confirmed the concerns of the residents through highlighting the capacity constraints on the transport network, summarised below.

The Draft FSTP developed a growth scenario as part of their transport modelling to establish projected urban growth in the area, using the year 2032 as a future limit.  The modelling accounted for existing land uses, new development applications (those approved, already under construction, and future applications on developable land), expected backyard densification (i.e. second dwellings) and projected non-residential growth (TDA Cape Town 2017d). Figure 4.18 depicts the spatial distribution of new developments.  Developments already in built (current) constitute 10%, those approved 43% and potential future developments 47% of the total envisaged growth (TDA Cape Town 2017d).  In previous sections, it was established which of these are likely to be gated communities.  It is projected that there will be a 32% increase in dwelling units in the Far South, from 29812 (existing) to 39338 by 2032, equating to an additional 6555 units from new developments and 2971 from densification (TDA Cape Town 2017d).  The City's calculations further estimate that there will be a 31% increase in employment, increasing the number of jobs from 15428 to 20044 in 2032 (TDA Cape Town 2017d).

These projected figures formed the basis for modelling eight different traffic scenarios for the area, each proposing road infrastructure investment, ranging from introducing general internal road improvements to three major proposals. These are a) widening of OKW; b) constructing a Fish Hoek Bypass linking Kalk Bay with Steenberg that includes a tunnel through the mountain above Fish Hoek known as 'Trappieskop'; and c) increasing Main Road's capacity between Clovelly and Kalk Bay (four-lane road) (TDA Cape Town 2017d).  The Draft FSTP concludes the analysis of the results of the modelling with the following overarching foreboding:

> The transport modelling undertaken for the study indicates that in the absence of substantial investment in the road network capacity in the Far South, with increased development in accordance with the projected future land use scenario, congestion levels on the gateway links are set to increase. The extent to which these levels materialise depends on the success of the range of other interventions to improve levels of public transport, modify travel behaviour, and facilitate land use changes in the area by encouraging investment in non-residential, employment generating land uses.
>
> TDA Cape Town 2017d:29

The impact of urban growth in the area is thus bound to have significant impacts on the existing stretched transport system in the Far South. The Draft FSTP illustrates the potential implications of each FSTP scenario on the utilisation capacity of the three gateways over the four-hour peak periods, see Figure 4.19.  It is only when major road infrastructure interventions are introduced that the modelling show a significant change in utilisation of

capacity (scenario four and up). It is important to note that in the City's modelling, a significant modal shift from private to public transport and NMT modes are assumed based on the City's current policy position (TOD) and the rail modernisation process (TDA Cape Town 2017d). These assumptions are shown in Table 4.11 below and are comparable to Table 4.9. The biggest modal shift assumption is anticipated in the 'Middle-High and High' income category, a 16% decrease in reliance on private transport.
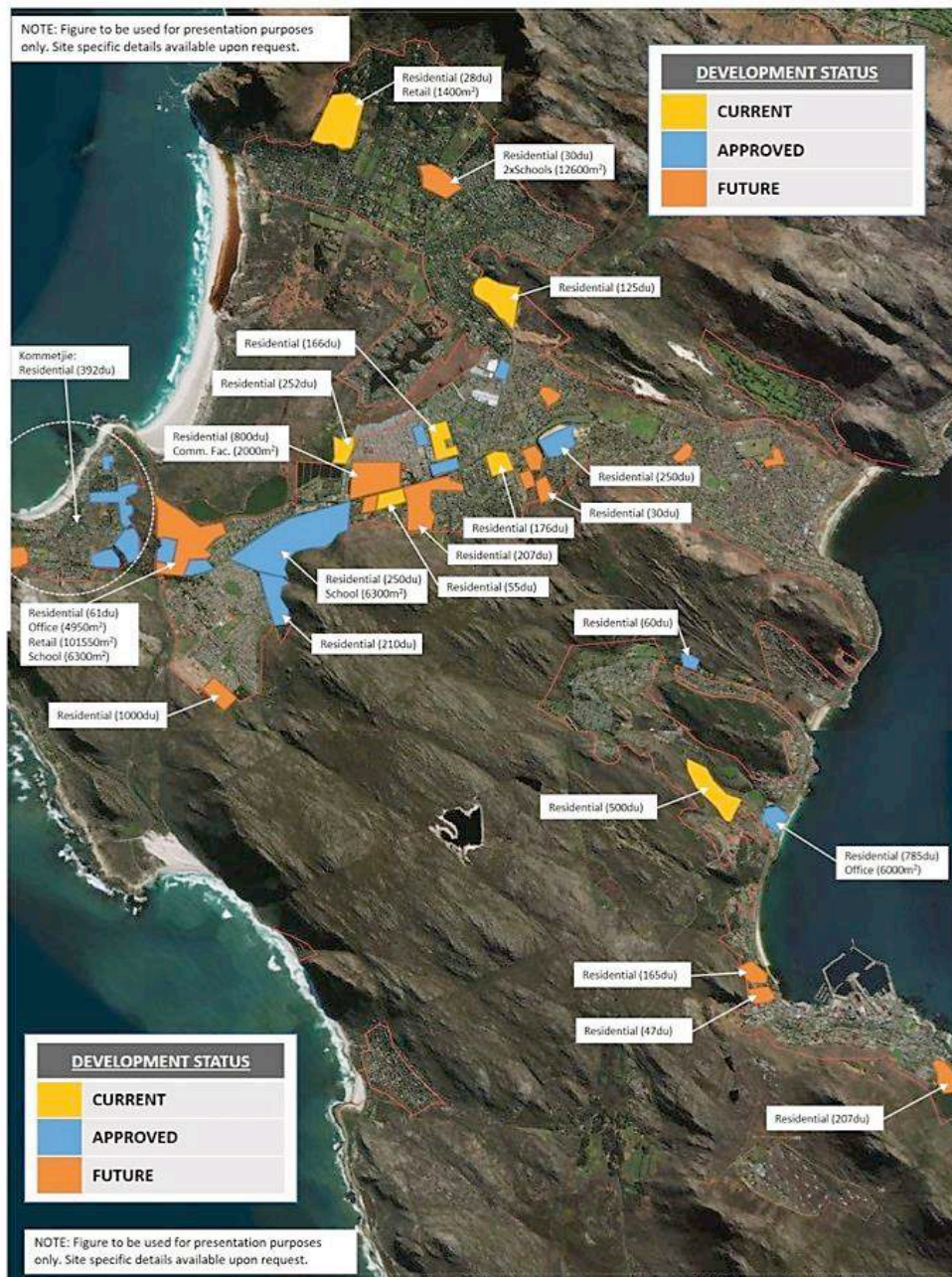


**Figure 4.18:**  New development applications.
Source: TDA Cape Town 2017d Figures 3.1 and 3.2. Adapted

**Table 4.11:** Future modal share assumptions.  (Source: TDA Cape Town 2017d.Table 3.5(b))

| Income Category | 2032 Person Trips | | | | | | |
|---|---|---|---|---|---|---|---|
| | Car | % | Pub Trans | % | NMT | % | Total |
| Middle-High & High | 14 479 | 71% | 4 143 | 20% | 1 655 | 8% | 20 277 |
| Low middle | 2 946 | 44% | 3 143 | 47% | 641 | 10% | 6 730 |
| Low | 650 | 19% | 2 543 | 72% | 315 | 9% | 3 508 |
| Total | 18 075 | 59% | 9 829 | 32% | 2 611 | 9% | 30 515 |
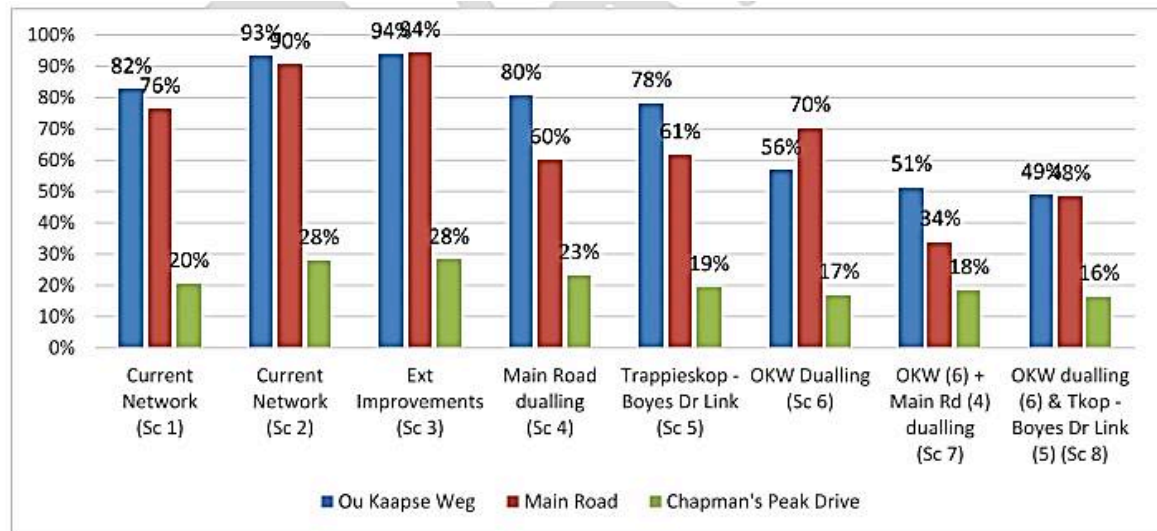


**Figure 4.19** - Traffic scenarios for Far South: Gateway capacity utilisation in the four hour AM peak period. Source: TDA Cape Town 2017d. Figure 3.4.

Given the above glimpse into the future, some residents fear a complete system collapse should all these approved units come into fruition (Interviewee 12 2017) and calls for a moratorium on all development until urban services have been improved.  See Textbox 4.6 for respondent views on urbanisation and in-migration.

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**Textbox 4.6:** Interviewees' views on urbanisation

*Interviewee 21:* "Are they going to put a toll gate on top of Ou Kaapse Weg too? To stop all the people flooding into Masi and Ocean View? And stop all the Zimbabweans coming into the Valley too?"

*Interviewee 16:* "You can't go backwards. I wish we could, but we can't...it is just not how the world works."

*Interviewee 16:* "It was lovely when Van Riebeeck arrived here and the place was nice for camping…but we have gone beyond that."

---

A municipal official maintains that the sudden increase in congestion is not the fault of new developments as only two were recently completed, with construction on the other approved developments yet to commence (Interviewee 20 2017).  It is this participant's opinion that there has been a significant change in demographics in the area. Some villages have changed from a seaside village for popular under retirees to accommodating families with grown kids that still live in the family home, sees Textbox 4.7.

On the other hand, the local press often reports on the dire need for land for housing aimed at people living in overcrowded conditions in Masiphumelele. Most recently, a "war of emotions"

> **Textbox 4.7:** Interviewees' views on changing demographics
>
> *Interviewee 20:* "from people that now lives in Kommetjie, has three kids that are all driving cars because they are commuting and their mommy and daddy also community to work...so we now have an extra 5 cars on the road instead of 2."
>
> *Interviewee 10:* "It is happening in Scarborough where you have city goers that buy up and now they want to live in paradise but drive … and all five of them want to drive ... and all five of them can afford to drive."

erupted around the City's proposal to build a fire station close to Masiphumelele on land that was allegedly originally acquired for low-income housing (Van Dijk 2017).  As a result, there has been a series of service delivery protests in this suburb around housing and sanitation that partly led to the cancellation of one of Cape Town's biggest cycling events in March 2017 (Ntongana 2017) and the recent mediatory involvement of the Public Protector (Isaacs 2017).

Urbanisation pressure, whether it is by design (in the form of planned developments) or by force (land invasions and protests) is a fundamental cause of social conflicts as discussed in chapter 5.

## 4.7    Niches and user innovation

Having reviewed the barriers to change in previous sections, this section turns to the local responses to the unsustainable system of automobility as uncovered during the research. From a transition theory perspective, niches are regarded as protected spaces that allow for the emergence of radical innovations (Geels 2002). Nykvist and Whitmarsh consider niches as more than just technological innovations, as it "… can comprise new technologies, institutions, markets, lifestyles and cultural elements and consists of networks of actors/organisations (2008:1374)."

Within this broader category, the following niches fit Nykvist and Whitmarsh's (2008) description and correspond with the best practice examples of user and producer innovations discussed in chapter 2:

- New technologies and markets
- Institutions
- Lifestyle and cultural elements
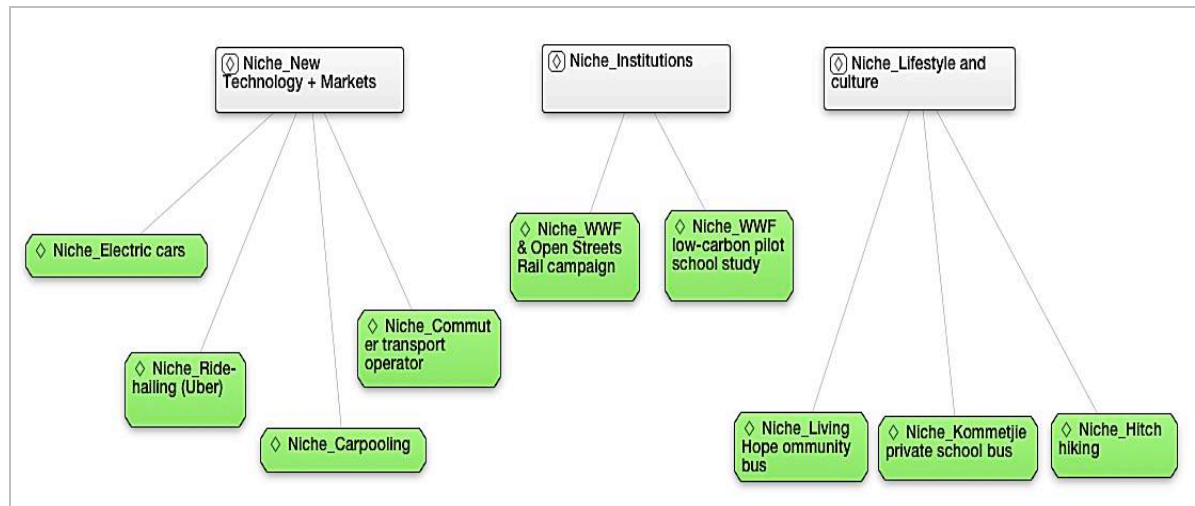
**Figure 4.20:** Niche code groups in Atlas.ti.

## 4.7.1 New technologies and markets

New technologies include innovations in vehicle design. As discussed, *electric cars* might be a niche gaining traction in South Africa (Electric Vehicle Industry Association 2016; Greyling 2017), but there was no evidence of it emerging as a niche in the study area.  There is no physical infrastructure such as public charging stations nor did participants mention it as a realistic low-carbon transport option.  In fact, Zijlstra and Avelino argue that although electric cars might be a niche concerning a sustainable *energy* system, this technological innovation could entrench the spatial difficulties of automobility in that it promotes further reliance on private transportation (2012).

**Ride-hailing (Uber)**

As described in paragraph 2.9.3, the field of ITS is fast growing and is supported by the growth of the ICT industry. ITS comprises *ride-hailing* (also called ride-sharing or e-hailing) mobile phone applications, such as Uber, that connects passengers with drivers on demand, which is available in Cape Town and 631 other cities in the world.  It is a typical example of producer innovation (Lyons et al. 2012), i.e. developed to derive a profit and has no doubt disrupted the Cape Town metered taxi industry as it did in most other cities (Dube 2015).  The Worldwatch Institute (2016) argues that this service could provide a solution to the last-mile challenge in providing a link between public transit services and residences. Uber has become a common urban service and is responsible for the creation of 2000 jobs in South Africa between 2014 and 2015 (Segev 2015). Though, the success of the platform has not been without its obstacles. A recent relaxation of payment restrictions (cash accepted), led to a local driver strike in Cape Town over safety concerns and potential clashes with the minibus-taxi industry (De Greef 2016b; Cowan 2017).

Nevertheless, a local minibus-taxi owner rebutted this claim by pointing out that Uber targets a different market:

> *Interviewee15:* "…people that are driving with Ubers, is not our people, because we don't drive those people, unless it is daily...but at night we are not driving. We sleep. Then Uber is taking over."

Further criticism includes the abuse of local regulations in many cities (The Worldwatch Institute 2016) and flouting labour practices, as surfaced in Cape Town recently (De Greef 2016a). A resident of Masiphumelele that was an Uber driver, attests to such claims confirming that the driver is left with very low earnings after Uber has deducted its share (27% of every trip), the owner of the vehicle is paid, and costs for fuel and mobile phone data are covered. In contrast, for riders it appears to be more cost-effective to purely rely on Uber for commuting needs than owning a private car, should the daily driving distance equate to 50km or less (Businesstech 2017b). Moreover, contrary to what was initially envisaged, ride-hailing platforms including Uber, are responsible for added congestion and causing a decline in public transport usage in a city like New York (Schaller 2016). The service is, as a result, adding more cars to city roads and thereby "intensifying car use rather than reducing car dependence" (The Worldwatch Institute 2016:184).

A participant sums up the logic behind this argument with the following quote:

> *Interviewee 6:* "Uber is not the solution because you've got the driver and one other person, the passenger, unless I can maybe have 2 passengers but it is still another car on the road."

The company has released UberPool, an added service aimed at attracting riders to share a ride if travelling in the same direction, which could impact on the number of Uber cars. Uberpool is not available in Cape Town as of yet.

Apart from these concerns with Uber, the platform is changing habits and behaviour, noticeable in the Far South too.  All the interviewees were aware of the service and had made use of it at some point, some in surprising ways.

A comment by an Interviewee shows how Uber is used as a scholar transport service between Noordhoek and a school in the southern suburbs of Cape Town, a journey of approximately 25km in one direction. At current Uber rates[8], using this service on a daily basis would

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**Textbox 4.8:** Interviewees' views on ride-hailing (Uber)

*Interviewee 4:* "There is a mom here whose kids get picked up by an Uber every single day and it is taking them over the mountain."

*SPTC member 5 2017*: "I gave [sic] an arrangement with one mom who lifts kids one day, I lift on Fridays and the remaining 3 days my children take an Uber home if extra murals end at the latest 5pm. If one has a later extra mural, I fetch. It's quite something when kids only have one free day, and each have a different extra mural ending at different times every day! Uber has been a godsend!"

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[8] UberX rates on 26 September 2017 in Cape Town is R7/km, thus equating to approximately R3500 per month (R175 per one-way trip times an average of 20 trips a month).

equate to around R3500 per month.  Others use it to complement existing informal school lift clubs should neither of the parents be available to make a trip (Interviewee 9 2017) or even to deliver children home from school extra-murals, as expressed in a post on the social media group, see Textbox 4.8.

It would appear a convenient choice for many, having to see to children's schedules - except, transporting children under the age of eighteen is in fact not permitted unless accompanied by the adult responsible for the account (www.uber.com 2017).  The question thus remains whether it is a sustainable alternative for daily commuters, given the added demand of school-related trips.

### Carpooling

> Carpooling can reduce peak period vehicle trips and increase commuter travel choices. It reduces congestion, road and parking facility cost, crash risk, pollution emissions and is even reputed to increase the levels of well-being through social interaction.
>
> TDA Cape Town 2017f:26

Another prominent niche is the concept of *carpooling* (also known as ridesharing) that has been revitalised with the support of ICT. Such services aim to decrease congestion through reducing the number of single-occupant private vehicles by matching riders and passengers. The Partnership on Sustainable Low Carbon Transport (SloCaT) has identified carpooling as a 'quick-win' in pursuit of sustainable transportation (Partnership on Sustainable Low Carbon Transport [SloCaT] 2016). Carpooling is certainly not a new concept, with Chan and Shaheen (2012) tracing the origins of this mode of transport to the United States of America during World War II.  This practice of forming car-sharing clubs was incentivised by that government through policy in an attempt to reserve fuel for the vehicles necessary to fight the war (Chan & Shaheen 2012).

Modern carpooling uses software (either through a web-based service or via a mobile phone application) to match riders and passengers, very different from the noticeboards in the past. In some instances, carpooling is combined with high occupancy vehicles (HOV) lanes, but this has had unintended consequences in other cities in the world. In Jakarta, the 'three-in-one' policy entices carpooling to access the HOV lanes only if three or more people share a vehicle (Hanna, Kreindler & Olken 2017). An informal practice of filling vehicles with 'jockeys' soon arose. It involved people congregating at the side of the highway ready to be lifted for a small fee to make up the required numbers of passengers (Hanna et al. 2017).  The authorities cancelled the policy in 2016, which provided a research opportunity to study the implications on congestion on the city's main roads. The study found that even despite the seemingly work-around practice of 'jockeys', the termination of this policy had significantly

increased the traffic on the roads formerly serviced with HOV lanes as well as on alternate roads nearby (Hanna et al. 2017).

BlaBlaCar is a carpooling platform with a reach of over 20 million active users across Europe. A study into the benefits of this platform exposed unexpected societal benefits in that 'equity balancing effects' were observed between the drivers that on average had a higher income than the passengers (Shaheen et al. 2017). Could this assist the South African society in its desperate need for remedies to its elevated levels of inequality?  By reducing the number of cars on the road, carpooling as a concept could deliver far-reaching environmental and economic benefits, such as lower GHG emission levels, result in less parking needed in cities, allow the rider and passenger to save money on travel, and assist in reducing congestion.

A study undertaken by Open Streets Cape Town, a non-profit organisation, shows that it is possible to reduce Cape Town's $CO_2$ emissions from transport by 10% by merely increasing car occupancy from the current city average of 1,4 people to 1,56 people (Kane 2016). To put this into perspective for the case study, the Draft FSTP reports an average of 1.52 persons/vehicle (p/veh) occupancy in the Far South on Main Road and OKW (only determining occupancy of private vehicles and light delivery vans) (TDA Cape Town 2017d). The Draft FSTP sets the current city average at approximately 1.35 p/veh. Comparatively, current levels were determined for Main Road (in Rondebosch) at 1.35 p/veh and 1.22 p/veh along the M3 highway during morning peak hours.  Vehicle occupancies in the Far South are thus on average considerably higher than in other parts of the city (TDA Cape Town 2017d). It would suggest that distance might already be enticing residents in the area to carpool (TDA Cape Town 2017d).

The City's Travel Demand Management (TDM) Strategy (2017f) acknowledges the advantages of carpooling in increasing vehicle occupancy, as shown in the opening quote to this section and lists possible actions around promoting it as an option to Capetonians. These include obtaining legal clarity around insurance risks, exploring the feasibility of developing a City carpooling platform, exploring the feasibility of HOV lanes, or partnering with an existing provider and instituting dedicated parking for vehicles used in such schemes (TDA Cape Town 2017f).  The legal status of carpooling platforms requires some clarification. The NLTA highlights that it hinges on whether the driver of a carpool/lift club intends to make a profit versus merely accepting money to share the cost of the trip and of maintaining a car (Republic of South Africa 2009). The former would be an example of producer innovation and the latter of user innovation (Lyons et al. 2012). As explained on the City's website: "Lift club drivers can recoup the costs of petrol from their fellow passengers as long as the costs are split evenly and there is no profit involved" (COCT 2017c). Should a driver make a profit, the law stipulates further requirements such as the need for professional driving permits and car insurance to protect all passengers (Republic of South Africa 2009).

Representatives of two carpooling industry players in Cape Town that have embraced the latest mobile phone technology were interviewed during this study.  CarTrip is based on the BlaBlaCar model and aims to create a city-to-city

<div style="border:1px solid #000; padding:10px;">

**Textbox 4.9:** Carpooling proponents

*Interviewee 7:* "I want it to become a social thing whereby it's actually not cool to drive on your own any more."

*Interviewee 14:* "I think that is will happen with people, you just need to get the message out there. You can't moan anymore if you are the only person sitting in your car. We got to vilify those people and say you have no right to complain about congestion, you are the congestion."

</div>

long distance carpooling option. uGoMyWay offers a locally-produced platform for the local market. This company works in close collaboration with the Cape Town business sector in forging partnerships with corporate clients to support behavioural change amongst employees that share a destination address (Accelerate Cape Town 2017). Critical mass is needed for either of these to build the desired impact, yet both are in their infancy stages.  CarTrip boasts around 1200 members and 300 active rides on their platform (Interviewee 7 2017) and uGoMyWAy around 2000 (Interviewee 14 2017a). Nonetheless, both companies envisage modern carpooling to follow Uber in becoming normal everyday practise, see Textbox 4.9.

These platforms are hedging on the notion of sharing costs and not profiteering, to stay in the less onerous side of the law. uGoMyWay stresses "Shared cost of traveling (fuel, tolls, parking, vehicle maintenance)", while CarTrip clearly notes that "passengers may only contribute towards your running costs of the vehicle" (CarTrip 2017; uGoMyWay 2017), on their respective websites. It might seem like a legal technicality, but it directly relates to trust and the safety of all passengers. The founders of CarTrip are very aware that trust levels in South Africa are different than in other parts of the world due to the country's violent crime and road accident statistics, but remains optimistic when stating:

> *Interviewee 7:* "Our country unfortunately sits so low on that trust table. So we have to chip away to get people to start trusting each other."

During the time of this transdisciplinary inquiry, I was asked by Open Streets Cape Town to write a feature article on carpooling for their website to promote the general idea of sharing trips to combat congestion and GHGs, see an extract in Figure 4.21.

**Figure 4.21:**  Feature article, by the researcher, about carpooling on the Open Streets Cape Town website.   Source: Henshilwood 2017.

Yet, these services appear to be unknown in the Far South[9]. The interviewed commuters were mostly unaware of this form of modernised carpooling. This finding is reinforced by the results of the perception survey that illustrates that 83% of Far South respondents were not regular carpoolers, whether informally or via a mobile phone platform (The Billboard 2017). Interview data show that some participants disregarded the possibility of using it, while the interest of others was sparked, see Textbox 4.10.

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**Textbox 4.10:** Interviewees' views on carpooling

*Interviewee 23*: "Never heard of them but would consider it" (Interviewee 23 2017).

*Interviewee 24*: "Yes, I have heard of them but would not yet consider this an option due to [sic] school run".

*Interviewee 22:* "Heard of some, definitely sounds fairly good, but since I transport a child to school it's not really an option I would consider".

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[9] I downloaded both mobile phone applications in May 2017.  I entered my standard commute as a ride offering it to potential passengers.  No passenger has attempted to make an arrangement with me on both platforms as yet (Aug. 2017).

Further, as noted by members of the social media group, carpooling has perceived limitations: less flexibility compared to private transport, disrupted personal comfort levels and having to be punctual at all times.

> SPTC member 3 2017: "It's [carpooling] great and hard: mornings mean talking as opposed to sitting quietly, having to be on time/schedule, I feel less beholden as lifting is shared (my son is lifted and collected twice a week and I lift both the kiddie and father three times a week), I save time getting to work two days a week."

> SPTC member 12 2017: Car pooling can be tricky though - my husband and I share a car so we have to 'pool' trips and it can involve a fair amount of waiting in coffee shops for the other's meeting to end, etc. but still worth it. Or car-pool [sic] one way, Uber back."

## 4.7.2  Lifestyles and community culture

The niches in the following two categories resemble small designed acts established in everyday life that present transformative value, as put forward by Pieterse (2008) and Tonkiss (2013) and discussed in paragraph 2.3.1.  These are not necessarily the work of the technical designers of urban space (Tonkiss 2013), but rather the labour of the broader public that includes community groups, NGOs and private sector players - thereby constituting examples of participatory bottom-up approaches that the UN regards as potential catalysts for positive change (UN 2016a).

Within this category, three niches are highlighted: a community school bus for low-income earners, a progressive 'mommy-taxi' and a visionary hitchhiker.

**The Living Hope school bus**

The Living Hope school bus emerged from the amalgamation of inequality and compassion. The Masiphumelele High School is the closest no-fee school that offers education in isiXhosa for learners not only in the Far South but also for learners residing in the suburbs beyond OKW (Westlake and Capricorn).  There are five schools within 4,5km to 9km from learners in these suburbs.  These schools require payment for school fees and offer tuition in Afrikaans and English only (Gontsana 2014).  A 15km journey over a mountain pass, OKW, stands between these learners and school, every day. Learners hitchhiking over OKW as early as 5:45 am, in the opposite direction of the morning northbound traffic, have become a regular sight (see Photo 4.5).  The principle of this school attests to various safety related incidences concerning these learners exposed to regular hitchhiking (Gontsana 2014). The Western Cape Department of Education's Policy on Learner Transport Schemes allows for subsidised scholar transport in rural areas especially to poor communities that live far away from schools and in areas not serviced by public transport. The hitchhiking Masiphumelele learners do not qualify for such a service (Gontsana 2014; Interviewee 19 2017). As discussed in 2.7.1, here is an example of how the actions of these individuals are restricted by the rules of the regime (Rib & Kemp 1998 in Geels et al. 2012).

**Photo 4.5:** Masiphumelele learners hitchhiking daily over mountain pass,
Ou Kaapse Weg, to attend a school of their choice.
Source: http://groundup.org.za/sites/default/files/styles/article_image /public/
field/image/pupilsAlongOu KaapseWeg.jpg?itok=FkWYiyNb

A concerned Noordhoek resident arranged a fundraising event in 2015 to raise capital for a 'South Peninsula community bus' for these learners. It was successful in that sufficient money was raised to acquire a minibus (see Photos 4.6). A partnership with a local Christian-based non-governmental organisation (NGO), Living Hope, was subsequently forged to operate the service and to maintain the vehicle (Interviewee 19 2017).  For Living Hope, accepting this responsibility was seen as inherent to the ethos of the organisation, which is "Bringing hope and breaking despair" (Interviewee 19 2017). The founder sees justice and inequality as the motivation behind this decision and notes:

> … they deserve the right to learn in their mother tongue and they deserve the right to go to a school of their choice in their mother tongue.

<div align="right">Interviewee 19 2017:1</div>

**Photo 4.6:** The Living Hope community school bus. Source: Own photograph.

This local transport service undoubtedly provides a much-needed safe and free service for around 15 local learners. The operating costs of such a service is estimated at R100 000 per year, around a third of the initial capital outlay (Interviewee 19 2017).  The financial viability is, therefore, a concern, given that Living Hope is the sole funder. Establishing this service has not been without bureaucratic challenges. One being that the NLTA does not make provision for a non-profit Trust, as an organisational entity, to own or operate a free school bus service (Interviewee 19 2017).  After much iteration with the authorities, this service was granted an exemption from the NLTA requirements as no remuneration is accepted. This exemption is used to prove to the minibus-taxis that this service is not in direct competition with them, a seemingly necessary defence as the Living Hope bus drivers have on occasion been confronted by minibus-taxis (Interviewee 19 2017).  It does, however, mean that Living Hope cannot use the bus for school excursions unless these are also fully funded by this organisation (Interviewee 19 2017). If in future, Living Hope would wish to supplement the bus' financial sustainability by offering a profitable service, it would have to establish a for-profit company, under the Living Hope umbrella organisation.  The founder of the organisation believes that it would reflect poorly on their status as a NGO and deter donors from bestowing the capital Living Hope depends on (Interviewee 19 2017).  He bitterly remarks:

> The law mitigates against and almost discriminates against any type of goodwill.…
> Interviewee 19 2017

**The proactive parent solution**

The participative inquiry led the researcher to a resident of Kommetjie whose child attends a private school outside the area, about 30km away. This private school encourages lift clubs amongst parents through social gatherings, as was the case here.  An online messaging platform was initially used to coordinate lifts between parents residing in the Far South, but it

soon became unmanageable (Participant 3 2017). The proactive parent consequently started a bus service (22-seater bus) from Kommetjie, only servicing this particular school, named 'To and Fro School'.  It operates with all the legal requirements, employs a Masiphumelele resident as the driver, the bus is fitted with a tracker developed by a local Far South company, and all bookings are done through an online system that generates the required monthly invoices. Parents pay between R1500 and R4000 per month depending on the number of trips a month. The owner of the service reports minimal profits as service and maintenance are costly. The motive behind this service is entirely self-centred in order to transport her child safely to school and the intent is to either sell the service or terminate it when the child finishes school (Participant 3 2017).  Scaling the service is therefore not an option for this parent.  The concept does, however, create an opportunity for others to pursue.

This local bus solution is another example of user innovation in the scholar transport area, similar to Living Hope School bus, notwithstanding the stark difference in motive between the two.

### Hitchhiking

When quizzing the community about possible short-term solutions, a resident suggested an organised hitchhiking system as a short-term solution to match commuters with those in desperate need of a lift to work (Email participant 5 2017c). This is in direct response to the growing numbers of hitchhikers congregating at either end of OKW during morning and afternoon peak hours.  I initiated a discussion about this suggestion on the social media group.  Mixed responses were offered, with safety concerns featuring prominently, see Textbox 4.11.

The discussion on the social media group led to an interview with an avid

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**Textbox 4.11**: Interviewees' views on hitchhiking

*SPTC member 22 2017*:  "I think any any [sic] initiative to help those trying to get to work is fantastic. I commute that route regularly and always give lifts. I would be keen to support, and get involved if need be."

"Hitch-hikers with well-made signs signs [sic] saying where they are going. That worked for me in Europe a long /me ago." (Email participant 5 2017c)

*Interviewee 16:* "I would have thrown them in the back of the bakkie [pick-up truck] if I didn't know them. But at least given them a lift over blackhill, you know, or something like that. People are just selfish...or they are scared."

*Interviewee 6:* "…unfortunately hitchhiking at the moment...I feel sorry for people when I see them hitchhiking but you can't trust anybody anymore."

*Interviewee 11:* "I drive everywhere and it's always irregular and I look at the people on the side of the road and I'm saying you know you.... There should be a safe way, I won't pick people up on the side or the road." (Interviewee 11 2017: 37).

*SPTC member 17 2017*: "I dont get [sic] anyone a lift, not safe anymore. I used to feel guilty but not anymore."

*Participant 5:* "Hitching is a bit s/gma/sed and infradig for many reasons. Acknowledging it as an acceptable option might help reposition it beyond the fear/pride/indifference relegation zone."

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hitchhiker that resides in Noordhoek.  For him, hitchhiking creates a brief moment in time where two worlds can collide, which are often on complete opposite ends of the income spectrum (Interviewee 18 2017).  This resident argues that therein lays the transformative

potential of a simple act of picking up a hitchhiker. He sees it as an opportunity to break down barriers between the richest segment of society, who are driving around in "tanks" (meaning expensive cars) to protect themselves from their privilege, and the poor. An argument that resonates with the BlaBlaCar study and its positive findings about bridging inequality (Shaheen, Stocker & Mundler 2017).   During the interview, various ways of starting an organised hitchhiking platform were discussed. This interviewee created a Facebook group shortly after and named it Give a Lift, see Figure 4.22.  This site has attracted 135 people from the study area since its inception on 19 July 2017.
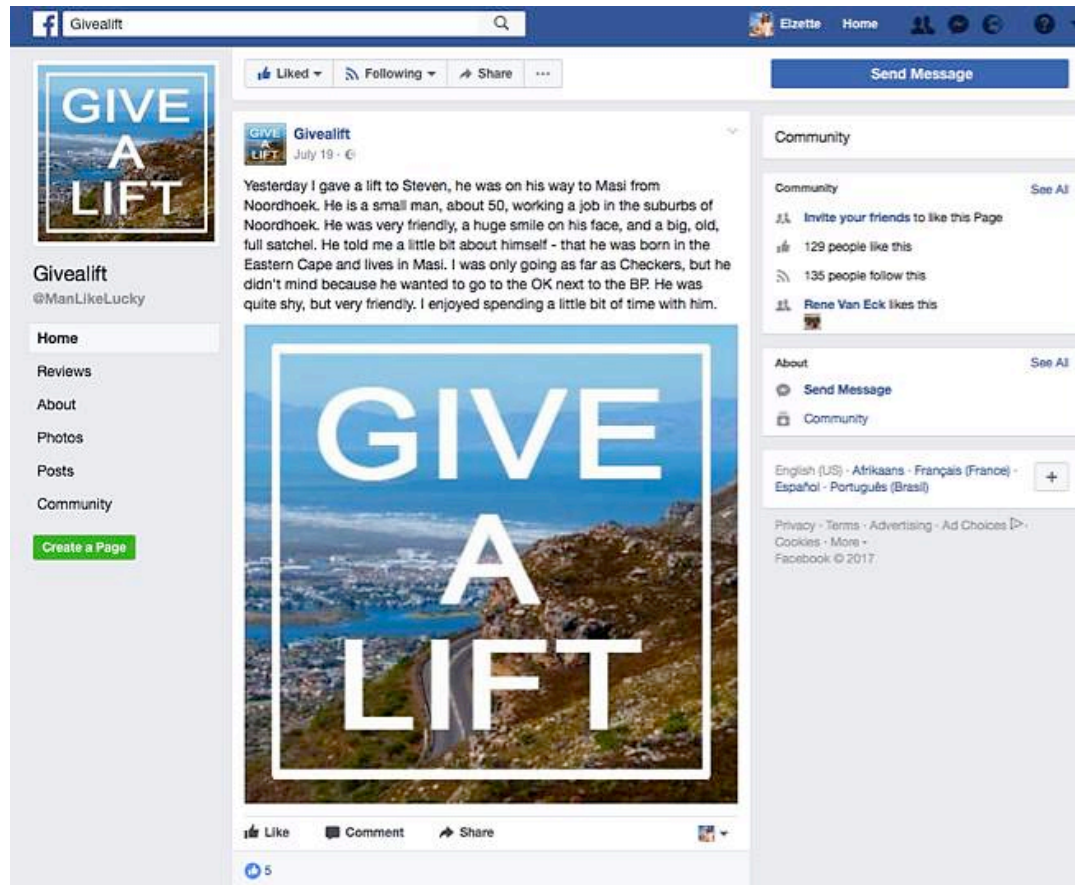


**Figure 4.22:**  The Give A Lift local Facebook group.
Source: https://www.facebook.com/ManLikeLucky/

## 4.7.3  Institutions

It is worth noting the synergies between this research and the work of some well-established institutions (niches) that all share an interest in urban mobility.  These include a low-carbon scholar pilot project, cycling initiatives in the Far South and a campaign to encourage cycling as a mode of travel to connect to rail.  These initiatives attempt to contest automobility.

The World Wide Fund's (WWF) Transport Low Carbon Frameworks programme is currently undertaking a pilot project with two established schools in Cape Town around sustainable low-carbon scholar transport options (Modau 2017). This project has thus far identified carpooling, walking and/or cycling, Uber Pool and public transport as possible low-carbon interventions (Modau 2017).   uGoMyWay, the Cape Town based carpool platform, has secured a working relationship with WWF on this project, after I, the researcher, assisted with introducing the two entities (Interviewee 14 2017b).

Cycling is being promoted in the Far South as a commuter option for low-income commuters and scholars by organisations such as BEN bikes and the Pedal Power Association (PPA) of South Africa.  There is a BEN bicycle shop in Masiphumelele that serves the local community and provides the bicycles for tourist bicycle tours of this informal settlement. The PPA has recently announced that they will be distributing 500 bicycles in the Far South in their quest to establish a cycling culture in the area. In addition, Open Streets Cape Town, the organisation that has become known for raising awareness about the role of streets in this city, has teamed with WWF, the PPA and Ben Bikes in initiating a 'Bike2train' challenge to encourage cycling as a commuting option to connect to rail stations.  The first challenge was rolled out in Kuils River, a train station on the Northern line.  Being an avid Open Streets follower, I made contact with this organisation at the start of this research.  Interactions between myself, as the researcher, and this team of sustainable mobility activists led to some fundamental endeavours that could spark change in the study area.  It included a written blog post on carpooling by myself, the researcher, for the Open Streets website (see Figure 4.21). Further, Open Streets launched the next Bike2Train campaign at Fish Hoek station, as a result of interactions with myself and City officials during this research process (Sasman 2017), see Photos 4.7 and 4.8.

**Photo 4.7:** Bike2Train campaign at Fish Hoek train station. Source: Open Streets Cape Town



**Photo 4.8:** Bike2Train participant at Fish Hoek train station. Source: Open Streets Cape Town

## 4.8    Conclusion: Barriers

This chapter is concluded with presenting the findings on the research objective that aimed to identify a mutual understanding of the issue at hand (Brown et al. 2010).  That being the barriers to establishing a more sustainable transport system in the Far South.  This step correlates with acquiring **systems knowledge** aligned with transdisciplinary research as outlined in paragraph 1.7. Figure 4.23 depicts an Atlas.ti code network comprising barriers identified across the qualitative dataset. This was done through analysing all data groups that constitute this participative transdisciplinary inquiry, these being: participant account data (primary data), data obtained from parallel processes (secondary data) as well as contextual data such as documentation, as outlined in Table 1.1.  The barriers or 'forces of stability' can be divided into five main interrelated groups: *biophysical constraints*, *land use barriers*, *transport constraints*, *political economy and governance*, and *cultural barriers*, as outlined in Table 4.12. The key themes in each have been discussed in preceding sections and were, in cases, strengthened by the spatial analysis.



**Figure 4.23**: Interconnected barriers to a more sustainable transport system in the Far South.
Source: Atlas.ti network view with qualitative codes.

**Table 4.12**: Barriers to sustainable mobility in the Far South.

| Barrier Group | Sub-elements |
|---|---|
| Biophysical constraints | The physical topography and the sensitive natural surroundings constrain access to the area, limit functional spatial linkages with the rest of Cape Town, and limit development growth. |
| | The natural setting does, however, contribute to the area's appeal and sense of place, drive the tourism economy, and fuel a thriving property market due to proximity to these natural features. |
| | Developable land is diminishing, therefore fetching premiums in the land market, which |

| | |
|---|---|
| | coupled with the need for secure living, produce only one urban typology - exclusive gated communities. |
| | Yet, the natural features remain inaccessible to low-income residents that are located further away and are largely reliant on road-based transport to access these natural assets. |
| Land use | The Far South is a predominantly low-density, racially segregated, residential enclave. |
| | Higher population densities are only evident in areas traditionally designated for the Black African and Coloured communities. In this sense, the area is a classic example of urban South African post-Apartheid. |
| | Car-centred gated communities are a popular urban typology and together with the trend of retrospectively closing neighbourhoods, respond to an increase in fear of crime amongst residents. |
| | The main economic nodes differ in that one is a car-centred retail precinct (two shopping malls) and the other a traditional activity street supported by a public transport interchange. |
| | There is an inadequate supply of social facilities such as schools and health centres, compounding transport related challenges. People are obliged, or those that can afford to choose, to travel mostly using private transportation to such facilities on offer elsewhere in the city, entrenching a local system of automobility. |
| | Future development growth scenarios informing the Draft FSTP, point to a severely compromised transport network in the medium term, unless further road infrastructure is provided, i.e. widening of OKW. |
| Transport constraints | The transport network in the Far South is under strain, caused by some of the factors already mentioned such as biophysical characteristics, a sprawling car-centred homogenous urban form compounded by urbanisation and population growth. |
| | The majority of the residing working force exits the area daily, via two congested roads and an overcrowded and unreliable rail service. |
| | The Far South's modal share is 20%:80%, public versus private transport. A ratio the exact reverse of the City's ideal. Minibus-taxis are the preferred public transport option. |
| | Current road expansion projects are projected to alleviate internal congestion, but will not ease the pressure on the gateways. |
| | A new road link, proposed to improve internal accessibility for some suburbs, has erupted in a heated uproar amongst communities. |
| | The biggest decline in modal share has been from rail to road, in particular, the 'discretionary users' who can afford private transport. Yet, the FSTP perception survey shows that participants are still willing to consider shifting to rail in the future.  However, even protracted roadworks along Main Road (nine years) did not cause a shift to rail. |
| Governance, politics and culture | The car culture is entrenched in the Far South due to the biophysical and land use barriers mentioned here.  Concerns with the rail system further prohibit an alternative culture. |

# 5. Sustainable transport transition dynamics in the Far South

## 5.1    Introduction

The preceding chapter presented an analysis of the urban dynamics in the Far South.  It detailed the forces that keep automobility stable and niches that attempt to contest the autonomy of the automobile through deviating from the status quo.  Although the focus of the research is on short-term solutions for commuters in this enclave, a broad understanding of the current situation around public transport services was required to comprehend whether it can be a viable and desirable alternative. Similarly, a clear grasp of the City's spatial vision and associated policy direction were needed to understand the implications for the Far South. It turns out that both elements - a dismal rail service and an entrenched fragmented urban form - are in need of transformation that will take time. Refusing to accept this long delay, I went in search of short-term bottom-up solutions to the symptoms of automobility, such as congestion, in the Far South.

Considering that a transdisciplinary inquiry such as this, allows for 'a holistic leap of the imagination' (Brown et al. 2010), this chapter leads with a summary of the results of the knowledge generation process - the imaginative search for solutions. This process encompasses the third type of knowledge synonymous with transdisciplinary research, i.e. **transformation knowledge**, offered here as the **research's contribution to society** (Pohl & Hadorn 2007). The resultant knowledge is further assessed through alignment with solutions provided by the sustainable transport discourse as earmarked in the literature review (see chapter 2), and against the recommendations made in the City's Draft FSTP. It is followed by an overarching analysis of the status of automobility, through a transition theory lens, using the MLP as the theoretical framework. This analysis **constitutes the scientific contribution of this transdisciplinary research**.

## 5.2    Contributions to society: Findings of solution-driven research

> Ideas matter. Ideas are indispensable for interpreting what is wrong in our cities, how it can be fixed, and what is better than what we are settling for at the moment. Ideas can ignite creative energy, resistance and movements for change. Ideas can also fix the future, creating the conviction that we are trapped by the powers of geography, time and capital flow.
>
> Pieterse 2008:148

Transdisciplinary research is participatory and solution driven by nature and is arguably a good research response to the call by academics to locate transport within society (Schiller et al. 2010; Schwanen et al. 2011; Hickman & Banister 2014).  Chapter 1 described how this research aimed to enable such a research approach that could ignite imaginations of real-world actors. What follows is an account of identified solutions to the many symptoms of automobility in the study area. A distinction is made between ideas offered by community members and by government officials (including recommendations made in the Draft FSTP), to emphasise the relational nature of city and infrastructure design as argued in chapter 2 (Graham & Marvin 2001; Guy & Marvin 2001; Latour 2008; Pieterse 2008; Tonkiss 2013). A further alignment is presented between these ideas and best practice ST interventions as outlined in chapter 2. To this end, the 'avoid-shift-improve' ST approach allows for a useful analytical categorisation. It is noted that although the aim was to elicit short-term solutions, many participants saw this research as an opportunity to propose solutions devoid of timelines. Table 5.1, therefore, encompasses *all* solutions gathered through the research process, whereas subsequent sections probe into practical solutions that could happen over a shorter timeframe.

**Table 5.1:** Alignment of Sustainable Transport interventions (literature review) and results from solution-driven research (citizens and authorities).

| Sustainable Transport area of influence | Examples from literature | Far South participants (Primary data) | Far South authority participants (Primary data) | Draft FSTP proposals (Secondary data) |
|---|---|---|---|---|
| **Avoid** the need to travel (Substitution) <br> Technological Fix & Social/Cultural Fix | | | | |
| TDM interventions could assist with this as well as private sector niches. | Internet shopping | Idea of online shopping supported but citizens expect retailers to encourage shift more. | - | - |
| | Changes in work trends (i.e. work from home) | Local job creation. Need for local office developments. Many already work flexible hours, but still have traffic concerns even over weekends. Others hope that companies will consider allowing staff to take flexible time, but regard it as a power/control concern for managers. | Work from home or move closer to work. City as an organisation is allowing remote working and flexible working hours. However, one participant hinted at the difficulties around implementation experienced by the City (i.e. only management staff can). Local job creation. | Local Economic Study to be done to determine growth sectors and to encourage local economic investment. For example, small business hives in Masiphumelele and Ocean View. Encourage office development in the area. Recommended that the City investigate overlay zone for business development incentives (tax holidays, rate rebates) Encourage a partnership with the Navy to expand economic activities associated with it, i.e. ship repairs. Proposal to investigate the tourism potential of the area to maximise natural amenities.  Investigate feasibility of selling state assets that might have tourism potential to the private sector. Engage businesses to encourage flexibly working. |
| | Car-free days and temporary car-free streets | - | Demonstration experiment, such as an Open Streets day and encourage ridesharing during 'transport week' in Oct. 2018. (This research | - |

| | | | led to Bike2Train campaign being run in this area) | |
|---|---|---|---|---|
| | **Case specific** | Improved internet connectivity for the area to allow work from home (there is a drive from citizens to entice service providers to roll-out fibre optic internet networks). | - | City to investigate ideal routing for fibre optic system to supply to service providers and assist with finding land for cell phone masts. |
| | | Combining trips for delivery vehicles to retailers in the area. | - | - |

| Sustainable Transport area of influence | Examples from literature | Far South participants (Primary data) | Far South authority participants (Primary data) | Draft FSTP proposals (Secondary data) |
|---|---|---|---|---|
| **Modal Shift** through transport policy<br>Social / Cultural Fix | | | | |
| Prioritising public transport over private transport (TDM measures) | **Transport measures** | | | |
| | NMT policy | Better sidewalks and cycling lanes.<br>Bicycle parking required. | Encouraging cycling internally in the area with supplying bicycle racks and cycle routes. | Kommetjie Road and OKW seen as key NMT routes, current roadworks will provide dedicated bus and NMT lanes in parts.<br>City to deliver bicycle parking (lock up) at Fish Hoek station, Sun Valley mall precinct. |
| | Speed restrictions | Speed reduction and better signage for bridal paths in Noordhoek. | - | - |
| | Car-free zones | Noordhoek ratepayers investigating retrospectively turning some streets to resemble 'woonerf' concept. | - | - |
| | Parking controls | - | Parking requirement relaxations in areas close to public transport (Cape Town MPBL). Through TDM policy looking at disincentivising parking through making it more expensive (elsewhere in Cape Town). | City to provide secure park-and-ride facilities at public transport interchanges (Masiphumelele, Fish Hoek, Ocean View and Sun Valley Mall). |
| | Enable ease of car-sharing or carpooling (ridesharing) | Many informal lift clubs are operating already.<br>Uber used frequently as ride-hailing option.<br>Interest in mobile phone carpool platforms. | Need to clarify legal concerns around this option before the City can actively promote it. In general, the city is supportive of increasing vehicle occupancies. | Proposed to use data from perception survey to determine what other elements are playing a role in ridesharing, i.e. distance, flexibility, legal liability. |
| | Encourage public transport use | Majority of participants saw reliable and safe public transport as the ideal solution, be it buses (BRT, GABS) or rail. | It is a key COCT policy directive. Modal shift is fundamental to success of TOD and to reduce congestion and environmental concerns.<br>Encourage shift to buses (GABS and minibus-taxis). | Proposals include upgrading and providing Public Transport interchanges at Masiphumelele, Fish Hoek, Ocean View, Sun Valley Mall (including bicycle and park and ride facilities).<br>Kommetjie Road seen as key public transport route, current roadworks will provide dedicated bus and NMT lanes in parts.<br>Recommended that the City look at providing a public transport service over OKW (minibus-taxi or bus). |
| | Improve reliability and reach of BRT | Participants have a good perception of the MyCiti BRT service and request that it is | MyCiti is hugely popular and perception levels are high in serviced parts of Cape Town. The roll-out | Investigate feasibility of a scheduled bus service from Sun Valley Mall to Hout Bay, via CPD. |

| | | | | |
|---|---|---|---|---|
| | | extended to serve the Far South. | is focussing on Metro South East where the numbers are, and also the greatest need. Establish an integrated public transport system (ticketing). | |
| | Improve reliability rail systems | General agreement that rail is a sustainable option but there is also a general discontent with the current state of Metrorail. Substitute railway line with light rail. | Rail is seen as the backbone to the entire COCT public transport system and for the success of the TOD strategy.   Yet, the City's influence over it is restricted and the uncertainty over its future is hugely problematic. | Existing rail capacity at Fish Hoek does not need improvement, being at the end of the line. Capacity needs are elsewhere on the Southern Line. PRASA to address 'crime and grime' urgently. Longer term take over operational subsidies and enter into service level agreements with PRASA. City to urgently "consider other strategies in order to address the current rail crisis in Cape Town (TDA Cape Town 2017d: 35). |
| | **Case specific** | Local school bus service. | Would welcome private operators to assist with transport challenges, i.e. school bus service. | - |
| | | - | Minibus-taxi as potential partner for a BRT feeder bus route (over CPD not Kommetjie Road as it is an existing taxi route). Establish a training centre for drivers in the area to increase safety concerns. | Boost existing GABS and minibus-taxi services along Kommetjie Road (bus stops, NMT facilities). |
| | | MyCiti feeder bus or private transport operator to create a link between Far South and BRT stations in Hout Bay via CPD.  Yet, safety aspects and frequent closures of CPD reduce desirability of such a service. | Might need to investigate the viability of a premium service between Kommetjie and Hout Bay, yet careful to not impede on minibus-taxi routes and business. | Investigate feasibility of a scheduled bus service (premium) from Sun Valley Mall to Hout Bay, via CPD. Road allows for buses narrower than 2,5m (different to existing feeder buses).  Business case to be formulated. |
| | | Motorbikes as commuter choice. | Motorbikes could be a good alternative for this area. | - |

**Economic measures**

| | | | | |
|---|---|---|---|---|
| | Road pricing | Renegotiate CPD toll road concession to allow further discounts (or free) to locals. | Possibly, renegotiate concession when it is up for renewal in 2032 to reduce fees for feeder bus services. | Recommended that the City liaise with Province on bigger discounts for locals to increase the usage of CPD. |
| | Congestion charge | - | - | - |
| | Fast-track cancellation of fossil fuel subsidies | - | - | - |
| | Carbon pricing | - | - | - |

**Institutional measures**

| | | | | |
|---|---|---|---|---|
| | School travel strategies | Cooperation from local schools around a local school bus service. | See it as a needed service but it would be a private service for private customers. City's role in this is minimal. | - |
| | Corporations supplying alternative transport options to employees | Carpooling incentives by businesses (uGoMyWay and Accelerate Cape Town pilot). | Need to clarify legal concerns around carpooling before the City can actively promote it. In general, the city is supportive of increasing vehicle occupancies. | Need to clarify legal concerns around carpooling before the City can actively promote it. |
| | Integrating government functions | - | Integration of land use and transport functions (formation of the TDA). | Integration of land use and transport functions (formation of the TDA). |

| | Case specific | Encourage partnerships between local service providers, such as using carpooling platform to encourage organised hitchhiking. | - | - |
|---|---|---|---|---|
| | | Negotiate special arrangements with CPD concession holders during accidents and disasters (i.e. when fires led to road closures in 2016). | - | - |
| | | Work with businesses such as shopping centres to entice private bus services to use the parking areas as lift-club zones. | Work with businesses such as shopping centres to entice private bus services to use the parking areas as sustainable transport zones, i.e. a small bus service for retirees as it will bring customers to the economic areas. | - |
| | | Some suggest engaging with developers constructively, others continue to use stalling tactics (objections) to scare developers away from the area. | Closer working relationships with developers to enable TOD investments. | City to investigate incentivising developers to develop in TOD areas (tax holidays, rates rebates) |

| Sustainable Transport area of influence | Examples from literature | Far South participants (Primary data) | Far South authority participants (Primary data) | Draft FSTP proposals (Secondary data) |
|---|---|---|---|---|
| **AVOID & SHIFT** Land Use policy (Distance reduction) <br> Social / Cultural Fix | | | | |
| | Increasing densities, concentrate mix use development around transit stops (TOD). | Create the demand for the redevelopment of areas such as Fish Hoek (local authority to incentivise developers), hinging on accessibility and improved rail. <br> Some residents of the opinion that Fish Hoek can 'handle' TOD type densification, but the scenic drive classification of Main Road could restrict. | Fully supportive of TOD across the City. Fish Hoek CBD is seen as a potential area for such interventions. Rail would form the public transport backbone. | Recommend enabling a local plan for Fish Hoek CBD around TOD principles. <br> Recommended that the City investigate overlay zone for business development incentives (tax holidays, rate rebates) <br> Encourage office development in the area. |
| | Decisions around location of new housing and non-residential development. | Entice developers to develop in areas where the need is dire, i.e. Ocean View and Masiphumelele. <br> Many participants saw the tide of new residential development as inappropriate given the sense of place and natural surroundings (i.e. legal battle over Kommetjie extension). <br> 'Contextually appropriate densification' is preferred. | Admit that some of the gated housing decisions that the City was opposed to (approved by Province on appeal) should never have happened. <br> Limited power over what developers actually propose (in terms of MPBL). <br> Require a closer relationship with developers and communities to facilitate appropriate development. | Encourage retirement development, as it does not impact significantly on peak travel demand. |
| | Design of buildings and spaces. | Many see the redevelopment of the commercial node in Sun Valley as a missed opportunity, i.e. the need is not two shopping centres opposite each other. | Limited power over what developers actually propose (in terms of MPBL). | City to identify areas where the 'high streets' concept in TOD areas can be encouraged, while disincentivising large retail developments. <br> Incorporate TOD design principles into policies to encourage an appropriate built form. |

| | | | | |
|---|---|---|---|---|
| | Car-free development. | - | - | - |
| | Adjusting standardised planning thresholds. | - | CSIR has revised planning standards as recent as 2015. | - |
| | | Increase supply of schools (primarily public and some private) and health facilities (i.e. private hospital) to reduce the need to travel.<br>(Yet, an application for a private school is heavily opposed by surrounding communities). | Provision of schools is not the City's ambit (Provincial function). There is an uptake of private school interest in the area. | Encourage local economic growth to increase thresholds for additional services such as schools and hospitals. |
| | | Institute a moratorium on all new development. | - | - |

| Sustainable Transport area of influence | Examples from literature | Far South community participants (Primary data) | Far South authority participants (Primary data) | Draft FSTP proposals (Secondary data) |
|---|---|---|---|---|
| **IMPROVE** efficiency<br>Technological Fix | | | | |
| | Alternative fuels (ethanol, biodiesel, hydrogen, electricity). | - | - | - |
| | Physical infrastructure provisioning for public transport and EV industry. | Improvement of rail system (trains, signalling and stations).<br>Tuk-tuks.<br>Park and ride (secure) facilities at stations. | PRASA's rail revitalisation strategy aim to invest heavily in rail infrastructure.<br>Turn the rail into a tram service to make it unique to the South Peninsula and to honour the scenic and historical connections. | |
| | Innovation in public transport infrastructure (smart public transport). | Integrated ticketing system. | The City is working towards establishing an integrated ticketing system. | The City is working towards establishing an integrated ticketing system, Kommetjie Road a key route. |
| | Alternative vehicle design for fuel economy and by lowering emissions (HEVs, BEVs). | Unaffordable option at present. | - | - |
| | **Case specific** | **Road investment**<br>**Varying opinions and suggestions:**<br>Improve road networks,<br>Ban trucks from OKW,<br>Ban overtaking on OKW,<br>Taxi owner welcomes Houmoed Road link,<br>Passing lanes and widening on OKW,<br>Bypass over key intersections,<br>Rather invest the money in functional public transport than widen OKW.<br>More roads will | **Road investment**<br>Kommetjie Road upgrading is needed to relieve congestion.<br>One participant said what if the City was to take a road link away from the Far South, would that entice the kind of behaviour change needed?<br>SANParks would oppose widening of OKW through the TMNP, suggest the City uses the R780million and develop the economy in the Far South or install a tram along the railway line.<br>A tunnel through the | **Road investment**<br>Possible road upgrading schemes as proposed in the FSTP.<br>Three major gateway improvements possibilities:<br>Fish Hoek Bypass (R1,18 billion)<br>OKW widening (R780 million)<br>Partial widening of Main Road<br>OKW widening is the preferred option at this stage, subject to further studies.<br>Houmoed avenue road link is crucial over the short-term. |

| | | encourage more development. | mountain an option for others.<br>Houmoed road link will increase access for Masiphumelele residents to economic opportunities. | |
|---|---|---|---|---|

| Sustainable Transport area of influence | Examples from literature | Far South community participants (Primary data) | Far South authority participants (Primary data) | Draft FSTP proposals (Secondary data) |
|---|---|---|---|---|
| **AVOID, SHIFT & IMPROVE** Behavioural changes 'Soft psyche'<br>Social / Cultural Fix | | | | |
| | Ecological driving (eco-driving). | - | - | - |
| | Raise public acceptability as it drives political acceptability (impact on quality of life and business practices) – through experimenting with innovative policy measure (as mentioned above). | One suggestion was to use the social media platform created for this research to serve as a way of encouraging carpooling. | - | The City is currently busy with a congestion awareness drive, where flexible working hours and remote working are encouraged.<br>Proposed to use data from perception survey to determine what other elements are playing a role in ridesharing, i.e. distance, flexibility, legal liability. |
| | Awareness campaigns (information, education and the use of media). | - | The City is currently busy with a congestion awareness drive, where flexible working hours and remote working are encouraged. | The City is currently busy with a congestion awareness drive, where flexible working hours and remote working are encouraged.<br>The City to entice the CPD concession holders to run an awareness campaign in media regarding potential savings for locals. |
| | Active involvement of users encouraged in policy debates and interventions. | Run community workshops around the new planning legislation for residents to understand their influence over such decisions and raise awareness about municipal projects. | Generally, the view is that the City expects 'push back' from communities. Further, the City experiences lack of trust from communities in their statistics and modelling used in many cases. | - |
| | **Case specific** | Organised hitchhiking to match riders and hitchhikers, with built in safety mechanisms. (I.e. Give a Lift social media drive active in the area at present). | - | - |
| | | Encourage active citizenry, evident in examples such as the Living Hope School Bus. | Would welcome private operators to assist with transport challenges, i.e. a school bus service. | - |

## 5.2.1  Myriad of aligned and contested solutions

This section presents observations relating to Table 5.1.

**Avoid**

Regarding strategies to *avoid* the need to travel, this study shows that both the City and the participating citizens see the benefit of working flexible hours and the creation of local job opportunities such as local office developments. Improved Internet connectivity for the area is a prerequisite agreed upon by both groups.  The City as an organisation has set the trend in allowing their staff to work either remotely or flexible hours to curb congestion.  However, a City official indicates that there are limitations to this seemingly blanket concession as many of the individual line managers prefer people at work during normal working hours (Interviewee 17 2017b).  A member of the SPTC apparently agrees:

> *SPTC member 3 2017*:  "We hope that a positive outcome of this horrendous congestion is businesses offering flexi time or work from home options to the staff that can do this. We both felt that the limitation to this roll out lies predominantly with Organisational leaders and their struggle to let go of their 'control' of staff. I believe many businesses take a punitive approach, assuming staff will abuse this option as opposed to valuing it, which is a problematic starting point. However hopefully with the City promoting this, it will have legs."

As alluded to before, some City officials view people living closer to their places of work as a short-term solution (Interviewee 10 2017; Interviewee 20 2017). Although a resident expresses a countering view when indicating that work circumstances can change unexpectedly, possibly implying that one's living arrangements are more established:

> *SPTC member 18 2017*:  "My company is moving offices to Woodstock from Kalk Bay. As a result, they are offering the staff flexi time. Will have to see how it goes from next week. Not looking forward to the traffic as one still needs to go in core times if you have kids."

What this analysis further indicates is that some City officials acknowledge the benefits of creating car-free environments thus aligning with the sustainable transport discourse, be it temporarily in the form of car-free days or car-free streets (SloCAT 2016). As illustrated in previous sections, Open Streets Cape Town is emerging as a niche (institution) in the greater Cape Town context that fulfils this role.  This institution has attempted to hold an 'open streets day' in this area before, but the City expressed concern over emergency routes, as it was when the Main Road roadworks were underway.  It could be beneficial to initiate this discussion again.

**Shift**

When it comes to *shifting* to public transport, there is alignment between examples from the literature and those offered by the participating citizens and authorities regarding the need to establish a safe, reliable and integrated public transport system in the area.  It is evident in the desperate calls from both the residents and local authorities to urge national government to deliver on their rail revitalisation promise as discussed in previous sections. On this topic, residents submitted creative ways of repurposing the railway line into either a light rail service

or tram with parallel NMT lane to exploit the scenic and tourism potential, as captured by this excerpt:

> *Email participant 2:* "This must be one of the most beautiful lengths of railway track In [sic] the world, with historically interesting stations along the route. But the trains are disgusting with their filthy little windows which can't be seen out of. Security is also an issue. The train could be a HUGE tourist attraction, but as it is we wouldn't recommend it to anyone. We would like nothing better than to leave the car at home for our day & evening jaunts into Cape Town & travel by public transport. Instead, we just add to the congestion."

BRT is another topic of alignment across the literature and the two participant groups.  The community participants on the whole held a positive view of the MyCiti BRT service, despite it not operating in the area. A recent COCT benchmark study on the BRT indicates very high customer satisfaction levels, as discussed before. A key community representative notes that the service is popular, has a good reputation and is successfully used by all income groups (Interviewee 12 2017).  It is thus no surprise that residents are calling for an extension of the service to the Far South.  An extract from the social media group illustrates a short discussion on this topic, see Figure 5.1. Some participants raised concerns over the MyCiti's seemingly complicating ticketing system (SPTC member 12 2017; SPTC member 14 2017). Conversely, a participating city official guards against creating expectations in the area, when reiterating that the service is being implemented according to priority areas, i.e. denser low-income areas in the southeast of the Cape Town (Interviewee 17 2017b). Nonetheless, the Draft FSTP does recommend for an investigation into the feasibility of a feeder bus service linking Kommetjie with Hout Bay (closest MyCiti infrastructure), via CPD, but simultaneously note potential restrictions due to the geometry of this scenic drive (TDA Cape Town 2017d).
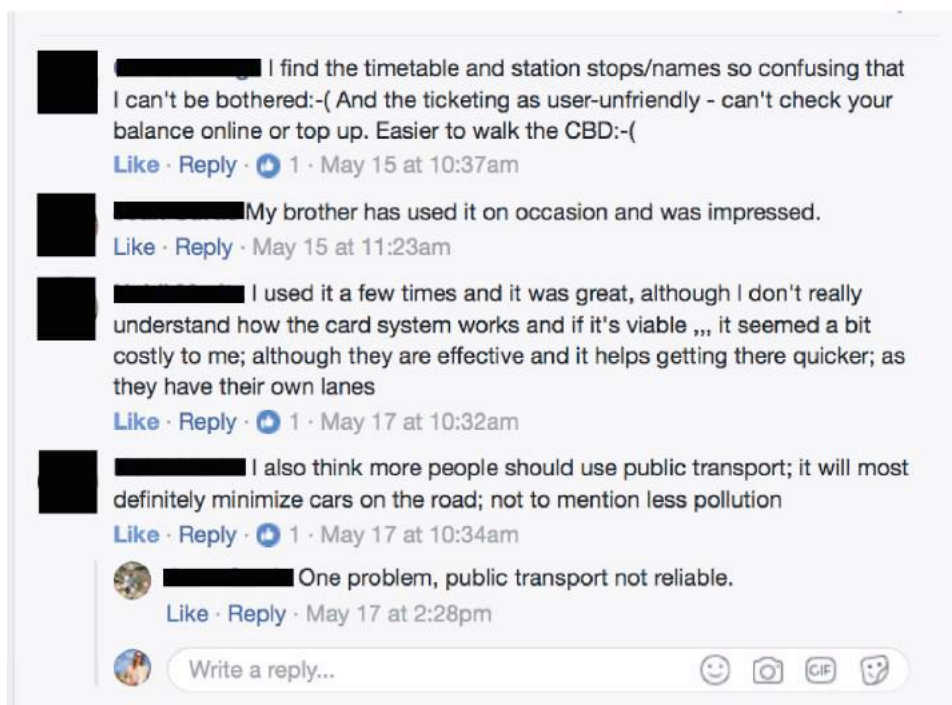


**Figure 5.1:** Extract from a discussion on the social media group about the MyCiti BRT service. Source: Facebook, South Peninsula Transport Chats Closed Group

It became apparent from the qualitative data that the majority of the citizen participants view a school bus service as a short-term intervention.  Two of the niche developments discussed in paragraph 4.7 are localised examples of scholar transport already operating in the area, one as a profit-driven initiative, the other offered as a free service. The consensus for solutions to scholar transport is highlighted in the quotes in Textbox 5.1.

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**Textbox 5.1:** Interviewees' views on a scholar transport solution

*Email participant 7:* "An alternative to this would be the introduction of a bus system to transport all the learners & students commuting to & from our valley to schools (& extra-murals) & universities in the Southern Suburbs & beyond. This would take a lot of "Mama's Taxis" (moms driving back & forth) off the congested roads leading away from the valley. These buses could park, at the start & end of their journeys, at the Valley's shopping malls, as well as at the train station & taxi ranks."

*SPTC member 3 2017:* "I don't know exactly where all the schools are that the kids commute to every day but I'm sure that a safe bus system would significantly decrease the morning traffic in particular."

*SPTC member 20 2017:* "In terms of public transport, i strongly believe that the my citi bus service should be implemented from kommetjie to Fish Hoek with phase two kommetjie to Westlake - it makes perfect sense and will be used by working folk as well as school kids -what do you think?

*Interviewee 4:* "As there is a definite need for transport especially for the school children travelling to Reddam in Tokai and Fish Hoek schools."

*Interviewee 4:* "What about public school busses for the large numbers of children from the Far South attending school at Reddam and elsewhere in the Southern Suburbs. A recent 2030 Vision Process the NRPA ran for Noordhoek, shows clear support for on-time, clean and safe public transport. We believe that this kind of public transport is the most desirable long term sustainable solution to the traffic congestion in the Far South."

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The City recognises this demand in the Draft FSTP, but sees private operators responding to it with the City assuming a limited role in this regard (TDA Cape Town 2017d).

The literature advocates for slowing down traffic and enforcing stricter parking controls to discourage car usage. The Draft FSTP does not put forward speed restriction as an advantageous measure.  On the other hand, a Noordhoek community-visioning exercise has highlighted the need to enforce speed restriction to ensure a safe equestrian and pedestrian environment in this suburb (Noordhoek Ratepayers Association 2016). Whereas another actor group, SANParks, would welcome slowing down traffic on OKW (Slayen 2017), as discussed in the following section. As noted in previous sections, the City has recently made changes to parking requirements for new developments and in this context recommends establishing secure park-and-ride facilities at key public transport interchanges.

The research further highlights that neither the FSTP, nor the community or authorities suggested any economic measures (i.e. congestion charge, carbon pricing) as potential solutions, apart from agreement on pursuing a further CPD toll fee discount for local residents with the provincial government.

**Avoid and Shift (Land Use)**

The research suggests that the participating local government officials see densification and development opportunities, aligned with the TOD vision for the City, as the ultimate solution to the transport challenges in the area. Such a strategy would involve growing the local economy to create local jobs. Notably, this is not a short-term solution, but a frequently cited one nonetheless:

> *Interviewee 10:* "The best thing to do is to redevelop and part of redevelopment is intensifying, and create the thresholds, whether you like it or not and it is not what people want to hear. But it would be a positive thing."
>
> *Interviewee 17:* "So it's not about...you know it's easy....we do provide roads so people look to us and expect to solve the problem...the problem that way, but uhm we're needing to now look at ways that we can solve the problem through uhm, indirectly through what incentives or disincentives to uhm intensify in land use. So that's what we've been looking at, extending the study to look at."

To this end, some interventions are proposed in the Draft FSTP, such as developing overlay zones for TOD areas in Fish Hoek and conducting a local economic growth study (TDA Cape Town 2017d).  The aim would be to entice developers to invest in specific areas. However, as shown in previous sections, development growth is highly contested in the Far South. It is a three-way 'blame-game' between communities, authorities and developers, which is elaborated on in the following section. The research reveals a real need for the provision of local schools, which is again a contested area with the provision of public schools being a provincial mandated function, as discussed in chapter 4.

**Improve efficiency (technological fixes)**

The sustainable transport discourse shows the benefits of alternative fuels, alternative vehicle designs (BEVs and HEVs) and technological advances in the infrastructure supporting these. As stated before, the electric car industry is in its infancy in South Africa with the available EV's on the market being largely unaffordable and poorly provided for in terms of charging stations.

As far as improved rail technology is concerned, the City is optimistically cautious about PRASA's rail revitalisation process, and it remains a long-term strategic intent.

As reasoned in the literature review, continuously building more roads to solve congestion can be an 'irrational rationality' in that it can lead to more congestion (Zijlstra & Avelino 2012). However, one could argue that in the South African case a functioning road network is required for conventional buses (GABS), minibus-taxis and any other more sustainable bus services. Councillor Brett Herron sums up the City's position on road expansion in this statement:

We are aware that building our way out of congestion will not solve the problem in the long-term. The only sustainable solution is to have significantly fewer private vehicles on our roads. However, as much as we want private vehicle owners to make use of public transport, we have to take into account that it will take some years to establish other reliable and attractive travel alternatives across the city to give people in private cars realistic choices – of which passenger rail is the most obvious. We have to add capacity to the existing road network to provide some form of relief in the severely congested areas of the city while we are working on establishing an efficient, affordable, extensive and intermodal public transport system.

<div align="right">Transport Cape Town 2015a:n.p.</div>

Yet, this study points to a myriad of conflicting views on road expansion in the Far South. This debate supports the arguments offered in paragraph 2.5, which call attention to the design politics of infrastructure investment and associated 'congealed social interests' (Graham & Marvin 2001; Graham 2010; Tonkiss 2013).

Participants expressed opposition to any further road expansion in the area, see Textbox 5.2. On the other hand, residents are of the opinion that road expansion might relieve congestion and improve access to economic opportunities. Others are convinced that road expansion is the only (long-term) solution to congestion, see Textbox 5.2.

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**Textbox 5.2:** Participants' views on road expansion

*Interviewee 11:* "Not another square metre of tar all this is horse shit we should be building MyCiTi bus routes and getting people up... as long as they are uncomfortable in their cars and frustrated great, good, fantastic."

*Interviewee 11:* "Make them... make it unpleasant in the car all you're doing is you're like a fat man making another notch in your belt eventually you're going to have a heart attack because eventually you're going to get so fat you're going to die. We cannot just keep making more roads. No Houmoed Road across a wetland, that is a nightmare, it's a nightmare."

*Interviewee 4:* "Okay, it makes no sense to continue to widen roads. If you look at cities like Los Angeles that have got [sic] six lane highways, it has not solved the traffic problem. The traffic gridlock still exists because the wider you make the roads, the more you are encouraging people using their cars... ."

*Interviewee 4:* "But the concern is that we will get more lanes on Ou Kaapse Weg, before we actually get a public transport system. It just does not make any sense to me."

*While on the other hand…*

*Interviewee 21:* "Doing something with Ou Kaapse Weg whether it be a tunnel or doubling it up or whatever that's all very well it might make that experience of going over Ou Kaapse Weg a little bit easier for the people doing it. You're still going to have a bottle neck at peak time in the morning you're going to have traffic hurdling over Ou Kaapse Weg onto the M3 and they hit Wynberg road, Kenilworth because the rest of the way into town is also an issue."

*Interviewee 8:* "I think the whole, that bypass road would help alleviate the linkages through to the shopping centres, Long Beach and Sun Valley. I think it's important. I mean if you look at the way people have to walk from Masi around the back."

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As discussed before, the Draft FSTP promotes infrastructure investment in this area as a necessity, with the widening of OKW supported as the preferred option. This is an expensive option that will no doubt incite a differed response, see Textboxes 5.2 and 5.3.

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**Textbox 5.3:** Interviewees' views on road expansion

*Email participant 1:* "Stop metro rail at Lakeside (maybe Muizenberg) and use the railway reserve as a ONE-WAY route for Main Road with (existing) main road being a ONE-WAY in the opposite direction."

*Email participant 1:* "Extra lanes (road widening) along full length of Ou Kaapse road."

*Interviewee 24:* "Build a tunnel through the mountain. Over-head train line or Underground."

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## 5.2.2  Short-term solutions

The research has disclosed the following as potential practicable short-term solutions to the transport challenges faced by commuters in the Far South. These will no doubt require further investigation and collaboration between various actor networks. Necessary actions would be to:

- Investigate the feasibility of a local bus for scholar transport
- Increase vehicle occupancy rates by encouraging ridesharing either through informal lift-clubs or through the uptake of carpooling through mobile phone applications. The popularity of this option could be enhanced through obtaining clarity on legal liability concerns
- Encourage a culture of sharing through giving lifts to hitchhikers when safe to do so or develop an appropriate platform to facilitate it
- Increase the desirability of Chapmans Peak Drive as an alternative through negotiating further toll-fee discounts for local residents
- Improve internet connectivity to allow flexible working arrangements
- Encourage developers to create office hubs in the area.

## 5.3    Contribution    to    science:    Applying    the    Multi-Level Perspective

As introduced in chapter 2, the basis of transition theory is the acknowledgement that the global environmental crises faced today, are tests for society (Geels et al. 2012). From a transition perspective, a 'wicked problem', such as automobility, is regarded as a complex socio-technical system consisting of a set of interrelated elements (Geels et al. 2012:16,49). These elements, together with a set of actors in each, have co-evolved over time to entrench this system. In this section, one of the sustainability transition frameworks, the MLP, is applied to automobility within the Far South as a specific local spatial context, see Figure 5.2.  In doing so, the focus is deliberately aligned with those arguing for a greater attention to space and scale within the MLP context (Hodson & Marvin 2010; Coenen et al. 2012; Farla et al. 2012; Swilling 2016) to deliberately embed the case within its geographical territory (Coenen et al. 2012).  The present study argues that space and scale are vital factors impeding the prospect of sustainable change in personal mobility in this context.

As sustainable transport is the overall focus of the research, the MLP levels (regimes and niches) is further contextualised in relation to the 'avoid-shift-improve' approach associated with sustainable transport policy. This approach further supports Banister's (2008) sustainable transport categorisation, as shown in Table 5.2:

**Table 5.2:** Theoretical thematic analysis, the link between the MLP and the 'avoid-shift-improve' approach to sustainable transport

| Sustainable Transport area of influence | MLP level |
|---|---|
| Substitution (**Avoid** the need to travel) | Niche: Temporary car-free streets. School bus solution to reduce trips |
| Transport & Land Use policy (Modal **shift**) | Regime: Policy changes |
| Technological innovations (**Improve** efficiency) | Regime: Policy adapted to accommodate new technology<br>Niche:  New ICT products in transport |
| Behavioural changes (**Avoid, shift & improve**) | Regime: Policy inducing behaviour change (TDM policy) and congestion awareness campaign<br>Niche: Carpooling, Hitchhiking |
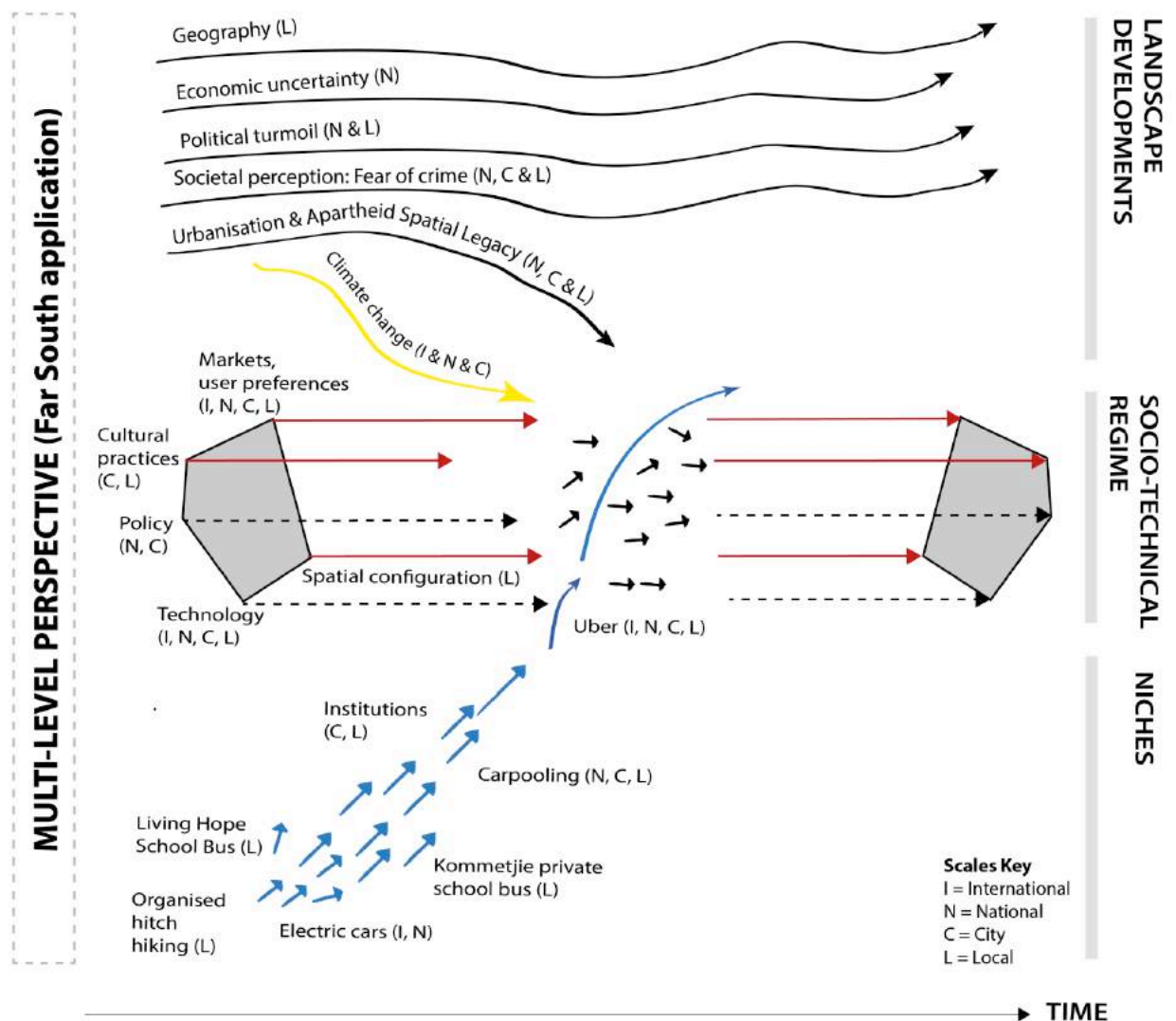


**Figure 5.2:**  The Multi-Level Perspective: A Far South analysis.  Source: Geels 2002. Figure 5. Adapted.

## 5.3.1  Dynamics at the landscape level

Conceptually, the socio-technical landscape comprises the 'wider context' within which actors and combinations of actors function (Geels 2002; Hodson & Marvin 2010; Geels et al. 2012).

> The sociotechnical landscape is a broad context that sustains action and makes some actions easier than others. These external landscape developments do not mechanically impact niches and regimes, but need to be perceived and translated by actors to exert influence.
>
> Geels & Schot 2007:404

It is fundamental to uncover the factors at the landscape level to build up a comprehension of the "… broader 'conditions', 'environment' and 'pressures' impinging on social-technical transitions" (Hodson & Marvin 2010:479). These 'external pressures' affect the regime and niche levels, but are not necessarily directly responsible for forming niches and regimes (Geels 2002).  Van Driel and Schot (2005) propose three types of landscapes; those aspects that cannot be altered, elements that can absorb changes over a long time-span and 'rapid shocks' happening over a shorter period.  What follows is a discussion about the landscape factors influencing automobility in the Far South, as depicted in Figure 5.3, aligned to Van Driel and Schot's (2005) classification. A further delineation is made to illustrate the influence of these forces across geographical scales (international, national, city and local).

As introduced in chapter 3, six landscape developments are identified as the 'wider context' for the case study.  In line with Van Driel and Schot's typology, these are: 1) the *isolated geographical nature* of the Far South as a force that cannot be changed. Forces that can absorb change over the longer term include 2) *climate change*, 3) *urbanisation* and the *Apartheid spatial forms* and 4) living with the *fear of crime.* Whereas the current 5) *political turmoil* and 6) *economic recession* in South Africa signify shocks that occurred promptly.
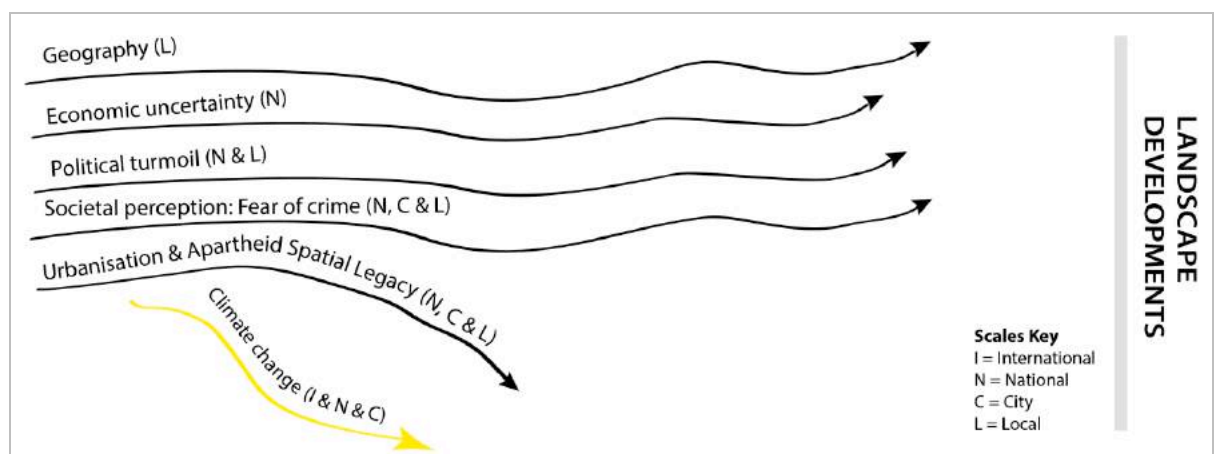


**Figure 5.3:** The landscape developments in the Far South.  Source: Geels 2002. Figure 5. Adapted.

**Geography**

The *geography* of the Far South, a peninsula with large tracts of land conserved into perpetuity, impede access to the area, impede mobility within the area and obstruct linkages with the rest of Cape Town. Yet, it greatly enhances its sense of place, tourism potential and quality of life for residents. The limited number of gateways into the area has shielded it from the impacts of urbanisation until the construction of OKW as a scenic route during the 1970s. It has since developed at a rapid pace, both formally and informally. This landscape factor is uniquely local and could not be changed. It does, however, engages a complex set of actors, from the residents navigating the mountainous terrain daily to those responsible for protecting this heritage for generations to come (SANParks), see Photos 5.1 and 5.2.



**Photo 5.1:** Aerial view of Chapmans Peak Drive looking towards the Noordhoek valley. Source: https://scontent.fcpt1-1.fna.fbcdn.net/v/t1.0-9/18838843_1400209590062665_ 4642186275003370125 _n.jpg?oh=b017ab957ffe43b0fa630a1d77e18ce1&oe=5A15F401



**Photo 5.2:**  Ou Kaapse Weg.  Source:  https://www.mountainpassessouthafrica.co.za /media/k2/items /cache/00d9b1e39f02d57be65ad2a9a6eaa3b8_XL.jpg

The Draft FSTP envisages at least one major road infrastructure investment needed to alleviate some of the traffic pressure on the gateways (TDA Cape Town 2017d).  The most likely intervention is the widening of OKW at an approximate cost of R780 million (TDA Cape Town 2017d). This infrastructure project would aim to reduce the current extended peak period congestion on this road to less than 2 hours, thus intending to speed up the flow of traffic.  Yet, SANParks would prefer traffic to slow down along this road to maximise the scenic value to visitors of the TMNP and, would for this reason, be against further road expansion (Slayen 2017).  Any attempt to increase the accessibility to this area traversing this mountainous terrain will thus be costly, provoke political contestation and would potentially severely impact the environment. The Draft FSTP has identified preliminary environmental impacts that include a potential loss of critically endangered vegetation and widening the existing barrier to movement of fauna (TDA Cape Town 2017d). Nevertheless, such an investment could alleviate congestion to a degree (TDA Cape Town 2017d). Having discussed the academic views on road expansion in the literature review as well as the contradictory views from the residents, it is argued here that geography as a landscape factor decreases the viability of an automobility transition in this area.

## Economic uncertainty and Political Turmoil

Two related rapid shocks occurred at the macroeconomic level in South Africa and coincided with the timeframes of this research.  A *political scandal* involving allegations of state capture and widespread corruption have led to investor rating downgrades and ultimately an *economic recession* from the second quarter of 2017.  The impacts of these shocks on urban mobility in the Far South are less apparent, but political instability and economic uncertainty remain forces at the national level that have the potential to permeate everyday life at the local scale. A negative economic outlook has had budgetary consequences, with local authorities expected to deliver quality transport services with reduced national grants, as discussed in chapter 3.  Infrastructure spending, especially on public transport, is a key national directive to enable the required urban transformation needed in South African cities (National Planning Commission 2011). Funding for such investments, in turn, hinges on a thriving economy and investor confidence. South Africa currently possesses neither. A local developer explains:

> *Interviewee 21*: "Funding is not so easy because the banks are running very shy at the moment funding for the road works or funding for developments."

> *Interviewer*: "Housing doesn't matter what type?"

> *Interviewee 21*: "Yes, largely because the macro economic situation and the downgrades that we got this year are having a very definite effect. The 2008 global financial crisis also had a ripple effect around the world including South Africa and the call that I had earlier was from Nedbank who is financing a project that I'm busy with and they have all kinds of bogus banking restrictions now in terms of minimising risk so that effects the way the banks look at every single project whether it be a property project or a trading investment or whatever it is and that just makes it…"

> *Interviewer*: "It just makes it a lot harder to do."

> *Interviewee* 21: "It restricts the growth of the economy because they are worried that they are going to be penalised for lending money for improvements and why it's getting improved so the whole system is getting problematic."

Besides, allegations of state capture and corruption are overshadowing large public transport infrastructure projects already underway, such as the R51 billion PRASA locomotive procurement transaction (Van Wyk 2017). Such allegations further taint the already struggling Metrorail commuter rail service and deteriorate trust in national government's ability to implement their 'turnaround strategy' of R173 billion and to stop the brazenly vandalistic attacks on the system. Participant remarks about PRASA and Metrorail confirm this argument:

> *SPTC member 17 2017*:  "Maybe start at the top and root out the dead wood? Just a thought."

> *Interviewee 21*: "Yes, it is because they haven't looked after their railways, they have allowed criminals to sabotage the system and the government doesn't call it sabotage they call it vandalising but its sabotage.  No one has been arrested and charged with sabotage in the last 5 years.  In fact I don't think since 1994 anyone has been arrested and charged with sabotage except perhaps Eugene Terblanche and a couple of his friends, but coming back to South Peninsula.  If Metrorail was operating a good system, it would take literally hundreds of cars off the roads from Simons Town to Muizenberg."

Political power plays between the ANC-led national departments, responsible for transport and rail, and the opposition-led provincial and local authorities compound the current *political instability*. The City has on numerous occasions expressed an interest in acquiring Metrorail from the national government and it remains a long-term objective, especially considering the vital role of rail in their TOD strategy (TDA Cape Town 2017b). A Memorandum of Action between PRASA and TCT (now TDA) signed in 2015 represents 'an implementation partnership' to address rail infrastructure in the city. Such a partnership signifies a long-term action that could make a sustainable transition more feasible.  Though, judging by the level of corruption in PRASA (Public Protector South Africa 2015) and Kates and Parris' (2003:8062) foreboding that "War, conflict, crime, and corruption are major threats to a sustainability transition in myriad ways", the opposite might materialise.  In this light, it is argued here that the current political turmoil in the country is a force of stability that will maintain the status quo at the highest level (national), with local actors feeling the brunt of it.

## Safety, security and the fear of crime

The concern for one's *safety* has emerged as a central theme throughout the research. It manifests in many ways in the Far South:

- The reluctance to use minibus-taxis (perceptions of reckless driving and illegal operators) and trains (PRASA's statistics shows a dramatic increase in security incidences)
- The increase in road accidents on OKW

- The popularity of gated communities and the tendency to retrospectively close neighbourhoods
- The vehement objections to new road links that improve accessibility to suburbs (i.e. Houmoed Avenue)
- Service delivery protests in communities of Masiphumelele (barricading of Kommetjie Road during the Cape Cycle tour) and gang-related violence in Ocean View.

Arguably, one could say that it is the fear of crime that is driving behaviour, but as shown in previous chapters, statistics confirm that life in the Far South is becoming unsafe. The resultant impact on mobility is fundamental as it seemingly requires "mass outbreaks of heroism" (Mees 2010:199) on the part of the user. This landscape factor has a paralysing effect on a future sustainability transition. Citations from participant interviewees endorse this argument, see Textbox 5.4.

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**Textbox 5.4:** Participants' views on safety and security

*In terms of road safety:*
*Interviewee* 4: "My son just got his licence okay. He got his licence, first time round over a month ago. I will not let him drive over Ou Kaapse Weg to school and back. Because it is just to freaky."

*Concerning safety on public transport:*
*Interviewee* 1: "…he was attacked 3 times on the train so it's a safety issue again" [a participant referring to her son travelling to college by train].

*Interviewee* 21: "Well that and also safety you don't know if you're going to have wheels when you come back in the evening or you might get mugged as you go to your car so if Metrorail are serious about getting people onto the train then maybe they should secure those park and ride facilities."

*Interviewee 11*: "Safety's critical for a transport system to work safety is critical, critical."

*Interviewee 6*: "It [Metrorail] might have been an asset years ago but it's definitely not anymore. Apart from the unreliability, it's not safe. It is like keeping a cow that doesn't give milk anymore."

*Fear of crime in suburbs:*
*Interviewee 13*: "But it is road reserve that the City is wanting to build that so [sic] you are able to come in here and come in here [sic[. And they are not so keen on it as it is a security issue."

*Interviewee 13*: "So security is an underlying thing through all of these. They will throw a technical question, but the underlying concern is ... how is my security going to be affected? "

*Fear of crime in everyday life:*
*Interviewee 11*: "Ja safety is critical to everything to economic development to recreation getting mugged on the mountain, getting mugged on the way to the taxi, getting mugged while you're at work."

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## Urbanisation and Apartheid spatial legacy

Previous sections have detailed the impact that *Apartheid* had on South African cities.  It is arguably a landscape force that has been exerting pressure on the regime to change since the birth of this country's democracy.  This is evident in the myriad of policies and legislation, across the tiers of government that call for a spatial transformation, which includes investment

in public transport, to address the inequalities that this spatial form has left in its wake. In this light, it is argued that the Apartheid spatial legacy is a landscape force that is asserting pressure on the automobility system to adapt, and has done so since 1994.

However, the entrenched capitalistic property market, amongst other factors, is hampering any significant change to this spatial form. The workings of the private property market further continue to add urban typologies to cities that rely on car use, such as shopping centres and gated developments. Chapter 3 shows that the Far South is an example of this phenomenon. Although, Cape Town's TOD strategy is evidence of a regime that is adapting to this landscape pressure and has the potential to enable a sustainable transport transition. However, as indicated in chapters 3 and 4, the City does not see the Far South as an 'area of need', when it concerns mass transit provisioning. This delineation is understandable, given that the Far South is an isolated enclave, accommodates a fraction of the City' population and is serviced by a trunk public transport mode (rail). Yet, one of the Far South's municipal wards (Ward 69) is the fourteenth fastest growing ward across the city (out of a total of 111 wards) (Statistics South Africa 2011).  This landscape force can change over time and is incrementally putting pressure on the regime.

### Climate change

*Climate change* is a landscape force across the world that is asserting pressure on regimes to develop and adopt climate change mitigation and adaptation policies and targets. International accords, such as the Paris Agreement, are furthermore compelling change in an urgent manner.  Chapter 3 outlined South Africa's broad commitments as required by the UNFCCC. With respect to transportation, the country proposes to make substantial investments in alternative vehicle designs, public transport and NMT infrastructure.  These commitments align with broader societal objectives, such as spatial transformation. It is likely that climate change will continue to influence city policies and strategies and thereby open up 'windows of opportunity' for niches to emerge, evident in the City's TOD strategy. The establishment of the nationwide EVIA might accelerate the roll-out of electric vehicles over time, and the focus on low-carbon transport will attract ICT and ITS solutions such as modern carpooling platforms. Although, as questioned before, the current economic uncertainty and political turmoil might deter foreign and local investors from generating the funding essential for a nation-wide climate change mitigation strategy, which in itself, is regarded as 'inadequate' at present (www.climateactiontracker.org 2017).

## 5.3.2  The regime level – the rules of the game

Having defined what is meant by a socio-technical regime in chapter 2, what follows is an account of the automobility system in the Far South in relation to the specific 'patchwork of regimes' associated with such a complex system (Geels 2002). Each specific regime consists

of a 'set of rules' that determines and influences actions, by actors and institutions, within these (Geels 2002, 2012). Examining these actions might uncover the behavioural acts that maintain automobility in this spatial context, such as the "habits of use, prevailing normality and mindsets and established practices of professionals" as well as the "everyday conversation and politics" (Geels et al. 2012:55). Taking cognisance of the critique of the MLP, this analysis is perceptive to space and scale.  Coenen et al. (2012) explain why a complementary multi-scalar approach is needed:

> What matters about scale is that characteristics of the locality have different impacts on the processes at all scales, so even processes operating at a global geographical scale are influenced by differences in localities, mediated by the way they affect the 'local' flavor of the process.

> Coenen et al. 2012:972

Figure 5.4 depicts the specific regimes observed in the case study that include markets and user preferences, spatial configurations, cultural meaning, technology and policy.
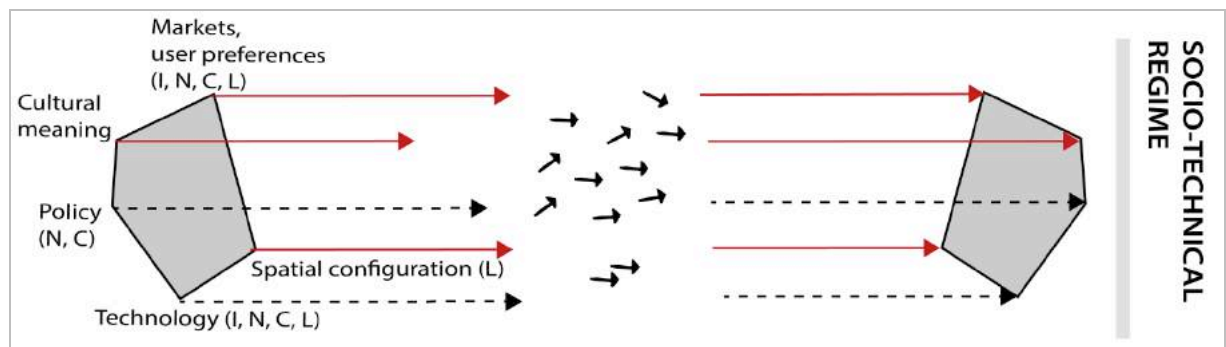


**Figure 5.4:** The regime developments in the Far South.  Red lines indicate regime factors seemingly maintaining the status quo, while dotted lines earmark those elements experiencing change.
Source: Geels 2002. Figure 5. Adapted.

**Markets and user preferences**

The spatial analysis in chapter 3 highlighted the *market-driven trend of supplying housing* through car-centred gated communities in the Far South.  This urban form encompasses exclusive estates as well as developments that cater for the first-time middle-class buyer. The demand for these estates is reiterated by this quote from a recent article on the South African Property News platform:

> There are only five estates in the Noordhoek valley area and the growing demand has continued – from upcountry investors who prioritise security as well as locals seeking a lifestyle change away from the city unabated – with property supply now lagging way behind.

> SA Property News 2016:n.p.

It would consequently appear that residents (users) prefer housing in this form, with the housing market willingly satisfying this demand. The need for safety, an identified landscape trend, contributes to this demand (SA Property News 2016). In doing so, the supply and demand dynamics within the property market further entrenches a car-centred lifestyle. The

unique local characteristics (spatial qualities) further influences the demand for housing, as the associated lifestyle (nature, beaches, mountains) attracts potential buyers across geographical scales, i.e. local Capetonians, South Africans relocating from other provinces, and foreigners (SA Property News 2014). It is consequently asserted that the dynamics of the market and user preferences in the property sector are maintaining the status quo and would therefore dissuade a land use transition that could support viable public transport interventions. The shortfall between the average population densities in the gated communities (average of 18 people / hectare) and the City's minimum threshold for a viable scheduled bus service (100 people / hectare) supports this argument (TDA Cape Town 2017c).

This investigation further found that this particular regime is not without its actor tensions between developers, authorities, potential buyers and community groups, as discussed in chapter 3. Concerns around development growth are widespread amongst residents, and has emerged as the main barrier to sustainable transport interventions. It is plausible to deduce that tensions amongst institutions and actors relate to perceptions held about the area by those in an official capacity to authorise development growth.

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**Textbox 5.5:** Perceptions and the private property market

***Short-term solution:***
*Interviewee 10*: "So the quickest solution, if you ... arguably if it is so painful, then don't do it. Go and live go and live near where it .. people... there is a sense that you want to live in paradise but work in the heart of activity."

***Level of personal sacrifice:***
*Interviewee 10*: "But the problem is going over the mountain, that is the big question here. It is getting over the mountain, and if you want to live far away you have got to. You know, I can speak from personal ... I wanted close to the sea, I then went and got married and the view was a central location ... and things like schools and stuff becomes important ... it is quite right. We we ... it works for us, although I still pine to live near the sea."

***Private market estimation of target market:***
*Interviewee* 4: "Part of the problem is that – and you can see it in the Virgin Active too, there is an assumption made by corporate business about this valley. And who we are as a target market. They don't waste time doing research. They have got an opinion about who we are okay. And that opinion is that we are low to middle income only and that we are a certain type of person. And that is why you get a lower tier Virgin Active here where the tiles are all terrible and falling off."

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For example, one interviewee, when asked about short-term solutions to growing congestion, responds that the easiest answer is to live nearby work opportunities, see Textbox 5.5. This participant, a government official, proceeds to emphasise the level of personal sacrifices one might need to endure to forgo traffic (Interviewee 10 2017). Another interviewee alluded to the notion that the Far South is seen as a place for retirees which might influence how authorities respond in terms of differing transport needs (Interviewee 13 2017). A different participant suggests that even the private market underestimates the nature of the target market in the Far South.

**Technology**

As discussed in the literature review, the effect of *living in the information age* has resulted in the rapidly evolving trend of utilising ICT to produce intelligent solutions within the transport sector and has consequently led to regime changes across geographic scales. For example, Far South commuters generate live traffic data through the use of mobile phones and global software applications (i.e. TomTom), and in turn, rely on the generated results to understand traffic flows on a real-time basis. The global ride-hailing platform, Uber, has already emerged as a global niche that has significantly influenced user behaviour in Westernised cities as well as in geographically isolated enclaves such as the Far South. As explained earlier, residents in the area have embraced this concept to the degree where allowing one's child to be driven around by a complete stranger is entirely acceptable, even if Uber policy does not condone it. This result is rather contradictory to the research finding of just how much of a concern safety and security are to individuals. It is possible to explain this contradiction due to a blind trust in technology to provide the necessary safety nets. There are, however, other possible explanations such as sheer desperation in having to manage congestion and a myriad of daily transport obligations (that of yourself and your children). In an area devoid of 'acceptable alternatives', technology in this form has become a 'godsend' (SPTC member 5 2017).

Uber has furthermore influenced policymaking on a national and citywide scale. The City amended the Metered Taxi Strategy in 2015 to refine its approach around such services, and it is reported that the NLTA is undergoing revisions to include similar changes (Dube 2015). The following statement in the City's draft CITP points to further regime adjustments in adopting this technology in other domains:

> The lesson from e-hailing is that it has transformed the quality, reliability and safety of metered taxi services. The City's intention is now to explore a wider version of e-hailing and introduce this in the minibus-taxi environment.
>
> TDA Cape Town 2017b:9

Proponents of the concept of carpooling (based on mobile phone technology) are hoping that it would have a similar impact on this particular regime, despite current regulatory concerns as detailed in chapter 3. The City supports the concept of carpooling given the apparent benefits of reducing single-occupant vehicle trips.  However, this institution remains cautious about actively promoting it as an alternative given uncertainty about legal and insurance risks (TDA Cape Town 2017f). Potential actions around future support have nonetheless been included in the City's Travel Demand Management (TDM) Strategy, such as investigating the feasibility of allowing carpoolers to use HOV lanes, cooperating with existing carpool platforms or even developing a mobile phone carpool application themselves (TDA Cape Town 2017f).  These amendments to policy is another example of how this regime is adapting to new technologies and to apparent persistent pressure from the private firms promoting it (Interviewee 14 2017a; Interviewee 7 2017).

**Policy regime**

As explained earlier, the *policy regime* governing land use and land transport in South Africa has undergone significant changes in recent years, ranging from substantial alterations to transport, land use and institutional measures to promoting a more compact urban form and investment in public transport. These measures align with best practice examples listed earlier in Table 5.1.

To explain this shift in the policy regime, three important modifications are discussed in this section, which include a) the *City's MPBL (land us*e), b) *TOD (land use and transport)* as an overarching strategy and c) and the establishment of the *TDA (institutional*).

Firstly, as noted in chapter 3, the *City's MPBL* amalgamated twenty-seven local zoning schemes into one overarching scheme and notably allows enhanced property rights nearby public transport routes with associated parking relaxations within these zones. This legislative modification signals a concerted effort to achieve TOD through enabling development growth in strategic areas. Again, this regime shift has not gone uncontested.  Actor networks within this domain have to navigate new territory and face resistance along the way. This can be illustrated by a participant remarking that there is opposition from the private property market as buyers of residential units along these routes still insist on parking bays (Interviewee 8 2017). Developers have in some cases creatively adapted buildings to accommodate both the current need (parking) and the envisaged future need (less parking) through designing floors designated for parking with future conversion to apartments in mind (Interviewee 8 2017).

Secondly, as mentioned before, *TOD* is supported as an acclaimed land use strategy to ensure a more sustainable urban form (Cervero & Kockelman 1997; Cervero 2013; Simon 2016) and specifically spatial transformation in the South African context (Wilkinson 2006; Bickford & Behrens 2015; COCT 2016c).

Others critique TOD by stating that the implementation of such a strategy is complex and problematic at the site level, due to the large number of actors and institutions involved across jurisdictions  (i.e. local authorities, private land owners, national governments, developers and receiving communities) (Belzer & Autler 2002).  For example, it would be more desirable for a developer to develop a greenfield site than attempting to navigate the complex set of actors and interests pertaining to an existing rail station surrounded by privately owned properties (Belzer & Autler 2002).  Further, the underlying principles of TOD are not entirely new in the context of Cape Town's spatial planning history.  A seminal document released on the cusp of the abolition of Apartheid, entitled 'South African cities: a manifesto for change', supported principles identical to what TOD represents.  This manifesto promoted a compact city and proposed a "… grid of continuous, direct public transportation channels [that] should be

reinforced by higher density housing" (Dewar & Uytenbogaardt 1991:80).   The rationale behind these proposals are explained to be:

> This is not only to the greater benefit of the people who will occupy the housing, but also contributes to the viability of the transportation system.
>
> Dewar & Uytenbogaardt 1991:80

This spatial rationale has been evident in the City's spatial planning frameworks ever since. One could arguably side with the academic, Rob McGaffin, who recently questioned whether TOD is not just a new label to a spatial policy directive advocated since 1991, as voiced during an Open Streets event held in May 2017 in Cape Town. Besides, when considering the feasibility of this model in the South African context, Wilkinson (2006) notes that although it is aligned with the country's spatial transformation objectives, this strategy needs to be cognisance of the intrinsic dualistic and entrenched socio-spatial segregated nature of different transport groups of the South African transport system.  It would be socially just to implement TOD in Cape Town's disadvantaged areas that have remained the 'captive' public transport markets (Wilkinson 2006). Having analysed the City's latest MSDF in paragraph 3.2.2, it appears that this is exactly how the implementation of the TOD strategy is planned, see Figure 3.22 (TDA Cape Town 2017c). However, Wilkinson (2006) guards against a myriad of potential obstacles when attempting to implement TOD in areas where 'discretionary' public transport users still need to be persuaded to shift to public transport in the first place.  Since this research centres on solutions for the users in the latter group, one needs to question whether a well-intentioned TOD strategy focussed along Fish Hoek Main Road and Kommetjie Road, as proposed in the Draft FSTP, would have the desired impact in the Far South. This assertion is made based on three context-specific explanations: a) the Fish Hoek economic node is not regarded as a significant metropolitan economic node in City policies; b) the notion that rail (in its current deteriorating state) is the trunk public transport service in the Far South; c) and that developers do not feel incentivised to invest in established areas such as Fish Hoek and will rather opt for areas where the risk is less (i.e. greenfields) (Interviewee 21 2017).  In this instance, the case of the Far South resonates with this statement:

> Well-intentioned policies formulated at the global or national level may not be adopted or properly implemented at the local level if they are not coherent with local priorities.
>
> UN 2016c:23

Thirdly, the City has institutionalised the mutually supportive roles of land use and transport, essential to a TOD strategy, through combining these functions into *one institutional unit, the TDA*, as noted before. This institutional modification is a bold step in addressing the critique of transport and planning municipal services operating in isolation (Wilkinson 2006; UN 2016a). Having interviewed four City officials now located within the TDA, myself, as researcher, observed a sense of initial confusion over the clarity over new roles and responsibilities. Such reactions are arguably warranted given institutional change of this nature. While, others saw it as 'encouraging' (Interviewee 10 2017; Interviewee 8 2017).  This organisational change

occurred over the time of the formulation of the FSTP by a private sector engineering consultancy, that was part of a broader TDA team (planners and engineers). Being privy to elements of this project, an unease was detected on the part of the consulting engineers in having to veer into matters outside their domain, i.e. land use.  A resultant cautious stance is evident in this disclaimer in the Draft FSTP:

> Although land use-focused, the proposals in this section relate specifically to the development of a transport plan, and do not constitute a spatial plan, although they may well be strong informants to such a plan. The role of this section is therefore to instigate debate around potential future land use planning interventions and scenarios.

<div align="right">TDA Cape Town 2017d:41</div>

It can be interpreted that implementing a new institutional structure normally involve challenges of this sort. Or, it can be argued that it signals an exciting shift towards an embrace of what is essentially an interdisciplinary working relationship amongst 'systems builders' (Zijlstra & Avelino 2012), to overcome "…the inertia of disciplinary and subdisciplinary boundaries has severely hindered understanding of a subject which intrinsically demands an interdisciplinary or transdisciplinary starting point" (Graham and Marvin 2001:17).

## Cultural practices and politics

> The automobility regime is also sustained by everyday conversation and politics and by cultural associations with freedom, modernity and individual identity.

<div align="right">Geels et al. 2012:55</div>

The last regime element refers to *culture and politics*, as noted in the opening quote by Geels et al. (2012) and affirmed by Pieterse (2008:146) when he states that it is "… vital to relate these more structural factors to questions of identity and power." Embedding culture and politics in automobility supports the notion that infrastructure is both relational and ecological, as discussed in chapter 2 (Graham & Marvin 2001; Tonkiss 2013).  It concerns relationships between people, things, and people and things (Tonkiss 2013). Henderson (2009:160) evidently shares this perspective, in viewing automobility as an expression of 'social conflicts'. This section, therefore, elaborates on the political and cultural factors at play in the Far South, particularly around issues already identified, being urban development and transport infrastructure provisioning, i.e. road expansion.

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**Textbox 5.6:** Car culture and perceptions around cars

*Car Culture:*
Interviewee 11: "Human nature is everybody wants their own car."

*Attachment to car:*
Interviewee 3: "The other thing which is sometimes why I'm so attached to my car is because of the errands I need to run like consolidating all the things you need to do especially as a mom and all that and if I was more organised I would do more online shopping and if online shopping was better serviced."

*Cars like tanks:*
Interviewee 18: "I call them like tanks, roaring on the roads, it's actually what they are, you want a car that when the poor they scrambling at the window, they can't get in…."

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As reasoned in paragraph 2.8.3, car culture, *as the relationship between people and things*, is an emerging property of the system of automobility, which assists in maintaining its dominance and reproduction (Urry 2004). The study found clear, yet differing views on the topic of car culture. One participant sees the aspiration for car ownership as a given, while another acknowledges an attachment to her car, but justifies it by pointing out systemic factors reinforcing this attachment. A striking perspective came from a resident when equating cars to military vehicles, meant to protect one's privilege from external forces, such as poverty, see Textbox 5.6.

This perspective seemingly supports Stevenson's view of urban reality in that a private car is seen as a shield against the many inequalities in a city:

> Different social classes, increasingly, are forced to follow different trajectories through space, they inhabit different zones for work and leisure, and rarely, if ever, do they unexpectedly encounter the 'other'.
>
> Stevenson 2003:47

The serious concerns with the Metrorail system, as noted before, further entrenches the car culture in the Far South as commuters regard private transport as a 'must' and not only a 'lust' (Steg 2005). It is further perpetuated by the nature of the fragmented and sprawling urban form in this spatial context and by the supply of gated communities and car-centred large shopping centres in this enclave (UN-Habitat 2013a), both driven by private market and user preference. It is unfortunate that this continuous supply of the 'same' seems to occur despite the City's efforts to promote densification and mixed-use intensification as noted in the directives in the approved District Plan:

> In general, support the development of new development areas at higher densities than exist in these locations, but with due regard for appropriate transition to surrounding areas.
>
> COCT 2012b:55

> Public transport and non-motorised movement need to be pro-actively embraced and supported.
>
> COCT 2012b:134

### 5.3.3  Niches that require attention

The concept of niches, as protected spaces for innovation, was introduced in previous sections. It was noted that the definition of niches, as per the MLP, is not restricted to only technological innovations, but encompass amongst others, practices, lifestyles, institutions and government interventions (Nykvist & Whitmarsh 2008; Geels et al. 2012).  In paying homage to the critique of the MLP, an explicit spatial and scalar approach to the MLP can explain what role space (geographical location) plays in advancing or stifling emerging niches (Coenen et al. 2012).  This research has identified niches in three categories, including

technology, lifestyles and community culture, and institutions. Chapter 4 detailed individual niches in each category, and the entire collection is depicted in Figure 5.5 and summarised in Table 5.3.  For the purposes of the MLP, the focus is placed on two niches to demonstrate a) how space and scale play a role in the up-scaling of a niche and b) how one niche has the potential to provide a more sustainable alternative in the short-term.
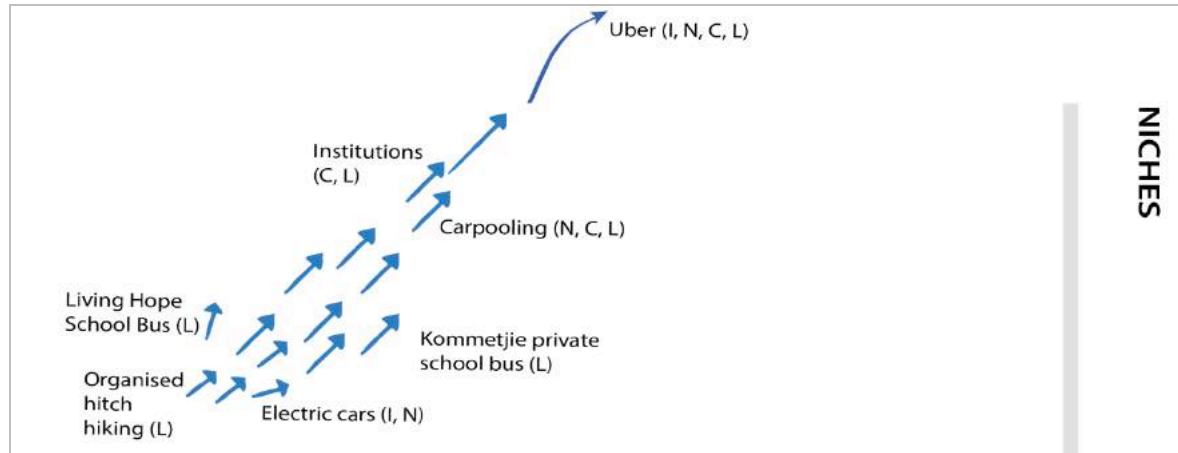


**Figure 5.5**: Niche developments in the Far South.  Source: Geels 2002. Figure 5. Adapted.

**Table 5.3:** Emerging niches in the Far South.

| Niche Group | Sub-elements |
| --- | --- |
| New technologies and markets | Ride-hailing platforms such as Uber have changed the behaviour of Far South residents. |
| | Key international institutions regard carpooling (ridesharing) as a quick low-carbon win.  There are some platforms supporting carpooling in Cape Town with two noteworthy companies offering this service via mobile phone technology.  It is a promising niche, but there is little evidence of a significant support base in the Far South. |
| Lifestyles and community culture | A local initiative between concerned residents and an NGO resulted in providing a scholar transport solution to low-income learners. |
| | A Kommetjie parent established a niche scholar transport service for children in the area attending one specific school in Cape Town's southern suburbs. |
| | An avid hitchhiker that lives in Noordhoek believes in the equalising benefits of giving people lifts. |
| Institutions | There are a number of organisations working on projects and initiatives that promote alternative urban mobility, such as NMT uses (bicycles), scholar solutions (WWF) and allowing the public to experience streets in a different light (Open Streets).    Some of the projects have found traction in the Far South. The 'Bike2Train' experiment is currently being implemented in Fish Hoek. |

Firstly, *Uber* is a global innovation that has changed the behaviour of local users while putting sufficient pressure on the policy regime for it to respond with amendments to policies and legislation as mentioned in paragraph 4.7.1. For Uber to have up-scaled the way it did, it had to have comprised, what Coenen et al. (2012) argue to be both the 'global and local dimensions' with actor dynamics in each. This research points out that while global dynamics were at play (i.e. Uber allowing cash payments), a storm was brewing on the city scale with tensions rising between metered taxis and mini-bus taxis (De Greef 2016b). Moreover, the

research shows that in this specific location (local scale), which is subjected to additional external forces such as geography and crippling congestion, users tend to use Uber as a chauffeur service for school children. It is not to say that it does not happen elsewhere. Further, contrary to what was experienced elsewhere in Cape Town, in this local enclave tensions between Uber drivers and minibus-taxis (occurring at the city scale) was dismissed by a minibus-taxi owner (Interviewee 15 2017).  It is interesting to note the apparent blind trust in technology by the local users, despite these conflicting dynamics occurring at a city and global scale, and the common and crosscutting concerns around safety and security amongst participants, a key finding of this study. This reasoning supports Coenen et al.'s (2012:972) assertion that "… localized activities and resources are subject in differing amounts to external pressures or local control."

Secondly, *carpooling or ridesharing* is hailed as a 'quick-win' in the pursuit of sustainable transportation (SloCAT 2016). The benefits of reducing the number of private passenger trips through increasing the occupancy of a vehicle are numerous, as mentioned in chapter 4.  The research found that there are some informally run carpool arrangements, especially around scholar transport needs. This finding is supported by the quantitative results contained in the Draft FSTP that illustrate a higher on average car occupancy rate in the Far South compared to the rest of Cape Town (TDA Cape Town 2017d). The Draft FSTP accordingly asserts that distance could be an aspect that determines occupancy rates. It is argued here that the geographical terrain (landscape factor), which positions the Far South at a greater distance from the city, further influences this finding. Yet, very few participants are aware of the mobile phone carpool applications active in greater Cape Town, nor could I, as researcher, find active riders on either platform in the study area with whom to share a ride.

The literature is revisited to further frame carpooling as an important niche. Geels et al. (2012) identify three social processes evident within niches (Geels et al. 2012): *expectations* and visions of the innovation itself, the *forging of social networks*, and *internal 'learning processes'*. The research can highlight the following in relation to these social processes. Both ridesharing companies that partook in this research, make use of the latest mobile phone technology to set their services apart from other web-based carpool platforms. Chapter 3 highlights how the 'expectations and visions' of these firms point to a belief that these services will become common practice in Cape Town. Further, both firms have embraced social networking as an important marketing strategy. It is evident in both firms approaching respected institutions (the City, large universities and schools, car insurance companies, large event organisers and business entities) with the aim that their service will be promoted from the top down (Interviewee 14 2017a; Interviewee 7 2017). One firm has succeeded in launching a successful carpool pilot with a prominent business association, Accelerate Cape Town (Accelerate Cape Town 2017). Such a partnership, forged around an experiment, upholds the academic arguments in favour of urban experimentation and demonstration in

light of sustainability challenges (Swilling et al. n.d.; Hoogma et al. 2005; Banister 2008; Bos & Brown 2012; Geels et al. 2012; Broto & Bulkeley 2013a; Bulkeley et al. 2015; Evans et al. 2016) as discussed in paragraph 2.3.2.

Also, this transdisciplinary inquiry allowed the researcher to assist uGoMyWay with building social networks through introducing this company to the work of the WWF around scholar transport (Interviewee 14 2017b). It further resulted in raising the awareness of the Far South as a potential captive market for this technological service. For the sake of ridesharing, limited access routes, are in fact a positive attribute for matching travel patterns. Moreover, this research can attest to the ongoing learning processes that these niche companies face, such as adapting the technology to user demand and liaising with the authorities to clear up legal concerns (Interviewee 14 2017a).   However, more can be done to raise the public's acceptability of carpooling in this form, especially when considering Schwanen et al.'s assertion that a level of acceptance by the public drives political acceptance (2011).

The *Kommetjie private school bus* is a niche worthy of encouragement, given the shortage of schools in the area and the rapid development growth in the residential market. This service arguably provides a short-term and more sustainable alternative for residents that only travel out of the area for educational purposes, which the Draft FSTP suggests might be significant. In its current form, it resembles user innovation (Lyons 2011) by one parent, yet it shows potential to morph into a production innovation in the way of a profit-driven private school bus operation. As discussed in paragraph 5.2.2, research participants identified such an intervention as a principal short-term solution. Further research is needed to assess its viability.

Local niches such as the *Living Hope School bus* and the *organised hitchhiking* initiative are examples of user innovations that hold significant societal and equality benefits. However, given their locally-focused nature, it is unlikely that these niches will exert enough pressure on the regime to adapt. The 'fear of crime' (a landscape factor) is further likely to stifle the uptake of organised hitchhiking, while a legal technicality (a regime factor) and fears of clashing with the minibus-taxi industry (social dynamics) prevent the Living Hope school bus from operating beyond that of a charity service.

## 5.4   Social dynamics

Apart from generating valuable context specific suggestions, the process of evoking ideas provided a glimpse into the social dynamics in the area and allowed the researcher to assess the relational aspects of this socio-technical system (Graham & Marvin 2001; Lyons 2004; Geels et al. 2012; Tonkiss 2013). The MLP analysis, furthermore, located these actor dynamics within the context of sustainability transitions. The research found four critical

relationships at play that includes a) the relationship between the *local authority and citizens*, b) between the *local authority and developers*, c) between *citizens and developers* and d) *amongst citizens* themselves.

The study highlighted a general mistrust in the *local authorities on the part of local citizens*. Middle and higher-income groups question the perceived pro-development stance of the City, evident in the suggestion to put a moratorium on all development until long-term strategies are agreed upon (Interviewee 4 2017; Participant 1 2017). It is further amplified through the Kommetjie Ratepayers Association recently taking legal action against the City (Participant 1 2017). Having attended a number of the FSPCF meetings, constant scepticism was observed emanating from key community actors whenever the City presented factual information. Residents constantly called the integrity of the data and that of independent consultants into question. While, low-income communities are resorting to service delivery protests (Ntongana 2017) and are engaging the Public Protector in attracting attention to overcrowding and the need for housing in the area (Isaacs 2017). On the other hand, authorities have come to anticipate this 'push back' reaction from communities when it concerns development and spatial transformation (Interviewee 10 2017; Interviewee 16 2017; Interviewee 8 2017). Further deep-rooted, almost bitter, perceptions held about people in the area, compounds inaction on the part of authorities, as noted by an official "… you want to live in paradise but work in the heart of activity" (Interviewee 10 2017:2). Further tensions and 'blame games' are observed concerning the need to shift to public transport, despite a general consensus that this is a vital solution. Residents blame the authorities for not responding to the unreliability and safety concerns of trains and the perceived lawless behaviour of mini-bus taxis. Whereas the City seems unable to act, both in terms of rail and having to navigate the delicate relationship with the mini-bus taxi industry.  For example, an local government official alluded to a standard institutional protocol that prohibits officials from directly engaging with the mini-bus taxi industry. There is an allocated unit within this organisation that is assigned to liaise with this industry (Interviewee 18 2017).

The study confirms that the *relationship between authorities and developers* needs improvement.  City officials expressed concern over how little influence they have over the form of new development. Although SPLUMA and the MPBL allow for the establishment of measures to incentivise the desired development, these have not yet been instituted (i.e. zoning overlay zones, rate rebates). Developers have also been seen to target individual officials in court when the City would oppose development applications (Interviewee 11 2017). Having interviewed a local developer, it is clear that this fraternity will invest in any area as long as the benefits outweigh the risks. The Draft FSTP goes some way in proposing context-specific instruments to attract investment into Fish Hoek to drive the TOD agenda in the area.

The relationship *between citizens and developers* is volatile.  In referring to the legal action taken by the Kommetjie Ratepayers Association, the developer concerned notes the following about the local community: "There's a pull-up-the-draw-bridge mentality among some of the residents. They're in, have their houses and now everybody else should be kept out…I live here. Why would I want to destroy it" (Joubert & Jurgens 2015:n.p.)?  Another developer contends that they are merely responding to a demand in the market (Interviewee 21 2017). A resident attests to a deliberate strategy from existing community organisations to delay, irritate and 'demonise' developers with objections to the point where it becomes unviable to continue (Interviewee 4 2017).  This has however lead to unintended consequences, observed in Noordhoek, with the smaller local developer merely selling to a developer with more resources, often with no affiliation to or sympathy for the local context (Interviewee 4 2017).

Final relational observations pertain to a sense that the *communities (suburbs) are divided* and territorial, as noted by a resident: "Each area is very sensitive to themselves. Like Sun Valley, is sensitive to what happens in Sun Valley and it might be a different approach to what happens in Sunnydale" (Interviewee 13 2017:3). The overarching safety concerns and trend of restricting movement through suburbs, as discussed in paragraph 4.4, confirm this territorial tendency. Having attended some FSPCF meetings, the Kommetjie and Noordhoek 'voices' emerged as the most prominent. These areas also happen to be higher income areas.  A concerned representative from one of the middle-class suburbs conveyed to me, as embedded researcher, that these 'voices' always dominate, leaving the others overlooked.

The result of all these dysfunctional and wavering relationships is an extended 'blame game' (Mees 2010) between actors that keeps the status quo in a state of inertia, compounded by a lack of trust about the others' real motives and vested interests. This lock-in mechanism does not bode well for any systemic change, especially when taking cognisance of politics and the importance of actor-collaboration in contesting automobility (Belzer & Autler 2002; Pieterse 2008; Henderson 2009; Geels et al. 2012).

## 5.5    Conclusion: The elusive transition

> The core puzzle in transitions thus centers around (dynamic) stability and (radical change), in particular their interactions which are played out on multiple dimensions.
>
> Geels et al. 2012:51

To conclude this chapter, transition theory is revisited.  As mentioned in chapter 2, Geels (2002) sees a transition occurring as a result of a battle between 'forces of stability' at the regime level and 'forces of change', at the landscape and niche level, that exert pressure on the regime.  It signals action in all three conceptual levels, yet can occur either from the top-down (landscape factors) or the bottom-up (niches).  The thesis has sided thus far with

authors such as Raven et al. (2012) that call for explicitly situating transition analyses in its spatial context;  they argue that transitions are likely to emerge as a result of the interactions between actors.  In this sense, space is seen as more than a geographical place, but as "relational, fluid and contested by institutionally situated actors" (Raven et al. 2012:63). Actors are moreover situated across scales within a socio-technical system.  In this case, systemic change in the Far South depends on a rail revitalisation strategy (national mandate), local authority regime actors tasked to govern the entire city (city-wide context), as well as local councillors and community members with a local interest (local context).

The MLP analysis of the case study point to an elusive sustainability transition (mobility) in this enclave. There are landscape forces that keep the system stable (economic uncertainty, political turmoil and the fear of crime) while climate change and the nation-wide spatial transformation agenda exert significant pressure on the regime for it to have adapted already. Most importantly, shifts have occurred in the policy regime and institutional arrangements within the City.  Technological niches (ICT in transport) have furthermore exerted pressure on the policy regime to adjust city policies.  Private property markets, user preferences and car culture seem to be countering these changes and make a transition less feasible.

This analysis further attempted to illustrate how shared beliefs (Geels et al. 2012) and 'place meanings, identities and histories' effect the politics of place making, i.e. planning and policy processes (Murphy 2015:83).  These factors can either unite or divide communities "… or serve to stimulate the rise of social movements that seek to improve socioeconomic conditions, address environmental problems, and/or advance ideological agendas" (Murphy 2015:83).  The research showed that this assertion is applicable to the Far South in some instances. Niche innovations within the study area are localised and unlikely to lead to regime changes. However, niches on the city level could eventually impact dynamics within the Far South.  In short, automobility is deeply entrenched in the Far South and added road expansion will extend its dominance unless rail is drastically improved or even replaced with another mass transit option.

# 6. Conclusion and Recommendations

In concluding this thesis, this chapter aims to provide a synthesis of the entire study. To this end, it conveys how the research objectives were addressed, provides a summary of the research findings (societal contribution), offers a critical reflection on suggested implications for the field of knowledge (scientific contribution), and makes recommendations for further research.

## 6.1    Research objectives and key findings

This study set out to align with the central tenet of the transdisciplinary methodology, which aims to **produce science with society** (Scholz et al. 2006; Hadorn et al. 2008; Bergmann et al. 2012).  In doing so, the research objectives represent a dual purpose - to produce knowledge relevant to both society and to science. The study therefore constantly had one proverbial foot in the literature (science) and another in the study area (society). Although the central question is a practical one aimed at society, it had to be informed by a scientific inquiry into current literature. This dualistic approach formed the basis for addressing all the research sub-objectives.

The **first sub-objective of the study** was to undertake a comprehensive literature review of the topic (chapter 2), and a context-specific policy review of the study area (chapter 3).  The literature review presented a series of arguments that point to the need for global sustainability transitions away from the current auto-dependent status quo.  In summary, current thinking around cities, sustainable mobility and sustainable transition theory support a local response to complex socio-technical systems, given its potential to either 'accelerate, reshape or even disrupt' a citywide or national transition (Hodson & Marvin 2010:480). Space becomes a key concept, not only when referring to geographical embeddedness (absolute spatial scale), but also to how actors interact with one another in a geographical location (relative spatial scale) (Raven et al. 2012). A local sustainable mobility response would require participatory responses from a smorgasbord of actors that influence the local system, despite being situated across geographical and institutional scales.

The **second research sub-objective** was addressed through reviewing current literature around best practice sustainable transport interventions. A summary of identified interventions aligned with the acclaimed 'avoid-shift-improve' strategy is presented in chapter 2 and formed a comparative yardstick (science) for the outcomes of the solution-driven research, see chapter 4 (society).

Given the societal focus of the literature review, the study further intended **to create a platform for the residents to discuss solutions** to the many symptoms of automobility.  It was done through creating a social media group, South Peninsula Transport Chats, to enable a community debate even beyond the purposes of the research.  This research attempt was successful in attracting considerate discussion and input, but in some aspects, the approach was found lacking. See paragraph 6.2 for a critical reflection on this research technique.

The study was furthermore designed to cover additional research aims relating specifically to the case study, to **develop a thorough grasp of the transport dynamics** in this enclave, particularly around private car usage (see chapter 4). It involved a **participatory process of identifying barriers** that hinder the transition to a more sustainable transport system in the area (see chapter 4).

The **identified barriers** can best be discussed under four headings.

- Firstly, the *biophysical constraints* of the geographical location of the Far South and its absolute spatial scale, restrict access to the area and limits functional spatial linkages with the rest of Cape Town.  Although, the natural setting contributes significantly to the area's appeal and sense of place thus fuelling a thriving property market aimed at selling a 'quality of life' unique to the Far South.

- Secondly, the existing *predominantly low-density residential urban form and racially segregated neighbourhoods* (a remnant from the Apartheid regime) is a barrier to sustainable mobility in that most of the suburbs could not sustain a viable bus service. Moreover, new development proposals are in the form of car-centred gated residential developments, which further add to congestion and institute a new type of spatial fragmentation. An inadequate supply of economic opportunities and social facilities (schools and hospitals) necessitate a daily exodus of commuter trips.

- Thirdly, the *transport status quo* in the study area is wholly unsustainable with an 80%:20%, private versus public transport modal split. This split is significantly higher than the City's average as depicted in Table 3.2. Two of the three existing access-gateways are operating at capacity, causing congestion peaks beyond the standard ideal of two hours.  The public transport system is further plagued with legacy concerns, suffers from disinvestment, and faces institutional fragmentation across government spheres. As a result, the southern railway line - unreliable and unsafe - remains the only option for many low-income earners and an unlikely option for 'discretionary users' who do have a modal choice.

- Lastly, barriers relating to *governance, politics, social dynamics and culture* are plentiful. Some of the obstacles already listed, such as urban form, car-centred commercial spaces, and entrenched property markets, **maintain the car culture**.  The research has also shown that **safety concerns and the fear of crime** have infiltrated daily urban decisions, evident in the demand for gated communities, avoiding public transport for this

reason, and the vehement objection to spatial transformation attempts (i.e. Houmoed Avenue).

Moreover, this investigation honours the participatory and solution-driven nature of the transformative paradigm and transdisciplinary methodology, by having **elicited potential short-term solutions (contribution to society)** to the many transport challenges from the residents and local authorities.  The research achieved this objective by means of interviews with citizens and local authority officials, and discussions on the social media group.  These, together with the draft recommendations made in the Draft FSTP, were measured against the best practice interventions outlined in the literature review, and clustered around the 'avoid-shift-improve' sustainable mobility strategy.  This analysis highlighted a multitude of solutions (long and short-term), some corresponding with best practice and others in stark contrast with solutions raised by other local actors.   In summary, the results of the solution-driven component of the research indicate the following:

- **Avoid the need to travel (substitution)**: Both the participating officials and citizens saw the benefit of altering working arrangements to prevent the need to travel. Some City officials see people living closer to their work as the easiest solution, while a resident points to the volatile nature of job security versus the more stable nature of living arrangements.
    - *Short-term solution:* Improved Internet connectivity to allow flexible working arrangements.
    - *Short-term solution:* Encourage developers to create office hubs in the area.

- **Shift to public transport:** One of the more significant findings of this study is the consensus among all the participating groups that a *safe, reliable and integrated* public transport is the ultimate solution to the many transport challenges.  However, the case study analysis has shown that this is not the case at present. Regarding rail, the City is subservient to National government's long-term plans, while some of the residents offered imaginative repurposing solutions to the historical railway line.  The study found that there is a need for a reliable bus service, in particular the MyCiti BRT service. The community participants overall held a positive view of this service operating in others parts of Cape Town - but the City reiterated that expanding this service to the Far South would take time, as the roll-out is currently concentrated in denser low-income areas of Cape Town. The study furthermore found that many citizens showed interest in a school bus solution in the interim, which in all likelihood would be instigated by the private sector.
    - *Short-term solution:* Investigate the feasibility of a local bus for scholars drawing inspiration from the existing niche service discussed in paragraph 4.7.2.

- **Improve efficiency:** The main findings in this category show that future road expansion, the current (interim) response by the City, invokes a mix of conflicting views and opinions. The Draft FSTP sees widening of the key gateway-road as a necessity to alleviate congestion, albeit a costly and potentially environmentally damaging option.  Other TDM behavioural measures were suggested that could improve the efficiency of the current system:

  o *Short-term solution:* Increase vehicle occupancy rates by encouraging ridesharing either through informal lift-clubs or the uptake of carpooling based on mobile phone technology, such as the niche examples detailed in paragraph 4.7.1.

  o *Short-term solution:* Encourage a culture of sharing through giving lifts to hitch-hikers when safe to do so. The Living Hope School Bus is an example of a just community service, see Section 4.7.2.

  o *Short-term solution:* Increasing the desirability of Chapmans Peak Drive as an alternative through negotiating further toll-fee discounts for residents. However, bearing in mind that this mountain pass is subject to frequent closures due to rock falls, which have in the past caused injury to motorists.

The **last sub-objective** concerned the contribution to science through **applying the MLP, as established sustainability transition framework, to the local socio-technical transport system** to assess the feasibility of a transition to a more sustainable alternative.  The study achieved this aim in providing a detailed account of the dynamics at the landscape, regime and niche levels applicable to this spatial location, as outlined in paragraph 5.3.  This analysis indicates that automobility is deeply entrenched in the Far South and held stable by a variety of landscape and regime factors.  A transition to a sustainable alternative remains elusive in this area.

## 6.2    Contribution to science

The topic of knowledge contribution can best be treated under two sub-sections relating to a) the research design and methodology and b) the field of transition studies.

Firstly, *transdisciplinary research* is a good methodological fit for this study as it complies with Lang et al.'s (2012) three requirements (see paragraph 1.7): the research was centred around a complex real-word problem, was solution-driven, and allowed shared learning and knowledge generation with real-world actors.

Nonetheless, Van Breda and Swilling (2016:n.p.) caution that when intervening in a real-world situation such as this, a researcher can never foresee whether the research process will lead to radical societal change or a mere display of 'transformative orientation.'  These authors note that this uncertainty can make the research process more difficult, but will not preclude the researcher from building up a thorough understanding of the case (Van Breda & Swilling 2016). Breda and Swilling further warn researchers to refrain from controlling the process in

their quest for certainty in a complex situation, as it could lead to premature conclusions (2016). This statement has a bearing on this research, having experienced challenges around the rigidity of the 'text-book' TDR process' research steps - problem-framing, knowledge-co-generation and knowledge-integration.  Having perused the TDR literature at the outset, it was envisaged that the first step would play out in a controlled setting with all major actors present to undertake the numerous activities Lang et al. (2012) propose. On the contrary, as mentioned in paragraph 1.4, the real-world setting did not allow for such a physical gathering given the time commitments of residents and officials to the other parallel community processes that were underway in the area.

Problem-framing as a research step thus had to adapt to this unique situation and was concluded through me, the researcher, assuming an active role in interacting iteratively with the principal actors in deciding on a topic (see paragraph 1.4). In this sense, the research supports the ETDR methodology, which **allows for the research design to adapt to the process** (Van Breda & Swilling 2016).

Similarly, knowledge-generation did not occur orderly and structured, but rather as a result of the researcher assuming an integrating role (Jahn 2008) (see Figure 1.4) and being open to adapt to the unexpected (Van Breda & Swilling 2016). Segments of information obtained from interviews, matters raised in community forum meetings, news clippings and solutions offered in existing literature were integrated and 'tested' on the social media platform to gauge a broader community response and debate.  In doing so, the researcher assumed the role of a transdisciplinary inquirer that 'crafts, invents, explores and coordinates' (Brown et al. 2010:11) with the result being a co-generation of knowledge. Social media research is considered a beneficial platform to augment transdisciplinary research as it allowed for a more flexible and asynchronous space for knowledge-generation. People can contribute to meaningful discussions in their own time, free from the constraints of geographic vicinity, a general benefit of social media research (Golder & Macy 2013).  To bolster this point, an attempt was made to arrange a focus group discussion for commuters during the fieldwork phase, offering prize money to those willing to participate (a minimum of 5 people were needed).  This attempt failed, as nobody could be persuaded to commit to such an engagement. Although, the social media platform produced substantial online discussion and can continue to hold some societal benefit.

Secondly, the study was from the outset directed at being sensitive to one of the major critiques of the MLP as a *transition theory*. In doing so, the research sheds light on the relevance of space and scale when applying a transition theory lens to a local manifestation of automobility. The framework was useful in absorbing some of the complexity of the problem, in differentiating between landscape factors that local actors had no real control over (Van Driel & Schot 2005). The MLP is a valuable framework for depicting a snapshot view of

the existing situation and can in this sense be used as a benchmark for comparative studies in future.   The framework was less suited to capture the multitude of social dynamics occurring across **scales and spatial location**, a known critique of the MLP (see Section 2.7.2). **The study was deliberately focused on being sensitive to these elements.** The resultant findings of the study show that a spatially isolated enclave of this nature (geography, sensitive natural environment and fragmented urban form) creates unique challenges to overcoming automobility.   Further, the **relational spatial scale is vital** in this sense as people interact with others in a case-specific manner due to these absolute spatial qualities. For example, the natural setting of the area is often used as a reasoning to oppose urban development, as shown in previous chapters.

In closing, it is argued that despite drawing from innovative scientific thinking, using an acclaimed methodology and trusted research methods, and applying the latest analytical and communications technology to generate **science with society** - upholding the specificity of the people (social dynamics) and the place (local context) makes this research valuable to understand the complexity of applying a participatory approach to something as entrenched as urban mobility habits.

## 6.3    Areas for further research

Within the realm of transdisciplinary research and knowledge creation, Brown et al. argue that "the complexity of the world, in combination with the limitations of our ability to know the world, results in a partiality of our ways of knowing and a plurality of possible designs of inquiry (2010:49)." Moreover, as discussed in chapter 1, the subjectivity of the researcher is primarily based on the premise that values and culture of the individual shape judgements and observations made during this research. The study is clear around the researcher's bias towards finding solutions as I share in the responsibility of the challenge being a resident of the area, private transport commuter and parent - which has potentially influenced the inquiry. From this, it is acknowledged that the findings of this research are 'partial' (Brown et al. 2010). In this light, the following recommendations are made for further research:

- There is a need to conduct empirical research into the viability of a local scholar transport solution for societal benefit.
- Scientifically, it is suggested to research the effect that social media can have on democratising urban planning public participation processes.  This is particular apt giving the dominance of a specific demographic profile, i.e. Causation middle age or retired males and females, dominating community forums such as the FSPCF.

## 6.4    Conclusion

To conclude, the arguments made in the literature review resonate with the case of the Far South. An extraordinarily local response is required for a local manifestation of automobility, one which would need to involve a representative spread of actors (Grieco & Urry 2011; Pieterse 2012; Zijlstra & Avelino 2012; Tonkiss 2013).  While long-term sustainable policy directives, such as an improved rail system and TOD interventions, align with best practice sustainable mobility theory, the interim response of increased road capacity and the proliferation of gated communities, might, in fact, lead to the perpetuation of this autopoietic system (Urry 2004; Zijlstra & Avelino 2012).  However, there are glimpses of change where social agency might over time alter the system. These include encouraging actions correlating to four of Newman and Kenworthy's (2015) six elements of success: demonstration projects (Open Streets campaigns), a narrative of change (the City's communications campaign around congestion and the social media group created for this research), technological solutions (carpooling based on mobile phone technology) and user innovation by active citizens (Living Hope School Bus, the proactive parent solution and the hitchhiking activist).

In recognising the relational nature of city design and socio-technical infrastructure systems, as argued in the literature review, everyone involved in this system needs to acknowledge their own agency in contributing to either the problem or the solution, thus supporting Meadows et al.'s advice:

> Taking no action to solve these problems is equivalent to taking strong action.
> Meadows et al. 1972:183

The simple act of being 'neighbourly' (Interviewee 16 2017; Interviewee 4 2017) and sharing can perhaps go a long way towards promoting shared transportation and user innovation while navigating the political nature of urban transformation, as noted by a participant:

> My feeling is, the answer to this kind of thing is a certain amount of physical sharing.
> Interviewee 18 201

# References

Accelerate Cape Town. 2017. *CORPORATE CAPE TOWN LAUNCHES CARPOOLING PILOT TO EASE*. [Online] Available: http://acceleratecapetown.co.za/carpooling/. [10 April 2017].

African News Agency. 2016. *One child killed, another injured, in Cape Town crash.* [Online] Available: http://www.enca.com/south-africa/child-killed-another-child-injured-in-cape-town-crash. [07 November 2016].

Arbib, J. & Seba, T. 2017. *Rethinking Transportation 2020-2030 » Contents*. [Online] Available: https://static1.squarespace.com/static/585c3439be65942f 022bbf9b/t/ 591a2e4be6f2e1c13df930c5/1494888038959/RethinkX+Report_051517.pdf. [2 June 2017]

ARG design. 2015. *Masiphumele Development Framework. Understanding Current Situation / Opportunities*.

Auvinen, H. & Tuominen, A. 2014. Future transport systems: Long-term visions and socio-technical transitions. *European Transport Research Review*. 6(3):343–354.

Banister, D. 2000. Sustainable urban development and transport ± a Eurovision for 2020. *Transport Reviews*. 20(1):113–130.

Banister, D. 2008. The sustainable mobility paradigm. *Transport Policy*. 15(2):73–80.

Banister, D. 2011. Cities, mobility and climate change. *Journal of Transport Geography*. 19(6):1538–1546.

Beall, J. & Fox, S. 2009. *Cities and development*. Oxon: Routledge.

Belzer, D. & Autler, G. 2002. Transit Oriented Development: Moving from Rhetoric to Reality. A Discussion Paper Prepared for The Brookings Institution Center on Urban and Metropolitan Policy and The Great American Station Foundation. [Online] Available: http://community-wealth.org/sites/clone.community-wealth.org/files/downloads/report-belzer.pdf. [15 July 2017].

Berger, R. 2013. Now I see it, now I don't: researcher's position and reflexivity in qualitative research. *Qualitative Research*. 15(2):219-234.

Bergmann, M., Jahn, T., Knobloch, T., Krohn, W., Pohl, C. & Schramm, E. 2012. *Methods for Transdisciplinary Research. A Primer for Practice*. Frankfurt-on-Main: Campus Verlag GmbH.

Bhorat, H., Buthelezi, M., Chipkin, I., Duma, S., Mondi, L., Peter, C., Qobo, M. & Swilling, M. 2017. *Betrayal of the Promise: How South Africa is being stolen*. [Online] Available: http://pari.org.za/wp-content/uploads/2017/05/Betrayal-of-the-Promise-25052017.pdf. [2 June 2017].

Bickford, G. & Behrens, R. 2015. WHAT DOES TRANSIT ORIENTED DEVELOPMENT MEAN IN A SOUTH AFRICAN CONTEXT? A multiple stakeholder perspective from Johannesburg. In Pretoria, South Africa. *34th Annual Southern African Transport*

*Conference 6-9 July 2015 "Working Together to Deliver - Sakha Sonke"*. [Online] Available: http://www.satc.org.za/index.php/component/easyfolderlistingpro/ ?view=download&format=raw&data=eNpFkGEOgyAMhe_SCwguc1v9t2RcJ9gBDJOqR B2EYmKy7O4D0exX6VfeewWFUuCHsULo7KTJQ81Y3hDMrHrigoP1JlZt22Wmd-CiFPKcLkmJsDD5LOMNIYhj1C_E4W95QWiajaXumqVvNVNqBUIqVaZGQ21QZJGn.

Blaxter, L., Christina, H. & Malcolm, T. 2010. *How to Research*. 4th ed. Open University Press.

Bos, J.J. & Brown, R.R. 2012. Governance experimentation and factors of success in socio-technical transitions in the urban water sector. *Technological Forecasting and Social Change*. 79(7):1340–1353.

Bos, J.J., Brown, R.R. & Farrelly, M.A. 2013. A design framework for creating social learning situations. *Global Environmental Change*. 23(2):398–412.

Braun, V. & Clarke, V. 2008. Using thematic analysis in psychology. *Qualitative Research in Psychology*. 3(October 2012):37–41.

Van Breda, J. & Swilling, M. 2016. *Guiding logics and principles for designing emergent transdisciplinary*. Stellenbosch.

Broto, V.C. & Bulkeley, H. 2013a. Maintaining climate change experiments: Urban political ecology and the everyday reconfiguration of urban infrastructure. *International Journal of Urban and Regional Research*. 37(6):1934–1948.

Broto, V.C. & Bulkeley, H. 2013b. A survey of urban climate change experiments in 100 cities. *Global Environmental Change*. 23(1):92–102.

Brown, V.A., Harris, J.A. & Russell, J.Y. (eds.) 2010. *Tackling Wicked Problems Through the Transdisciplinary Imagination*. London & Washington, DC: Earthscan.

Bryman, A., Bell, E., Hirschsohn, P., Dos Santos, A., Du Toit, J., Masenge, A., Van Aardt, I. & Wagner, C. 2014. *Research Methodology. Business and Management Contexts.* Cape Town: Oxford University Press South African (Pty.) Ltd.

Bulkeley, H. & Broto, V.C. 2013. Government by experiment? Global cities and the governing of climate change. *Transactions of the Institute of British Geographers*. 38(3):361–375.

Bulkeley, H., Broto, V.C., Hodson, M. & Marvin, S. (eds.) 2010. *Cities and Low Carbon Transitions*. London abd New York: Routledge.

Bulkeley, H., Broto, V.C. & Edwards, G.A.S. 2015. *An Urban Politics of Climate Change. Experimentation and the governing of socio-technical transitions*. 1st ed. Oxon: Routledge.

Businesstech. 2017a. *The cost of owning a car in South Africa is about to get a whole lot more expensive*. [Online] Available: https://businesstech.co.za/news/finance/170481/the-cost-of-owning-a-car-in-south-africa-is-about-to-get-a-whole-lot-more-expensive/. [02 June 2017].

Cape Town Heritage Trust. 1990. *Cape Town Historical Route. The Cape Town – Simon's Town Railway*. [Online] Available: http://www.atlanticrail.co.za/stations_history.php. [10 September 2016].

Cape Town Partnership. 2014. *The Low Carbon Central City Strategy*. [Online] Available: http://www.capetownpartnership.co.za/our-work/low-carbon-central-city-strategy/. [20 February 2015].

Cape Town Tourism. 2016. *Cape Town Tourism. A year in review 2015/2026.* [Online] Available: http://www.capetown.travel/annualreport/2016/files/ctt-ar-download-2016.pdf.

Capra, F. 2005. Complexity and Life. *Theory, Culture & Society*. 22(5):33–44.

Capri Community Group. 2017. *Facebook*. [Online] Available: https://web.facebook.com/groups/Caprisocialrunners/ permalink/1841831899167782/. [01 August 2017].

CarTrip. 2017. *FAQs*. [Online] Available: https://cartrip.co.za/faqs. [20 April 2017].

Cass, N., Shove, E. & Urry, J. 2005. Social exclusion, mobility and access. *Sociological Review*. 53(3):539–555.

Cervero, R. 2013. Transport Infrastructure and the Environment : Sustainable Mobility and Urbanism. Paper presented at the 2nd Planocosmo International Conference Bandung Institute of Technology. 21-22 October, Bandung, Indonesia. [Online] Available: http://iurd.berkeley.edu/wp/ 2013-03.pdf [15 July 2017]

Cervero, R. & Kockelman, K. 1997. Travel demand and the 3Ds: Density, diversity, and design. *Transportation Research Part D: Transport and Environment*. 2(3):199–219.

Chan, N.D. & Shaheen, S.A. 2012. Ridesharing in North America : Past, Present, and Future. *Transport Reviews*. 32(1):93–112.

CHAND. 2017a. *Houmoed Ave Phase 1 Extension-draft Basic Assessment Report*. [Online] Available: http://www.chand.co.za/houmoed2.asp. [10 August 2017].

CHAND. 2017b. *Basic Assessment Environmental Process for the proposed extention of Houmoed Ave. Comments received on BID and initial public participation activities*. [Online] Available: http://www.chand.co.za/houmoed2.asp. [10 August 2017].

Chilisa, B. 2012a. Situating Knowledge Systems. In Chilisa, B. (ed.). *Indigenous Research Methodologies*. Los Angeles, London, New Delhi, Singapore, Washington DC: SAGE Publications Ltd. 0–43.

Chilisa, B. 2012b. Discovery and Recovery. In Chilisa, B. (ed.). *Indigenous Research Methodologies*.  Los Angeles, London, New Delhi, Singapore, Washington DC: SAGE Publications Ltd. 45–72.

City of Cape Town [COCT]. 2012a. *Cape Town Densification Policy.* [Online] Available: http://resource.capetown.gov.za/documentcentre/Documents/Bylaws%20and%20policies/Densification%20Policy%20-%20approved%20on%2029%20February%202012.pdf. [12 January 2017].

COCT. 2012b. *Southern District Plan.* [Online] Available: http://resource.capetown.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/Southern_District_Plan_Technical_Report.pdf. [12 January 2017].

COCT. 2014. *Household Travel Survey Report Final Draft*.

COCT. 2015a. *City of Cape Town Municipal Planning By-Law*. [Online] Available: http://resource.capetown.gov.za/documentcentre/Documents/Bylaws and

policies/Municipal Planning By-Law containing all amendments.pdf. [10 August 2017].

COCT. 2015b. *Comprehensive Integrated Transport Plan 2013 – 2018. 2015 Review.* Cape Town. [Online] Available: http://www.tct.gov.za/docs/categories/1627/ Comprehensive-Integrated-Transport-Plan-2013-2018_2015_Review_Final (VWWC).pdf. [12 January 2017].

COCT. 2015c. *State of Energy Report*. [Online] Available: http://www.capetown.gov.za/en/ EnvironmentalResourceManagement/publications/Pages/default.aspx. [30 January 2017].

COCT. 2016a. *City to host public information session about upcoming Kommetjie Road project*. [Online] Available: http://www.capetown.gov.za/Media-and-news/City%20to%20host%20public%20information%20session%20about%20upcoming %20Kommetjie%20Road%20project. [14 September 2016].

COCT. 2016b. *State of Cape Town Report 2016*. [Online] Available: http://maitcid.co.za/ wp-content/uploads/2017/01/State-of-Cape-Town-Report-2016.pdf. [4 April 2017].

COCT. 2016c. *Transit Oriented Development: City of Cape Town TOD Strategic Framework*. Cape Town. [Online] Available: http://www.tct.gov.za/docs/categories/1788/ Approved%20City%20of%20Cape%20Town%20TOD%20Strategic%20Framework%20 V1.0. pdf. [12 March 2017].

COCT. 2017a. *City of Cape Town Five-Year Integrated development Plan July 2017 - June 2022.* [Online] Available: http://resource.capetown.gov.za/documentcentre/ Documents/City%20strategies,%20plans%20and%20frameworks/IDP%202017-2022%20Executive%20Summary.pdf [20 August 2017].

COCT. 2017b. *ODTP to bring greater parity in service delivery to all Capetonians*. [Online] Available: http://www.capetown.gov.za/Media-and-news/ODTP to bring greater parity in service delivery to all Capetonians. [04 June 2017].

COCT. 2017c. *Lift Clubs*. [Online] Available: http://www.capetown.gov.za/Family and home/transport-and-vehicles/greener-travel/lift-clubs. [15 July 2017].

Cobern, J. 2003. *Fish Hoek Looking Back*. Cape Town: Fish Hoek Printing & Publishing. [Online] Available: https://gosouth.co.za/wp-content/uploads/2016/05/FISH-HOEK-Looking-Back-Pdf.pdf. [4 August 2017].

Cobern, M. 1984. *The story of the Fish Hoek Valley*. Fish Hoek: Fish Hoek Printing Company.

Coenen, L. & Truffer, B. 2012. Places and Spaces of Sustainability Transitions: Geographical Contributions to an Emerging Research and Policy Field. *European Planning Studies*. 20(3):367–374.

Coenen, L., Benneworth, P. & Truffer, B. 2012. Toward a spatial perspective on sustainability transitions. *Research Policy*. 41(6):968–979.

Cope, M. & Elwood, S. (eds.) 2009. *Qualitative GIS: A Mixed Methods Approach*. Los Angeles, London, New Delhi, Singapore, Washington DC: SAGE Publications Ltd.

Council for Scientific and Industrial Research [CSIR]. 2015. *Far South Strategic Environmental Assessement (SEA): Final Report*.

Cowan, K. 2017. Uber drivers protest "unsafe working conditions". [Online] Available: https://www.businesslive.co.za/bd/national/2017-03-10-uber-drivers-protest-against-unsafe-working-conditions/. [22 May 2017].

Creswell, J.W. 2013. *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. 4th edition. Thousand Oaks: SAGE Publications Ltd.

Crime Stats SA. 2017. *Crime Stats Simplified Precinct : Fish Hoek, Noordhoek, Simon's Town*. [Online] Available: http://www.crimestatssa.com/precinct.php?id=1096. [15 July 2017].

Cupido, D. (donald.cupido@capetown.gov.za) 23 September 2015. FW: Feedback on Motion_Transport Challenges in the Far South. Email to C. Madell (Claude.Madell@capetown.gov.za).

Davies, R.J. 1981. The Spatial Formation of the South African City. *GeoJournal*. 2(2):59–72.

Dennis, K. & Urry, J. 2009. *After the Car*. Cambridge: Polity Press.

Department of Cooperative Governance and Traditional Affairs. 2016. *Integrated Urban Development Framework*. [Online] Available: http://www.cogta.gov.za/cgta_2016/wp-content/uploads/ 2016/05/eJZWfa-IUDF-2016_WEB.pdf. [10 December 2016].

Department of Environment and Natural Resources. White Paper. 2010. *National Climate Change Response White Paper*. South Africa.

Department of Environmental Affairs. 2010. *Ghg inventory for south africa 2000 - 2010*. [Online] Available: https://www.environment.gov.za/sites/default/ files/docs/ greenhousegas_ invetorysouthafrica.pdf. [23 July 2017].

Department of Environmental Affairs. 2015. *South Africa's Intended Nationally Determined Contribution*. [Online] Available:https://www.environment.gov.za/sites/default/files/ docs/sanational_determinedcontribution.pdf [10 June 2017].

Department of Transport. 2013. *Natmap 2050 Synopsis Update – Final Draft Report / Executive Summary*. http://www.transport.gov.za/Portals/0/ITP/NATMAP%202050/NATMAP2017/0 _ExecutiveSummary2017.pdf. [10 July 2017].

Department of Transport. 2015. *National Land Transport Strategic Framework Final Draft - March 2015*. [Online] http://www.exclaim.co.za/fileadmin/Issue_No.8_of_2015 /Doc%2025.pdf. [13 July 2017].

Dewar, D. & Uytenbogaardt, R.S. 1991. *South African cities: a manifesto for change*. University of Cape Town. Urban Problems Research Unite.

Van Dijk, L. 2017. *How to fight – or better , avoid – fires in a township like Masiphumelele*. [Online] Available: https://www.dailymaverick.co.za/opinionista/2017-07-25-how-to-fight-or-better-avoid-fires-in-a-township-like-masiphumelele/#.WZapaBRLeoM. [18 August 2017].

Dimitriou, H.T. 2011. Transport and city development: understanding the fundamentals. In H.T. Dimitriou & R. Gakenheimer (eds.). *Urban Transport in the Developing World. A Handbook of Policy and Practice.* Cheltenham: Edward Elgar Publishing Limited. 8–39.

Van Driel, H. & Schot, J. 2005. Radical innovation as a multi-level pro- cess: introducing floating grain elevators in the port of Rotterdam. *Technology and Culture*. 46(1):51–76.

Dube, S.C. 2015. *UBER: A GAME-CHANGER IN PASSENGER TRANSPORT IN SOUTH AFRICA?* [Online] Available: https://www.competition.org.za/review/2015/11/22/uber-a-game-changer-in-passenger-transport-in-south-africa. [10 August 2017].

Electric Vehicle Industry Association. 2016. *Unity in Sustainable Mobility : Roadmap towards building a unified electro mobility industry in South Africa*. [Online] Available: http://www.sanedi.org.za/ EVIA/ images/EVIA%202016%20Booklet.pdf. [11 July 2017].

Elliot, K. 2015. *Delays, faults and failures: what is to be done about Metrorail?* [Online] Available: http://www.groundup.org.za/article/delays-faults-and-failures-what-be-done-about-metrorail_2693/. [25 May 2017].

Email participant 5. (patrick@tops.org.za) 13 April 2017a. Re: FSPCF meeting tomorrow / meeting dated changed to 12 April. Email to E. Henshilwood (elzette.henshilwood@gmail.com).

Email participant 5. (patrick@tops.org.za) 23 March 2017b. RE: Traffic in the Far South. Email to E. Henshilwood (elzette.henshilwood@gmail.com).

Email participant 5. (patrick@tops.org.za) 11 May 2017c. patrick suggestions. Email to E. Henshilwood (southpeninsulatransport@gmail.com).

eNatis. 2017. *Live Vehicle Population. National Traffic Information Services.* [Online] Available: http://www.enatis.com/index.php/statistics/13-live-vehicle-population. [31 July 2017].

eNaTis. 2017. *Live Vehicle Population per Registering Authority as at 30 June 2017*. [Online] Available: http://www.enatis.com/index.php/statistics/71-live-vehicle-population-per-registering-authority. [10 July 2017].

Evans, J. & Karvonen, A. 2014. "Give Me a Laboratory and I Will Lower Your Carbon Footprint!" - Urban Laboratories and the Governance of Low-Carbon Futures. *International Journal of Urban and Regional Research*. 38(2):413–430.

Evans, J. & Mathebula, A. 2017. Angry commuters torch, loot, at Cape Town station. [Online] Available: http://www.news24.com/SouthAfrica/News/angry-commuters-torch-trains-loot-at-cape-town-station-20170612. [20 June 2017].

Evans, J., Karvonen, A. & Raven, R. (eds) 2016. *The Experimental City*. Oxon & New York: Routledge.

Far South Peninsula Community Forum Report. 2015. *Facing Facts* [Online] Available: https://roundandaboutsouth.wordpress.com/2015/08/27/far-south-community-peninsula-community-forum-report-facing-facts/. [08 May 2017].

Farla, J., Markard, J., Raven, R. & Coenen, L. 2012. Sustainability transitions in the making: A closer look at actors, strategies and resources. *Technological Forecasting and Social Change*. 79(6):991–998.

Ferro, P.S., Behrens, R. & Wilkinson, P. 2013. Research in Transportation Economics Hybrid urban transport systems in developing countries : Portents and prospects. *Research in*

*Transportation Economics*. 39(1):121–132.

Frantzeskaki, N. & Loorbach, D. 2010. Towards governing infrasystem transitions. Reinforcing lock-in or facilitating change? *Technological Forecasting and Social Change*. 77(8):1292–1301.

Friedrich, J., Ge, M. & Damassa, T. 2015. *Infographic: What Do Your Country's Emissions Look Like?* [Online] Available: http://www.wri.org/blog/2015/06/infographic-what-do-your-countrys-emissions-look. [28 July 2017].

Furlong, A. 2015. *Taking your life in your hands on Metrorail*. [Online] Available: https://www.groundup.org.za/article/taking-your-life-your-hands-metrorail_3176/. [25 May 2017].

Gakenheimer, R. 2011. Land use and transport in rapidly motorizing cities; context of controversy. In H.T. Dimitriou & R. Gakenheimer (eds.). *Urban Transport in the Developing World. A Handbook of Policy and Practice*. Cheltenham: Edward Elgar Publishing Limited. 40–68.

Geels, F.W. 2002. Technological transitions as evolutionary reconfiguration processes: a multi-level perspective and a case-study. *Research Policy*. 31:1257–1274.

Geels, F.W. 2011. The multi-level perspective on sustainability transitions: Responses to seven criticisms. *Environmental Innovation and Societal Transitions*. 1(1):24–40.

Geels, F.W. 2012. A socio-technical analysis of low-carbon transitions: introducing the multi-level perspective into transport studies. *Journal of Transport Geography*. 24:471–482.

Geels, F.W. & Kemp, R. 2007. Dynamics in socio-technical systems: Typology of change processes and contrasting case studies. *Technology in Society*. 29(4):441–455.

Geels, F.W. & Schot, J. 2007. Typology of sociotechnical transition pathways. *Research Policy*. 36(3):399–417.

Geels, F.W., Kemp, R., Dudley, G. & Lyons, G. (eds.) 2012. *Automobility in Transition? A Socio-Technical Analysis of Sustainable Transport*. New York: Routledge.

GEESE Glencairn. n.d. *Historical Overview.* [Online] Available: http://www.geeseglencairn.org/history-infomenu-11.html. [04 August 2017].

Geffen, N. 2015. *Commuters must organise to improve Metrorail*. [Online] Available: https://www.dailymaverick.co.za/opinionista/2015-02-20-commuters-must-organise-to-improve-metrorail/. [25 May 2017].

Gibela Rail Transport Consortuim. 2017. *The Project.* [Online] Available: http://www.gibela-rail.com/the-project. [15 July 2017].

Golder, S.A. & Macy, M.W. 2013. Social media as a research environment. *Cyberpsychology, Behavior, and Social Networking*. 16(9):627–628.

Goldman, T. & Gorham, R. 2006. Sustainable urban transport: Four innovative directions. *Technology in Society*. 28(1–2):261–273.

Gontsana, M. 2014. *Long day's journey to school*. [Online] Available: http://www.groundup.org.za /article/long-days-journey-school_2504/. [10 May 2017].

Gontsana, M. 2013. *Metrorail or Metrofail*. [Online] Available: http://www.groundup.org.za/

article/metrorail-or- metrofail_748. [10 April 2017].

Gordon, P. & Richardson, H.W. 1989. Gasoline Consumption and Cities A Reply. *Journal of American Planning Association*. 55(3):342–346.

Graham, S. 2010. *Disrupted Cities: When Infrastructure Fails*. New York: Routledge.

Graham, S. & Marvin, S. 2001. *Splintering urbanism: Networked infraestructures, technological mobilities and the urban condition*.

De Greef, K. 2016a. *Uber and out : Drivers in Cape Town are working 24-hour shifts for low pay*. [Online] Available: http://www.groundup.org.za/article/uber-and-out-drivers-cape-town-are-working-24-hour-shifts-low-pay/. [30 May 2017].

De Greef, K. 2016b. *Uber decision to allow cash payments alarms drivers*. [Online] Available: http://www.groundup.org.za/article/uber-decision-allow-cash-payments-alarms-drivers/. [30 May 2017].

Greyling, S. 2017. *The Future of the Electric Car in South Africa*. [Online] Available: http://www.joburg.co.za/future-electric-car-south-africa/. [15 August 2017].

Grieco, M. & Urry, J. (eds.) 2011. *Mobilities: new perspective on transport and society*. Farnham: Ashgate Publishing Limited.

Guy, S. & Marvin, S. 2001. Urban Environmental Flows: Towards a new way of seeing. In S. Guy, S. Marvin, & T. Moss (eds.). *Urban Infrastructure and Transition.* London: Earthscan Publiscations Ltd.. 22–36.

Hadorn, G.H., Pohl, C., Hoffmann-Riem, H., Biber-Klemm, S., Wiesmann, U., Grossenbacher-Mansuy, W., Zemp, E. & Joye, D. (eds.) 2008. *Handbook of transdisciplinary research*. Bern: Springer.

Hanna, R., Kreindler, G. & Olken, B.A. 2017. Citywide Effects of High-Occupancy Vehicle Restrictions: Evidence from the Elimination of "3-in-1" in Jakarta. *National Bureau of Economic Research Working Paper Series*. No. 23295(July):89–93.

Harrison, P. & Todes, A. 2015. Spatial transformations in a "loosening state": South Africa in a comparative perspective. *Geoforum*. 61:148–162.

Harvey, D. 2014. *Seventeen Contradictions and the End of Capitalism*. London: Profile Books Ltd.

Henderson, J. 2009. The Politics of Mobility: De-essentializing Automobility and Contesting Urban Space. In J. Conley & A.T. McLaren (eds.). *Car Troubles. Critical Studies of Automobility and Auto-Mobility.* Ashgate Publishing Limited. 147–164.

Hennessy, K. (Kier.Hennessy@capetown.gov.za) 10 August 2017. RE: quick sweep of likely new gated communities in Far South. Email to E. Henshilwood (elzette@citygreenprint.co.za)

Henshilwood, E. (elzette@citygreenprint.co.za) 16 August 2016. Far South Transport Study – offering assistance. Email to B. Herron (Brett.Herron@capetown.gov.za).

Henshilwood, E. 2017. *Carpooling makes a come back*. [Online] Available: https://openstreets.org.za/news/carpooling-makes-comeback. [06 June 2017].

Heritage Trust, C.T. 1990. *Cape Town Historical Route. The Cape Town – Simon's Town*

*Railway*. [Online] Available: http://www.atlanticrail.co.za/stations_history.php. [1 August 2017].

Herron, B. 2016. *CITY UNDERTAKES TRANSPORT STUDY TO ADDRESS COMMUTER*. [Online] Available: http://www.tct.gov.za/en/news/general/city-undertakes-transport-study-to-address-commuter-needs-in-far-south/page-1/. [10 September 2016].

Heylingen, F., Cilliers, P. & Gershenson, C. 2007. Philosophy and Complexity. In J. Bogg & R. Geyer (eds.). *Complexity; Science and Society*. Oxford: Radcliffe Publishing. 117–134.

Hickman, R. & Banister, D. 2014. *Transport, Climate Change and the City*. Kindle ed. Oxon, New York: Routledge.

Hidalgo, D., Pereira, L., Estupiñán, N. & Luis, P. 2013. Research in Transportation Economics TransMilenio BRT system in Bogota , high performance and positive impact e Main results of an ex-post evaluation. *Research in Transportation Economics*. 39(1):133–138.

Hodson, M. & Marvin, S. 2009. Cities mediating technological transitions: understanding visions, intermediation and consequences. *Technology Analysis & Strategic Management*. 21(4):515–534.

Hodson, M. & Marvin, S. 2010. Can cities shape socio-technical transitions and how would we know if they were? *Research Policy*. 39(4):477–485.

Holmes, O.W. 2013. Elucidating complexity theories. In J. Wells (ed.). *Complexity and Sustainability.* London: Routledge. 19–51.

Hoogma, R., Kemp, R., Schot, J. & Truffer, B. 2005. *Experimenting for Sustainable Transport: the approach of Strategic Niche Management*. London & New York: Spon Press.

International Energy Agency. 2016. *s t a t i s t i c s CO 2 emissions from fuel combustion*. [Online] Available: https://www.iea.org/publications/freepublications/publication/co2-emissions-from-fuel-combustion-highlights-2016.html. [24 October 2016].

Interviewee 3. 2017. Personal Interview. 29 May, Tokai.

Interviewee 4. 2017. Personal Interview. 26 May, Noordhoek.

Interviewee 5. 2017. Personal Interview. 11 May, Kenilworth.

Interviewee 6. 2017. Personal Interview. 15 May, Fish Hoek.

Interviewee 7. 2017. Personal Interview. 8 June, Kenilworth.

Interviewee 8. 2017. Personal Interveiw. 26 May, Plumstead.

Interviewee 9. 2017. Personal Interview. 9 June, Sunnydale.

Interviewee 10. 2017. Personal Interview. 7 June, Plumstead.

Interviewee 11. 2017. Personal Interview. 5 June, Fish Hoek.

Interviewee 12. (trafsol@mweb.co.za) 2 December 2016. RE: Traffic in the Far South. Email to E. Henshilwood (elzette@citygreenprint.co.za).

Interviewee 12. 2017. Personal Interview. 15 June, Sunnydale.

Interviewee 13. 2017. Personal Interview. 5 June, Sunnydale.

Interviewee 14. 2017a. Personal Interview. 11 May, Kenilworth.

Interviewee 14. (chris.megan@ugomyway.com) 24 May 2017b. RE: WWF schools transport

pilots. Email to E. Henshilwood (elzette@citygreenprint.co.za).

Interviewee 15. 2017. Personal Interview. 12 May, Sunnydale.

Interviewee 16. 2017. Personal Interview. 1 June, Fish Hoek.

Interviewee 17. (Nicola.Sasman@capetown.gov.za) 5 September 2016. RE: Far South
Transport Study. Email to E. Henshilwood (elzette@citygreenprint.co.za).

Interviewee 17. (Nicola.Sasman@capetown.gov.za) 13 April 2017a. Re: South Peninsula:
Traffic Assessment Survey. Email to E. Henshilwood (elzette@citygreenprint.co.za).

Interviewee 17. 2017b. Personal Interview. 18 May, Cape Town.

Interviewee 18. 2017. Personal Interview. 12 June, Noordhoek.

Interviewee 19. 2017. Personal Interview. 20 June, Capri.

Interviewee 20. 2017. Personal Interview. 7 June, Plumstead.

Interviewee 21. 2017. Personal Interview. 12 June, Newlands.

Interviewee 23. 2017. Personal Communication: Email questionnaire.

IPCC. 2014. *Climate Change 2014 Synthesis Report*. Contribution of Working Groups I, II and
III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change.
[Online] Available: https://www.ipcc.ch/report/ar5/syr/ [14 January 2017].

Isaacs, L. 2017. *Masiphumelele service delivery agreement not a done deal yet*. [Online]
Available: http://ewn.co.za/2017/08/31/masiphumelele-service-delivery-agreement-not-
a-done-deal-yet. [8 September 2017].

Jahn, T. 2008. Transdisciplinarity in the practice of research. *Transdisziplinäre Forschung.
Integrative Forschungsprozesse verstehen und bewerten.* 37:21–37. [Online] Available:
http://www.isoe.de/fileadmin/redaktion/Downloads/Transdisziplinaritaet/jahn-
transdisciplinarity-2008.pdf.

Jenks, M. & Burgess, R. Eds. 2000. *Compact Cities. Sustainable urban forms for developing
countries.* London & New York: Spon Press.

Joubert, A. 2017. *The economics of rush hour traffic*. [Online] Available:
https://www.sablog.kpmg. co.za/wp-content/uploads/2017/04/The-economics-of-rush-
hour-traffic.pdf. [22 July 2017].

Joubert, P. & Jurgens, A. 2015. *Cape village up in arms about development plans*. [Online]
Available: https://www.pressreader.com/south-africa/sunday-
times/20150104/281724087919203/TextView. [24 July 2017].

Kajikawa, Y. 2008. Research core and framework of sustainability science. *Sustainability
Science*. 3(2):215–239.

Kane, L. 2016. *What do we mean by low carbon transport? Understanding how people move
in Cape Town.* [Online] Available: https://openstreets.org.za/news/policy-brief-what-do-
we-mean-low-carbon-transport. [10 December 2017].

Kates, R.W. & Parris, T.M. 2003. Long-term trends and a sustainability transition.
*Proceedings of the National Academy of Sciences of the United States of America*.
100(14):8062–8067.

Kates, R.W., Clark, W.C., Corell, R., Hall, J.M., Jaeger, C.C., Lowe, I., McCarthy, J.J.,

Schellnhuber, H.J., et al. 2001. Sustainability science. *Proceedings of the National Academy of Sciences*. 292(5517):641–642.

Kennedy, C., Pincetl, S. & Bunje, P. 2011. The study of urban metabolism and its applications to urban planning and design. *Environmental Pollution*. 159(8–9):1965–1973.

Khanna, P. 2011. *When Cities Rule The World*. [Online] Available: http://www.mckinsey.com/global-themes/urbanization/when-cities-rule-the-world. [25 March 2017].

Khaya, S. 2016. *Metrorail's skorokoro trains.* [Online] Available: http://www.groundup.org.za/article/metrorails-skorokorotrains/. [25 May 2017].

Kotze, K. 2017a. Shootings continue in Ocean View. *False Bay Echo*. [Online] Available: http://www.iol.co.za/false-bay-echo/news/shootings-continue-in-ocean-view-8836872. [5 May 2017].

Kotze, K. 2017b. *New road plan in South*. [Online] Available: http://www.iol.co.za/false-bay-echo/news/new-road-plan-in-south-8007240. [2 March 2017].

Kozinets, R. V. 2010. *Netnography: Doing Ethnographic Research Online*. London: Sage Publications.

Landman, K. 2000. *Gated Communities and Urbain Sustainability: Taking a closer look at the Future*. Pretoria: CSIR Building and Construction Technology. [Online] Available: https://researchspace.csir.co.za/dspace/bitstream/handle/10204/2823/Landman_2000.pdf?sequence=1&isAllowed=y. [2 August 2017].

Landman, K. 2007. The storm that rocks the boat: The systemic impact of gated communities on urban sustainability. *CyberGeo*. 2007:1–18.

Lang, D.J., Wiek, A., Bergmann, M., Stauffacher, M., Martens, P., Moll, P., Swilling, M. & Thomas, C.J. 2012. Transdisciplinary research in sustainability science: Practice, principles, and challenges. *Sustainability Science*. 7(SUPPL. 1):25–43.

Latour, B. 2008. A Cautious Prometheus? A Few Steps Toward a Philosophy of Design (with Special Attention to Peter Sloterdijk). *Design History Society*. 2. [Online] Available: http://books.google.com/books?hl=en&amp;lr=&amp;id=3B5bbv0r-EkC&amp;oi=fnd&amp;pg=PA2&amp;dq=A+Cautious+Prometheus?+A+Few+Steps+Toward+a+Philosophy+of+Design+(with+Special+Attention+to+Peter+Sloterdijk&amp;ots=BENSsMyS03&amp;sig=6iebJo1hrW2idy0DTtcUUscMi2. [20 March 2017].

Lemanski, C. 2004. A new apartheid? The spatial implications of fear of crime in Cape Town, South Africa. *Environment and Urbanization*. 16(2):101–112.

Lemon, A. Ed. 1991. *Homes Apart. South Africa's Segragated Cities*. Bloomington: Indiana University Press.

Levy, J.S. 2008. Case Studies: Types, Designs, and Logics of Inference. *Conflict Management and Peace Science*. 25(788159814):1–18.

Lightstone Property. 2016. *Does crime pose a threat to sustainable economic activity?* [Online] Available: http://www.lightstoneproperty.co.za/news/ Does_crime_ pose_a_threat_to _sustainable_economic_activity.pdf.

Loorbach, D.A. 2007. *Transition Management*. Utrecht: International Books.

Loorbach, D.A. 2010. Transition Management for Sustainable Development: A Prescriptive, Complexity-Based Governance Framework. *Governance, An International Journal of Policy, Administration, and Institutions.* 23(1):161–183.

Lyons, G. 2004. Transport and society. *Transport Reviews*. 24(4):485–509.

Lyons, G. 2011. Technology Fix Versus Behaviour Change. In M. Grieco & G. Lyons (eds.). *Mobilities: New Perspectives on Transport and Society*. Farnham: Ashgate Publishing Limited. 159–177.

Lyons, G., Jain, J., Mitchell, V. & May, A. 2012. The Emergent Role of User Innovation in Reshaping Traveler Information Services. In F.W. Geels, R. Kemp, G. Dudley, & G. Lyons (eds.). *Automobility in Transition? A Socio-Technical Analysis of Sustainable Transport*. New York: Routledge. 268–286.

Machin-Mastromatteo, J.D. 2012. Participatory action research in the age of social media: literacies, affinity spaces and learning. *New Library World*. 113(11–12):571–585.

Markard, J., Raven, R. & Truffer, B. 2012. Sustainability transitions: An emerging field of research and its prospects. *Research Policy*. 41(6):955–967.

Mazzucato, M. 2013. *The Entrepreneurial State: Debunking Public vs. Private Sector Myths*. London: Anthem Press.

McCain, N. 2017. Locals croak on school plan. *False Bay People's Post*, 11 July:1

Mdebuka, V. (FishHoekSAPS@saps.gov.za) 6 June 2017. *RE: Statistics for accidents on Ou Kaapse Weg*.  Email to E. Henshilwood (elzette@citygreenprint.co.za).

Meadows, D.H., Meadows, D.L., Randers, J. & Behrens, W.W. 1972. *The limits to growth.* New York: Universe Books.

Mebratu, D. 1998. Sustainability and sustainable development. *Environmental Impact Assessment Review*. 18(98):493–520.

Mees, P. 2010. *Transport for Suburbia*. London: Earthscan.

Mertens, D.M. 2007. Transformative Paradigm. *Journal of Mixed Methods Research*. 1(3):212–225.

Meyer, G. & Shaheen, S. 2017. *Disrupting Mobility. Impacts of Sharing Economy and Innovative Transportation on Cities*. G. Meyer & S. Shaheen (eds.). Chan: Springer.

Millennium Ecosystem Assessment. 2005. *Ecosystems and Human Well-being: Synthesis.* Washington, D.C.: Island Press.

Mnyakama, M. 2017. *Cape Town's bursting trains*. [Online] Available: https://www.groundup.org.za/ article/cape-towns-bursting-trains/. [10 July 2017].

Modau, I. (imodau@wwf.org.za) 15 May 2017. Re: WWF schools transport pilots. .  Email to E. Henshilwood (elzette@citygreenprint.co.za).

Moloney, S. & Horne, R. 2015. Low carbon urban transitioning: From local experimentation to urban transformation? *Sustainability (Switzerland)*. 7(3):2437–2453.

Moreno, M.A., Goniu, N., Moreno, P.S. & Diekema, D. 2013. Ethics of Social Media Research: Common Concerns and Practical Considerations. *Cyberpsychology,*

*Behavior and Social Networking*. 16(9):708713.

Moss, T. 2014. Socio-technical Change and the Politics of Urban Infrastructure: Managing Energy in Berlin between Dictatorship and Democracy. *Urban Studies*. 51(7):1432–1448.

Murphy, J.T. 2015. Human geography and socio-technical transition studies: Promising intersections. *Environmental Innovation and Societal Transitions*. 17:73–91.

National Planning Commission. 2011. *National Development Plan 2030. Our future - make it work*. [Online] Available: http://www.poa.gov.za/news/Documents/NPC%20National%20 Development%_20Plan%20Vision%202030%20-lo-res.pdf. [10 July 2017].

National Treasury. 2017. *Budget Review 2017*. [Online] Available: http://www.treasury.gov.za/documents/national%20budget/2017/review/FullBR.pdf. [10 July 2017].

Newman, P. & Kenworthy, J. 2015. *The End of Automobile Dependence*. Washington: IslandPress.

Newman, P. & Kenworthy, J.R. 1989. Gasoline consumption and Cities. *Journal of the American Planning Association*. 55(1):24–37.

Noordhoek Ratepayers Association. 2016. *Noordhoek 2030*. [Online] Available: https://www.nrpa.org.za/noordhoek-2030-vision/ [12 March 2017].

Ntongana, T. 2017. *Arrests after Masiphumelele protest cuts cycle tour short*. [Online] Available: http://www.news24.com/SouthAfrica/News/arrests-after-masiphumelele-protest-cuts-cycle-tour-short-20170313. [14 March 2017].

Nykvist, B. & Whitmarsh, L. 2008. A multi-level analysis of sustainable mobility transitions: Niche development in the UK and Sweden. *Technological Forecasting and Social Change*. 75(9):1373–1387.

OECD. 2017. *South Africa - Economic forecast summary (June 2017)*. [Online] Available: http://www.oecd.org/economy/south-africa-economic-forecast-summary.htm. [20 July 2017].

Organization Internationale des Constructeurs d'Automobiles. 2016. *Economic Impact*. [Online] Available: http://www.oica.net/category/economic-contributions/. [12 November 2016].

Participant 1. 2017. Personal communications. 28 February, Sunnydale.

Participant 3. 2017. Personal communications. 16 May, Fish Hoek.

Partnership on Sustainable Low Carbon Transport. 2016. *Quick Wins on Transport , Sustainable Development and Climate Change*. [Online] Available: http://www.ppmc-transport.org/wp-content/uploads/2016/11/SLoCaT-Quick-Wins-Report-1.pdf. [1 April 2017].

Pieterse, E. 2008. *City futures: Confronting the crisis of urban development*. Landsdowne: UCT Press.

Pieterse, E. 2012. High Wire Acts : Knowledge Imperatives of Southern Urbanisms. (March):1–26.

Pohl, C. 2010. From Transdisciplinarity to Transdisciplinary Research. *Transdisciplinary Journal of Engineering & Science*. 1(1):74–83.

Pohl, C. & Hadorn, G.H. 2007. Transdisciplinary Research. In Hadorn, G.H. & Pohl, C. *Principles for designing transdisciplinary research.* Munich: NCCR North-South. 25–36.

Pohl, C., Rist, S., Zimmermann, A., Fry, P., Gurung, G.S., Schneider, F., Speranza, C.I., Kiteme, B., et al. 2010. Researchers' roles in knowledge co-production: experience from sustainability research in Kenya, Switzerland, Bolivia and Nepal. *Science and Public Policy*. 37(4):267–281.

Potter, S. 2004. Undertaking a Literature Review. *Doing Postgraduate Research*. 4(4):411–429.

PRASA. 2014. *Corporate Plan MTEF 2017-2020*. [Online] Available: http://www.prasa.com/ Corporate Plans/Corporate Plan 2017-20.pdf. [15 July 2017].

PRASA. 2015. *PRASA About Us*. [Online] Available: http://www.prasa.com/About.html. [14 July 2017].

Property24. 2017a. *Understanding affordable housing : spotlight on the Western Cape*. [Online] Available: https://www.property24.com/articles/understanding-affordable-housing-spotlight-on-the-western-cape/25821. [14 August 2017].

Property24. 2017b. *3 Bedroom House for sale in Milkwood*. [Online] Available: https://www.property24.com/for-sale/milkwood-park/noordhoek/western-cape/10609/105104882. [11 August 2017].

Public Protector South Africa. 2015. *Derailed*. [Online] Available: http://www.pprotect.org/library/investigation_report/201516/PUBLIC_PROTECTOR_INVESTIGATION_ REPORT_NO_3_OF_201516_PRASA_24082015.pdf. [15 July 2019].

Rampele, L. 2016. *Far South Traffic Dilemma tackled by the city. Cape Talk interview with Brett Heron on 15 August.* [Online] Available: http://www.capetalk.co.za/articles/15776/far-south-traffic-dilemma-being-tackled-by-city. [15 August 2016].

Raven, R., Schota, J. & Berkhoutb, F. 2012. Space and scale in socio-Technical transitions. *Environmental Innovation and Societal Transitions*. 4:63–78.

Republic of South Africa. 2009. *National Land Transport Act*. [Online] Available: http://www.gov.za/sites/www.gov.za/files/32110_413.pdf. [1 July 2017].

Republic of South Africa. 2011. *White Paper on the National Climate Change Response*. South Africa. [Online] Available: http://www.gov.za/sites/www.gov.za/files/34695_gen757.pdf. [10 July 2017].

Rockström, J., Steffen, W.L., Noone, K., Åsa, P., Chapin III, F.S., Lambin, E.F., Lenton, T.M., Scheffer, M., et al. 2014. Planetary Boundaries: Exploring the safe operating space for humanity. *Ecology and Society*. 14(2).

Rotmans, J. & Loorbach, D. 2009. Complexity and transition management. *Journal of Industrial Ecology*. 13(2):184–196.

Rucks-Ahidiana, Z. & Bierbaum, A.H. 2015. Qualitative spaces : Integrating spatial analysis for a mixed methods approach. *International Journal of Qualitative Methods*.

2015(14):92–103.

SA Property News. 2014. *Record price paid for Noordhoek house*. [Online] Available: https://www.sapropertynews.com/record-price-paid-for-noordhoek-house/https://www.sapropertynews.com/record-price-paid-for-noordhoek-house/. [14 July 2017].

SA Property News. 2016. *The Noordhoek residential market is dominated by demand for lifestyle properties*. [Online] Available: https://www.sapropertynews.com/the-noordhoek-residential-market-is-dominated-by-demand-for-lifestyle-properties/. [30 May 2017].

Saffer, M. 2016a. Little room for learning. *False Bay Echo*, 29 September: 1.

Saffer, M. 2016b. Civic forum surprises mayor at office with "gatvol" petition. *False Bay Echo*. 22 September. [Online] Available: http://www.iol.co.za/false-bay-echo/news/civic-forum-surprises-mayor-at-office-with-gatvol-petition-5401461/. [25 September 2017].

Sagaris, L. 2010. From sustainable transport development to active citizenship and participatory democracy: The experience of Living City in Chile. *Natural Resources Forum*. 34(4):275–288.

Sasman, N. (Nicola.Sasman@capetown.gov.za) 13 July 2017. FW: Bike2Train goes to Fishoek station. Email to R. Jobanputra (Rajesh.Jobanputra@capetown.gov.za).

Schafer, A. & Victor, D.G. 2000. The future mobility of the world population. *Transportation Research Part A: Policy and Practice*. 34(3):171–205.

Schaller, B. 2016. *Turns out , Uber is clogging the streets*. [Online] Available: http://www.nydailynews.com/opinion/turns-uber-clogging-streets-article-1.2981765. [10 August 2017].

Schiller, P.L., Bruun, E.C. & Kenworthy, J.R. 2010. *An introduction to sustainable transportation policy,planning and implementation.* London & Washington D.C.: Earthscan.

Scholz, R.W., Lang, D.J., Wiek, A., Walter, A. & Stauffacher, M. 2006. Transdisciplinary case studies as a means of sustainability learning. Historial framework and theory. *International Journal of Sustainability in Higher Education*. 7(3):226–251.

Schwanen, T., Banister, D. & Anable, J. 2011. Scientific research about climate change mitigation in transport: A critical review. *Transportation Research Part A: Policy and Practice*. 45(10):993–1006.

Schwanen, T., Banister, D. & Anable, J. 2012. Rethinking habits and their role in behaviour change: the case of low-carbon mobility. *Journal of Transport Geography*. 24:522–532.

Segev, L. 2015. *The Uber way*. [Online] Available: http://www.itweb.co.za/index.php?option =com_content &view=article&id=144232. [19 August 2017].

Senge, P.M. 1990. *The Fifth Discipline. The Art and Practice of the Learning Organization.* New York: Currency Doubleday.

Sengers, F., Berkhout, F., Wieczorek, A. & Raven, R. 2016. Experimenting in the city: unpacking notions of experimentation for sustainability. In J. Evans, A. Karvonen, & R. Raven (eds.). *The Experimental City.* Oxon & New York: Routledge. 15–31.

Shaheen, S., Stocker, A. & Mundler, M. 2017. Online and App-based carpooling in France: Analyzing Users and Practices - A Study of BlaBlaCar. In G. Meyer & S. Shaheen (eds.). *Disrupting Mobility. Impacts of Sharing Economy and Innovative Transportation in Cities*. Chan: Springer.

Sheller, M.B. & Urry, J. 2000. The City and the Car. *International Journal of Urban and Regional Research*. 24(December 2000):737–757.

Simon, D. (ed.) 2016. *Rethinking Sustainable Cities. Accessible, green and fair*. Bristol: Policy Press.

Sims, R., Schaeffer, R., Creutzig, F., Cruz-Núñmez, X., D'Agosto, M., Dimitriu, D., Figueroa Meza, M.J., Fulton, J., et al. 2014. Transport. In Vol. 5th Assess *CIn: Climate Change 2014: Mitigation of Climate Change. Contribution of Working Group III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change*. [Edenhofer, O., R. Pichs-Madruga, Y. Sokona, E. Farahani, S. Kadner, K. Seyboth, A. Adler, I. Baum, S. Brunner, P. Eickemeier, B. Kriemann, J. Savolainen, S. Schlömer, C. von Stechow, T. Zwickel and J.C. Minx (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA. 599-670.

Slayen, M. 2017. Personal communications. 27 June, Newlands.

Smith, A., Voß, J.P. & Grin, J. 2010. Innovation studies and sustainability transitions: The allure of the multi-level perspective and its challenges. *Research Policy*. 39(4):435–448.

Sousa, C., Roseta-Palma, C. & Martins, L.F. 2015. Economic growth and transport: On the road to sustainability. *Natural Resources Forum*. 39(1):3–14.

South African Cities Network. 2015. *Spluma As a Tool for Spatial Transformation*. [Online] Available: http://sacitiesnetwork.co.za/wp-content/uploads/2015/04/spluma-_as_a_tool_for_ spatial_transformation_final.pdf. [10 August 2017].

South African Cities Network. 2016. *State of South African Cities Report*. [Online] Available: http://www.sacities.net/state-of-cities-reporting/socr-2016. [20 May 2017].

South African National Parks. 2015. *Table Mountain National Park: Park Management Plan*. [Online] Available: https://www.sanparks.org/assets/docs/conservation/park_ man/tmnp_ approved_plan.pdf. [27 June 2017].

SPTC member 3. 2017. Personal Communications: South Peninsula Transport Chats. [Online] Available: http://www.facebook.com/722948037907949_733801110155975.

SPTC member 5. 2017. Personal Communications: South Peninsula Transport Chats. [Online] Available: http://www.facebook.com/722948037907949_733801110155975.

SPTC member 12. 2017. Personal Communication: South Peninsula Transport Chats. [Online] Available: http://www.facebook.com/722948037907949_733801110155975.

SPTC member 14. 2017. Personal Communications: South Peninsula Transport Chats. [Online] Available: http://www.facebook.com/722948037907949_733801110155975.

Stake, R. 1995. Data Gathering. In Thousand Oaks: Sage Publications *The Art of Case Study Research*. 49–68.

Statistics South Africa. 2011. *Census 2011*. [Online] Available:

https://www.capetown.gov.za/en/stats/2011CensusSuburbs/2011_Census_CT_Suburb_ Masiphumelele_Profile.pdf. [2 May 2017].

Statistics South Africa. 2013. *National Household Travel Survey*. [Online] Available: http://www.statssa.gov.za/publications/P0320/P03202013.pdf. [12 May 2017].

Statistics South Africa. 2014a. *National Household Travel Survey Western Cape Profile*. [Online] Available: http://www.statssa.gov.za/publications/Report-03-20-02/Report-03-20-022014.pdf. [12 May 2017].

Statistics South Africa. 2014b. *National Household Travel Survey February to March 2013*. [Online] Available: http://www.statssa.gov.za/publications/P0320/P03202013.pdf. [12 May 2017].

Steg, L. 2005. Car use : lust and must . Instrumental , symbolic and affective motives for car use. *Transportation Research Part A: Policy and Practice*. 39:147–162.

Stevenson, D. 2003. *Issues in Cultural and Media Studies: Cities and Urban Cultures*. Maidenhead: Open University Press.

Swilling, M. 2013. Towards Sustainable Urban Infrastructures for the Urban. In A. Allen, A. Lampis & M. Swilling (eds.). *Untamed Urbanism*. Oxon: Routledge. 19–32.

Swilling, M. 2016. Africa's game changers and the catalysts of social and system innovation. *Ecology and Society*. 21(1). N.p.

Swilling, M. & Annecke, E. 2012. *Just Transitions Explorations of sustainability in an unfair world*. Cape Town: UCT Press.

Swilling, M., Musango, J., Robinson, B. & Peter, C. 2017. Flows, Infrastructures and the African Urban Transition. In N. Frantzeskaki, V.C. Broto, L. Coenen, & D. Loorbach (eds.). *Urban Sustainability Transitions*. Oxon: Routledge. 311–330.

Swilling, M., Pieterse, E. & Hajer, M. n.d. Futuring, experimentation and transformative urban politics. In R. Poli (ed.). *Handbook of Anticipatory Systems.* New York: Springer.

Taborda, J. 2016. *South Africa GDP growth rate*. [Online] Available: http://www.tradingeconomics.com/south-africa/gdp-growth. [10 July 2017].

Transport and Urban Development Authority [TDA] Cape Town. 2017a. *City scoops transport award in Montreal, Canada*. [Online] Available: http://www.tct.gov.za/en/news/ general/city-scoops-transport-award-in-montreal-canada/page-1/. [04 August 2017].

TDA Cape Town. 2017b. *Comprehensive integrated transport plan 2016 – 2022*. [Online] Available: http://resource.capetown.gov.za/documentcentre/Documents/City% 20strategies%2C%20plans%20and%20frameworks/HYS_Draft%20Comprehensive%20 Integrated%20Transport%20Plan%202017%20-%202022.pdf. [2 August 2017].

TDA Cape Town. 2017c. *Draft Cape Town Municipal Spatial Development Framework (MSDF) 2017-2022*. [Online] Available: http://resource.capetown.gov.za/ documentcentre/Documents/City%20strategies%2C%20plans%20and%20frameworks /Draft_CITP_Plan_Presentation_22%20August%202017.pdf. [2 August 2017].

TDA Cape Town. 2017d. *Draft Far South Peninsula Transport Plan*.

TDA Cape Town. 2017e. *Open-ended Comments on the Travel Perception Survey*.

TDA Cape Town. 2017f. *Travel Demand Management Strategy for the City of Cape Town*. [Online] Available: http://resource.capetown.gov.za/documentcentre/Documents/Bylaws and policies/Travel Demand Management Strategy for the City Cape Town.pdf. [28 July 2017].

The Billboard. 2017. *Transport in the South Peninsula*. [Online] Available: http://thebillboard.co.za/ transport-survey/. [24 July 2017]

The Friends of Kommetjie Library. 2002. *A century of Kommetjie*. Fish Hoek Printing & Publishing cc. [Online] Available: https://gosouth.co.za/wp-content/uploads/2016/05/A-CENTURY-OF-KOMMETJIE.pdf. [3 August 2017].

The Worldwatch Institute. 2016. *State of the World. Can a City Be sustainable?* Washington: IslandPress. [Online] Available: http://www.worldwatch.org/http%3A/%252Fwww. worldwatch.org/bookstore/publication/state-world-can-city-be-sustainable-2016. [20 March 2017].

TomTom Traffic Index. 2017. *TomTom Traffic Index*. [Online] Available: https://www.tomtom.com/en_gb/trafficindex/city/cape-town. [12 April 2017].

Tonkiss, F. 2013. *Cities By Design: The Social Life Or Urban Form*. Cambridge & Malden: Polity Press.

Transport Cape Town (TCT). 2015a. *City's Council Approves Projects to Alleviate Traffic Congestion*. [Online] Available: http://www.tct.gov.za/en/news/general/citys-council-approves-projects-to-alleviate-traffic-congestion/page-1/. [10 December 2016].

TCT 2015b. *City of Cape Town Integrated Transport Plan 2013 - 2018 Review*. [Online] Available: http://www.tct.gov.za/docs/categories/1627/Comprehensive-Integrated-Transport-Plan-2013-2018_2015_Review_Final(VWWC).pdf. [11 January 2017].

TCT 2016. *The Kommetjie Road Project. Public Information Session*. [Online] Available: http://www.chand.co.za/komroad.asp. [20 November 2016].

TCT 2017. *Far South Transport Plan – progress report. Subcouncil 19 Update 16 January 2017*.

Turok, I. 2011. Deconstructing density: Strategic dilemmas confronting the post-apartheid city. *Cities*. 28(5):470–477.

uGoMyWay. 2017. *Carpool & Rideshare: Everyone*. [Online] Available: http://ugomyway.com/ rideshare-for-everyone/. [10 July 2017].

UN-Habitat. 2013a. *Planning and Design for Sustainable Urban Mobility: Global Report on Human Settlements 2013*. [Online] Available: https://unhabitat.org/planning-and-design-for-sustainable-urban-mobility-global-report-on-human-settlements-2013/. [26 October 2016].

UN-Habitat. 2013b. *State of the World's Cities 2012/2013 - Prosperity of Cities*. [Online] Available:  http://mirror.unhabitat.org/pmss/listItemDetails.aspx?publicationID=3387 [15 June 2017].

UN-Habitat. 2016a. *World Cities Report*. [Online] Available: http://wcr.unhabitat.org. [16 July 2017].

UN Habitat. 2016b. *The New Urban Agenda Explainer*. [Online] Available: https://www.habitat3.org/the-new-urban-agenda. [20 December 2016].

UNEP. 2013. *City-Level Decoupling: Urban resource flows and the governance of infrastructure transitions. Case Studies from selected cities. A report of the Working Group on Cities of the International Resource Panel. Swilling, M., Robinson, B., Marvin, S. and Hodson*.  [Online] Available: https://www.wrforum.org/uneppublicationspdf/city-level-decoupling-urban-resource-flows-and-the-governance-of-infrastructure-transitions/. [18 June 2017].

United Nations [UN]. 2015a. *Compilation of information on nationally appropriate mitigation actions to be implemented by developing country Parties*. [Online] Available: http://unfccc.int/resource/ docs/2013/sbi/eng/inf12r02.pdf. [28 July 2017].

UN. 2015b. *Transforming our world: the 2030 Agenda for Sustainable Development*. [Online] Available: http://www.unfpa.org/sites/default/files/resource-pdf/Resolution_A_RES_70_1 _EN.pdf. [2 Febuary 2017].

UN. 2016a. *Draft New Urban Agenda (Habitat III)*. [Online] Available: http://habitat3.org/ the-new-urban-agenda/. [20 December 2016].

UN. 2016b. *Expert panel finds that greener, more efficient and sustainable transport can save trillions and help achieve Sustainable Development Goals*. [Online] Available: https://sustainabledevelopment.un.org/?page=view&nr=1118&type=230& menu=2059. [08 March 2017].

UN. 2016c. *Mobilizing Sustainable Transport for Development. Analysis and Policy Recommendations from the United Nations Secretary-General's High-Level Advisory Group on Sustainable Transport.* [Online] Available: https://sustainabledevelopment.un.org/content/documents/2375Mobilizing Sustainable Transport.pdf. [8 March 2017].

UN. 2016d. *Paris Agreement - Entry in Force*. [Online] Available: https://treaties.un.org/doc/ Publication/CN/2016/CN.735.2016-Eng.pdf. [2 November 2011].

United Nations Development Programme. 2015. *Sustinable Develpment Goals*. [Online] Available: https://sustainabledevelopment.un.org/post2015/transformingourworld. [7 September 2016].

United Nations Office on Drugs and Crime. 2013. *Global Study on Homicide*. [Online] Available:https://www.unodc.org/documents/gsh/pdfs/2014_GLOBAL_HOMICIDE_BOO K_web.pdf. [7 September 2017].

Urry, J. 2004. The "System" of Automobility. *Theory, Culture, and Society*. 21(4):25–39.

De Waal, M. 2012. *Metrorail: unsafe, overcrowded, dangerous*. [Online] Available: https://www.dailymaverick.co.za/article/2012-06-01-metrorail-unsafe-overcrowded-dangerous/#.WWi9kcbMzVo. [25 May 2017].

Wakeford, J. 2016. Transport beyond oil. In M. Swilling, J.K. Musango, & J. Wakeford (eds.). *Greening the South African Economy. Scoping the issues, challenges and opportunities*. Claremont: UCT Press.

Walker, M. 2002. *Kalk Bay "a place of character".* Cape Town: Kalk Bay Historical Association.

Watson, V. 2001. *Change and continuity in Spatial Planning: Metropolitan planning in Cape Town under political transition*. Vol. 24.

Watson, V. 2001. *Change and continuity in Spatial Planning: Metropolitan planning in Cape Town under political transition*. London & New York: Routledge.

Whitehead, M. 2015. *Transport Development Index: A Baseline Understanding of the "State of Transport" in Cape Town*. [Online] Available: http://www.tct.gov.za/docs/widgets/319/UITP_TDI_ Presentation.pdf. [23 May 2017].

Wilkinson, P. 2006. *"Transit Oriented Development": A strategic instrument for spatial restructuring and public transport system enhancement in South African cities?* Paper presented at the 25th Southern African Transport Conference (SATC 2006). 10-13 July, Pretoria, South Africa. [Online] https://repository.up.ac.za/handle/2263/6099 [15 July 2017].

Wirasinghe, S.C., Kattan, L., Rahman, M.M., Hubbell, J., Thilakaratne, R. & Anowar, S. 2013. Bus rapid transit – a review. *International Journal of Urban Sciences*. 17(1):1–31.

www.climateactiontracker.org. 2017. *Climate Change Tracker*. [Online] Available: http://climateactiontracker.org/countries/southafrica.html. [28 July 2017].

www.masicorp.org. 2014. *About masiphumelele*. [Online] Available: http://www.masicorp.org/aboutmasiphumelele.html. [29 July 2017].

www.uber.com. 2017. *Legal Terms of Use*. [Online] Available: https://www.uber.com/legal/terms/za/. [10 August 2017].

www.wheels24.com. 2017. *SA road deaths : ' A cause for great concern ' - AA*. [Online] Available: http://www.wheels24.co.za/News/Guides_and_Lists/sa-road-death-toll-a-stark-warning-to-motorists-aa-20170609. [10 August 2017].

Van Wyk, P. 2017a. *Scorpio: Prasa – Treasury investigation recommends Sfiso Buthelezi be criminally charged*. [Online] Available: https://www.dailymaverick.co.za/article/2017-06-10-scorpio-prasa-treasury-investigation-recommends-sfiso-buthelezi-be-criminally-charged/. [26 July 2017].

Yeld, J. 2012. *One Road, 10 months - 111 crashes.* [Online] Available: http://www.iol.co.za/motoring/industry-news/one-road-10-months---111-crashes-1415581. [10 December 2016].

Yin, R.K. 2003. *Applications of case study research. (Applied Social Research Methods Series Volume 34).* Second ed. SAGE Publications Ltd.

Yin, R.K. 2009. *Case study research: Design and methods*. Vol. 5. London: SAGE Publications Ltd.

Zijlstra, T. & Avelino, F. 2012. A Socio-Spatial Perspective on the Car Regime. In F.W. Geels, R. Kemp, G. Dudley, & G. Lyons (eds.). *Automobility in Transition? A Socio-Technical Analysis of Sustainable Transport*. New York: Routledge. 160–179.

# Appendices

## Appendix A: Case Study Database

| Atlas.ti Document # | Name | Type |
|---|---|---|
| **Archival Records** | | |
| 176 | Archival_Image_AG 6586 Front Main Road, Kalk Bay. 1905.tif | Image |
| 177 | Archival_Image_AG 14361 Front Panoramic view of Chapmans Peak Pass .tif | Image |
| 178 | Archival_Image_CA1648 Sun Valley Township, Fish Hoek Valley. Oct 1974.tif | Image |
| 179 | Archival_Image_CA1651 Sun Valley Township, NoordHoek Valley. Oct 1974.tif | Image |
| 180 | Archival_Image_CA1652 NoordHoek Valley. Oct 1974.tif | Image |
| 181 | Archival_Image_J1879 Front Fish Hoek Road.tif | Image |
| 182 | Archival_Image_J1881 Front Kalk Bay.tif | Image |
| 270 | Archival_Image_Niche_community bus 1.JPG | Image |
| 271 | Archival_Image_Niche_community bus 2.JPG | Image |
| **Documentation (emails, minutes of meetings, reports of formal studies, News clippings, presentations)** | | |
| 27 | Doc_Audio_Why is Cape Town traffic so congested.mp3 | Audio |
| 198 | Doc_Minutes_30 Nov_Kommetjie Road Project-CLM #1- Minutes.pdf | PDF |
| 259 | Doc_News_Angry commuters torch trains, loot, at Cape Town station \| News24.pdf | PDF |
| 240 | Doc_News_Cape Argus_17 May 2017.JPG | Image |
| 103 | Doc_News_cape times 4 jan 2015.tiff | Image |
| 105 | Doc_News_Cape's Deep South road upgrades begin \| IOL.pdf | PDF |
| 260 | Doc_News_Chapman's Peak Drive closed indefinitely.pdf | PDF |
| 241 | Doc_News_Echo 11 May.JPG | Image |
| 14 | Doc_News_Echo 23 March Lutz van Dijk.pdf | PDF |
| 7 | Doc_News_Echo 29 Sept 2016.pdf | PDF |
| 6 | Doc_News_Echo_22 Nov.JPG | Image |
| 8 | Doc_News_Echo_Houmoed Ave 2 March.pdf | PDF |
| 160 | Doc_News_How BlaBlaCar created a global transport network - BBC News.pdf | PDF |
| 9 | Doc_News_IOL_Cape Town to study congestion in deep south 16 Aug 2016.pdf | PDF |
| 10 | Doc_News_IOL_Cape's Deep South road upgrades begin 21 Oct 2016.pdf | PDF |
| 161 | Doc_News_Is it cheaper to own a car or to Uber in South Africa? Here is the answer.pdf | PDF |
| 273 | Doc_News_News24_13 March_Arrests after Masiphumelele protest cuts cycle tour short \| News24.pdf | PDF |
| 274 | Doc_News_News24_25 June_City of Cape Town condemns torching of MyCiTi bus \| News24.jpeg | Image |
| 239 | Doc_News_PeoplesPost 23 May.jpg | Image |
| 243 | Doc_News_PeoplesPost 30 May.JPG | Image |
| 11 | Doc_News_press release Transport Cape Town Aug 2016.pdf | PDF |
| 107 | Doc_News_press release_City Kommetjie Road project.pdf | PDF |
| 131 | Doc_News_The cost of owning a car in South Africa is about to get a whole lot more expensive.pdf | PDF |
| 172 | Doc_News_Uber drivers protest 'unsafe working conditions' - Times LIVE.pdf | PDF |
| 175 | Doc_News_Who will push electric cars in SA? Meet the govt-backed EVIA \| Wheels24.pdf | PDF |
| 191 | Doc_Presentation_Core Stakeholder Meeting_11-05-17.pdf | PDF |
| 20 | Doc_Presentation_Far South TP_CoCt 2016 05 16 SC 19 intro.pdf | PDF |
| 21 | Doc_Presentation_Far South TP_CoCt 2016 08 19 Cllrs update.pdf | PDF |
| 22 | Doc_Presentation_Far South TP_CoCt 2016 11 10 Core stakeholder Mtg notes.pdf | PDF |
| 23 | Doc_Presentation_Far South TP_CoCt 2016 11 10 Core Stakeholder Presentation.pdf | PDF |
| 24 | Doc_Presentation_Far South TP_CoCt 2017 01 16 SC19 Update.pdf | PDF |
| 25 | Doc_Presentation_Far South TP_CoCt 2017 02 22 FSPCF update.pdf | PDF |

| 197 | Doc_Presentation_K30 Nov_Kommetjie Road Project CLM #1 Presentation 30 Nov 2016.pdf | PDF |
|---|---|---|
| 195 | Doc_Presentation_KMR Traffic Presentation.pdf | PDF |
| 199 | Doc_Presentation_Kommetjie Road Project-Public Information Session Posters.pdf | PDF |
| 104 | Doc_Press release_Cape Town to study congestion in deep south \| IOL.pdf | PDF |
| 213 | Doc_Report_11 May_COMMENTS FROM THE FSPCF CORE GROUP MEETING.docx | Text |
| 128 | Doc_Report_Cape_Town_Energy2040_Vision_pres_2015-09.pdf | PDF |
| 275 | Doc_Report_Far South Transport Plan_Draft Report_June-17.pdf | PDF |
| 12 | Doc_Report_FINAL SEA Report_13July 2015_MvdM.pdf | PDF |
| 278 | Doc_Report_Houmoed_Appendix E-Site Plans.pdf | PDF |
| 277 | Doc_Report_Houmoed_Appendix H(viii)-Comments and Responses Table July 2017.pdf | PDF |
| 276 | Doc_Report_Houmoed_Appendix J-Draft EMPr Houmoed Ave Phase 1-July 2017.pdf | PDF |
| 132 | Doc_Report_Infographic_Transport-for-CT-Infographic-2015.jpg | Image |
| 238 | Doc_Report_Kommetjie Road Project-Comments and Response Report.pdf | PDF |
| 13 | Doc_Report_NRPA-2030-final-1604.pdf | PDF |
| 1 | Doc_Report_Schools_ WC ED needs assessment_2017_03_16_02_34_01_259.pdf | PDF |
| 269 | Doc_Report_Southern_D_P_Tech_Report_FINAL.pdf | PDF |
| 125 | Doc_Report_Travel-Pref-survey-results-presentation.pdf | PDF |
| 226 | Email_5 June_Kommetjie Road upgrade project traffic management at Capri Drive.pdf | PDF |
| 224 | Email_10 May_Kommetjie Road upgrade project Capri drive lane restriction.pdf | PDF |
| 225 | Email_12 May_Kommetjie road upgrade project Horizontal directional drilling Hawthorne Close Faerie Knowe.pdf | PDF |
| 227 | Email_19 May_Kommetjie road upgrade project Notification.pdf | PDF |
| 222 | Email_Casas_12 May_Introductions.pdf | PDF |
| 39 | Email_Chand 28 Feb Houmoed.pdf | PDF |
| 40 | Email_councillors 13 Feb.pdf | PDF |
| 41 | Email_Councillors posters.pdf | PDF |
| 237 | Email_email participant 1__8 June Transport congestion Fish Hoek.pdf | PDF |
| 29 | Email_email participant 2.pdf | PDF |
| 31 | Email_email participant 4.pdf | PDF |
| 65 | Email_Email participant 5.pdf | PDF |
| 32 | Email_email participant 5.pdf | PDF |
| 33 | Email_email participant 6.pdf | PDF |
| 34 | Email_email participant 7.pdf | PDF |
| 35 | Email_email participant 7.pdf | PDF |
| 68 | Email_FSPCF Lorrain Holloway 28 Feb.pdf | PDF |
| 229 | Email_Hector_15Scholar bus transport.pdf | PDF |
| 256 | Email_Herron email 16 Aug.pdf | PDF |
| 230 | Email_Hitge_Train work.pdf | PDF |
| 71 | Email_Holloway March _ April.pdf | PDF |
| 228 | Email_Holloway_RE Elzette Henshilwood Sustainabale Transport Project.pdf | PDF |
| 62 | Email_Interviewee 4_ 22 March 2017 Commercial property development in Noordhoek.pdf | PDF |
| 42 | Email_Interviewee 10_ 28 Feb.pdf | PDF |
| 48 | Email_Interviewee 17_ 10 Feb survey.pdf | PDF |
| 49 | Email_Interviewee 17_ 17 March 2017.pdf | PDF |
| 55 | Email_Interviewee 17_ email 23 Nov.pdf | PDF |
| 56 | Email_Interviewee 17_ email 26 Oct 2016 WC ED study.pdf | PDF |
| 57 | Email_Interviewee 17_ email Sept 2016.pdf | PDF |
| 46 | Email_Interviewee 17_ Open Streets 24 Feb.pdf | PDF |
| 60 | Email_Interviewee 17_ SC19 meeting 14 March.pdf | PDF |
| 59 | Email_Interviewee 17_ Survey email 28 Feb.pdf | PDF |
| 3 | Email_Interviewee 17_26 Oct_Schools_FW WC ED scholar transport survey.pdf | PDF |
| 72 | Email_Jennings 11 March 2017.pdf | PDF |
| 73 | Email_Lutz 2 March 2017.pdf | PDF |
| 88 | Email_Marcela Feb March April.pdf | PDF |

| 89 | Email_Marcela_train campaign 9 Feb | PDF |
|---|---|---|
| 257 | Email_McDade email 2 Dec schools.pdf | PDF |
| 77 | Email_McDade interview.pdf | PDF |
| 215 | Email_McDaid_1 June_FSPCF comments and queries re the modellling.pdf | PDF |
| 220 | Email_Megan_25 May_WWF schools transport pilots.pdf | PDF |
| 138 | Email_Metrorail Train Reports Southern Line email 25 april.pdf | PDF |
| 4 | Email_Naude_12 Jan_Schools_FW WWF schools transport pilots.pdf | PDF |
| 223 | Email_Open Streets_4May_Join us to discuss TOD in the Cape Town context.pdf | PDF |
| 254 | Email_Sasman 15 June.pdf | PDF |
| 218 | Email_Sasman_11 May_FW Far South Transport Plan update.pdf | PDF |
| 216 | Email_Sasman_31 May comments on modelling from FSPCF.pdf | PDF |
| 221 | Email_Speedy_3 May 2017_High speed fiber connectivity Noordhoek.pdf | PDF |
| 81 | Email_Trish Woods 1 March.pdf | PDF |
| 92 | Email_uGoMyWay .pdf | PDF |
| 93 | Email_uGoMyWay WWF schools.pdf | PDF |
| 232 | Doc_Survey_FS Transport Plan comments from survey final.pdf | PDF |
| 214 | Doc_Webpage-Celebrating volunteers Bike2Train campaign OS Toolkit UrbanThinkers.pdf | PDF |
| 18 | Doc_Webpage_Accelerate Cape Town_8 Sept 2016.pdf | PDF |
| 19 | Doc_Webpage_Accelerate Cape Town_carpool 16 March 2017.pdf | PDF |
| 154 | Doc_Webpage_Apps in cape town.pdf | PDF |
| 155 | Doc_Webpage_Best Apps for Carpool and Rideshare 2016 - Green Living Ideas.pdf | PDF |
| 126 | Doc_Webpage_C40.pdf | PDF |
| 157 | Doc_Webpage_CarTrip: this carpooling startup looks to make travel easier in SA – Ventureburn.pdf | PDF |
| 279 | Doc_Webpage_Dailymaverick_How to fight - or better, avoid - fires in a township like Masiphumele | PDF |
| 281 | Doc_Webpage_GiveaLift aim.tiff | Image |
| 108 | Doc_Webpage_Niches_Fundraiser | South Peninsula Community Bus .pdf | PDF |
| 143 | Doc_Webpage_opinion piece-Metrorail: unsafe, overcrowded, dangerous | Daily Maverick.pdf | PDF |
| 133 | Doc_Webpage_opinion piece_Cape Town's bursting trains | GroundUp.pdf | PDF |
| 134 | Doc_Webpage_opinion piece_Commuters must organise to improve Metrorail | GroundUp.pdf | PDF |
| 135 | Doc_Webpage_opinion piece_Delays, faults and failures: what is to be done about Metrorail? | GroundUp.pdf | PDF |
| 110 | Doc_Webpage_opinion piece_Funds needed to end long wait for school bus | GroundUp.pdf | PDF |
| 111 | Doc_Webpage_opinion piece_Long Trek to Education for City Students.pdf | PDF |
| 137 | Doc_Webpage_opinion piece_Metrorail or Metrofail? | GroundUp.pdf | PDF |
| 142 | Doc_Webpage_opinion piece_Metrorail's skorokoro trains | GroundUp.pdf | PDF |
| 147 | Doc_Webpage_opinion piece_Taking your life in your hands on Metrorail | GroundUp.pdf | PDF |
| 148 | Doc_Webpage_opinion piece_TimesLIVE Mobile.pdf | PDF |
| 15 | Doc_Webpage_opinion piece_Ward 69_1 Feb 2016 | GroundUp.pdf | PDF |
| 38 | Doc_Webpage_press release STATEMENT BY CLLR HERRON Revised Built Environment Performance Plan .pdf | PDF |
| 117 | Doc_Webpage_press release_Drive less, live more.pdf | PDF |
| 124 | Doc_Webpage_press release_ODTP to bring greater parity in service delivery to all Capetonians.pdf | PDF |
| 146 | Doc_Webpage_press release_Prasa board briefs MPs on Metrorail, gets raked over the coals over Letsoalo's firing.pdf | PDF |
| 145 | Doc_Webpage_press release_PRASA Corporate.pdf | PDF |
| 123 | Doc_Webpage_press release_STATEMENT BY CLLR HERRON Revised Built Environment Performance Plan .pdf | PDF |
| 36 | Doc_Webpage_press release_TCT TDM flexitime.pdf | PDF |
| 116 | Doc_Webpage_press release_TCT_congestion.pdf | PDF |
| 37 | Doc_Webpage_press release_Transport Development Index| Transport for Cape Town.pdf | PDF |
| 16 | Doc_Webpage_SA property_Noordhoek residential market 13 Dec 2016.pdf | PDF |
| 166 | Doc_Webpage_School Transportation and Kids Bus Shuttle Service.pdf | PDF |
| 167 | Doc_Webpage_School Transportation Services | School Transportation | Rubix | PDF |

| | Shuttles & Transfers.pdf | |
|---|---|---|
| 5 | Doc_Webpage_Schools_WC ED Regulations for the transport of learners \| Western Cape Government.pdf | PDF |
| 112 | Doc_Webpage_South Peninsula Community Bus:Living Hope Fundraiser \| South Peninsula Moms.pdf | PDF |
| 127 | Doc_Webpage_The future of low carbon transport in SA - The Green Business GuideThe Green Business Guide.pdf | PDF |
| 17 | Doc_Webpage_The Heritage Portal_dev policies 17 Aug 2016.pdf | PDF |
| 206 | Doc_Webpage_The State of Ridesharing in Africa \| TechCabal.pdf | PDF |
| 115 | Doc_Webpage_transport service_CITY SHUTTLE - Sunbird Adventures.pdf | PDF |
| 174 | Doc_Webpage_Urban Sprawl Affects School Start Times for Sleepy Teens - CityLab.pdf | PDF |
| **Direct observation** | | |
| 244 | Doc_Photography_23 May 18h00.JPG | Image |
| 245 | Doc_Photography_23 May 18h00_2.JPG | Image |
| 205 | Doc_Social Media_19 May_Ocean View.pdf | PDF |
| 204 | Doc_Social Media_20 Feb.jpeg | Image |
| 212 | Doc_Social Media_Drive Less.pdf | PDF |
| 109 | Doc_Social Media_FB 2015_Community Bus.jpeg | Image |
| 140 | Doc_Social Media_Metrorail twitter 24 May 2017 1.jpeg | Image |
| 139 | Doc_Social Media_Metrorail twitter 24 May 2017.jpeg | Image |
| 144 | Doc_Social media_Metroral Commuters FB site 23 May.jpeg | Image |
| 187 | Fieldnote_6 June_Telephone chat_Interviewee 17.pdf | PDF |
| 193 | Fieldnote_11 May_FSPCF core group 11 may 2017.pdf | PDF |
| 192 | Fieldnote_12 April_FSPCF.docx | Text |
| 250 | Fieldnote_12 June_Analysing and personalities.pdf | PDF |
| 249 | Fieldnote_15 june personal reflection on choic.pdf | PDF |
| 200 | Fieldnote_15 March_SC19.docx | Text |
| 194 | Fieldnote_21 Feb_FSPCF.docx | Text |
| 189 | Fieldnote_23 May_rail.pdf | PDF |
| 186 | Fieldnote_29 April.pdf | PDF |
| 196 | Fieldnote_30 Nov_Kommetjie Road Construction.docx | Text |
| 248 | Fieldnote_interviewee 18 .pdf | PDF |
| 91 | Fieldnote_Meeting_Krygsman 22 Feb.docx | Text |
| 83 | Fieldnote_Meeting_participant 2_ 12 May.pdf | PDF |
| 84 | Fieldnote_Meeting_participant 3_16 May.pdf | PDF |
| 87 | Fieldnote_Meeting_participant 4 11 May.docx | Text |
| 82 | Fieldnote_Telephone chat_ participant 1 28 Feb 2017.pdf | PDF |
| 85 | Fieldnote_Telephone chat_Interviewee 17_3 March.docx | Text |
| 242 | Fieldnote _ informal chat estate agent_29 May.pdf | PDF |
| 185 | Fieldnote_3 May.pdf | PDF |
| 190 | Fieldnote_11 May_FSPCF.pdf | PDF |
| 188 | Fieldnote_22 may.pdf | PDF |
| 203 | Fieldnote_22 May_Alternative transport.pdf | PDF |
| 253 | Fieldnote_29 May_Initial traction.pdf | PDF |
| 209 | Fieldnote_Interviewee 11.pdf | PDF |
| 183 | Fieldnote_Interviewee 7.pdf | PDF |
| 97 | Fieldnote_Interviewee 13.pdf | PDF |
| 100 | Fieldnote_Interviewee 16.pdf | PDF |
| 251 | Fieldnote_Interviewee 19.pdf | PDF |
| **Participant observation** | | |
| 231 | Doc_Social Media_FB Group_comments and posts export 1_29.pdf | PDF |
| 236 | Doc_social media_SPTC_tammi.jpeg | Image |
| 201 | Fieldnote_2 May_FB group.pdf | PDF |
| 202 | Fieldnote_22 May_FB group.pdf | PDF |
| **Interviews** | | |
| 211 | Interview_1_PI_17 May.pdf | PDF |

| 235 | Interview_2_C & PS_23 May.pdf | PDF |
| 234 | Interview_3_C_29 May.pdf | PDF |
| 258 | Interview_4_C_26 May.pdf | PDF |
| 262 | Interview_5 & 14_PS_11 May.pdf | PDF |
| 210 | Interview_6_PI_15 May.pdf | PDF |
| 184 | Interview_7_PS_8 June.pdf | PDF |
| 255 | Interview_8_A & C_26 May.pdf | PDF |
| 268 | Interview_9_C_9 June.docx | Text |
| 95 | Interview_10 & 20_A_ 7 June.pdf | PDF |
| 261 | Interview_11_C_5 June.pdf | PDF |
| 98 | Interview_12_C_ 15 June.pdf | PDF |
| 96 | Interview_13_C & PS_5 June.pdf | PDF |
| 101 | Interview_15_C & TS_12 May.pdf | PDF |
| 99 | Interview_16_C_1 June.pdf | PDF |
| 94 | Interview_17_A_18 May.pdf | PDF |
| 266 | Interview_18_C_12 June.docx | Text |
| 267 | Interview_19_C_20 June.docx | Text |
| 265 | Interview_21_PS_12 June.docx | Text |
| 263 | Interview_online questionnaire_commuter 1.pdf | PDF |
| 264 | Interview_online questionnaire_commuter 2.pdf | PDF |
| 272 | Interview_online questionnaire_commuter 3.pdf | PDF |

# Appendix B: Spatial database

The following spatial data was supplied by the City of Cape Town for the purposes of this research (15 May 2017):

| Spatial Data set name | Description | Format of shapefile | Custodian |
|---|---|---|---|
| Census Population and Household Density 2011 | Population and Household Density (sq km) per sub place, using 2011 Census data supplied by Statistics South Africa | Polygon | COCT: Development Information & GIS |
| 5m contours | 5 meter contour set derived from various photogrammetrically derived sources. | Lines | COCT: Development Information & GIS |
| City of Cape Town Boundary | This feature class represents the City of Cape Town Unicity boundary as published by the Demarcation Board. | Polygon | COCT: Development Information & GIS |
| Indigenous Vegetation - Current Extent | Current extent of indigenous vegetation types and subtypes of Cape Town | Polygon | COCT: Environmental Resource Management |
| Indigenous Vegetation - Historic Extent | Historic extent of indigenous vegetation types and subtypes of Cape Town | Polygon | COCT: Environmental Resource Management |
| Integrated zoning land parcels | Boundaries of integrated zoning parcels | Polygon | COCT: Planning and Building Development Management |
| Land parcel | Boundaries of land parcels | Polygon | COCT: Planning and Building Development Management |
| Major Suburbs | Boundaries of main planning suburbs | Polygon | COCT: Planning and Building Development Management |
| Official Suburbs | Boundaries of official planning suburbs | Polygon | COCT: Planning and Building Development Management |
| Biodiversity Network | Location of protected and critical biodiversity areas of Cape Town | Polygon | COCT: Environmental Resource Management |
| Railway stations | This dataset represents the locations of the Railway Stations within the City of Cape Town | Line | Transport for Cape Town |
| Railways | The Railways represents the current COCT Railway infrastructure | Point | Transport for Cape Town |
| Schools | Locations of public schools | Point | COCT: Development Information & GIS |
| Primary Roads Network | This feature set represents the road network in Cape Town | Line | Transport for Cape Town |

# Appendix C: Qualitative analysis code list

| Atlas.ti Code | Code Group 1 | Code Group 2 |
|---|---|---|
| **Codes - Status quo related (SEA = Strategic Environmental Assessment)** | | |
| Far South_demographics | Status Quo information | |
| Far South_environmental risks | Status Quo information | |
| Far South_environmental value | Status Quo information | |
| Far South_Key Actors | Status Quo information | Key Actors |
| Far South_Masiphumele_socio economic needs | Status Quo information | |
| Far South_Ocean View_socio economic needs | Status Quo information | |
| Far South_SEA_CLD | Formal Studies | |
| Far South_SEA_Findings_Bulk services | Formal Studies | |
| Far South_SEA_Findings_CoCT + FSPCF + empowerment | Formal Studies | |
| Far South_SEA_Findings_CoCT + FSPCF + trust | Formal Studies | |
| Far South_SEA_Findings_CoCT Forward planning 2032 initiative | Formal Studies | |
| Far South_SEA_Findings_Environmental | Formal Studies | |
| Far South_SEA_Findings_Equity | Formal Studies | |
| Far South_SEA_Findings_FSPCF expectations | Formal Studies | |
| Far South_SEA_Findings_Housing | Formal Studies | |
| Far South_SEA_Findings_local economy + tourism | Formal Studies | |
| Far South_SEA_Findings_Open space + NMT | Formal Studies | |
| Far South_SEA_Findings_transport | Formal Studies | |
| Far South_SEA_Recommendations_collaboration stakeholders | Formal Studies | |
| Far South_SEA_Recommendations_growth areas | Formal Studies | |
| Far South_SEA_Recommendations_integrated planning | Formal Studies | |
| Far South_SEA_Recommendations_investment | Formal Studies | |
| Far South_SEA_Recommendations_Local SDF | Formal Studies | |
| Far South_SEA_Recommendations_policy | Formal Studies | |
| Far South_SEA_Recommendations_public participation | Formal Studies | |
| Far South_SEA_Recommendations_Role of DP | Formal Studies | |
| Far South_SEA_Recommendations_TMNP | Formal Studies | |
| Far South_SEA_Recommendations_transdisciplinarity | Formal Studies | |
| Far South_SEA_Recommendations_transport | Formal Studies | |
| Far South_SEA_scale | Formal Studies | |
| Far South_SEA_SDP_growth scenarios | Formal Studies | |
| Far South_SEA_SES | Formal Studies | |
| Far South_SEA_Southern District Plan_densification | Formal Studies | |
| Far South_SEA_Southern District Plan_growth scenarios | Formal Studies | |
| Far South_SEA_status_quo_environmental | Status Quo information | Formal Studies |
| Far South_SEA_status_quo_geography | Formal Studies | |
| Far South_SEA_status_quo_social | Status Quo information | Formal Studies |
| Far South_SEA_status_quo_transport | Formal Studies | |
| Far South_SEA_study focus | Formal Studies | |
| Far South_SEA_sustainability framework | Formal Studies | |
| South District Plan_Mobility proposals | Formal Studies | |
| South District Plan_SDP | Formal Studies | |
| South District Plan_spatial proposals | Formal Studies | |
| South District Plan_TMNP and urban | Formal Studies | |
| South District Plan_Vision Statements | Formal Studies | |

| Code | Code Group 1 | Code Group 2 |
|------|--------------|--------------|
| **Codes - relating to barriers on a city scale (CT = Cape Town)** | | |
| CT_barriers_car culture | Cape Town Landscape issues | Barriers_Cultural |
| CT_barriers_legislation | Cape Town Landscape issues | |
| CT_barriers_rail | Cape Town Landscape issues | |
| CT_climate change | Cape Town Landscape issues | |
| CT_congestion | Cape Town Landscape issues | |
| CT_Institutional change | Cape Town Landscape issues | |
| CT_landscape pressures | Cape Town Landscape issues | |
| CT_NMT | Cape Town Landscape issues | |
| CT_policy direction + capital spend | Cape Town Landscape issues | |
| CT_population density | Cape Town Landscape issues | |
| CT_private transport | Cape Town Landscape issues | |
| CT_public transport | Cape Town Landscape issues | |
| CT_road expansion | Road Expansion | Cape Town Landscape issues |
| CT_wicked problem | Cape Town Landscape issues | |
| **Codes - relating to barriers on a local scale (Far South as case study)** | | |
| Far South _barriers_accessibility | Barriers ALL | Barriers_Land use |
| Far South _barriers_Apartheid spatial planning | Barriers ALL | Barriers_Land use |
| Far South _barriers_car culture | Barriers_Cultural | Barriers ALL |
| Far South _barriers_competition between modal choice | Barriers_transport network | Barriers ALL |
| Far South _barriers_congestion | Barriers_transport network | Status Quo information |
| Far South _barriers_costs and time | Barriers ALL | |
| Far South _barriers_daily errands | Personal Choice & Alternatives | Barriers ALL |
| Far South _barriers_demographics | Barriers ALL | |
| Far South _barriers_development_growth | Formal Studies | Barriers_Land use |
| Far South _barriers_fuel as fossil fuel | Personal Choice & Alternatives | Barriers ALL |
| Far South _barriers_gated communities | Barriers ALL | Barriers_Land use |
| Far South _barriers_geography & weather | Barriers ALL | Barriers_Biophysical constraints |
| Far South _barriers_governance + legislation | Barriers_Political economy & governance | Barriers ALL |
| Far South _barriers_health services | Barriers ALL | Barriers_Land use |
| Far South _barriers_inequality | Barriers_Cultural | Barriers ALL |
| Far South _barriers_lack of schools | Formal Studies | Barriers_Land use |
| Far South _barriers_mindsets & NIMBY | Barriers_Cultural | Barriers ALL |
| Far South _barriers_perceptions of area | Barriers_Cultural | Barriers ALL |
| Far South _barriers_politics | Barriers_Political economy & governance | Barriers ALL |
| Far South _barriers_PT_Golden Arrow Bus | Barriers_transport network | Barriers ALL |
| Far South _barriers_PT_minibus-taxis | Personal Choice & Alternatives | Barriers ALL |
| Far South _barriers_PT_rail | Barriers_transport network | Barriers ALL |
| Far South _barriers_road expansion | Barriers_transport network | Barriers ALL |
| Far South _barriers_road network | Road Expansion | Barriers ALL |
| Far South _barriers_safety + security | Personal Choice & | Barriers ALL |

| Code | Code Group 1 | Code Group 2 |
|------|-------------|-------------|
| | Alternatives | |
| Far South _barriers_school travel | Barriers_Land use | Schools |
| Far South _barriers_schools choice | Barriers_Land use | Schools |
| Far South _barriers_choice | | |
| Far South C_area value | | |
| Far South C_economy | | |
| Far South C_environmental conscious | | |
| Far South C_historical accounts | | |
| Far South C_Planning Initiatives _ Noordhoek 2030 | | |
| Far South C_Planning Initiatives _ Noordhoek 2030_ challenges | | |
| Far South C_Planning Initiatives _ Noordhoek 2030_ circular economy | | |
| Far South C_Planning Initiatives _ Noordhoek 2030 _ goals | | |
| Far South C_Planning Initiatives _ Noordhoek 2030_ good neighbours | Community Solutions_good citizenry | |
| Far South C_Planning Initiatives _ Noordhoek 2030_ horses | | |
| Far South C_Planning Initiatives _ Noordhoek 2030_ long term | | |
| Far South C_Planning Initiatives _ Noordhoek 2030_ short-term | | |
| Far South C_Planning Initiatives _ Noordhoek 2030_ spatial planning | | |
| Far South C_Planning Initiatives _ Noordhoek 2030_ unplugged | | |
| Far South C_Planning Initiatives_ Noordhoek 2030_ thread lightly | | |
| Far South Projects_Kommetjie Road_Expansion | Road Expansion | |
| Far South Projects_Kommetjie Road_Houmoed extension | Road Expansion | |
| Far South TP_modelling | | |
| Far South TP_proposals Land use | Authority Solution_policy and Land use | Authority ALL Solutions |
| Far South TP_proposals Operations Public Transport | Solutions from authorities: FSTP | Formal Studies |
| Far South TP_proposals Travel Behaviour_TDM | Solutions from authorities: FSTP | Authority Solution_Avoid travel |
| Far South TP_proposals_Infrastructure Investment | Authority Solutions_Improve (tech) | Solutions from authorities: FSTP |
| Far South TP_public perception | | |
| Far South TP_rationale + objectives | Formal Studies | |
| Far South TP_restructuring TDA | | |
| Far South TP_sit analysis_assessment | Status Quo information | Formal Studies |
| Far South TP_sit analysis_capacity | Status Quo information | |
| Far South TP_sit analysis_Chapmans | Status Quo information | |
| Far South TP_sit analysis_congestion | Status Quo information | |
| Far South TP_sit analysis_economy & jobs | Status Quo information | Formal Studies |
| Far South TP_sit analysis_land use | Status Quo information | |
| Far South TP_sit analysis_modal split | Status Quo information | |
| Far South TP_sit analysis_opportunities map | Status Quo information | |
| Far South TP_sit analysis_private vehicles | Status Quo information | |
| Far South TP_sit analysis_pub transport | Status Quo information | |
| Far South TP_sit analysis_rideshare | | |
| Far South TP_sit analysis_survey | | |
| Far South TP_sit analysis_traffic across city | Status Quo information | |
| Far South TP_sit analysis_traffic flows + trip distribution | Status Quo information | |
| Far South TP_study area | Formal Studies | |
| Far South TP_TMNP input | | |

| Code | Code Group 1 | Code Group 2 |
|------|--------------|--------------|
| **Codes - relating to solutions (A = Authority, C = Citizen)** | | |
| Far South Transport_solutions_A_buses & integrated system | Authority Solution_Shift to Public Transport | Authority ALL Solutions |
| Far South Transport_solutions_A_Chapmans Peak | Authority Solution_Shift to Public Transport | Authority ALL Solutions |
| Far South Transport_solutions_A_developer relationship | Authority Solution_policy and Land use | Authority ALL Solutions |
| Far South Transport_solutions_A_development opportunities | Authority Solution_policy and Land use | Authority ALL Solutions |
| Far South Transport_solutions_A_experiment | Authority Solution_Avoid travel | Authority ALL Solutions |
| Far South Transport_solutions_A_legislation | Authority Solution_policy and Land use | Authority ALL Solutions |
| Far South Transport_solutions_A_Minibus-taxi | Authority Solution_Shift to Public Transport | Authority ALL Solutions |
| Far South Transport_solutions_A_motorbikes | Authority Solution_Shift to Public Transport | Authority ALL Solutions |
| Far South Transport_solutions_A_NMT | Authority Solution_Shift to Public Transport | Authority ALL Solutions |
| Far South Transport_solutions_A_parking requirements | Authority Solution_policy and Land use | Authority ALL Solutions |
| Far South Transport_solutions_A_Provision of schools | Authority Solution_policy and Land use | Authority ALL Solutions |
| Far South Transport_solutions_A_public transport_rail | Authority Solution_Shift to Public Transport | Authority ALL Solutions |
| Far South Transport_solutions_A_ridesharing | Authority Solutions_Improve (tech) | Authority Solution_Avoid travel |
| Far South Transport_solutions_A_Road expansion _ Houmoed Ave | Authority Solutions_Improve (tech) | Formal Studies |
| Far South Transport_solutions_A_road infrastructure | Authority Solutions_Improve (tech) | Road Expansion |
| Far South Transport_solutions_A_school bus | Authority Solution_Shift to Public Transport | Authority Solution_Avoid travel |
| Far South Transport_solutions_A_TOD & land use change | Solutions from authorities: FSTP | Authority Solution_policy and Land use |
| Far South Transport_solutions_A_work from home / live close to work | Authority Solution_Avoid travel | Authority ALL Solutions |
| Far South Transport_solutions_A_zoning rights | Authority Solution_policy and Land use | Authority ALL Solutions |
| Far South Transport_solutions_C_cable car | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_Chapmans | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_collaboration user and provider | Community Solutions_Improve (tech) | Community ALL Solutions |
| Far South Transport_solutions_C_connectivity | Community Solutions_Improve (tech) | Community ALL Solutions |
| Far South Transport_solutions_C_delivery vehicles | Community ALL Solutions | Community Solutions_Avoid travel |
| Far South Transport_solutions_C_densification + land use change | Community ALL Solutions | Community Solutions_policy and land use |
| Far South Transport_solutions_C_develop opportunities | Community ALL Solutions | Community Solutions_policy and land use |
| Far South Transport_solutions_C_electric cars | Community Solutions_Improve (tech) | Community ALL Solutions |
| Far South Transport_solutions_C_health services | Community ALL Solutions | Community Solutions_policy and land use |
| Far South Transport_solutions_C_integrated PT system | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_job creation | Community ALL Solutions | Community Solutions_Avoid travel |
| Far South Transport_solutions_C_legislation | Community ALL Solutions | Community Solutions_policy and land use |

| Code | Code Group 1 | Code Group 2 |
|---|---|---|
| Far South Transport_solutions_C_minibus-taxi | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_motorbikes | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_NMT | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_no development | Community Solutions_policy and land use | Community ALL Solutions |
| Far South Transport_solutions_C_office space | Community ALL Solutions | Community Solutions_Avoid travel |
| Far South Transport_solutions_C_online shopping | Community Solutions_Improve (tech) | Community ALL Solutions |
| Far South Transport_solutions_C_organised hitching | Community ALL Solutions | Community Solutions_good citizenry |
| Far South Transport_solutions_C_perceptions | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_politics | Community ALL Solutions | Community Solutions_good citizenry |
| Far South Transport_solutions_C_public transport in general | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_public transport_buses | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_public transport_rail | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_ridesharing | Community Solutions_Improve (tech) | Community ALL Solutions |
| Far South Transport_solutions_C_Road expansion | Community Solutions_Improve (tech) | Community ALL Solutions |
| Far South Transport_solutions_C_school bus | Community Solutions_Shift to public transport | Community Solutions_Avoid travel |
| Far South Transport_solutions_C_schools | Schools | Community ALL Solutions |
| Far South Transport_solutions_C_shopping centre | Community ALL Solutions | Community Solutions_policy and land use |
| Far South Transport_solutions_C_tech | Community Solutions_Improve (tech) | Community ALL Solutions |
| Far South Transport_solutions_C_TOD | Community ALL Solutions | Community Solutions_policy and land use |
| Far South Transport_solutions_C_traffic management | Community Solutions_Improve (tech) | Community ALL Solutions |
| Far South Transport_solutions_C_water transport | Community ALL Solutions | Community Solutions_Shift to public transport |
| Far South Transport_solutions_C_working arrangements | Community ALL Solutions | Community Solutions_Avoid travel |
| Far South Transport_solutions_connectivity | Community Solutions_Improve (tech) | |
| Far South_C_active citizens | Community Solutions_good citizenry | |
| **Codes - Relating to niches** | | |
| Niche_Carpooling | Niches_all | Niche_New Technology + Markets |
| Niche_Commuter transport operator | Niches_all | Niche_New Technology + Markets |
| Niche_Electric cars | Niches_all | Niche_New Technology + Markets |
| Niche_Hitchhiking | Niche_Lifestyle and culture | |
| Niche_Kommetjie private school bus | Niche_Lifestyle and culture | Niches_all |
| Niche_Living Hope ommunity bus | Niche_Lifestyle and culture | Schools |
| Niche_Ride-hailing (Uber) | Schools | Niches_all |

| Code | Code Group 1 | Code Group 2 |
|------|--------------|--------------|
| Niche_SA school bus | Niches_all | |
| Niche_WWF & Open Streets Rail campaign | Niches_all | Niche_Institutions |
| Niche_WWF low-carbon pilot school study | Schools | Niches_all |
| **Codes - Relating to social dynamics and relationships (FSPCF = Far South Peninsula Community Forum)** | | |
| FSPCF _ Authorities relationship | Social Dynamics_Relationships | |
| FSPCF _ Politics | | |
| FSPCF _ Researcher relationship | Social Dynamics_Relationships | |
| Relationships_Authorities + communties_trust | Social Dynamics_Relationships | |
| Relationships_Communities | Social Dynamics_Relationships | |
| Relationships_Developers + authorities | Social Dynamics_Relationships | |
| Relationships_Developers + communties | Social Dynamics_Relationships | |
| Relationships_Researcher_authorities | Social Dynamics_Relationships | |
| Relationships_Researcher_community | Social Dynamics_Relationships | |
| Relationships_Researcher_niches | Social Dynamics_Relationships | |
| **Codes - Relating to research process** | | |
| Research obstacles_commuters | Research process | Social Dynamics_Relationships |
| Research_connecting the dots | Research process | |
| Research_interest | Research process | Social Dynamics_Relationships |
| Research_Participant invite process | Research process | |
| Research_positionality | Research process | |

# Appendix D: Example of an interview transcript

**Semi-structured Interview**

**Interviewer:** Elzette Henshilwood
**Respondent:** Interviewee 16
**Date:** Thursday, 1 June 2017
**Venue:** Fish Hoek Chambers (City of Cape Town)
**Time:** 10:00 - 11:00

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#00:00:00-0#

Participant has received the Informed consent via email and now I asked her to sign.   #00:00:06-5#

Enquired about the Facebook site and how it has been received. #00:00:29-0#

 #00:00:29-0#

interviewer: So far on the site people it has been easier to complain about for example options. #00:00:18-0#

respondent: that is their stock sort of activity, is to complain.  #00:00:32-3#

interviewer: it will be part of my findings in the end though. Whenever I put some solutions or example up of what is happening elsewhere they are not so talkative.  #00:00:47-9#

respondent:: I think the reality is that rail is not perceived as reliable and not being safe and dirty. However, those are all fixable in the medium term and I think once that is fixed everybody's perceptions will change back to old days when it was easier to get on the train than do anything else. #00:01:07-3#

interviewer: mmm. So you believe the rail is a real medium term option for this area and for everyone … across classes? #00:01:07-3#  #00:01:16-9#

respondent:: yes, but it does need to be clean, reliable and safe.  #00:01:20-7#

respondent:: I grew up on a train, we went to school on a train. You know, we went to town on a train. We went iceskating and catch a train to town and catch a train back. It was completely safe….and it was clean. And the conductor sat in the coach with you uhm if it was girls alone [interrupted with someone coming into the office]. #00:01:46-8#

respondent:: so so when .. we were girls and there was always a conductor in train and the guard would sit in the train where we were to kinda keep an eye on us. They always…. always surveillance. And I am not meaning they were being funny, they did that, they were protective, you know.  #00:02:29-2#

interviewer: okay, fantastic. And I also heard you can't take a bicycle on the train in peak hour….which is a concern for some commuters. #00:02:37-5#

respondent:: there were … you actually need to speak to Theuns Vivian at the City's tourism department. During the World cup and doing the Argus, they negotiated that you could take your bicycles on the trains. In the old days, you could always put it in the guards couch #00:02:54-5#

interviewer: yes, the luggage area #00:02:57-8#

respondent:: yes. In that first little section. But having said that, I am not sure if the new trains have that. I have actually never looked. #00:03:06-5#

interviewer: I dont know #00:03:06-5#

respondent:: you could take your surfboard, you know #00:03:15-5#

interviewer: so, during the world cup and? #00:03:15-5#

respondent:: during the world cup and that week just before the Argus, people could carry their bikes on the train. Well, we have MyCiti buses that we could put your bikes on. #00:03:21-0#  #00:03:25-6#

interviewer: mmm. So, maybe just to backtrack, have you been living here your whole life? #00:03:25-6#  #00:03:33-0#

respondent:: yes. We went to school at the Star in St. James, we caught a train to school and home.  #00:03:46-2#

interviewer: Glencairn right? #00:03:46-2#

respondent:: yes. But all our entertainment was 'up the line' so in those days it was the skating rink or the bioscope. We went to the Empire every Friday night and at 3 minutes to 12 we caught the last train back home. If we missed it, we had to wake my mother up to fetch us. But there was a train at 3 minutes past 12.  #00:04:10-9#

interviewer: wow.  #00:04:10-3#

respondent:: So you could that social thing, now the last train is I think 10 o'clock. #00:04:16-0#

interviewer: yes.  #00:04:20-3#

respondent:: But that we are going to fix.  #00:04:21-4#

interviewer: okay #00:04:23-1#

respondent:: we just need to get control of the trains. #00:04:23-1#

interviewer: I spoke to a guy the other night, and he reckons we need a massive social movement to get the trains going. the same level of Fees must Fall social uprising.  #00:04:43-3#

respondent:: you see, the reality is…Prasa and Metrorail are so badly run. And I don't think.. what that will be is more destructive than productive. Quite honestly, I don't believe in those sorts of things. I think pressure, yes, but we are making progress on that regard. I mean, they busy with the new railway line connecting (incomprehensible) #00:05:00-7#  #00:05:08-4#

interviewer: yes, the one past  #00:05:08-4#

respondent:: yes, from the east from Khayelitsha to Bellville.. #00:05:18-4#

interviewer: yes, the one that cuts across #00:05:18-4#

respondent:: yes, so they are busy with those things. So, you know, how fast can you work with our labour? If it was China we would work through the night, but we do not do that thing here.  #00:05:29-0#

interviewer: Ja I went to an Open Streets talk about TOD the other night, that was really well attended. People from all over, obviously the trains came up as it is a massive backbone of transit-orientated-development and Mayco member Brett, discussed that link…and from the floor there was optimism…clearly people think it is a good strategy for the City but there are also a lot of questions around are we over-anticipating development in certain areas are we just hoping development will follow to train stations or are we going to incentive? #00:06:08-3#

respondent::I think that we are not over-anticipating…it is a slow process and it might take 15 years. But you know Capricorn was conceived 25 years before it actually turned to sod.  So, I don't think…we still have to plan. We have to get that rail link going, you can't put it in afterwards..it will just be too late. So, we must get it working and then develop around it and if we want to bring low income people into the city, we have to do it in a high density kind of developments. So that the economies of scales…that the rentals can be affordable. #00:06:54-7#

interviewer: so the only spot for us then is going to be Fish Hoek CBD? #00:06:56-5#

respondent:: Well, it is different for us because we are on a scenic route and a tourism route. So, I think we have allowed..our densification policies has allowed for second dwellings …it is not going to be five storey because we have a ceiling of 11m. But, uhm certainly there will be densification …and and #00:07:21-4#

interviewer: Fish Hoek can handle it? #00:07:21-4#

respondent::Fish Hoek can handle it …we just need to.. you see the biggest problem that came out of the Ward Committee meeting is whether we are going to have water. But, that is a different problem and in the long term we will be doing something about it…but but actually we can … it will probably become a little congested but we could probably up the density in Fish Hoek by a third. #00:07:52-4#

interviewer: uhm, I think that is what Nicky might suggest in her study #00:07:52-4#

respondent: all the greenies will explode, but the reality is they are all having children and where are they going to live. #00:08:08-3#

interviewer: (laughing)  #00:08:08-3#

respondent:: and then they all buy them a car when they turn 21 so you know. #00:08:13-0#

interviewer: so, ja, my … I am trying to look at short-term what can we do short-term. Not just the city.. #00:08:18-5#

respondent:: everybody.  #00:08:21-9#

interviewer: ja. #00:08:21-9#

respondent:: You know, I … we always carpool, so we go from here to town, we carpool…if for some reason Simon has to go by his own, he will take his motorbike. So where ever possible…even with the officials if we go to meetings

we share lifts. uhm…not only to just save petrol but really to de-congest.  So use we all sitting in the same queue. #00:08:49-9#

interviewer: ja, and you can discuss things. #00:08:49-9#

respondent:: for us..yes that is very useful, you can debrief and exactly, it is an extra hour and half chat time #00:08:57-3#

interviewer: work time #00:08:59-9#

respondent:: so uhm, that is the one thing. I would really like to see, but I know the constraints at the moment, a MyCiti feeder bus route through the valley. #00:09:16-3#

interviewer: linking to Hout Bay, is that an option? #00:09:16-3#

respondent:: It is an option, that is to town #00:09:21-3#

interviewer: yes,  #00:09:20-1#

respondent:: we could do a Cape Town to town, but we can get every school kid into a bus if it was a safe bus. #00:09:29-1#

interviewer: ja, i know that is my other…  #00:09:29-1#

respondent:: you see. We there is no reason we should all be taking our children to school, but we won't put them in a taxi. #00:09:37-7#

interviewer: but you know what we are doing apparently…we putting them in Ubers. People are sending their kids over the mountain to Redeem in Ubers everyday or people are living Kommetjie side they getting grown kids, 13, 14, 15 to get their own Uber back from school from Fish Hoek to Imhoff, Kommetjie. That is a R30, R40 trip. #00:10:04-9#

respondent:: Well, it is probably cheaper than getting in your car and coming to fetch them and getting back. #00:10:11-3#

interviewer: but it is amazing to see how people are starting to use it #00:10:12-4#

respondent:: Ja. I hope they are maximizing the number of kids in the car. But anyway…you see because it is perceived as safe. #00:10:21-6#

interviewer: yes. So you can get that same level of safety in a carshare environment…in a proper app based car share environment…uhm the whole world is doing it. I have asked the City, and they have their reservations around carshare at the moment or these sort of app based things because as soon as you pay for a ride #00:10:43-2#

respondent:: you then fall in the category of taxi.  #00:10:44-8#

interviewer: and then you need to get PDP and insurance, etc. #00:10:45-5#

respondent:: unless you do it into a club #00:10:47-3#

interviewer: if you look on the city's website…they are very clever…they say if you share the cost of the ride there must be certain wording in the Act, then it is fine.  So they are encouraging lift clubs to share the cost. So if you go on the website of these carshare apps, they say 'get people to share the cost of your ride'. So they gotten onto it.. #00:11:08-2#

respondent:: ja, that is fine. So it is not a taxi. #00:11:09-8#

interviewer: Ja, you are not making a profit by driving you car as a .. #00:11:15-2#

respondent:: so not a taxi, so that is fair. #00:11:15-8#

interviewer: My question to the City is can they push it more as an option… #00:11:30-6#

respondent:: but why must the City push it? Can't we just.. #00:11:30-6#

interviewer: educational driver perhaps?  Push it through media and communication, like they are doing now for the drought. #00:11:30-6#  #00:11:37-0#

respondent:: As these are things people are doing .. #00:11:39-0#

interviewer: elsewhere, yes. And you are already Uber, so you are used to the system, now … #00:11:45-5#

respondent:: we must just be careful that we don't create a problem with the taxi industry…because they are… #00:11:58-8#

interviewer: are they relying on this clientele for their bread and butter? #00:11:59-3#

respondent:: no, they are not. uhhm but there are … there are… what they call mother bodies and I am not sure which one it is, whether it is CATA or CODESA or whatever, who have a thing against Uber. #00:12:15-5#

interviewer: Yes #00:12:17-7#

respondent:: so that would need to be investigated  #00:12:19-9#

interviewer: yes there is an Uber vs taxi … #00:12:18-2#

respondent:: yes, but I do think certainly as locals and as individuals could say well … write a letter to the Echo every week or something and say well I find it easier to put my child in an Uber, you know.  #00:12:37-4#

interviewer: Or I have used this carshare app.. #00:12:38-5#

respondent:: or even on Facebook or something like that.  #00:12:41-8#

interviewer: but that is how I found out about it … I had no idea.  I use Uber to go out at night, or to go here or there or when you drop your car for a service…but I have never thought of sending my kids to school in one. But my kids are quite little. There are obviously an age where it becomes okay when your kids have got a phone… #00:13:02-4#

respondent:: I don't know how Uber works…could you go for woman drivers?  #00:13:07-0#

interviewer: uhm…you can only see who is around you and you can see who are the drivers of those 5, so you can see what gender and you can pick the which ever one. But there isn't a lot of female uber drivers. #00:13:17-6#

respondent:: you see I would be reluctant to send little girls with male drivers…with strange men. #00:13:27-2#

interviewer: ja ja. So I spoke to two carshare app companies. So the one is called uGoMyWay and the other CarTrip. They are a bit different in that the one is commuter focussed and the other one is trying to get people to say I am going to Knysna in a weeks time and I have space in my car. So he is trying to get long distance car sharing going. And the one has got the option to say I only want to drive with females, no smokers, no pets in the car…and you can really hone down what you want… I like to listen to music or I like to chat or I don't want to chat I just want to drive. So, you can really be picky about it. So I am on the one system and I am trying to see if anyone is going my way at the same time to Claremont …but there is one guy in Fish Hoek going to Kenilworth so it is 10min trip detour…so just not yet that critical mass is there for me to say there are three people in Milkwood Park that go in that directions. So they are really hoping to get it going, but they are concentrating on town where a lot of people end their trips. So they have partnered with some of the big businesses in town and Accelerate Cape Town and they have a few people going to the same buildings.  But the businesses are promoting from internally, you get incentivized, so that helps a lot. And I know the City is doing the flexible hour thing.. #00:14:49-0#

respondent:: yes.  #00:14:51-7#

interviewer: …as an organization, but they haven't been pushing carshare as such for their employees. So there must be way of rallying people around here to do that sort of thing.  #00:15:14-8#

respondent:: for me… I found it so strange that people will go to school in the morning with their kids in the car … when I come down in the morning from my house in Glencairn, there is a guy that works at the health shop here. Now, depending on whether I am early or late, sometimes he is walking past my driveway as I come out and then I say jump in and then he jumps in. Otherwise I pick him up at the bottom at the bus stop. Then there is another guy, who lives …with me [someone enters and she asks her to sit down] who has to go to Muizenberg and then he will go down and wait at the bus stop to go to Fish Hoek so he can then catch a train to Muizenberg, then I will drop him and I go past there and drop both of them and then go to the school. And then where there are always kids at the bus stop at Glencairn I pick them up as they have already missed their bus, you know.  #00:16:06-9#

interviewer: the Golden Arrow bus? #00:16:06-9#

respondent:: The Golden Arrow bus ….you know kids are very difficult to get them to school on time.. Mine one too. #00:16:14-1#

interviewer: ja I know (laughing)  #00:16:14-1#

respondent:: 8 days late this term already #00:16:14-1#

respondent:: And I am waiting in the car, so it is not my fault… (laughing) but uhm people don't give lifts. You know, I find … not even about car sharing, they will drive past someone walking… an old mamma, and they will not stop and give them a lift.  #00:16:37-8#

interviewer: ja.  #00:16:39-7#

respondent:: you know, and I just … these are obvious people that are going to work or coming back from work they not scum .. #00:16:46-1#

interviewer: not looking for trouble… #00:16:46-1#

respondent:: no, and if they were men… oh my bakkie was stolen… I would have thrown them in the back of the bakkie if I didn't know them. But at least given them a lift over blackhill, you know, or something like that. People are just selfish…or they are scared.  #00:17:01-0#

interviewer: there are more and more…and I think it is because of metro rail going backwards the last month or two after that accident .. there are more and more people hiking over Ou Kaaps. People dressed up, fancy… #00:17:13-9#

respondent:: ja, you can clearly see where they are going #00:17:13-9#

interviewer: Ja so that is becoming quite scary, not just the school kids that stand there in the morning hiking the other way to Masi high School, but I lift a girl…I take my kids to swimming lessons in Imhoff at a swimming school. But I lift that lady back to Masi every time at 5 o'clock, but I see her there every time you know. So it is safe for me …with kids in the car.. #00:17:32-7#

respondent:: yes, she knows you #00:17:32-7#

interviewer: but, I always ask myself the question why would I not stop for that woman…I don't think I would stop for a man I think.  #00:17:41-6#

respondent:: no no that is different.  you can stop for a woman #00:17:42-8#

respondent:: Ja and you know those people are working in our homes #00:17:49-3#

interviewer: or they are nurses, or at a hospital and they are now late for a shift and they are going to lose their job. #00:17:53-1#

respondent:: yes. Ja, but they will complain about the taxis. I don't know if I told you the story..so stop me if I did. But you know the people in Kommetjie complained about the taxis in wireless road and for years they kept complaining about the taxis …they don't want taxi's in Wireless road. So I said to them..why don't you arrange between all of you to have a set time when you get your domestic to leave in the afternoon and then we will arrange a bus for that. No no it did not suit them, because someone wants it at 4, this one wanted at 3, and this one wanted it at 2. So they could not agree on that..so I said to them then why don't you arrange your ladies to the top of Wireless road…because it is a long walk in winter. No no they can't do that. [someone else delivers a message to the participant]. #00:18:40-4#

respondent:: so so we are not considerate about peoples needs in terms of transport.. #00:18:51-7#

interviewer: and that is anything, from getting someone to False Bay Hospital or Groote Schuur… #00:18:53-5#

respondent:: yes, anything.  #00:18:58-1#

interviewer: or clinic, or school … I think there is a huge problem.  #00:18:58-1#

respondent:: ja, my one guy at work … he has a drinking problem. So on a Friday night he would often use up his train fare then he could not come to work…so he was between a rock and a hard place. So now we started buying him a train ticket so he gets a pay slip and a train ticket. #00:19:19-1#

interviewer: aaahhh #00:19:19-1#

respondent:: but now that the trains are buggered … it is R30 for taxis. You see, so we should be able to allow them to get their train ticket to work on the bus and work on the thing.. we need that integrated system.  #00:19:38-1#

interviewer: but isn't that coming? #00:19:38-1#

respondent:: yes, it is coming.  #00:19:38-1#

interviewer: so if we come back to the BRT…how are we going to link the Far South with the BRT? #00:19:43-4#

respondent:: well, it has been identified that a feeder route can come through from Scarborough, Kommetjie, past Ocean View, down the line to the station.  #00:20:00-6#

interviewer: oh just to the station? #00:20:00-6#

respondent:: yes, to the station, that is the one route.   #00:20:00-6# And then the other route and then the other route would be to go from Fish Hoek station along the Kommetjie Road over Chapmans to Hout Bay.  #00:20:15-8#

interviewer: can that Entilini fee be subsidized in some way? #00:20:15-8#

respondent:: or Province can subsidize it, but in any case it would be in everyones best interest to get the cars off the road.  #00:20:23-3#

interviewer: ja, or just to get to a MyCiti. #00:20:23-3#

respondent:: ja.  #00:20:26-2#

interviewer: and it is only 10km around Chapmans. But Chapmans has not been built for high traffic.. #00:20:29-6#

respondent:: no.  #00:20:27-8#

interviewer: but if you have a feeder system that runs.. #00:20:31-8#

respondent:: small bus  #00:20:34-2#

interviewer: a morning two or three trips.. #00:20:34-8#

respondent:: ja, thats fine.  #00:20:37-9#

interviewer: I would take it.  #00:20:37-9#

respondent:: I would take it. We would ..you know we go to town twice a week. uhm it will be much easier for us to go in a bus .. but we need to know if we can get a bus back.  #00:20:50-4#

interviewer: ja. or you take an Uber back. #00:20:51-5#

respondent:: ja, .. or … we can take a train back. It depends on what sort of time we get back, but we can hang around there till there is an appropriate one.  #00:21:01-4#

interviewer:. ja, that BRT is not running at full capacity?  #00:21:03-5#

respondent:: no.  #00:21:03-5#

interviewer: so that could just feed into that system? #00:21:03-5#

respondent:: ja. I mentioned it to Simon the other day… and I really think it could be a quick win..if there is a collaboration between one provider…you know they probably need to advertise it and ask for an operator to come forward. But you know there are so many little operators running around here. .. .airport transfers and Noordhoek taxi. I mean Noordhoek taxis are perfect..they can just say .. #00:21:26-6#

respondent:: completely  #00:21:26-6#

interviewer: … we will take it on tomorrow.  #00:21:26-6#

respondent:: ja.  #00:21:26-6#

interviewer: there is now a Sunbird Adventures from Kommetjie. I spoke to the guy, he is advertising a city shuttle bus going to town for R70 one way. That is cheap. But he says he drops people everywhere. It is not sustainable for him either.  #00:21:42-4#

respondent:: but you can work…you see the thing is you can work while that is happening. Or you can read a book you know.  #00:21:52-8#

interviewer: like one does in other parts of the world.  #00:21:52-8#

interviewer: Okay that is something that can be looked at.  As so many people are actually saying they would get in a bus.  #00:22:02-9#

interviewer: :: if there are not more than 2 stops. Come to longbeach mall and park you car, or if you come from Scarborough you can stay the whole way.  #00:22:12-9#

respondent:: yes.  #00:22:12-9#  #00:22:12-9#

interviewer: so how do we go about rallying something like that? #00:22:12-9#

respondent:: you know, the emphasis at the moment .. is on that link that they are doing …is it the Wetton Landsdowne corridor. So uhm once that is up and running, they will be looking for their next project. The reality is that the numbers are on that side in the Southwest. South east, but but congestion… we have congestion here. And I honestly believe, that if .. you see the Metro is not even running .. the metro…what is it called? The Golden Arrow is not run effectively, but they …they are based on subsidies.  #00:22:56-8#

interviewer: okay. so they will run regardless? #00:22:57-4#

respondent:: yes, but they have reduced the number of buses they run here. And of course… it is a head and egg because the taxis have taken their clients. You see. The taxis have taken a lot of their clients. Now if all those people in taxis were in buses, … it would be a much more efficient bus service, because it would be profitable.  #00:23:30-6#

interviewer: cause there is only one Golden Arrow going over Ou Kaaps in the morning, 6.30 or something. #00:23:33-8#

respondent:: ja.  #00:23:35-6#

interviewer: and I think one back. I am trying to get hold of them to give me some numbers of how popular that route is in the morning. But internally… #00:23:48-4#

respondent:: from uhm #00:23:51-4#

interviewer: nicky #00:23:51-4#

respondent:: does the Golden Arrow people from Glencairn not talk to you? #00:23:51-4#

interviewer: no I have just been phoning their toll number #00:23:53-9#

respondent:: No, go down and speak to the guy and ask for a Alead, he is a very nice guy that manages it down at Dido Valley, at the bottom at the Kelp factory.  #00:24:06-8#

interviewer: okay there… i will go down there.  #00:24:06-8#

respondent:: go ask for the manager. #00:24:13-6#

in: because that is also an option, I mean internally it could be.. #00:24:14-6#

respondent:: They don't make any decisions there, they are all made at Head Office. But it would be uhm…see if he can give it to you or refer you to somebody.  #00:24:23-9#

interviewer: okay. Then I am seeing some school principals next week, just to sort of test the water.   #00:24:23-9#

respondent:: I would say that at the next PTA meeting you should given a shot, because I don't see why people don't lift pool the children. Now when they have sport in the afternoon well which mother is at home, take all the kids home and we will fetch all the kids at one place after work. You know, or leave a teacher at school and let them stay there till 6 o clock… #00:24:54-2#

interviewer: jaa  #00:24:55-6#

respondent:: but don't charge them R350 for the .. #00:24:58-0#

interviewer: after care.. #00:24:58-0#

respondent:: you see, they can play so long as .. you know they are safe there. They can carry on. You see tonight Henna is playing, no she is going to netball. Yesterday she did, hockey and then tennis and she will fetched till after 6pm. So I mean I that is fine.. but the days that is 2.30 or 3, (incomprehensible) . #00:25:20-9#

interviewer: they can sit in the library and work.. #00:25:20-9#

interviewer: :: ja. I mean, so especially Fish Hoek High, which we know is pulling people from the area, especially peak morning. Morning traffic, they all need to be at the same time. The afternoons are different, I see that, but mornings… #00:25:38-3#

respondent:: there is one little .. there is one woman in Fish Hoek who drop her..we do a turn and come back to go home. And there is a woman that stands there, and then she walks down their little street, and picks up little children .. #00:25:54-0#

interviewer: awww like the walking bus. #00:25:54-0#

respondent:: yes.  #00:25:55-8#

interviewer: cute. #00:25:55-8#

respondent:: yes, it is quite cute. Uhm but it makes sense. It is not going to happen in winter, but anyway.  #00:25:55-8#  #00:26:04-7#

interviewer: there is also a company in Hout bay, she has got, I don't know, 4 buses, little cars… 7 seaters, Avanza's. And she does that for to schools on the other side of Hout Bay. So in and out of Out Bay. You can pay monthly, or you get a daily, oh he has missed his lift R60. Okay he is on the bus. I have seen her in SACS in the parking area, she is everywhere. Shuttlebug is her company's name. And I am trying to speak to her…as she had a good system. And she works safety first, there is an extra person in the bus that drops the kids at the school, so you know it is not the driver getting out of the car. Walking them to the door if it is little ones. And there they go. Uhhm so I think it works well. So I mean… #00:27:01-4#

respondent:: and just imagine the amount of time it is saving the parents.  #00:27:01-4#

interviewer: The amount of arrangements one make on a daily basis between husband and wife…who is dropping who is fetching, etc.  #00:27:08-7#

respondent:: it is all part of the economy, transport economics. #00:27:10-2#

interviewer: yes. #00:27:10-2#

[someone joins the discussion] #00:27:14-2#

interviewer: hi hi nice to see you.. .how are you #00:27:22-4#

guest: Yes you too. #00:27:24-8#

interviewer: we having a discussion, back at schools. #00:27:30-5#

guest: oh, I know the problem.  #00:27:30-5#

interviewer: Then I know the WC ED is doing a pilot study around school transport and they have been looking at Wynberg High Boys and Girls and they have sent questionnaires to parents to see their travel patterns…and partnering with WWF. It will be interesting to see what comes out of that study. And then they want to see if they can roll it out. So I think there are traction around that. #00:27:53-9#  #00:27:58-4#

respondent:: so you just take your child to the nearest bus station #00:28:06-8#

interviewer: ja, or you then have a little app system - a school bus system, they have some in Jhb that runs very well. They pick the kids up from your door, and it is not only for the private schools…for any as long as you can pay the fee. They organize the logistics around who drops who at which school. there are big companies in Jhb like that. #00:28:06-8#  #00:28:30-4#

respondent:: interesting that Province has done that, because Province has some really inefficient staff and that they are using technology now is a good sign. #00:28:43-8#

interviewer: oh no, I am not sure if they are doing that… #00:28:49-6#

respondent:: we battle with them to provide us transport for the kids from Westlake to Masi and we battle to get transport for the kids from Redhill down to Simon's Town to Fish Hoek. #00:28:58-8#

interviewer: And it is part of their mandate right…they have that policy? #00:29:01-0#

respondent:: it is part of their mandate. #00:29:02-7#

interviewer: but only in rural areas, isn't there a grey area? #00:29:02-7#

respondent:: that is what they say…one could argue that Redhill is a rural area #00:29:05-1#

interviewer: ja ja #00:29:09-4#

respondent:: so did you get anywhere with the kids from Westlake to Masi?  There was that community bus? #00:29:17-5#

interviewer: ja, they must catch the Golden Arrow….but I mean they are never on time.  #00:29:23-3#

interviewer: those kids hike every morning… i drive past them, just going the wrong way.  #00:29:23-9#

respondent:: you can get a lift with the Navy people (laughing)  #00:29:33-8#

interviewer: ja or you can have a cross-subsidized system you start the buses… it sleeps at Westlake…you get parking for them here. The driver starts from there. You get a 6 o clock bus or 6.30 drop those kids here and then start the trip to go back over. #00:29:44-9#

respondent:: exactly #00:29:44-9#

interviewer: so the rich kids subsidizes the poor…then you have  community school bus.  Not sure if people will go for that and pay for that…you are going to have to pay for that service. But you pay already … sometime 4 trips a day to get your kids to school …but that would be the next step. #00:30:14-3#

interviewer: Okay apart from that, what else do you think are barriers to our transport situation  #00:30:23-9#

respondent:: the geography…it is the network, I mean we live on a little Peninsula and we have to wind our way around it, you know…or over it. That is way the train would be the answer.  #00:30:49-8#

interviewer: it is there…it has been there since 1800s #00:30:56-4#

respondent:: you know what we should have done…there is still a road reserve that runs from Clovelly corner all the way to Kommetjie.  We should have build that link. Ja there is a road reserve, they will never build it now…but there is an area in Kommetjie that has been set aside for a station. #00:31:11-3#

interviewer: really? #00:31:16-6#

respondent:: but they won't build it now, it is just too expensive. And it will run through the back of Masi. #00:31:15-2#

interviewer: It would help Masi.. .if there is a station there. #00:31:25-5#

respondent:: It would help and it would help Ocean View.  #00:31:26-1#

respondent:: but if the bus service works it will be fine. I would say a tram.. #00:31:36-0#

interviewer: but that is where the population densities are. #00:31:39-7#

respondent:: yes.  #00:31:44-5#

interviewer: so the intersection might help? #00:31:44-5#

respondent:: the new road widening and all that?  It will help .. it will move people faster. Do you know what I do think, but it is not anything to do with the number of people, but I do think we should have a compulsory advanced driver course for taxi drivers. #00:32:09-4#

interviewer: to get the pirate taxis off? #00:32:09-4#

respondent:: yes.  #00:32:07-7#

respondent:: and we should sponsor it, as it is actually in our interest for them to learn to driver properly.  #00:32:24-1#

interviewer: ja that is a great idea.  #00:32:24-1#

interviewer: and then development in the area, are you…how do you feel about densifying the rest of the suburbs or new developments? #00:32:38-5#

respondent:: well, I have a philosophical approach to this…if we don't do it, it is going to get invaded. I would rather it was done in a planned organized manner…and uhh services that we can control, that we can access if there is fires, that we can do all the right things with. Uhh it was lovely when Van Riebeeck arrived here and the place was nice for camping..but we have gone beyond that. Who is going to listen to your tape?   #00:33:25-7#

interviewer: just me! (laughing)  #00:33:25-7#

respondent:: I am be careful what I say now. But I mean that is the reality. Because they will get invaded…and I will not be surprised, as much as I would fight my way against it…I would not be surprised if our mountains will be invaded soon.  #00:33:47-5#

interviewer: you think? #00:33:47-5#

respondent:: there is an orchestrated uhm attempt to take land..politically.  #00:34:00-8#

interviewer: ja, nationwide? #00:34:00-8#

respondent:: yes, nationwide. And what a better signal can you do … and there is a lot of land on the mountains. They don't just go straight, they go up and down. And you know, it can be done. But I uhm…we must do whatever we must do appropriately. And that is why … flippen hell I must phone Bruce… and I said it to Bruce and I said it to … you fight every development, I am telling you, you are going to have a low-cost development in Kommetjie.  And they don't want it…they say 'oh we rather have poor houses'… but they don't want anything. You can't go backwards. I wish we could, but we can't…it is just not how the world works.  #00:34:59-7#

Guest: rather than saying 'invading' rather say…the result of urbanization  #00:35:00-9#

respondent:: pressure,  #00:35:02-1#

Guest: will force all available (incomprehensible) to be absorbed. #00:35:10-5#

interviewer: either by the market, and we will get more gated.. or either by .. City driving a process. #00:35:14-3#

Guest: either by design or by force. #00:35:20-2#

interviewer: ja. and apparently, demand is saying …you know there is one demand…dire need for land and the other demand is gated communities. I would think there is more a need for GAP housing.. #00:35:33-0#
 #00:35:33-4#

respondent:: you know there is a need for…there is a need for another Sun Valley. Sun Valley, in the 1970s was a low-cost #00:35:49-6#

guest: that can be the gap housing you talking about #00:35:49-6#

respondent:: it does not matter which color you are…it is that entry level.  #00:35:51-9#

guest: the average youngster finishing school now and starting their career is staying with their parents until they are 30 years old, because they can't afford to go anywhere…and even if they can…because they have small salary..they either can't afford it or there is no space available.  #00:36:03-1#

interviewer: and you know what they spend their cash on… a car. #00:36:03-1#

respondent:: a car, yes … and a phone. #00:36:04-5#

interviewer: cause that is their independence.  #00:36:05-9#

guest: yes #00:36:05-9#

interviewer: but they still live there…so this is what someone else said to me.. you have Kommetjie, not really physically growing but you have more people and more cars  #00:36:17-8#

guest: the population is denser  #00:36:17-8#

interviewer: ja, and more cars on the road…because we don't use public transport. #00:36:20-9#

respondent:: thats right.  #00:36:25-6#

guest: the same happens of course in Ocean View and Masi. #00:36:25-6#

respondent:: yes exactly #00:36:28-6#

interviewer: if you have a little bit of disposal income #00:36:35-1#

guest: and I feel sorry for the guys in Masi, because there is no safe space for parking.  I mean we have a guy that is a youngster, who is a real motivated little business guy. He parks his trailer at my house because it gets vandalized if he leaves it outside.  #00:36:48-1#

interviewer: sjoe, everyday. #00:36:48-1#

guest: so when he has to go to work, even if say Noordhoek, he has to come fetch his trailer from my place and takes it there. It is not right.  #00:36:54-9#

respondent:: no, it is not.  #00:36:54-9#

interviewer: so are they building the taxi rank now? #00:37:01-2#

respondent:: ja.  #00:37:09-5#

interviewer: I am speaking to one of the taxi drivers on Friday #00:37:09-5#

respondent:: which one? #00:37:09-5#

interviewer: Ricci…do you know Ricci? #00:37:14-1#

respondent:: I know Ricci, yes.  #00:37:15-3#

interviewer: is he a good guy to speak to?  he is an owner #00:37:15-3#

respondent:: ja, he is an owner. But speak to Philemon as well. 0837319838  #00:37:24-8#

interviewer: okay good, he is an owner too? #00:37:41-8#

respondent:: he is an owner #00:37:49-9#

interviewer: could you for instance rope him in in a discussion around a feeder bus system perhaps? #00:37:49-9#

respondent:: yes,  #00:37:56-4#

interviewer: have they done it elsewhere in the city? #00:37:56-4#

respondent:: well, they..they have got it elsewhere, I just cannot remember where it is.

interviewer: ja, I know in Stellenbosch they are trying to do that. Is it easier if there is only one association in an area? #00:38:17-8#

respondent:: in Masi, there is only one association. MASETA. And in Ocean View there are two associations, Mr. Adams and Mr. Basil Lievendal #00:38:31-6#

Guest: how are these guys fall under CODESA and CATA? Are they affiliated? #00:38:32-5#

respondent:: our people are all CATA, i think. They are the one. they actually keep phoning me when the other ones wants to come here and interfere.So last week they had a meeting with the city guys …you see the big problem is there is a need and those CODETA people are doing the routes to Khayelitsha and Mitchellsplain and .. and the people need to get there and there is no other way of getting there. It is only the need that has created the demand. #00:39:12-5#

interviewer: ja, if they stop working tomorrow … we in trouble.  #00:39:12-5#

respondent:: we would be in trouble. people can't come to work. And that is what residents need to understand, they all shout and scream and perform about taxis this and taxis that …but the meeting in Sunnydale the other day one of the guys says you know I jog and let me tell you there is not one car that stops at the stop street in Sun Valley or in Noordhoek and they are #00:39:38-5#

interviewer: (laughing)  #00:39:38-5#

guest: as guilty as the taxis #00:39:38-5#

respondent:: even more, as they are more of them … [participants takes a call] #00:39:44-1#

The conversation then turned to how Councillors must always be available and being tagged on all social media posts.

interviewer: so okay, so how do we change behavior? #00:41:50-1#

respondent:: we consciously reiterate reiterate reiterate  'consideration, share lifts, pick up kids that goes to school …' #00:42:06-9#

interviewer: be neighbourly…  #00:42:06-9#

respondent:: be neighbourly…it is just good manners.  #00:42:14-5#

Conversation drifts off between the two of them.

The end of the interview.