Realising the density dividend?

Changes in urban lifestyle and culture as compact developments emerge on Cape Town's public transport corridors.

Katharine McKenzie

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Master of Philosophy specialising in Transport Studies,

Centre for Transport Studies, Department of Civil Engineering, Faculty of Engineering and the Built Environment, University of Cape Town

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Supervisor: A/Prof Roger Behrens

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Abstract

Local planning reform has facilitated the development of some higher density residential and mixed-use development on Cape Town's transport corridors, laying the basis for more efficient and sustainable lifestyles in areas of the city served by public transport and paratransit services.

The research aims to explore the lifestyle changes that these new denser developments, viewed as a form of nascent transit-oriented development (TOD), have ushered in and their potential to contribute to the creation of inclusive urban communities.

The research explores this through the development of four qualitative case studies, each in a different part of the city, with different transport and urban features. The case studies each focus on relatively new multi-storey residential developments exploring the intentions of the developers in relation to their target markets, as well as the lived experience of the residents of these developments.

The key findings are that in areas with the features, services and amenities associated with transit-oriented development, residents are embracing new urban lifestyles based on walking and public transport use. Barriers to this include the failure of public transport, particularly the rail system, to adhere to existing timetables and service levels, or to expand these beyond the traditional weekday peak service.

The research concludes that in well-located developments on public transport corridors with good urban management, behaviour change on the part of residents can be observed. This shift to more sustainable lifestyles will be bolstered by further improvements in the provision of public transport services, non-motorised transport infrastructure and paratransit services, as well as the strategic management of parking policy and practice to support TOD lifestyles.

Contents

1 Introduction

The end of apartheid in South Africa in 1994 brought fundamental changes to South African cities, but did not alter many elements of the urban form in the fundamental way that might have been expected. Despite the removal from the statute books of legislation and policy that determined where people would live based on race, and how they would travel based on race, elements of the apartheid city remain stubbornly present, with poor, black communities frequently located on the periphery or some distance from the social, economic and public goods associated with a good quality of urban life.

Related to this the location of affordable housing at scale in urban areas with access to social and economic amenities and quality public goods has met with limited success, and South Africa's cities have continued to sprawl, occupying much larger footprints than cities comparable by population in other parts of the world. A key driver of South Africa's sprawl is its car-oriented low-, middle-, and high-income suburbs, often with constrained, or no public transport services.

In response to these challenges South African cities like Cape Town have introduced policy in support of denser development. In Cape Town this includes a zoning scheme which aims to facilitate density and compaction, a new planning by-law and very recently a Transit-Oriented Development Strategic Framework which the City of Cape Town describes as a "long-term development strategy to achieve our vision for Cape Town (by) 2032".

Accompanying this there have been some shifts in national policy. South African cities have been given greater powers in respect of public transport, through the National Land Transport Act of 2009, and more leverage over road-based public transport through the provision of national government conditional grant funding for public transport infrastructure and systems. This relatively new legislation and funding stream recognises that metropolitan, or Category A municipalities, need to play an expanded role in the provision of public transport services to improve this core amenity of urban life.

National government's National Development Plan for South Africa published in 2012 also recognises that for municipalities to reverse spatial apartheid and create more livable and inclusive cities there is a need to give municipalities more power to manage the built environment including public transport. It recognises that there are no 'quick fixes' for transforming the workings of the space economy in South Africa, and that real changes will take time to implement. The plan notes that in the post-apartheid era:

> *"The housing policy has been a learning process. The release of a revised policy in 2004, known as Breaking New Ground, followed a growing recognition that the programme often resulted in poor quality units; uniform and monotonous settlements on the urban edge; the concentration of the very poor in new ghettoes; and poor-quality residential environments without the necessary social facilities and supportive infrastructure. Unwittingly, post-apartheid housing policy had reinforced apartheid geography" (2012:268).*

In Cape Town the establishment of a municipal transport authority in 2012 paved the way for more coordination between the municipality's planning and transport functions. However the development of a bus rapid transit system in the city for use during South Africa's hosting of the 2010 Soccer World Cup and beyond, has brought into sharp relief the challenge of providing road-based public transport services that operate cost-effectively with an affordable subsidy in a city that was planned for apartheid and for the

convenience of private car owners and users. In this context the considerable length of many of the identified public transport corridors in Cape Town again highlights the sprawling nature of the city and the difficulty of providing good quality public transport services in a way that is affordable within constrained public budgets.

The costs and complexity of servicing spatial communities set far apart from one another and shaped by apartheid and low-density sprawl has emphasised the need for planning decisions which do not reinforce this status quo, and instead support the viability of public transport services, so that there is a diverse market of customers on corridors serviced by public transport. This would help to ensure that fare box takings were maximized through seat renewal and the use of public transport was extended beyond the traditional peak periods. Currently a congested peak travel period is a defining feature of Cape Town's transport landscape with all modes of transport and the road system very well utilised in the morning and afternoon weekday peaks.

In confronting these problems the concept of transit-oriented development (TOD) has been increasingly used by public sector officials responsible for various built environment functions as a possible mechanism to address the challenges that face South Africa's larger metropolitan municipalities in their bid to be more financially, socially and environmentally sustainable. Most recently it is cited in national government's Integrated Urban Development Framework (2016) as an approach that supports resource-efficient urban development. TOD as a concept holds promise for South Africa with its growing realisation that land use and transport challenges need to be tackled jointly within a holistic approach to urban development.

This minor dissertation seeks to explore the notion of transit-oriented development and its relevance for South African cities, and Cape Town in particular, as new urban lifestyles are emerging in new and more compact developments. For the most part these are being driven by market demand and private developers occur in tandem with the growing realisation on the part of South Africa's large metropolitan municipalities (metros) that compact cities are essential in order to better reap the benefits of urbanisation, halt inefficient sprawl, and make existing public transport services more viable. This has led to policy shifts on the part of metros, although the package of urban services needed to make transit-oriented lifestyles really work, are not yet fully in place with:

- Insufficient incentives to get urban dwellers out of their cars – from the easy availability of parking to, more importantly, an absence of good public transport services;
- Bicycle and pedestrian infrastructure that does not encourage walking and cycling; and
- Inadequate urban management with respect to cleaning, informal trading management and safety and security that has not yet caught up with the demands required of increased densities and a TOD way of life.

At the same time the minor dissertation explores whether well-located developments, with medium to high densities taking shape in well-located parts of the city with features of transit-oriented development, are delivering a 'density dividend' for their residents. Overall the minor dissertation seeks to interrogate this idea, which suggests that the dividends that flow from greater densities are experienced at the indi-

vidual, household, community and metropolitan level. The urban efficiencies associated with 'density dividends' contribute to a more efficient and sustainable use of public resources and investment, but also impact directly on individual quality of life and wellbeing.

The minor dissertation reviews the international literature on transit-oriented development and then presents four case studies drawn from different parts of Cape Town. Each case study focuses on a relatively new, multi-storey residential development on well-located land served by public transport. Interviews were conducted with representatives of the developer in three of the cases as well as with residents of these relatively new residential developments.

The work seeks to explore the hypothesis that nascent TOD is in evidence in parts of Cape Town and that this is attributable to the following changes in the behaviour of agents:

- Policy shifts on the part of the state, which now encourage density and mixed-use development;
- Developer responses to policy shifts, and market demand resulting new medium- to high-density developments which exhibit the characteristics of a nascent TOD; and
- The existence of a growing and diverse community of people who are embracing emerging TOD lifestyles.

The case studies explored this hypothesis and investigated the following research questions:

- Are the residents of nascent TOD-type developments patrons of transit services, paratransit services and users of non-motorised transport?
- What are the barriers to making use of public transport and non-motorised transport?
- To what extent do municipal parking and other requirements support or detract from TOD and sustainable development?
- How are public transport services being extended and is urban planning and urban management being used strategically?
- Are the residents of new TOD-type developments changing their travel behaviour?

To explore these questions the dissertation makes use of a qualitative research method structured as four case studies. The research method employed is described in chapter two. This is followed by a literature review in chapter three, which explores the international literature on TOD with a particular focus on those elements of relevance to South African cities and the four case studies. The case studies are set out in chapter four, and each case explores a new compact development in its local context looking at parking, the travel behaviour of residents, walkability and cycling in the area, and finally the insights each development provides into the application and limitations of TOD approaches and principles. The dissertation concludes with a discussion of policy in relation to the case studies and literature reviewed followed by concluding observations and insights.

2 Research method

2.1 Introduction

TOD in the South African context is for the most part unexplored territory. It is a new approach to development that has taken hold in developed city contexts, but in South Africa there are few if any developments, that would explicitly label themselves transit-oriented developments.

Given the very recent emergence of TOD in South Africa, and In order to explore the potential for TOD, existing developments with some of the features of TOD were identified for further exploration. Given the exploratory nature of the research, the development of case studies was identified as the most appropriate method to conduct in-depth exploration of the issues surrounding the need for well-located dense development.

The dissertation makes use of a qualitative research method to explore the prospects for transit-oriented development through the four case studies which are located in different parts of the city. Interviews with developers, where possible and residents at these developments were conducted to gain insights about the nature of the development and the lived experiences of people occupying the developments with respect to their transport and lifestyle.

2.2 Case selection

The case studies span a range of features and characteristics and were chosen to explore the issues as they affect different kinds of households in Cape Town. They include relatively socially and economically diverse areas in four different parts of the city, and each case has its own unique features. Together they span a set of different conditions conducive to providing useful insights.

Although the location of the four developments chosen is diverse, they are linked in that all locations can be regarded as strategically or well located within the context of the city economy and the amenities that it offers, and they all form part of the transport network. All of the developments are located on public transport corridors and within relatively short walking distances of mass transport services.

The four case studies include one social housing development, two private developments in different parts of the city targeting the market for affordable housing and a development in the historic city centre targeting the middle-income market. Three of the four developments have a mixed-use element and all of them are located within 500m, or less, of a public transport service. Two of the case studies are served by rail, as well as bus and minibus taxi, while the remaining two are not in the vicinity of rail, but are served by MyCiTi.

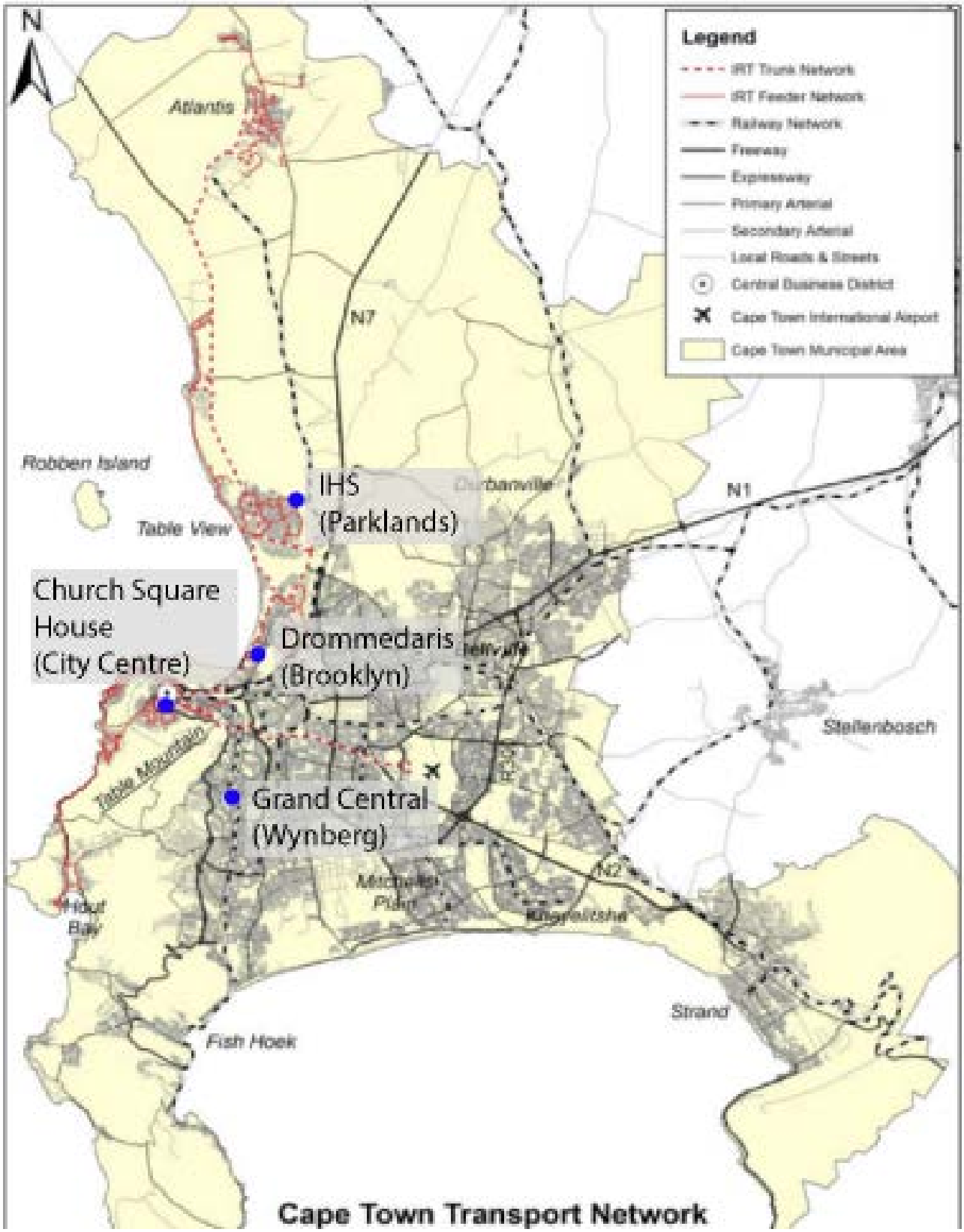
MyCiTi is Cape Town's relatively new bus system which includes a bus rapid transit component, but is in most respects comparable with a suburban bus service, as described by Currie (2006). The majority of the service operates in mixed traffic and without the dedicated rights-of-way and speed enhancing features of bus rapid transit. The three case study developments that are served by MyCiTi are all located on feeder routes that operate in mixed traffic, with the one in the central city also in walking distance of the Civic Centre station which is the main hub of MyCiTi services and where it is possible to access the bus rapid transit-type service if travelling to Table View. This portion of the service offers greater speed and efficiency than a suburban bus service as it has a dedicated busway. Several MyCiTi feeder services also pass through the central city *en route* to the Atlantic Seaboard, Camps Bay via Kloof Nek, Gardens, Woodstock and the Waterfront.

The developments chosen are located in areas of the city that are undergoing palpable growth and development, albeit to varying degrees. Parklands in the west of the city has been growing quickly with a number of greenfield developments completed. The landscape of the area is dotted with cranes and building sites as new buildings go up on undeveloped land. For first time buyers and rental tenants Parklands is popular for its affordability and value-for-money offerings. It is between 15 and 20 km from the Cape Town central city and rental incomes for a two-bedroom apartment were between R4 000 and R5 000 in 2016. In contrast the Wynberg area, which is located on the southern line of Cape Town's rail system can command rents for comparable apartments also aimed at the low-income market of R7 500, reflecting the relative utility of Wynberg, with its established shops, schools, parks and most significantly proximity to hubs of economic activity, jobs and an affluent market.

The case studies were selected based on their proximity to public transport services and their densities. The original intention was to select properties within 500 metres of public transport, which was achieved, and to select properties with market valuations of between R500 000 and R1 500 000. This was achieved with the two properties aimed at the low-income market, while Drommedaris the Communicare development in Brooklyn near Milnerton is social housing made available as rental stock[1]. Drommedaris has been developed using a social housing model which is able to provide subsidised rentals to low-income households. The units in Church Square House range in value, but a recent property listing for one of the units prices it at R2 200 000, which tallies with estimates by the Central City Improvement District (2016) of the average cost of a two-bedroom unit in central Cape Town. The Church Square House units are on average 130m^2.

The location of the four case studies relative to one another and the Cape Town public transport network is illustrated on the map overleaf.

[1] A small number of freestanding, residential units were sold as part of the Drommedaris development when it was completed. These were aimed at the 'gap' market and sold fast. The case study focuses on the major part of the Drommedaris development which aims to provide social housing.



Case study developments indicated on a map of the Cape Town transport network.

2.3 Data collection

Interviews were conducted with three developers and with the residents, and in one of the case studies the resident-owners, living in the four residential developments.

Interviews with the developers made use of a structured questionnaire, which is attached as Appendix A, and which was used to guide discussion. When seeking to identify the developer of a given development, the encompassing nature of the term "developer" becomes clearer. As noted in the literature the definition of developer is fluid depending on the nature of the scheme being developed. This fluidity is evident in the four developments chosen for investigation which spanned a small owner-developer; a not-for-profit developer; an international private equity fund which owns many developments and has partnered with local developers in South Africa; and lastly an entrepreneurial local developer.

The individuals who were interviewed were able to provide insights into those portions of the development process with which they were most engaged. In the case of Church Square House, the developer had passed away and no other participant in the development team could be located. Interviews with developers were conducted at the offices of the developers, or on site of the developments, in the period April to May 2016.

Interviews with the residents of the developments were conducted in different settings, with different access arrangements facilitated for each case study in the period between April and October 2016. Interviews for the Parklands case studies were undertaken at the office of the property manager at Southwark Mews. Eleven residents were interviewed ranging from individuals who had only lived at the development for a month to others who had been resident for more than a year. Interviews were facilitated by IHS and IHS Property Management, with the resident property manager asking residents who were on the property that day and were passing by his office at the front gate if they would be interviewed. This took place on a weekday morning which meant that interviewees were mainly students, mothers of small children, job seekers and economically active individuals with flexible work who happened to be in the complex at the time.

Interviews with residents at Grand Central, Wynberg took place in a less structured and less formal setting as interviewees were intercepted on their way in or out of the building. This was not entirely ideal as many were on their way in or out with a purpose in mind, and many who were approached did not want to be interviewed. The interviews took place over two weekday periods, which like the Parklands interviews meant that many of the interviewees also fell into the categories of students and mothers of small children, in addition to a shift worker who had finished work after starting at 04:00 and a professional who was on leave from work on the day the field work was conducted. Given that these interviews, with the exception of one which took place in the apartment of the interviewee, were conducted in the foyer of Grand Central, they were completed relatively quickly and the location was not conducive to a leisurely exploration of the questions.

Three of the interviews with residents of Church Square House took place in the office of the researcher in the same building and were able to cover the relevant issues in quite some depth. A fourth interview was conducted telephonically.

Five residents of Drommedaris were interviewed, all economically active in formal employment. Gaining access to the residents took some perseverance and several approaches were attempted. Eventually an individual resident was identified by the staff of Communicare as an initial contact point. This resident

who was an active participant in the community life of the complex then identified a further group of residents who were available to participate in the research. The interviews were conducted in each of their apartments on weekday evenings, enabling a rich exploration of the issues canvassed in the questionnaire.

Information was noted using pen and paper with responses written directly onto copies of the questionnaires. Interviews with the three developers and the residents of the Parklands IHS developments and the Communicare development (Drommedaris) were also electronically recorded with the permission of the interviewees.

Table of interviewees

Case study	Area	Residents	Developer
Church Square House	Central Cape Town	X (4)	
Grand Central	Wynberg	X (6)	X (1)
Drommedaris	Brooklyn	X (5)	X (1)
IHS apartments	Parklands	X (11)	X (1)

The interviews only proceeded once the interviewees had agreed to be interviewed, Interviews were conducted in terms of the Faculty of Engineering and the Built Environment's requirements for Ethics in Research projects. Ethics approval was granted for the research by the faculty and is attached as Appendix D.

2.4 Data analysis

The responses to the questionnaires varied widely with some interviewees being more forthcoming and engaged in the process and questions than others. As the interviews took the form of a conversation about transport and lifestyle, a wide range of information was gathered in each of the cases, providing a rich source of varied insights and perspectives into the daily life of the diverse respondents.

Respondents in the category of residents spanned a very diverse cross-section of Capetonians across language (a minority of those interviewed were first-language English speakers), age — ranging from teenagers to economically active individuals nearing retirement, economic migrants, a refugee, students and scholars, factory workers, clerical workers, professionals, small business owners and full-time parents.

Excerpts from some of the in-depth and insightful responses have been selected for inclusion, particularly those which resonate with the literature and research questions and provide insight into the daily lived experience of life in a nascent transit-oriented development. The data gained from the interviews with the residents was analysed making use of the notes and recordings of the interviews.

The developer interviews were longer interviews, recorded in note form and electronically, with additional documents supplied by the interviewees.

2.5 Limitations

Quite a number of limitations were experienced. The key limitation is in the necessarily curtailed selection of case studies, necessitated by the scale of the project. The cases, while aiming to demonstrate features of TOD in Cape Town in areas where multi-storey developments are beginning to impact on the urban form and the lifestyles of residents, are inherently limited. They represent but small samples of life in a

large and diverse city. They are located in developed areas of the city, and each holds out some aspects of an ideal TOD-inspired urban form. At the same time however they are not representative of the broader city context in which many households live in poverty with limited access to the features and services that define TOD. The selection of the case studies does not aim to belie the challenging realities that define too many areas of Cape Town which are served by poor public transport, are located at long distances from amenities, good and services and with limited mixed use features.

With respect to conducting the interviews, the majority of the residents interviewed did not speak English as a first language, and with the research questions administered entirely in English there were some limitations to the initial ease of communication with respect to some of the interviewees.

The settings for the field research were also dictated by circumstance, which in two of the case studies skewed the interviews such that they were largely conducted with non-working residents, thus limiting the insights of the economically active population regarding their experiences of transport in these developments. On the other hand these interviewees provided insights into the perspective of individuals who travel outside of the busy peak periods an explicit aim of transit-oriented development.

Access to the residents of each of the developments differed from place to place and required a variety of different approaches in order to secure possible interviewees. Interviews at Grand Central with residents proved the most challenging to secure, with the majority of interviews taking place in the lobby of the building where residents were intercepted coming in and out of the building, limiting the leisurely exploration of the issues.

In spite of the limitations the lived experiences and insights of a broad range of individuals was collected providing interesting and relevant observations about the quality of daily life in areas where communities are being shaped by the opportunities and challenges of life in medium to high density, shared living spaces, and where the availability of public transport is a factor shaping decisions about work, education and the need for, or not, of purchasing a private car.

3 Literature

3.1 Introduction

Transit-oriented development is a relatively new concept, but one that has relevance to the particularity of the challenges that continue to confront South African cities as the third decade of democracy gets underway. It is a contemporary concept that tackles the interlocking themes of land use and public transit and their relationship. It has grown in prominence since it was first posited by Peter Calthorpe in 1993, but the term has not been confined to academic scholarship, and is also used in the public policy discourse relating to the built environment.

Related is both scholarship and public policy about the role of parking in urban life and its potential to impact negatively on the viability of transit, the liveability of the city and the equitable distribution of public goods and resources across income groups and vulnerable communities. As the literature reveals, parking plays an important part in the success or otherwise of transit-oriented developments. There is a growing realisation that current parking practice in South Africa may mitigate against the success of emerging transit-oriented development as well as the functioning and liveability of dense urban areas.

The literature review discusses the origin of TOD in planning, and some of the issues that arise in defining the term precisely, noting as well that while densities are an important part of TOD, the literature is not definitive about what these should be and TOD embraces both medium and high density urban areas.

In much of the literature the implicit assumption is that the 'transit' or public transport in TOD is rail. Given the important role that buses and the paratransit sector play in South Africa, the literature review investigates 'bus TOD', which is of relevance to some of the case studies.

The implementation of successful TOD rests on the participation of both the public and private sectors as well as the inhabitants and users of transit-oriented developments. The literature on the various role players is reviewed in order to provide some insight into how a TOD might take shape driven by the needs and responsibilities of the different role players.

Of particular interest from the South African perspective is the extent to which TOD is able to support the development of more inclusive cities. The literature is limited but includes discussion of location- efficient mortgages and mechanisms to provide affordable housing within TOD.

The literature on parking policy, approaches to parking in TODs and parking policy in Cape Town enjoys particular focus given the core role that parking has come to play in shaping our cities and contributing to the social, economic, class and racial divides which are a defining part of South African life.

The final segment of literature reviewed looks at how TOD can be measured and what constitutes its successful implementation. Of particular interest is the interplay between a single TOD, around for example a public transport station or interchange, and the broader region in which it exists for achieving the economies, opportunities and quality of life improvements that TOD promises. The case studies in the chapter that follow illuminate some of the implications of this.

3.2 The origin and definition of transit-oriented development

The term 'transit-oriented development' is attributed to Peter Calthorpe, an American planner who coined the term in his book "The new American metropolis" published in 1993. Introducing "Transit-Oriented Developments" as he first termed them, Calthorpe advocated for these as a neighbourhood form which he also called 'pedestrian pockets'. These were an alternative to sprawl and would be:

> *"neighborhoods of housing, parks and schools, placed within walking distance of shops, civic services, jobs and transit – a modern version of the traditional town. The convenience of the car and the opportunity to walk or use transit can be blended in an environment with local access for all the daily needs for a diverse community. It is a strategy which could preserve open space, support transit, reduce auto traffic, and create affordable neighborhoods. Applied at a regional scale a network of such mixed-use neighborhoods could create order in our balkanized metropolis. It could balance inner-city development with suburban investment by organizing growth around an expanding transit system and setting defensible urban limit lines and greenbelts. The increments of growth in each neighborhood would be small, but the aggregate could accommodate regional growth with minimal environmental impacts; less land consumed, less traffic generated, less pollution produced" (1993: 16).*

The pedestrian, the quality of the pedestrian experience, liveability and preserving green spaces are central to Calthorpe's concept of Transit-Oriented Developments:

> *"At the core of this alternative philosophically and practically, is the pedestrian. Pedestrians are the catalyst that make the essential qualities of communities meaningful. They create the place and the time for casual encounters, and the practical integration of diverse places and people… Although pedestrians will not replace the car anytime soon, their absence in our thinking and planning is a fundamental source of failure in our new developments" (Ibid:17).*

Calthorpe contrasts the requirements of the pedestrian with those of the car, and those of the transit system:

> *"The car in all cases wants to go fast. Its speed has many implications on the built environment: pressing for a street system with few intersections and many lanes; for streets with wide lanes and soft-sweeping turns, for more freeways and ever-larger parking areas… The car wants … low-density development that preserves plenty of space for more and more asphalt… the requirements of a humane and efficient transport system are quite different. It simply requires riders. This in turn calls for higher-density land uses (housing at ten units per acre min.), dedicated rights-of-way (for easy movement), infrequent station stops (one-mile minimums), frequent headways (no more than 15-minute intervals) and big mixed-use job destinations (like city cores). Most importantly its destinations need to be varied and walkable so that riders are not stranded when they arrive."*

For Calthorpe then "the issue is not one of the density of the community but the quality" (Ibid, p28).

One view that emerges in the literature in response to this, is that transit-oriented development is old hat. Carlton (2009, p8) points out that one way of looking at it is as the "rebranding" of a concept in the 1990s that had been around for many years: "transport and the built environment are mutually dependent entities that have consistently pushed and pulled to create urban forms" and the idea "that transit might orient development and vice versa is certainly not new".

In South Africa though, these ideas are perhaps still new with South African cities planned, since the rise of the private car, for car-oriented development and structured around ease of access for cars. In many areas this is an embedded part of the culture mirroring development in the car-dominated cities of the United States of America and other parts of the developed world.

Carlton draws attention to the changing nature of the synergies that have existed historically between transit and development. In the early twentieth century, he and other scholars point to the existence of "development-oriented transit" in which the establishment of new public transport services and infrastructure acted as a stimulus to developers (Ibid:2).

This relationship changed with the decline of transit and the rise of the car.

> *"prior to 1916, the U.S. was the world's leader in transit rail miles, streetcar ridership, and almost every other transit metric, primarily motivated by the profits reaped by real estate developers that installed streetcar lines. But by 1945, after major disinvestment in transit infrastructure during the depression and WWII, the stage was set for the dominance of the automobile. Rail systems were dismantled and replaced by bus transit in most U.S. cities. As cars became more affordable, buses had minimal competitive advantage over the automobile with which they shared lanes. With the development of the Eisenhower Interstate System in 1956 and the promise of quick and easy vehicular access, the proverbial nail was put in transit's coffin" (Ibid:2-3).*

This shift, that privileged cars above transit, shaped what remained of the American transit system into a form that Carlton and others label "auto-oriented transit" (Ibid) in which transit systems served suburbs well, but with minimal downtown or central business district coverage. With this came the development of park and rides for car users and then the decline of transit services, which required growing operating subsidies as a "typical transit agency recovered less than one-third of its costs in fare box revenues" (Ibid).

In Carlton's account, which draws on Dittmar and Poticha's (2004) "New Transit Town", saw transit agencies in the 1970s and 1980s desperate for increased revenues, begin to use their land holdings as resources which could generate lease incomes in the market. This real-estate focus has been labelled "transit-related development" and showed that "joint development conferred other benefits by demonstrating that transit ridership was related to the intensity of development near transit stations" (Ibid).

Carlton's accounting of the progress to full transit-oriented development, posits transit agencies as key role players as they "began to see that they could play a part in increasing ridership by guiding the type and scale of development on land near stations. The 1980s saw transit agencies look beyond joint development to become true promoters and instigators of development" (Ibid:4). As such transit agencies were

seeking out projects that attracted pedestrians and had "transit-supportive uses" as well as generating lease revenue.[2]

In the 1980s a relationship in academia began to form between transit advocates and opponents of sprawl in the planning discipline, with studies demonstrating that users of transit came from the traditional:re-World War II suburbs which had been designed for public transport use with moderate to high densities. Peter Calthorpe's work is located in this tradition with a strong base in California. But Carlton places his, and transit-oriented development's antecedents in the master planned communities of the 19th century which included not only a transit-orientation but an association with nature and the environment, typified in developments like Ebenezer Howard's garden city (Ibid:6).

More recent scholarship on transit-oriented development moves beyond whether the concept is entirely new, or whether it has its roots in what could be described as good planning practice, to better understand what makes transit-oriented development work, or not work, and what constitutes good or bad transit-oriented development.

Implicit in much of the literature is the 'Americanness' of transit-oriented development, which has particular meaning in contexts where the car has shaped development, epitomized by many wealthy American cities, some of which are now changing approach. In contrast many European cities have never been car-oriented in quite the same way, and many of the features of transit-oriented development are already intrinsic to the European urban form. As such other countries which are now engaging transit-oriented development are also doing so from a similar perspective to that of the United States. Notable is Australia where transit-oriented development has been identified as a way to channel more sustainable forms of growth and limit urban sprawl (Renne 2005). Cervero notes that transit-oriented development is most developed in Europe and particularly Scandanavia (2009: 23).

3.2.1 Defining transit-oriented development

Since Calthorpe coined the term 24 years ago, many different definitions of transit-oriented development have arisen, coalescing around the themes of transit and land use and how these can interface in a way that has both public and private benefits. Cervero *et al* (2002), in a literature review, point out that while there is no single definition for transit-oriented development, the term refers to development near or oriented to mass-transit facilities (Ibid, p5). They conclude that while the range of definitions may vary in scope and specificity, most definitions see transit-oriented development as including the following elements:

- Mixed-use development;
- Development that is close to and well-served by public transport; and
- Development that is conducive to making use of public transport.

Less universally subscribed to in the definitions are features including compactness, a pedestrian and cycle-friendly environment, public and civic spaces near to stations and stations as community hubs.

A more recent definition provided by Cervero, a recognized authority on the topic, states "TOD is a straightforward concept: concentrate a mix of moderately dense and pedestrian-friendly development

[2] To some extent this can be seen at the City of Cape Town where the internal transport authority, Transport for Cape Town, is engaging with transit-oriented development in order to increase public transport patronage.

around transit stations to promote transit riding, increased walk and bicycle travel, and other alternatives to the use of private cars" (2009: 23). Lund *et al* also highlight moderate to higher-density development as features of transit-oriented development which is "located within an easy walk of a major transit stop" (2004: 5).

In pinning down a definition for transit-oriented development, the literature distinguishes between transit-adjacent development and transit-joint development as a way of sharpening an understanding of what comprises 'true' transit-oriented development. Transit joint development is sometimes seen as small-scale transit-oriented development, at a project level, and usually involving a public private partnership, often with a revenue sharing or cost-sharing arrangement (Ibid: 7). Transit adjacent development, of which there are many examples in South Africa, is development that is near to public transport facilities but which "fails to capitalize upon this proximity" to promote public transport use (Ibid). Transit adjacent development is not functionally connected with public transport through land-use, through the means of accessing a station or the design of the site. Also missing from transit adjacent developments are pedestrian pathways and bicycle access routes.

For Belzer and Autler (2002) the lack of a universal working definition of transit-oriented development is a problem, particularly since there are many role players in transit-oriented development and their interests may be contradictory. They point to the divergent interests of the public sector which may be building or providing the public transport or transit; local government which usually plays a planning authority role; developers who are looking to make profits; the users of public transport with their specific interests; the neighbours of the development and the general public. Without a firm definition it may be difficult to determine what constitutes good transit-oriented development. As they put it:

> *"Should TOD aim to maximize revenue to the transit agency through lucrative ground leases or seek to minimize the use of automobiles? Should TOD be designed to maximize ridership or to help revitalize the station area? Should it try to maximize economic success or urban values? All of these are legitimate but sometimes mutually incompatible goals that may result in policies that work at cross-purposes to one another. And resolving them is made harder by the lack of a settled framework for assessment." (2002: 3*

3.2.2 Density

While transit-oriented development is associated with density, the literature is not prescriptive about the quantum of the density required to achieve successful transit-oriented development. Calthorpe's foundational vision of a series of mixed-use neighbourhoods, with their access to nature and the other amenities that contribute to quality of life and community development, does not require high density. There is consensus that medium to high density is required for transit-oriented development to succeed and the literature takes a range of approaches to density, none overly prescriptive.

Cervero suggests a minimum density threshold of 3 000 inhabitants per square kilometre to support reasonably cost-effective public transport services. He cites other research which calculates that a cost-effective public transport investment in bus rapid transit would need about 4 000 jobs and residents per square kilometre within 800 metres of a station, while for a light rail investment to be cost-effective it would require 11 000 jobs and residents per square kilometre and heavy rail 14 000 per square kilometre (2013: 85).)

3.2.3 Bus transit-oriented development

While for the most part transit-oriented development relates to rail, the literature points to some cities where bus-based systems have laid the basis for successful transit-oriented development. Curitiba in Brazil is the most cited example of this, but is perhaps exceptional with Cervero describing this city as a world class transit metropolis (2006: 3). Other bus-based systems recognized in the literature as including transit- oriented development exist in Ottawa and San Diego (Cervero *et al* 2002: 4) and in the developing world transit-oriented development is planned or has taken form to varying degrees around bus rapid transit stations in Santiago (Chile) and Guatemala City and in Asia -- Kuala Lumpur in Malaysia and Kaoshiung, Qingdao and Jiaxing in China are associated with bus transit-oriented development (Cervero 2013: 94).

The literature is sparse on the topic of bus TOD and Currie, one of the few scholars who has written on the topic, notes that it is not well covered in research. He makes a case for it, distinguishing between bus rapid transit and suburban bus services, but seeing a role for each of them, sometimes in combination, in transit-oriented development. Currie's starting point, citing Cervero is that "market climate and investment opportunity are key success factors in TOD … rather than the relative features of rail versus bus" (2006: 2). Currie identifies a number of challenges of high significance for bus TOD. These include the low frequency and minimal infrastructure associated with bus services which are seen as being less permanent than rail, and thus for developers, and even residential buyers possibly risky from an investment perspective due to their possible impermanence. In bus rapid transit systems with dedicated busways and other fixed infrastructure, the investment is seen as more substantive and permanent.

Capacity to implement successful bus TOD is also identified, with Currie noting that transit agencies have fewer staff with the skills and experience to implement bus TOD.

Parking restraint, or its absence, is seen as a challenge of high significance, particularly when it comes to suburban bus TOD. Currie says that without quality public transport "it can be argued that parking restraint in smaller urban development is less justified" (Ibid). As parking restraint can encourage public transport use, parking restraint policies also limit road congestion, provide more land for development and thus contribute to successful bus TOD. As urban density is the critical driver of public transport patronage Currie acknowledges that rail TOD or bus rapid transit TOD is likely to have more success in reducing car use than suburban bus TOD, but notes that bus TOD can still occur even though it may not have the high impact of the other modes. Scale dilution is of interest to public transport systems aiming to enhance bus or BRT TOD. With bus TOD it may be difficult to concentrate development around the large number of bus stops in an urban system, when compared with rail, which has relatively few stops. While rail TOD is more effective than bus TOD the volume of bus TOD sites is so much larger than the rail TODs that overall it has a greater effect. Importantly Currie points out that having the option of both forms of transit-oriented development provides a greater choice for both TOD developers and customers (Ibid: 9).

In comparing the two approaches, bus TOD is at a disadvantage when it comes to noise and pollution and local or suburban buses are at a significant disadvantage to rail and full service bus rapid transit when it comes to frequency and speed, which are central to successful public transport services. Currie notes that the 'transit' element of TOD requires an effective service offering to qualify as transit-oriented development (Ibid: 10).

The core advantages that are associated with bus TOD include the ubiquitousness of bus TOD with its many stops, its flexibility in communities where there is resistance to high densities, its ability to adapt to

change, its cost effectiveness in comparison to rail and the ability of bus rapid transit to achieve high frequencies, even as compared with rail, and to minimize transfers, which passengers dislike. Currie concludes that bus rapid transit has more advantages for TOD than suburban bus systems, and may even have "net advantages over rail in some circumstances" (Ibid: 14).

This view is not shared by Newman (2009) who argues that cities will only move away from car dependency if they are able to access transport services that enable them to cut their travel time budget[3] and this almost "invariably" requires electric rail due to its speed which is competitive with overall traffic speed. Newman concedes that in developing countries bus rapid transit may be providing the extra speed required over the traffic "though rarely as fast or with the capacity advantages of rail" (Ibid: 17). Related is the space saving associated with rail, with bus-served city centres having the potential to experience bus-bunching due to "a capacity factor that is even more obvious with cars" (Ibid).

3.3 Role players in transit-oriented development

There are a range of role players in TOD that fall into three main sectors. The public sector, the private sector in the form of developers and the residents of TODs.

3.3.1 The public sector

There is broad consensus in the literature that the state has an important role to play in the success of transit-oriented development. Cervero says if, "the marketplace functioned perfectly, then a case might be made for governments to get out of the way so that producers and consumers can sort themselves into station areas (in support of TOD) unfettered" (2006: 25). But since this is not the case, he and other scholars agree that it plays a crucial role in successful transit-oriented development.

This though is not without its complexities given the range of public sector players that are likely to be involved in a transit-oriented development, ranging from what the literature calls a transit agency, to the local planning authority and the regional one. Renne's work on transit-oriented development in Western Australia found that, in a survey of local government practitioners, the perceived highest impediment to transit-oriented development was a lack of collaboration among governments and agencies (2005: 14).

Niles and Nelson question whether public spending on transit-oriented development can deliver return on investment in the form of substantive public benefits, while Cervero and others identify a key role for the state (local, regional and parastatal) in successful transit-oriented development.

Boarnet and Crane (2001) in critiquing the implementation of transit-oriented development suggest that a major impediment is the planning authorities – municipalities themselves – which erect regulatory barriers to transit-oriented development in the form of zoning codes and maximum densities. Thus they see the problem as being one of government failure, as opposed to market failure. They argue that regulations should be removed in keeping with free market principles, which would allow the private sector to respond to market demand for housing in the vicinity of transit (Ibid: 116). They argue that for municipalities it may be in their fiscal and parochial interests to prevent residential developments in the vicinity of transit if they are "left to their own devices". This they argue is as a result of the local tax advantages that come

[3] Newman asserts that an hour a day is the optimum travel time budget and that people do not want to travel for longer than this (2009: 16).

with commercial development relative to residential development as well as exclusionary zoning practices which seek to keep poor communities from settling in the vicinity of rail transit.

Boarnet and Crane (2001) also problematise the relationship between land use and public transport, arguing that city building and transportation will always be linked, but that the relationship between urban design and public transport use is not well understood. In their view planners should lower their expectations regarding the travel benefits of urban design and focus instead on more flexible policy measures that can be easily implemented, or changed, such as direct pricing, for example congestion charging (Ibid: 10). This highlights the range of policy options that face the local state in its governance efforts in this area. Cervero (2006) also emphasises the need for public policies that incentivise the behaviours on the part of potential commuters that will contribute to making investment in transit-oriented developments see a return.

3.3.2 Developers

Much of the literature reviewed indicates that private developers play a key role in successful transit-oriented development. Literature on developers situates them as agents in their own right, but also agents that are responsive to the prevailing economic and social conditions. Property market processes then act as mediators of economic change, both reflecting and shaping it.

The literature also notes that the definition of a developer is fluid depending on the nature of the scheme being developed. At times property users might perform the role of developer to secure the kind of space that they need, while investment institutions might perform the role to secure long-term property assets. For D'Arcy and Keogh "different market conditions or different market objectives favour varying divisions of responsibility, particularly with regard to the entrepreneurial, or risk taking, aspects of development" (2002: 27). The development role can also be led by the public sector as it has been in part of the United Kingdom, where the authors maintain government has "perfected" an entrepreneurial role in the property market. With respect to the outcomes of development, these will vary based on the institutional structure that emerges "interactively out of the wider institutional environment" (2002: 28). D'Arcy and Keogh note that developers

> *"operate in an environment moulded by institutional structures and engage with a process – development – driven by powerful economic forces. It is also driven by their own decisions and actions. Those actions are the products of developers' differing characters and behaviours, of the ways in which developers seek to make sense of the world" (2002: 287).*

For transit-oriented development a question for further study and discussion then is what are the institutional structures and environment that can drive successful transit-oriented development in the South African context, and what are the characters and behaviours of developers that will help to facilitate transit-oriented development rather than car-oriented development.

3.3.3 Residents

Central to the idea of TOD is its mixed-use character of which individuals and residential households are a key part. The literature reviewed tends to view people who live in TODs as a community that has consciously selected the TOD 'lifestyle'

The role of 'self-selection' is discussed in the literature, and viewed slightly differently depending on the scholar's enthusiasm for the concept of transit-oriented development. Handy Blackwell Science Ltd at the one extreme, is of the view that the built environment is not responsible for encouraging a transit-oriented lifestyle, rather those people with a preference for the lifestyle "caused them to select a neighborhood with those characteristics" (2005: 22). Cervero (2006) views the issue slightly differently arguing that transit-oriented development delivers a ridership bonus for transit through transit-oriented developments, and that this is partly due to residential self-selection, including the development of affordable housing in the vicinity of urban rail stations. This has been the case particularly in Southern California. Cervero is of the view that self-selection does not diminish the importance of planning for and building transit-oriented residences and that self-selection occurs for a variety of reasons that can range from reducing the stress of driving, saving time and money and supporting 'green' transport.

In Perth, Australia, where there is considerable local and state support for transit-oriented development, research including interviews with developers and estate agents shows that "the typical buyer in a TOD is either a young professional or a retiree looking for an urban lifestyle" (Renne 2005: 23). Changing demographics were also seen as an important contributor to demand for well-located apartments in mixed-use neighbourhoods close to amenities and transit. These areas were seen as attractive as people were delaying or not marrying and there were more households, but with fewer children.

Cervero argues that transit-oriented development can attract significant shares of former motorists, and in one case study probes the factors that explain the decision to use public transport by those who live near California rail stations. He finds that "a number of policy-related variables had significant marginal influences on mode choice" (Ibid: 6). The most significant of these were workplace variables including the availability of flexitime – which encouraged transit use and employer-provided free parking and car allowances, which deterred transit use. Neighbourhood design, on the other hand, had a relatively limited influence, although when exiting a station *en route* to work, a walkable street grid, with high connectivity was important in deciding whether to use public transport. Overall the model used in his research showed that job "accessibility over the regional highway networks was a much stronger predictor of mode choice than job accessibility over regional transit networks" (ibid: 8) and that in spite of being in walking distance of public transport services, commuters would choose to drive unless public transport had "mobility advantages" over auto and highway travel. These include speed advantages with travel time savings strongly influencing choosing public transport.

Cervero concludes that policy levers that influence public transport use could include measures by employers to encourage their staff to make use of public transport, by for example subsiding travel passes, and at the regional government level by eliminating free parking. But the greatest "ridership pay-off" he argues will come from intensifying housing in the vicinity of stations. This creates an "indifference zone" around stations with those living in a half mile radius generally using public transport "regardless of urban design features" (Ibid: 9).

At the same time it should be noted that the very notion of self-selection implies choice with respect to residential location. In South Africa and other developing contexts the choices available to poor households are highly circumscribed. The notion of self-selection is then one that is more appropriate to understanding the choices that members of middle-class communities are able to make regarding where and how they live in urban areas.

In South Africa another factor of relevance for households that are able to exercise choice is personal safety. This is evidenced in the popularity of managed developments with access control and security, and is of relevance with respect to TOD-type developments and their attractiveness.

3.4 Transit-oriented development and the inclusive city

Of particular relevance to South Africa is the potential of transit-oriented development to deliver more cost-effective urban areas, but also more inclusive ones, where the dividends associated with densities and well-located, mixed-use areas can be shared with and experienced by poor communities and households as well as the middle class.

There is some discussion in the literature about affordable housing and transit-oriented development, location efficient mortgages and the role of TOD in the development of social capital. Location efficient mortgages are available in the United States and enable low-income households to access a larger mortgage based on the location of a property close to public transport. This assumes that when households locate in the vicinity of public transport they will have a larger portion of their household budget available for mortgage repayments, since they may be able to forego private car ownership with its attendant costs and the proximity to public transport will likely reduce the percentage of the household budget that is set aside for transport.

The issue is pertinent to South Africa where too many households, particularly black households, must apportion a significant quantum of the household budget to travel, and where well-located housing stock and its ownership, does not differ significantly from the ownership patterns that existed in the apartheid era. There is also a growing focus in parts of Cape Town on gentrification, which may result in poor tenant households currently living in areas with access to a range of social and economic resources, being pushed or bought out of these areas as land prices rise and new developments come on stream.

In Perth, where there is multi-agency collaboration and the establishment of public-private models in the implementation of transit-oriented development, one initiative to create affordable housing opportunities sees the local department of housing and public works buying back one in 12 houses developed in a TOD which is then made available for public rental housing (Renne 2005: 25). In Vancouver, Canada municipal policy requires that 15% of any new development is set aside for affordable housing, while in Boulder, Colorado 40% is required (Newman 2009: 19).

3.5 Parking and transit-oriented development

The easy availability of parking plays a key role in urban middle-class life and is linked to the adoption, or not, of transit-oriented lifestyles. Tumlin and Millard-Ball (2006), Willson (2005) and Lund *et al* (2004) point out that TOD requires a different approach to conventional development when it comes to parking.

A seminal text in the literature on parking is the work of Donald Shoup whose 2005 book “The high cost of free parking” sets out the economic and social costs of “free” parking at the kerbside and within developments. This is relevant to the success of TOD and much of the literature on TOD parking draws on Shoup. As an American Shoup reflects on a context in which cars are the dominant mode of transport, and development could be described as car-oriented. For Shoup “off street parking requirements collectivise the cost of parking because they allow everyone to park free at everyone else’s expense” (2005: 2). Shoup argues that the cause of most parking problems is the “treatment of curb parking as a commons” (2005: 6). As such, “Free parking is an asphalt commons: just as cattle compete in their search for scarce grass, drivers compete in their search for scare curb parking spaces”.

This in turn skews consumer choice in favour of cars: "motorists park free for 99% of their trips because off street parking requirements provide a huge subsidy to motorists, and thus increase the demand for cars, parking spaces and vehicle travel" (2005: 9). Shoup points out that "for a typical trip *to* work the cost of parking *at* work (if drivers pay for it) is over half the out-of-pocket cost of automobile commuting. But most drivers do *not* pay for parking, at least not in their role as drivers. Because a cost-recovery price for parking is such a large share of the total cost of automobile travel, "free" parking seriously skews travel choices toward solo driving and away from other forms of travel that require less terminal capacity: public transit, carpooling, bicycling and … walking" (Ibid). Shoup's reference to "terminal capacity" refers to one of the three elements that for him define every transport system -- that is vehicles, rights of way and terminal capacity – parking is terminal capacity for cars comparable with rail stations, sea ports and air-ports. The availability of free parking also "gives the largest subsidy per mile to the shortest vehicle trips – the ones that without a parking subsidy we would most likely make by walking, cycling, or public transport. Free parking is an invitation to drive wherever we go".

When it comes to development the cost of complying with parking requirements set by the relevant authority may also be overlooked. Shoup's robust assertion is that "off-street parking requirements are perhaps the greatest of all unfunded mandates" as even "a small increase in parking requirements can significantly increase development cost, and by extension the cost of housing and all other goods and services" (2005: 647).

He argues that planning authorities require the provision of parking spaces when development approvals are being sought "when planners, developers, and tenants know the least about the future demand for parking. The inevitable uncertainty about parking demand helps explain why cities often require more than enough spaces to meet their peak demand" (2005: 37) and further "When they set parking requirements, planners appear to take the arbitrary and uncertain estimate of the maximum parking demand and then revise it *upward* to set the minimum parking requirement" (2005: 38). Shoup describes this as the "pseudoscience of planning for parking" (2005: 75).

Litman follows on in the same tradition as Shoup, with a specific focus on the relationship between affordable housing and parking. Litman estimates that current parking practices are comparable with a 10% tax on development.

Willson (2005) in summarizing the issues for the critics of parking practice and policy notes that parking is generally oversupplied and underpriced.

Since Shoup's call to action, some cities are beginning to change their approach to parking and successful TOD developments in the United States and other parts of the world have brought in new approaches to parking policies. Examples include reduced minimum parking requirements expressed as a reduction in the required number of bays per unit in defined transit areas in San Diego, reduced parking requirements for affordable housing within 1,500 feet of mass transit or a major bus line in Los Angeles, office parking requirements reduced from one space per 530 square feet to one space per 1,000 square feet within ¼ mile of public transport while for retail and service-commercial uses within 1,500 feet of a station, no parking is required for the first 5,000 square feet of gross floor area in Arlington County. In Milwaukee reductions of up to 15% in minimum parking requirements for developments near transit are provided for (Tumlin and Millard-Ball 2006). Buffalo in upstate New York has gone even further and abolished parking minimums (Barter 2017:3). But as Barter points out, this is "less radical than it sounds" as the short-term

impact on parking supply will be modest and developers are likely to continue building parking where they see demand (Ibid).

The Institute for Affordable Housing at New York University in a 2012 policy brief discusses some of the tensions inherent in city parking policy in meeting the diverse needs of sustainable development, housing affordability and local level parking pressures (Been et al, 2012: 1). The brief sets out the potential disadvantages of minimum parking requirements as contained in the City's Zoning Resolution as being increased construction costs, reduced housing supply, unattractive streetscapes, and the environmental and health consequences of increased car ownership (Ibid: 4,6). This research underscores the high cost of building underground garages which can cost up to USD$50 000 per parking spot.[4] While developers

> *"pay these parking construction costs upfront … any portion not recouped through parking fees paid by residents with cars might be passed on to all residents through higher sales prices or rents" (Ibid).*

The authors also point out that the

> *"impact of upward pressure on prices is borne by all residents, and is regressive, because all low-income households pay a larger portion of their incomes towards housing. Further, those low-income households also are considerably less likely than others to own cars, but share in the burden of the higher prices caused by parking requirements" (Ibid: 7).*

The issues raised by Shoup and others are finding their way into municipal policy internationally. The City of Seattle, in a report to its Council concerned with parking tabled in April 2015, notes that

> *"Parking is an important topic for cities, affecting the long-term prospects for a city's ability to grow and evolve in ways that are functional, economic and livable. Nationally, there is an increasing understanding of the relationships among parking policy and housing affordability, the transportation system, environmental sustainability, quality urban design and equity" (2015: 1).*

The report goes on to state that "Simply put, the approach prefers lower costs to build housing rather than the storage of automobiles." A guiding principle is:

> *"Prioritizing housing affordability to preserve and enhance the ability of persons of all economic means to be able to live in Seattle. Parking is a significant cost factor. It is also one aspect of housing development that may be optional depending on location and market" (Ibid).*

Linked to this, the City of Seattle emphasizes the "walkable and livable" qualities of the City's neighbourhoods and the need to ensure racial and socio-economic equity in the setting of parking policies, as well as aiding the availability of bicycle options to facilitate mobility. The City of Seattle has ended the need for parking requirements in the Downtown area expanding this so that "new development is not required to provide parking … within a ¼ mile walk of (a) stop with frequent transit service". Frequent transit service

[4] The City of Seattle in April 2015 estimated the cost of building a parking structure at between USD 20 000 and USD 50 000.

is defined in the City's Land Use code as a service with at least 15-minute headways for 12 hours, six days per week and at least 30-minute headways for 18 hours of every day.

This makes explicit the relationship in urban areas between parking and public transport: the need for parking can be reduced if there is a quality public transport system that operates frequently, and provides a service not only in the commuter peak, but after hours and over weekends to meet leisure and shopping needs as well. Following from this Seattle's parking policy states that "requiring developers to provide parking in areas well served by transit and other transportation options is inconsistent with City policies to reduce single-occupant vehicle (SOV) trips". Related the City of Seattle supports car share programmes, taxi legislation that has facilitated "thousands of new service providers for on-demand transportation" such as Uber and Lyft; and a bike share scheme (Ibid: 3).

This points to the role that parking plays in a holistic approach to urban and environmental management linked to quality of life. In South Africa the role of parking in urban management is contested, with an absence of parking frequently cited as cause, rather than a contributor to urban dysfunctionality. For example Neil Fraser, the former executive director of the Central Johannesburg Partnership, an organization tasked with revitalizing the historic Johannesburg central business district cited insufficient parking as "a major factor in the downward spiral of the Johannesburg business district" (2004). This was seen as the result of short-sighted decision making by city planners in the 1960s and 1970s who restricted the number of parking bays in any construction project. For Fraser:

> *"Coupled with traffic congestion in and out of the city. Lack of adequate street parking, high rates, high rentals and building costs, many companies started to move out to new areas where such restrictions did not apply. Crime and grime then moved in."*

In this view of inner city regeneration parking provision (rather than parking management) is key and seen as a crucial to success. The press release citing this view goes on to note the 6 052 bays under construction will be completed at a cost of R30-million together with parking provision for 500 cars in Newtown to be achieved through the conversion of disused rail sidings.

This view highlights the interplay between the regional and local dimensions of successful transit-oriented development as discussed by Niles and Nelson (1999). In polycentric Johannesburg the travel behavior of business people coming into the historic central business district for work is an expression too of the limited public transport options available connecting work and residential areas across the greater Johannesburg region.

Cervero, Adkins and Sullivan also draw attention to the relationship between parking and transit-oriented development. They argue that excessive parking requirements are one of the reasons that transit-oriented development has not yielded its hoped-for benefits (2010: 47).

Park and rides in the vicinity of rail stations are identified as particularly problematic, with Cervero *et al* (2002: 26) identifying a trade-off between providing parking for train commuters or building communities. Parking is seen as separating the adjacent community as well as potential parcels of land that could be used for transit-oriented development from the transit service. At the same time this creates a car-oriented environment, rather than the pedestrian environment that is essential for transit-oriented development. In South Africa there are parallels with the Gautrain stations with their generous park and ride services but poor pedestrian infrastructure and signage in the vicinity of stations and the Gautrain's feeder

bus routes. In Cape Town the municipal parking policy notes that park and rides have been identified in the vicinity of several rail stations but that on the whole demand exceeds supply. The quality of the pedestrian environment in the vicinity of these facilities is also questioned in the parking policy which states that there is "poor public perception of safety and security at Park & Ride facilities and the safety and walkability of the "last mile" from the station or stop to the final destination" (City of Cape Town 2014: 4).[5]

3.5.1 City parking policy in Cape Town

The Council of the City of Cape Town adopted a formal parking policy in April 2014. The document outlines its approach as being:

> *"The Strategic Intent of the Draft Parking Policy is to manage parking supply and demand in high parking demand areas efficiently (including availability of loading bays, bus bays and reserved parking) and to reduce private car dependency by means of including Travel Demand Management (TDM) measures"(2014: 2).*

The parking policy identifies a number of challenges that lie at the heart of the tension between private car use and efficient urban growth in Cape Town. These include developers having to apply for departures should they wish to reduce parking ratios. The policy also identifies the possible conversion of current parking garage space to other uses being hampered by structural and design aspects, such as floor-to-roof height as well as the reality that in some buildings, body corporate rules or lease conditions prohibit the "unbundling" of privately-held parking bays to allow owners or tenants to on-sell or on-lease their unused or unrequired bays to other tenants or users in an area like the central city business district where there is a greater demand for parking. The policy points out that this creates inefficiency in the marketplace, increased pressure on other parking facilities, and a larger incentive for employees to drive (or does not disincentivise driving).

A key aspect of the parking policy that undermines its ability to really shape how parking is managed going forward is that the minimum parking requirements for respective land use types are determined in the Cape Town Zoning Scheme (CTZS) regulations, and are not determined through the parking policy. The land use – transport interface is thus disconnected in this important policy area that is key to good urban management. The zoning scheme regulations require that a "departure" is required when reduced parking standards are sought by a developer. Departures trigger additional requirements in the planning process, such as the need to get the approval of neighbouring property owners.

The parking policy identifies the need to implement "reduced parking requirements to facilitate new development and address private car dependency proactively". It notes that parking development "comes at a financial and land cost" and that reduced parking standards should be applied in low-income areas

[5] As new developments in Cape Town are approved, many with generous parking ratios, it can be expected that congestion will increase. A recent example is the Portside Building the tallest building in Cape Town occupying a city block in what is now described as the financial district of Cape Town's historic central city. The building which is designed to house 3 000 staff has 1 444 parking bays (Hinton and Le Cordeur 2016), which will impact significantly on congestion in the vicinity of the building, when it reaches full occupancy. Cape Town's congestion is estimated to be the most severe of South Africa's cities by the Tom Tom Traffic Index, on which it ranks 47 on the index of congested cities with an overall congestion level of 30%, 71% in the morning peak and 62% in the afternoon peak.

where demand is lower due to limited vehicle ownership and use and in areas where public transport is available and "can assist to break the cycle of private car dependency" (2014: 13).

The policy also sets out "actions" and "policy directives" which suggest that the policy will continue to evolve in various areas driven by different line functions within the municipality. This includes reviewing and updating the minimum off-street parking requirements for the different areas as set out in the zoning scheme and investigating the implementation of minimum off-street parking requirements for subsidy housing, including rental and social housing and gap housing developments. These actions are described in Annexure A of the policy as short-term implementation priorities (2014: 23) which should be included in the review of the City's Comprehensive Integrated Transport Plan (CITP), a document required by the National Land Transport Act.

The parking policy is thus not limited to one policy document but must be read with the zoning scheme regulations and the CITP for a fuller picture of the requirements of this dynamic policy implementation.

The Cape Town Zoning Scheme (CTZS) regulations deal with parking in chapter 19. The regulations have created different zones -- the PT1 and PT2 zones which refer to the availability of public transport services in the area thus reducing the parking requirements. According to these regulations "'PT1 areas' refers to areas where the use of public transport is promoted, but where Council considers the provision of public transport inadequate or where the use of motor vehicles is limited." 'PT2 areas refer "to areas where the use of public transport is promoted and Council considers the provision of public transport good, or where the use of motor vehicles is very limited" (2012: 108). The remaining areas that fall outside of PT1 and PT2 are called "standard areas".

In terms of this the zoning scheme sets out the parking standards for each development type in a detailed way. The requirement for flats, which is the research focus of the case studies in this minor dissertation, is 1,75 bays per dwelling unit, plus 0,25 bays per dwelling unit for visitors for standard areas, 1 bay per dwelling unit plus 0,25 bays per dwelling unit for visitors in areas that are in PT1 and 0,75 bays per dwelling unit plus 0,25 bays per dwelling unit for visitors in areas that are described as PT2. In other words the requirement is two bays per unit in standard areas, 1.25 bays per unit in PT1 areas and 1 bay per unit in PT2 areas (2012: 109). The case studies that follow set out the implications of these parking standards for recent developments in areas of Cape Town where transit-oriented development could be promoted.

3.6 Measuring the success of transit-oriented development

Niles and Nelson (1999), approach transit-oriented development from a planning perspective and identify 16 factors that are key to its success. Importantly they point out that success must be measured both at the local level, in the vicinity of a transit development or station and at the corridor or regional level (Ibid, p2). They point out that some of the success factors will be applicable at the local level, some at the regional level and some at both levels. The table below sets this out.

Table 1: Factors determining the success of TOD

Factor	Station area success	Regional success
Number of TODs (and station areas)		X
Transit quality		X
Transit technology		X
Street pattern		X
Station-area parking (moderation of supply and demand)	X	X
Employment and housing density	X	X
Commercial mix	X	X
Retail siting criteria		X
Regional market structure		X
Consumer activity patterns		X
Travel behaviour/trip chaining		X
Zoning flexibility		X
Resident reactions	X	X
Housing type preference/life style and life stage		X
Self-selection in residential choice	X	X
Government policies		X

(Adapted from Niles and Nelson 1999: 3).

Based on their analysis Niles and Nelson are cautious about whether public investment in transit-oriented development can "produce commensurate public benefits".

Specific challenges that they identify include the need for density at both the trip origin and the destination and, in the modern era, the highly dispersed nature of employment destinations, which are now outside of traditional central business districts in many metropolitan areas. They note that some research suggests that "transit use will grow and contribute to the success of TOD only if public policy can channel dispersing job growth to suburban transit corridors" (Ibid: 5). The authors also argue that the major trends in the retail market structure are likely to mitigate against the success of transit-oriented developments. These trends include retail activity being increasingly polycentric and dispersed; the rise of planned shopping centres which have come to dominate the market; the likelihood that small malls will cluster around major malls; the market share of 'super stores' increasing with shops growing larger in terms of store space and market area; and the convenience of drive through growing in popularity. They conclude that, "the modern retail structure has … produced profound changes in personal and household travel patterns that must be understood in order to improve TOD's chance of success" (Ibid: 8).

The importance of the use of transit for non-work trips to the success of transit-oriented development is underscored by the work of Cervero, one of the most prolific contemporary scholars of transit-oriented development. He points out the importance of mixed and balanced traffic flows for "squeezing efficiencies" from costly rail services (2006: 3). This requires the generation of trips during off-peak hours which in Niles and Nelson's analysis is under threat from current trends in the retail market. In the US they note that non-work activities generate almost three out of five person trips (1999: 8). But these trips need to

be made using transit for Cervero's transit-oriented development to succeed, a vision in which "mixed and balanced land uses ensure mixed and balanced traffic flows" (2003: 3).

Market preference is another key factor for Niles and Nelson. They emphasise that few hard facts about actual market preferences are established and whether the neo-traditional housing, described by Calthorpe, and associated with transit-oriented development is attractive to more than a small niche market. They point to national surveys conducted by the federal mortgage loan company Fannie Mae which provide some perspective on American housing preferences. These indicate that 73% of respondents' ideal home is a "single-family detached house with a yard on all sides" (Ibid: 9). The same survey also found that Americans would make significant tradeoffs for home ownership and four out of five would drive a longer distance to work if they could own rather than rent. In keeping with this the market has produced a growing proportion of single family units with a "steadily increasing floor area" over the period between 1970 and 1995 (Ibid, p9-10). These trends suggest a market preference for non-transit-oriented development type housing, and although based on American findings, anecdotal evidence suggests that at least some South Africans are not too different in their tastes and preferences.

Other literature which considers the factors for success in transit-oriented development and smart growth strategies, also strikes a cautionary note against assumptions about the relationship between transit and development. Handy (2005) argues that the presence of transit will only encourage development under certain conditions. These include rapidly growing regions with an underlying demand for high-density development, and citing Vesalli finds that key to success is the involvement of the public sector "including land assembly, high-density zoning allowances, restrictions on parking, and financial incentives". All of these played an important role in the most successful examples of development around transit stations. She goes further citing other research to argue that the land-use impacts of transit entail substantial public sector resources, coordination and public policy to leverage investments (Ibid: 16-17).

Belzer and Autler also focus on the performance of transit-oriented developments. Like Niles and Nelson they note that transit-oriented development has a local and a regional dimension as transit stations provide an opportunity for development to be locally and regionally oriented, but that it is not always clear how to create synergy between these two functions (2002: 7). The authors identify six overlapping performance areas to measure the success or not of transit-oriented developments, namely: location efficiency; value recapture; liveability; financial return for individuals, developers and the state; choice for residents of transit-oriented developments; and efficient regional land-use patterns.

3.7 Summary and conclusion

The literature review locates the origin of transit-oriented development in the work of Peter Calthorpe, who coined the term in 1993 with a focus on human-scale neighbourhoods that were conducive to walking and with an emphasis on quality of life. Since then the concept has grown in currency, holding out as it does, new opportunities for efficient urbanism as well as a softer focus on place making and the building of community.

The literature points to the lack of an agreed universal working definition for transit-oriented development and demonstrates that different role players may have varied agendas and intent when implementing transit-oriented development. In addition the literature and its range of definitions for the term underscores its focus on relatively wealthy developed cities, which are well served by public transport. For the most part transit-oriented development is about rail, or bus rapid transit. There is some discussion

about whether a suburban bus system can facilitate transit-oriented development, and the literature omits any discussion of a possible role for paratransit services in transit-oriented development. These omissions and shortcomings in the literature circumscribe the ease with which transit-oriented development can be neatly applied in the South African context, and suggest the need for further research and debate.

A useful term that emerges in the literature about the definition of transit-oriented development is 'transit adjacent development', which describes development that is near to, but not oriented to public transport. This is useful way of looking at urban South Africa's often ambiguous relationship with public transport, and is frequently in evidence.[6]

In discussing the origins and practice of transit-oriented development, the literature distills two distinct threads. The first is what could be regarded as the softer, planning focus as articulated by Calthorpe. This views transit-oriented development from the perspective of the user, the citizen, visitor, tourist or community member. At its heart it is about people, and how places can be shaped to build community life. It is essentially humanist. From these origins the term has evolved as a way of looking at bricks and mortar development and a way to solve diverse urban challenges as they face different institutional stakeholders including city governments, transport authorities, housing agencies, developers and others. Belzer and Autler point out that the interests of this range of stakeholders may not always coincide.

For Carlton the role of the transit agency is key as this stakeholder recognises the importance of increased ridership to the sustainability of public transport offerings and thus has a natural interest in the development that surrounds stations and other public transport infrastructure. For South African cities this is relevant. As cities rather than national government, are increasingly advancing the urban transport agenda, and managing bus rapid transit systems, the importance of sustainable business models has come into sharp focus, and with this the immense challenge of providing public transport that is affordable to the public purse given the long distances that must be traversed.

Boarnet and Crane articulate a contrary view in the transit-oriented development literature. For them the relationship between urban design and public transport use is not very well understood, and they argue that more flexible policy instruments, like congestion charging and direct pricing should instead enjoy greater focus.

Boarnet and Crane also view the role of city government as potentially Janus-faced in relation to transit-oriented development – seeing municipalities as acting in their own fiscal and parochial interests first. This, they suggest, could manifest in zoning practices that seek to keep poor communities away from rail transit or favour commercial development at the expense of residential development. Apartheid was the essential exclusionary zoning practice which has shaped South Africa's cities, but there is still a need to better understand the extent to which current zoning practices contribute to, or hinder the creation of inclusive cities.

[6] A very clear example are the Gautrain stations in Pretoria, Hatfield, Sandton and Midrand with their large park and ride facilities which imply that access to the network will be by car. The poor way-finding signage and customer communication, street furniture, urban management in the vicinity of stations together with a lack of integration with other public transport modes such as Metrorail, minibus taxis and even the Gautrain's own bus service signal the service as adjacent to the surrounding development and not oriented to it.

South African policy is increasingly referencing transit-oriented development as a way of tackling the challenges of apartheid spatial planning and the need to develop viable business models for public transport. The literature that explores what is needed for successful transit-oriented development is thus instructive. A core issue highlighted by Niles and Nelson is the need for both local and regional interventions in order to achieve successful transit-oriented development. In other words a local area with transit and development and the key features of transit-oriented development such as mixed-use development and non-motorised transport infrastructure, is not sufficient unless it is part of a large well-designed network of transit-oriented development nodes and corridors. They distinguish between the features that make for a successful station-area and factors that are required for a successfully functioning region from a TOD perspective. The point being that both facets must work – the local node and the region – to see the benefits accrue at scale. Of particular importance to the regional or city scale is high quality transit, employment and housing density, commercial mix, zoning flexibility and government policy. The checklist they provide is a useful tool to assess the achievement and potential, or not of transit-oriented development in a given area.

The literature also looks at the role of the public sector in transit-oriented development, with the overwhelming view being that its involvement is essential to success. Niles and Nelson though strike a cautionary note and question whether public benefits will follow as a return on investment in transit-oriented development while Boarnet and Crane make the case for deregulation of zoning codes and maximum densities to allow the market to respond to the demand for housing.

Cervero views the issue differently arguing that because the market is imperfect potential producers and consumers of transit-oriented development will not "sort themselves into station areas unfettered". The range and contrast of views about government involvement is a reminder that local politics and priorities differ as does the technical expertise located within state formations for implementation. Renne points out that a lack of collaboration between government and its agencies is also perceived by some role players as a major impediment to transit-oriented development.

The literature on self-selection and transit-oriented development reflects the developed city contexts in which transit-oriented development is for the most being planned for. Self-selection implies a level of agency on the part of households and economically active individuals. In South Africa a breadth of choice is not really available to many poor and working-class households in the decisions they make about where to live, work and educate their children. In addition the majority of households in South Africa are public transport captive which hems in further the kinds of choices that are available to them. The lifestyle preferences referred to by Handy are only available to some communities and households to exercise. Cervero sees self-selection positively in contexts where affordable housing is close to transit while Renne highlights the typical transit-oriented development demographic as being relatively affluent and economically active – the childless young professional or active retiree.

Of relevance to South Africa is the emergence of international transit-oriented development initiatives to support affordable housing through municipal policy that requires that a percentage of a new development is set aside for affordable housing. The absence of policy that encourages affordable housing developments will impact on the ability of transit-oriented development to meet objectives of social justice, equity and inclusion in South Africa, if it is purely market driven.

Parking emerges as an important issue in the success or otherwise of transit-oriented development. In South Africa it also has a particular resonance indicating as it does the extent to which urban areas are

planned for the convenience of a privileged minority of car-owning residents, once defined mainly by their race and now by their class.

The parking literature points to the individual, social, environmental and household costs that are associated with an oversupply of parking. In Cape Town the zoning scheme still makes provision for high parking standards for new developments even when their proximity to public transport is good. In so-called PT2 areas, which are those best served by public transport a parking bay is required for every unit built. Shoup likens this approach to a "pseudo science" based on uncertain estimates of parking demands and in the process driving up the cost of development, which is in turn passed on to buyers and tenants. Litman estimates that this practice is the equivalent of placing a 10% tax on a development.

As cities internationally become more congested parking policy is coming under greater scrutiny due to its ability to impact negatively on the functionality and liveability of a compact urban area. The city of Seattle for example has determined that new developments located within 400 metres of a public transport stop that is frequently serviced — with at least 15 minute headways for 12 hours, six days of the week – need not provide parking.

In South Africa the role of parking in urban management is contested, with an absence of parking frequently cited as contributing to urban dysfunctionality. The Cape Town policy that is reviewed in the literature reflects this contestation as it is expressed from within the City of Cape Town where the municipal parking policy acknowledges the challenges that unfettered parking imposes on urban efficiency, while the zoning scheme makes provision for generous parking standards that can only be reduced through successful departures, a process which may be unsuccessful and is often onerous, time consuming and costly.

While there are many facets to transit-oriented development and its successful application in South Africa, the issue of parking encapsulates both the planning and behaviour change issues that are needed for quality urban life. In South Africa these are overlaid by an admixture of issues that pull in different directions relating to the aspiration for car ownership in the face of public transport services that too frequently provide poor quality service; a conservative, generational attachment to the need for parking at every possible destination; and an emergent wave of young professionals able to access a range of other options, and whose relationship with the private car is starting to shift.

In concluding the literature review section of this minor dissertation, what emerges is a dearth of literature on transit-oriented development in the developing world. The vast majority of scholarly work on the topic emanates from the developed world and is based on the experience of large developed cities. There is also a strong correlation between the sophistication of the public transport services available and the study of transit-oriented development. The scholarship on transit-oriented development reflects to a large extent a reality based on the presence of substantive public transport with service levels which seldom exist in developing country contexts, including the South African one. There is also an absence of literature on transit-oriented development in the countries that would be most comparable with South African, and which have provided models for bus rapid transit that have been utilised in this country, such as the example of Bogotá in Colombia.

4 Case studies

4.1 Introduction

Transit-oriented development is being embraced in South Africa as an approach which could help to lead the country and its cities away from the spatial practices that reinforce apartheid-era segregation and sprawl, and toward an approach to city development that prioritises urban efficiencies at both the city and household level. In so doing it is thought that it will contribute to the viability of public transport systems which require a critical mass of ridership in order that public subsidies are set at an affordable level.

The case studies are set out here in a sequence starting with the one that is closest to an ideal transit-oriented development, namely Church Square House, with its range of transport options, excellent urban management and dense range of amenities within walking distance. This is followed by the well-located Wynberg development, Grand Central, which is also well-served and with a range of amenities in walking distance. This is followed by Drommedaris the social housing and affordable housing development built and managed by Communicare and finally a cluster of apartment buildings in Parklands developed and managed by International Housing Solutions. The latter are notable for their affordable rentals and property prices in well-managed developments. Both Drommedaris and the IHS apartments are conducive to a good quality of daily life in key respects, but neither enjoy the excellent pedestrian access of central Cape Town or Wynberg. The social housing development Drommedaris is relatively better located close to jobs and areas of economic activity but unlike Wynberg and central Cape Town there is a more limited pedestrian access to public goods and retail opportunities. It is difficult to rank Drommedaris and the Parklands developments as each has its own specific utility and are located in areas that have the potential still to develop and change in dynamic new ways.

Each of the case studies has been documented using an analytical frame that has been developed based on the key features of TOD as discussed in the literature. Each case study opens with contextual information about the specific development and its immediate context.

This is followed by a discussion of local features of TOD, which explores the public transport facilities available and the other key amenities that contribute to the mixed-use features that are so essential to TOD. This includes a discussion of some of the factors that Niles and Nelson (1999) highlight as being factors that will determine the success of TOD at a regional or station area level such as transit quality, transit technology, employment and housing density, commercial mix and retail siting criteria.

Since parking has been identified as a potential impediment to successful TOD both internationally and in the Cape Town context, and parking had shaped at least three of the four developments profiled in the case studies in specific ways, this is explored explicitly with respect to each case.

The TOD literature places a premium on the walkability of TOD neighbourhoods and also encourages cycling. While these could have been treated as one section dealing with non-motorised transport, it is argued that the infrastructure required for walking and cycling respectively are very different and that for TOD to succeed in the city, these relatively neglected modes each require a dedicated focus.

The case studies conclude by exploring the specific insights that can be gleaned from each development. As the developments span a social and economic spectrum and are located in different parts of the city

each with unique characteristics, different challenges and opportunities are also associated with each providing a range of relevant insights.

4.2 Church Square House, central Cape Town

4.2.1 The development and its context

The central city where the first of the four case study developments is located is the historic heart of Cape Town. The original city centre is home to many small, medium and micro businesses as well as large corporates and increasingly to residential developments. The area represents a significant portion of the city and the Western Cape provincial economy.

It is the best served part of the city from a public transport perspective, but has over the years been repurposed for cars, from its historic origins which predate the private car. Today it has extensive managed kerbside parking bays, parking arcades for use by the public and traditionally high parking standards have been applied to developments in the central city (City of Cape Town 2013). With its dense footprint and uneven public transport services the assumption is that many people will drive into the city in a car. The consequences of this practice are easy to observe with a high volume of single occupancy vehicles making their way in and out of the central city in the traditional weekday peak period. As a consequence severe congestion has become a feature of the peaks. The congestion is a source of concern for stakeholders in the public and private sector and has been noted by the City of Cape Town, but is not seen as one of the congestion areas most requiring intervention.[7]

Church Square House is a modernist, 12 storey building, 44 metres in height[8] and located centrally on the historic Church Square, named for the Groote Kerk, Cape Town's oldest church. The square on which both buildings abut is part of South Africa's oldest urban area. It is in an historic precinct which includes Parliament and the Slave Lodge. Church Square House was developed in the 1950s as an office block, but was converted by the owner and developer, the late Valter Blaugsted in the mid-2000s to a mixed-use sectional title development. This was facilitated by a change in the zoning of the building from commercial offices to the less restrictive mixed-use. This took place at a time when South Africa was experiencing a property boom[9] and confidence in Cape Town's historic central business district was rising. This manifest in a number of new residential and other commercial developments, and marked a distinct shift as the area's residential desirability began to grow.

[7] The City of Cape Town's Congestion Management Programme has identified the priorities for congestion management as being Kuils River: Bottelary Road, Saxdowns Road, Amandel Road, Belhar Main Road, Erica Drive and Okavango Road; Kommetjie: Kommetjie Road, Ou Kaapse Weg, Houmoed Avenue with an investigation into the feasibility of a shuttle service between Kommetjie and Fish Hoek planned; and Blaauwberg: Plattekloof Road (M13), Tygerberg Valley Road, Blaauwberg Road, Giel Basson Drive (M12), Sandown Road, Link Road, and Koeberg Road Extension.

[8] See https://www.emporis.com/buildings/178999/church-square-house-cape-town-south-africa?pdf, accessed 11 September 2016.

[9]Between 2000 and 2006 South Africa experienced a residential housing boom attributed to a number of factors including the emergence of a financially stable black middle class, reduced crime, reinvestment in South Africa and the Financial Services Charter which boosted mortgage loan growth. See http://www.globalpropertyguide.com/Africa/South-Africa/Price-History accessed 24 July 2016.

Confidence in the central city can be attributed in large part to the establishment of the Central City Improvement District (CCID) in 2000 which remains key to the ongoing success of the central city. The improvement district was the first in Cape Town and drew on international best practice. Improvement districts in Cape Town are special rating areas, designated by the municipality based on the support of property owners in the area (a majority of whom must agree to pay an additional levy on top of property rates). This money is used to provide additional services determined by the improvement district, over and above those provided by the municipality. This means that improvement districts are in general better managed and with higher service levels than surrounding areas. Internationally this approach has included a strong focus on tackling the challenges of 'crime and grime' and this is reflected in central Cape Town, with its abundance of visible security and ongoing cleaning. The property boom and the establishment of the CCID paved the way as well for the conversion of offices into residential accommodation. Church Square House, which until 2000 had been an office block, without parking, underwent a makeover. Each unit, bar the smaller ground floor and the larger penthouse is 130m^2 and over the last ten years several of the commercial units have undergone renovation and been converted to residential use. Currently two thirds of the building is residential and it is in walking distance of a very wide range of social, cultural, economic, government, entertainment and civic goods and services.

The residents of Church Square House reflect the middle class urban sensibility that is being shaped by the CCID with several of the residential units home to owner-occupiers who are young professionals, most without children who work near to, or in the building from their home units. Interviews were conducted with four people falling into this category.

Church Square House in Spin Street, Cape Town.

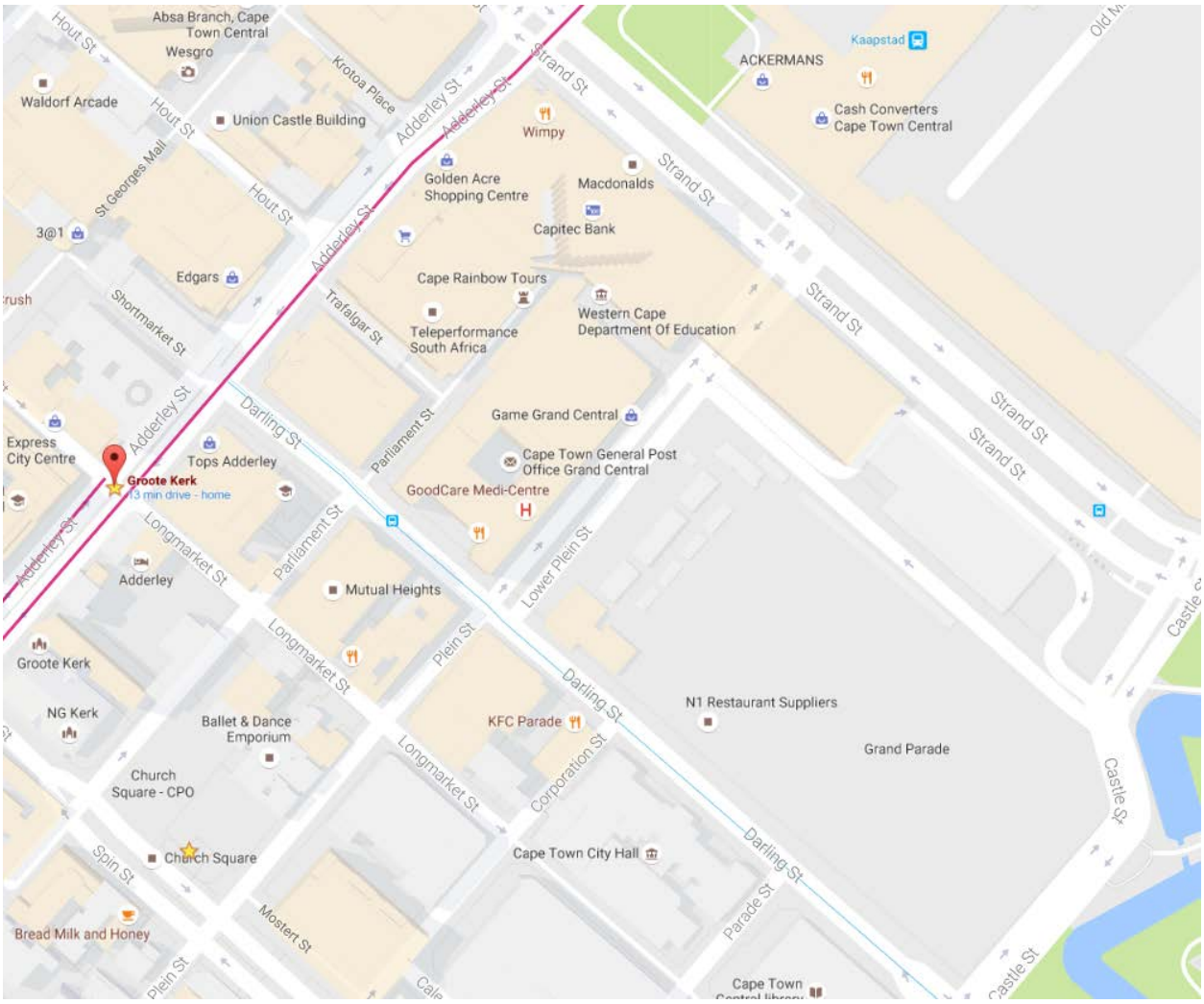
4.2.2 Local features of transit-oriented development

Church Square House is about 500m from Cape Town's main railway station and a similar distance to the Civic Centre station, the hub of MyCiTi Cape Town's hybrid BRT-suburban bus system. It is as near to the main Golden Arrow bus terminus and a major minibus taxi interchange located on the station deck above Cape Town station, as well as an informal minibus taxi rank nearby. Of the four case studies this area is the best served by public transport, paratransit, private metered taxis and the e-hailing services, Uber and Taxify.

The area epitomises, perhaps more than any other in greater Cape Town, the features of transit-oriented development. The CCID area, which represents a significant portion, but by no means all of the area is 1,6 km^2 and contains 1 200 formal retailers and 900 informal traders, 1 400 other businesses, 6 000 residents, 44 education institutions, 9 000 full-time and 3 500 part-time students. The CCID also calculates that 25% of the metropolitan economy is located in the central business district (of which the CCID area is a portion) and 30% of Cape Town's workforce is based there (CCID 2015: 2). For residents or workers it offers a near complete suite of business, leisure, retail, cultural and public services.

4.2.3 Parking

An unusual feature of Church Square House is that it has no structured parking. Instead owners and tenants make use of parking a short walk away at The Adderley, another mixed-use building also developed in the 2000s, which has eight floors of parking. The City of Cape Town's Zoning Scheme regulations make provision for this type of parking arrangement, which must be notarised as part of the development (2012: 107). Visitors to the building who arrive by car can make use of the managed kerbside parking in the central city as well as commercial parkades including one in neighbouring Plein Street. For some time Church Square itself was managed as an open parking lot, but was converted back to public open space in the mid-2000s (SAHRA 2006).



Church Square, in the bottom left quadrant of the map, is in walking distance of MyCiTi services (one of which is depicted as a red route) and the Cape Town rail station in the top right quadrant. Golden Arrow Bus Services have a major interchange on the Grand Parade. Public and private amenities nearby include the City Hall, the Castle of Good Hope, the Post Office, several banks, the Grand Central and Golden Acre shopping centres and many different kinds of businesses and hospitality services.

4.2.4 Behaviour

All of the interviewees had changed their transport habits since moving to the development between the years 2012 and 2015. The first resident interviewed had bought a unit in the development in 2012 and at the end of 2015 he had made a major lifestyle change. In the interview he explained:

> *"I walk a lot. Last year I sold my car as my office is in Tamboerskloof. I love the idea of walking, and walking to work through the Company's Garden … every day I get excited. For me living in the city is to be a pedestrian and walk. At night I take an Uber and before Uber I 'taxied' but Uber is much more competitive, the prices are great and the service is faster… Parking forced me to be more pedestrian, as it's quicker (to walk than drive and park). The City Bowl is actually very compact. The Company's Gardens I love*

– it's like a mini-Central Park, it's a great benefit of being here. I explore the city more (on foot) and discover nice places which often go unnoticed when taking transport."

In addition to enjoying walking to work in Tamboerskloof (a distance of approximately two kilometres) the interviewee had opted to sell his car based on its cost. He noted that this included the cost of insuring the vehicle and, "doing the sums it just made sense to get rid of the car".

By doing so he exchanged the costs required to maintain the car for an income which he now receives from the lease of his property's parking bay. Asked if he thought he might change his travel behaviour in the future he responded:

"I think so … I sometimes use minibus taxis to Sea Point. I would like to use more public transport, more for things that are further away. But Uber is very convenient it is R20 to anywhere in the Bowl. I kind of miss my car but so much of my life is in the city. I miss the car as it was sporty to drive, but the cost and maintenance (was the down-side). (Not having it) has forced me to find out what stores are close, I have to plan. I do have a work van that I can use, so that is an option."

Other residents shared similar views, with couples sharing a car rather than owning one per person. One couple who were interviewed together had moved away entirely from the middle class ideal of one person, one car. This had been a process that had commenced at their previous apartment which they rented. There they had leased a friend's car during the day in order for one of them to drive to work, while the other drove their shared car. This entailed an arrangement with their insurance company and the use of a log book to track mileage. They had not owned two cars for seven years. Since moving to the central city from Tamboerskloof they now barely drive with one of them working from home and the other walking to work at a corporate office on the Foreshore area of the central city.

Transport was an important part of their reason for selecting a unit in Church Square House to purchase. In addition to aspiring to buy a property instead of renting accommodation, the building facilitated work-from-home, given its zoning for both residential and commercial use, and the option of walking to work. There were cost savings in this approach which were attractive as there would be no need to rent accommodation for the one partner in the couple to run her small business with its two employees, and there were transport savings – both time and cost -- for the other member of the partnership who could walk to work. As one of them described it:

"(We are) much more open to the reuse of cars (car sharing). We have seen it work. We use Uber instead of owning a second vehicle. It's not an option getting a second car. We can utilise what is around. There is MyCiTi bus, if the bus takes too long we can use an Uber, we can walk, the city is very small we tend to walk a lot and really enjoy walking in the city, we even walk to the Waterfront sometimes and take an Uber back... We have real city living."

4.2.5 Walkability

The experience of 'city living' as expressed by these interviewees underscores Calthorpe's original intent when he coined the phrase transit-oriented development and envisaged its "pedestrian pockets" as "neighbourhoods of housing, parks and schools, placed within walking distance of shops, civic services, jobs and transit … with local access for all the daily needs of a diverse community" (1993: 16).

Calthorpe went further than some of the subsequent literature about transit-oriented development, which is more instrumentalist in tone, when he observed that "pedestrians are the catalyst that make the essential qualities of communities meaningful. They create the place and the time for casual encounters, and the practical integration of diverse places and people". The words of one of the residents of Church Square House resonates with Calthorpe's intent when she commented on what living in the area meant for her personally:

> *"I love the eclectic environment. It is so different to the way I grew up and what I had assumed life was about. My life has become so much fuller and I have a wider appreciation for what I have, seeing other people's hardships, like the person at the corner shop who works so hard."*

For this interviewee the diversity of languages and people in the central city, and the presence of people from all over Africa had broadened her perspective. Calthorpe's "casual encounters" are with people very different to herself and knowing the local Somali shopkeeper by name when buying the household's bread and milk was an essential part of her daily experience of life in a nascent transit-oriented development, or pedestrian pocket. As Litman notes, "Environments that are conducive to walking are conducive to people" (2007: 2).

This couple had been nudged toward behaviour change by the location of the parking garage a short distance from their apartment where their car is parked on the 10th floor, requiring a five minute drive to get it out. The time and effort involved in doing this was seen as more onerous than walking somewhere, or catching an Uber. This meant that they had adjusted their local 'hangouts' to ones that they could walk to rather than driving. As they noted:

> *"Your environment changes and you find local hangouts, hangouts change. You go somewhere nearby (instead) for the convenience of walking. Being able to walk trumps driving. We have changed behaviour for the convenience, above our (previously) local spots. Bree St is only 600m away, and before we would have gone to Kloof St."*

Other advantages related to the convenience of being able to do several chores on foot:

> *"I can walk to work. I like the practicality of it. Everything is so much closer. I had to get a Schengen visa. It was so easy to get a certified copy of a document, two blocks later I could verify my banking details, get passport pictures taken at a shop in Strand St and hand the application in."*

Also, one of them noted, "we live in a 'mall' you can get so much stuff done, and access so much, in minutes."

The experience of these residents of Church Square House demonstrates the economic value of walkability, in which "good walking conditions allow consumers to save on vehicle expenses" (Litman 2007: 8).

4.2.6 Cycling

The fourth interviewee was a keen walker, cyclist and user of public transport. Moving into the central city had however coincided with a change in his job, which necessitated changing his travel habits from previously using the MyCiTi bus or walking from Green Point to De Waterkant, to now driving to get to

work in Durbanville in the northern suburbs of Cape Town. As a keen cyclist he contrasted the pedestrian and cycle infrastructure on the Atlantic Seaboard with that of the central city, which he found wanting:

> *"I love cycling but the area is not great for cycling, such as the Adderley St cycle path and there is not really places to lock up bikes at the station and bus stations".*

This interviewee and his wife had also sold one of their two cars when moving into the apartment, which they purchased after renting in Green Point. Like the other couple interviewed they had bought property in the central city after renting and had reduced the costs associated with their cars while investing in property -- the better long-term financial investment for a young couple, in contrast with the depreciating asset that is a car.

4.2.7 Insights from Church Square House

Like the Grand Central development in Wynberg, which is discussed later, the importance of a spatial centre to successful transit-oriented development is explicit in this case study. Newman (2009: 13) says that the ingredients for success are a commitment to transit and to centres for TOD to succeed. Related is density with a successful transit-oriented development centre requiring 10 000 people and jobs within a 1km radius (Ibid: 15). A town centre requires a 3km radius and 100 000 population and jobs. The Cape Town central city falls within these parameters and has many of the characteristics of a transit-oriented development. People living in this area, as highlighted by the case study, benefit tangibly from the reduced need for a private car, and the easy access to goods and services. Newman points to research comparing people living in TODs and those who don't, of similar age and income. Those living in TODs on the whole had one less car per household and this was found to lead to a "20 percent increase in their available household wealth" adding that "local governments soon find that this extra available household wealth is largely spent on local goods and services whereas buying a car would not do the same thing. Hence TODs are a means of helping create local economic development" (Ibid: 16).

In this respect a negative observation on the part of all of the interviewees was that the range of food stores available nearby for grocery shopping did not fully meet their needs. This was a function of both the planning and effort that was required to do the shopping as a pedestrian in the area and the mix of goods available in their preferred brand of grocery store (Woolworths), which was seen as offering a limited variety in their local branch.

Niles and Nelson point to the rise of planned shopping centres which dominate the market and have in turn influenced personal and household travel patterns. Central Cape Town is one of the few remaining high streets in Cape Town and bucks the mall trend. It will be interesting to see how South African retailers respond to this nascent transit-oriented development and whether the high street retail offerings will be increasingly tailored to this emerging new market, or if retailers will continue to favour shopping malls which are designed almost universally for the private car.

The case study demonstrates the potential that transit-oriented development holds out for Cape Town, where a very good quality of life and an energy-efficient daily lifestyle for residents can be achieved. The extent to which is this is available to a broad cross-section of Capetonians is though doubtful, with limited affordable accommodation in the central city, and concerns about gentrification of neighbouring Bo-Kaap and Woodstock. This highlights an absence of policy that facilitates inclusive development in areas like this.

Three other things stand out. Firstly the rise of e-hailing is palpably evident and changing behaviour; secondly good pedestrian access and density, rather than good transit, is driving behaviour change and thirdly the central city is not facilitating cycling and has a poor cycle network. In this established middle-class community the availability of Uber's services, which are needed only for short distances has made it easier to consider not owning a car, or foregoing having a second car in a household. Unless there is a regulatory change that impacts on the ability of e-hailing services to operate, this trend looks likely to stick, which into the medium to long term could impact on the need for the very generous volume of Shoup's "terminal capacity" that parking currently requires. As discussed this terminal capacity drives up the price of development, and contributes to making the area unattainable for a broader diversity of potential residents and owners.

For those who both live and work in the area, it is an almost perfect pedestrian pocket and achieves the station area characteristics for success per the requirements of Niles and Nelson, but this is a function of mixed and balanced land use as opposed to the quality of the available transit.

4.3 Grand Central, Wynberg

4.3.1 The development and its context

Grand Central is a large apartment block on the Wynberg Main Road, developed by the Leisure Development Company. It comprises 414 units and is located close to the rail service and a busy transport interchange in a bustling part of Cape Town's southern suburbs, an area associated with the city's established and affluent predominantly white middle class.

Phase one of the Grand Central development was opened for residents in January 2009 as an affordable housing offering. Michael Smith the Development Director of the Leisure Development Company described this as follows:

> *"We positioned it right from the outset for first time occupiers, and first time property owners. It was very much aimed at lower income, with the close proximity to the transport interchange plus rail and taxi. We anticipated that people staying here would be working in Wynberg or in town or in places close to the rail commute."* [10]

As an entry level offering the units were designed for a very economical use of space and with limited finishes, with the developer's idea being that new owners would upgrade their finishes as they could afford to. The emphasis was on providing units that would enable new owners to enter the property market.

Grand Central is also close to Claremont, an area which has emerged as an important centre in Cape Town's polycentric urban landscape, and is adjacent to Kenilworth. These are well-serviced middle class areas which like Wynberg were racially segregated in the apartheid era. These suburbs include a number of properties from which black and coloured households and landowners were forcibly removed in the past. Today the area includes a wide range of retailers, schools, public services and parks and its mixed-use characteristics are evident, particularly along the Main Road.

Grand Central shares some similarities with the Parklands IHS developments, discussed later. Both properties target the gap market and the affordable housing market, however Grand Central is on a larger

[10] Interview with Michael Smith, Development Director, Leisure Development Company (Pty) Ltd.

scale than the cluster of IHS apartments in Parklands and has been developed at a greater density. The IHS apartments are three-storey walkups, while Grand Central has elevators and stands at seven storeys. Grand Central is also better located, and this is reflected in the rents that the respective developments commanded at the time of writing – R5 000 for two bedrooms in Parklands and R7 500 for two bedrooms in Grand Central.

The façade of Grand Central on Main Road, Wynberg with small retail shops on the street and the residential units set back above them.

Phase one of the development opened its doors in January 2009. When the development came onto the market prior to this, the first phase sold out, but development work was concluded as the global economic slump of 2008 set in and 25% of sales subsequently fell through. This underscores the interplay between TOD-type development and the underlying health of the economy. This is particularly relevant with respect to the role of developers in TOD who, as D'Arcy and Keogh (2002) point out are essentially driven by "powerful economic forces" and prevailing social and economic conditions.[11]

The changes in the economy left the developer holding these units which are currently let as rental stock. In addition to residential units the development also houses a commercial gym and includes several small retail stores in the front of the development on Wynberg's historic Main Road. These form part of the building's heritage façade, which was respected and upgraded as required by the City of Cape Town and comprises small retail shops, with the residential element set back.

[11] The relationship between trends in the local economy and TOD deserves further discussion. An observation from the research is that Cape Town's property market is growing robustly in particular pockets. These are areas characterised by excellent urban management and locational advantages. Confidence in these areas is in contrast to other parts of the country where it has waned. Opportunities presented by current trends may shift however, suggesting that there is a need on the part of the public sector to take advantage of market buoyancy while it lasts.

Grand Central appears to be the only new development of scale on the southern suburbs Main Road which is aimed at the affordable housing market. Phase two of the development will comprise 223 apartments of between two and three bedrooms which will be available as rental accommodation also targeting the low income segment of the market. The experience of phase one showed strong market demand for two-bedroom apartments which are typically occupied by two couples, which makes the rent affordable (at R3 750 per couple) and comparable with other accommodation that targets this segment of the market. The Grand Central offering of a managed, well-maintained and modern apartment was positioned to be very attractive when compared with the quality of other accommodation available at the same price to this market segment in the area. Services in the building include communal washing machines, cable television, 24-hour security and parking.

Transport and congestion emerge as important factors in development decisions in this part of Wynberg. Uncertainty about the road scheme for the area and its implementation as well as "a lack of finality" about current public investment in public transport infrastructure are perceived by Smith as having impacted negatively on Grand Central and the area more broadly. The unwillingness of large national retailers or national tenants to take up retail space on the Main Road was also cited as evidence of a lack of investor confidence in the area as a whole, put down to severe congestion from the many private cars,

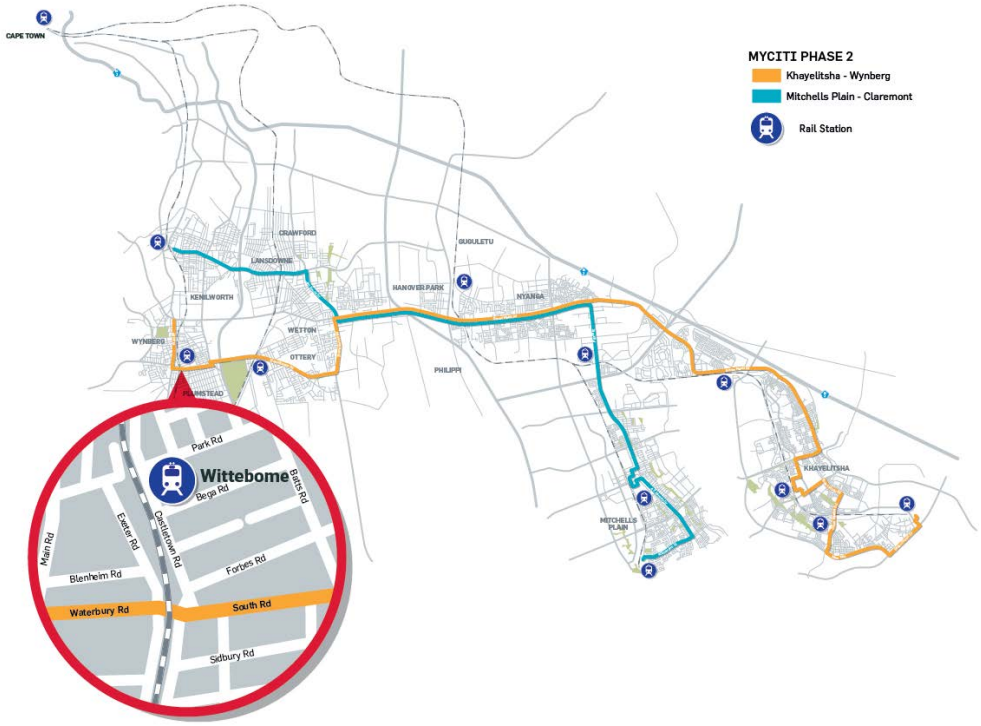
Main Road Wynberg where cars, pedestrians, minibus taxis and buses compete for road space contributing to significant congestion and a lack of investment in the area. Photo Rodger Bosch.

minibus taxis and buses that service the area and use it as a thoroughfare. A key issue for Smith is the absence of an adequate public transport interchange which can serve minibus taxis and buses. A proposal by the City of Cape Town to implement a road scheme, that was initially approved some decades ago, has been met with vigorous resistance and the implementation of the scheme through South Road and under the railway line and including a new public transport interchange is the subject of a legal challenge. The proposal by the City of Cape Town was to implement the road scheme in order to provide a MyCiTi service from the public transport captive south east of the city to Wynberg and Claremont.

Six residents of Grand Central were interviewed, intercepted as they came in and out of the building in the course of two weekday afternoons in June 2016. The first interviews were conducted on 17 June 2016, which followed a public holiday, facilitating access to working members of the Grand Central community

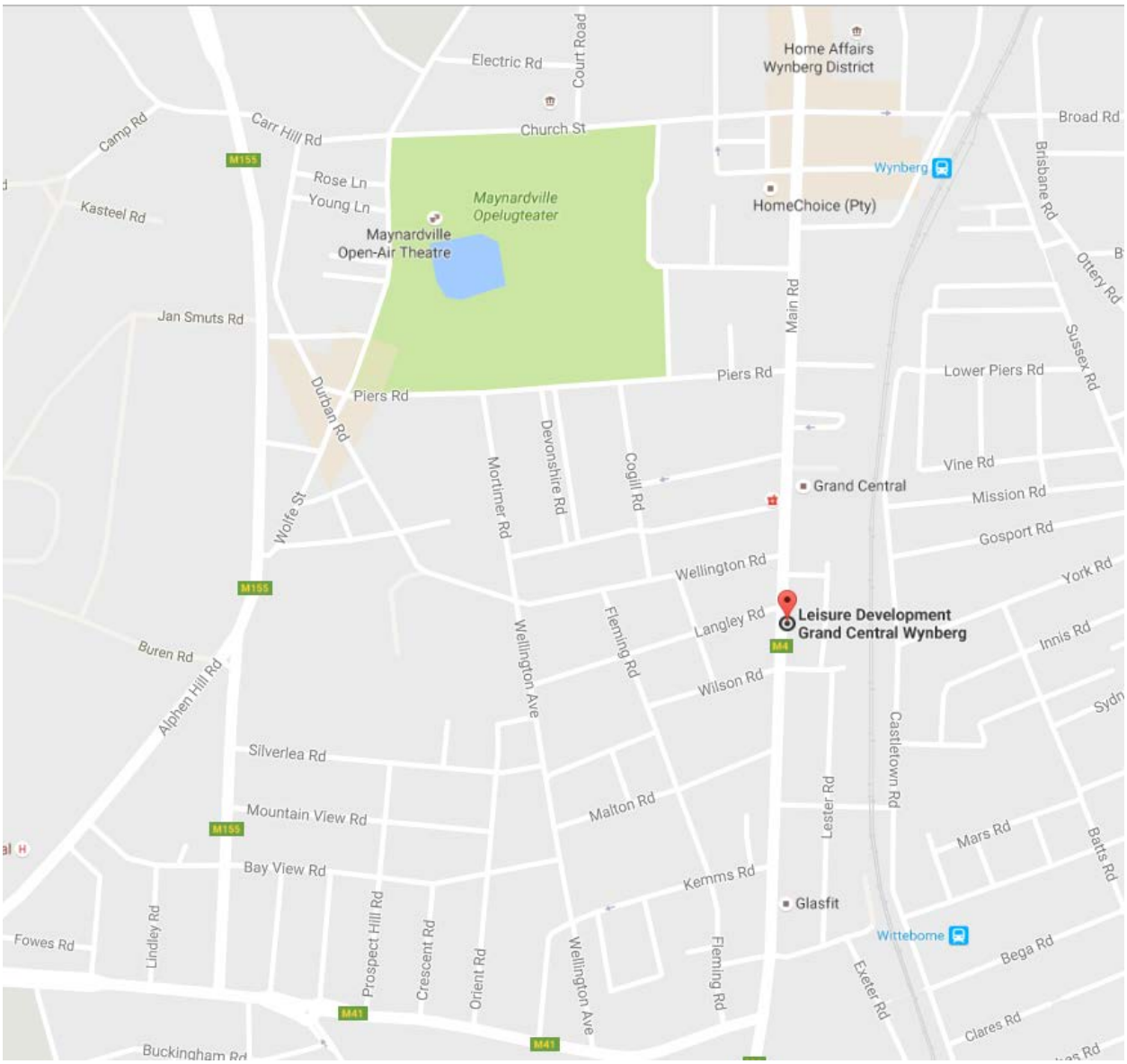
who had taken leave on the day to benefit from a long weekend. The sample of people interviewed comprised three working people, two scholars and a housewife with children.

While the area as a whole was seen as having very positive attributes some interviewees felt that the apartment block had some problems including drug dealing, noise and overcrowding and one interviewee's car had been broken into. The developer too noted that the building had a reputation for drugs and prostitution, and there had been problems with some tenants which they tried to manage proactively. Front-of-house access to the building is managed through a biometric turnstile system and all visitors to the building are required to produce identification for the security guards who staff the front desk around the clock.



A portion of the City of Cape Town's proposed South Road scheme (above) and a couplet and transport interchange (below), which has been the subject of a legal challenge.


MyCiTi phase 2
Khayelitsha -Wynberg
Wynberg
Wittebome
Wetton Rd
Broad Rd
Church St
Byrnes Ave
Piers Rd
Brodie Rd
Main St
Wellington Rd
York Rd
Sussex Rd
Ottery Rd
Park Rd
Forbes Rd
Silverlea Rd
Bay View Rd
Waterbury Rd
South Rd
Ottery Rd



Grand Central is highlighted on the map, with Wynberg and Wittebome stations in walking distance and other amenities nearby including, Maynardville -- a large park, itself with a number of amenities, a hospital, Home Affairs office and a fairly dense network of residential and retail offerings.

4.3.2 Local features of transit-oriented development

The location of Grand Central was chosen by the developer for its proximity to the rail service making it a good choice for representatives of the market segment seeking affordable housing and who work in the city centre or at other locations served by rail. It is between the Wynberg and Wittebome stations on the southern line between central Cape Town and Simonstown, which is Metrorail's most commercially successful line. The development is situated 700m from Wynberg station and 550m from Wittebome station. The area is also served by the Golden Arrow Bus Service and the paratransit industry with minibus taxis having a strong presence in the area.

The quality of urban management in Wynberg was cited by both the developer and residents as a potential challenge. Like the central city property owners in the area have supported the creation of a Special

Rating Area (SRA) – the Wynberg Improvement District, which like other SRAs provides for an improvement district levy by all property owners, which is collected by the City of Cape Town in addition to property rates and provided to the improvement district to spend on providing services that 'top up' municipal services in priority areas, usually associated with safety and cleaning.

Michael Smith pointed out that there were a number of urban management and other challenges in Wynberg which in his view had a negative impact on investment in the area and its ability to attract national retail tenants:

> *"Wynberg unfortunately is not attractive …Wynberg has a lot to offer but … (there are) absentee landlords, (and) other issues, Wynberg has a bad name for congestion on Main Road … the other big negative is the informal trading which gives a very negative vibe. The Wynberg Improvement District which pays for additional cleaning and additional security and has made a big difference."*

Wynberg's busy Main Road on a weekday. Photo Rodger Bosch

Wynberg stands in marked contrast to nearby Claremont where several years ago developers and the City worked closely together to develop a new road, Claremont Boulevard, which helped to facilitate the development of a well-designed public transport interchange and good integration between road, rail, bus and minibus taxi transport modes, close to a major retail and office hub, with growing densities. Claremont possesses many of the characteristics of transit-oriented development namely a mix of uses from residential, retail, offices, leisure amenities and tertiary colleges and schools. This has contributed to ongoing investment in the area, and many new dense developments continue to go up as evidence of the area's robust growth phase. While Claremont and Wynberg share many attributes, Claremont is thriving in a way that Wynberg is not yet, but clearly has the potential to.

Grand Central which is sandwiched between Metrorail's southern suburbs railway line to the left and Main Road, Wynberg. Work on phase two of the development has commenced on the land in the foreground.

The volume of people coming into Claremont and Wynberg from the south east of the city every day is testimony to the desirability of the destination for its range of attributes and proximity to employment. In many ways the area is a perfect candidate for transit-oriented development, and indeed contains many of its features, although all of its major destinations have also been designed for access by private cars, and for middle class consumers, office workers and residents this is undoubtedly the middle class mode of choice in the area. This has made the Main Road of Wynberg and its immediate footprint congested and very difficult to navigate in the busy peak. As Grand Central is located in an older, denser, established part of the city, and as it is on the mass transportation rail system, its residents have a much broader spectrum of choices available to meet their needs for work, play, shopping, healthcare and education. The range of amenities that can be accessed on foot in Wynberg from Grand Central comprises a very vast array in contrast with the Parklands developments, discussed later, where only one small garage shop is in walking distance of the complexes.

The development and its surrounds fit many of the characteristics of transit-oriented development – it is near and oriented to mass transit, it forms part of a mixed-use, compact area, there are pedestrian facilities and public and civic spaces nearby that are community hubs. Interviews with the developer and residents highlighted aspects of life at Grand Central where the vision of transit-oriented development is being achieved, and other areas in which it is not. These are discussed in more detail below.

4.3.3 Parking

The parking standards applied by the City of Cape Town to Grand Central was described by the developer, Michael Smith as "a negotiation" which arrived at a high parking ratio for a development targeting this market, and which has resulted in many underutilised parking bays. The ratio applied was one parking bay per unit, with 0.75 bays for residents and 0.25 bays for visitors and commercial use, in keeping with the

Cape Town Zoning Scheme for PT2. As a result the development has 414 parking bays. For Michael Smith this has been a frustrating experience and he described this generous parking provision as a “huge cost, a wasted cost in a low-income development close to a transport interchange”.

More positively the City has reduced the parking ratios for phase two of the development, which is expected to be completed by 2018. This reduced parking ratio was achieved based on a case study of phase one of the development in which the developer was able to present evidence in support of a reduced parking ratio, which has now been set at one bay for every two units. The evidence from phase one showed that the parking area was at most 50% full, and less than 50% full after hours. In the daytime the bays are also used by members of a gym which is housed in Grand Central, contributing to the development’s mixed-use character.

The parking area at Grand Central which occupies the ground floor space of the development. One of the cars on the left has a plastic sheet in place of the back windscreen, indicative perhaps of the key role that cars play for social and economic access, even when they stretch the household financially.

The approach taken by the authorities to the phase 1 parking provision could be seen to demonstrate Shoup’s theory that cities require the provision of parking spaces when development approvals are being sought “when planners, developers, and tenants know the least about the future demand for parking. The inevitable uncertainty about parking demand helps explain why cities often require more than enough spaces to meet their peak demand” (2005: 37). This leads Shoup to his dismissive characterisation of the setting of parking standards as a “pseudoscience”. The high parking ratio applied also undermines a core tenet of transit-oriented development in which residents in the “indifference zone” referred to by Cervero can be expected to use public transport and parking provision in developments nearby should thus be modest.

4.3.4 Behaviour

For residents of Grand Central, the features of transit-oriented development on offer in the area are all cited as reasons for the desirability of the development. This was expressed by one interviewee as being extremely well-positioned in the middle of the Main Road, "to get all the amenities of life".

Grand Central's location close to rail was cited as a key positive attribute by the residents interviewed, the majority of who make use of the rail service to go to work and school. For some residents the proximity to rail was a major reason to move to the development. One resident who works in the Cape Town central city at the High Court had moved from Pinelands where the 15-minute walk to the Ndabeni station was too far and inconvenient, particularly in the rainy winter months. "In Pinelands there are no facilities if you don't have a car, here there is taxi, bus and train" he said. Although this tenant had a car, this was only used for leisure purposes over weekends and in the holidays. He did not drive it to work citing the "terrible" traffic congestion into the central city, and the expense of parking in the historic central business district at R90 a day. In contrast the Metro Plus (formerly first class) carriages of the train system were described as something that "works for me" with "reasonable" fares. The primary challenge he experienced on the rail system was that the trains tended to be delayed.

The delay on the part of trains was cited by other interviewees at Grand Central, including teenage learners, who caught the train to school in Mowbray. For these users of the rail service overcrowding was also cited as a problem. For one of the young interviewees the train was seen as convenient and cheap, but a car was seen as the most desirable mode of transport as it was seen as quicker, with more space and providing the driver with more autonomy. For this young person the location of Grand Central in Wynberg was very good, close to Maynard Mall, sources of entertainment and with many parks. Another learner also resident in the building cited the many young people and friends living in the area, and its many activities, entertainment, things to do nearby, shopping malls and soccer clubs as positive attributes. This resonates with the literature on successful transit-oriented developments which needs to have a range of amenities and land uses, making the area desirable for people at different stages of their lives, and in turn businesses. For a woman interviewee, a mother of three, the easy availability of health care services including a hospital and pharmacies was the second most desirable aspect of the development following its generally being close to things, with access to the train service also cited as a desirable aspect of living at Grand Central in Wynberg.

Delays in the train service were cited by all interviewees who regularly use it as being a problem. The easy availability of minibus taxis in the area was seen positively, and was 'plan B' for train users when the service was unreliable.

The limitations of rail service frequency was a problem for some interviewees. One person who worked in Salt River at Premier Mills (which is very close to the Salt River rail station) started their shift at the non-negotiable time of 04:00 and because the first train on the southern service only leaves Wynberg station at 05:03, was required to drive a private car to work, which he said cost about R350 a week in petrol, representing a significant portion of the household budget. In contrast a monthly rail ticket on the metro service (formerly called third class) costs R140.[12]

[12] This price was taken from the Metrorail site, which does not publish the most recent prices and is dated 2014 http://www.metrorail.co.za/Communication/fares/Western-Cape-Flyer.png accessed 24 July 2016.

Minibus taxis were the back-up mode for many of those interviewed and minibus taxis on the Main Road use the driveway into the building's parking area as a stop off and pick up point, making it very easy for residents and visitors to access the building using this mode.

4.3.5 Walkability

Observing the comings and goings of residents at Grand Central as they entered and left the building using the pedestrian access point, the utility of the area's pedestrian infrastructure and access was very evident as adults and many unaccompanied children came in and out of the building with their goods, packages and small purchases for daily life. Teenagers living in the building were also seen accessing a range of leisure activities on foot with a high volume of pedestrian traffic coming through the front of house area in the daytime periods when the interviewees were conducted by intercepting residents as the entered and left the building.

Urban management in Wynberg was cited as an issue negatively impacting the pedestrian environment, with one interviewee noting that the area "was not always clean" unlike "Newlands, Claremont and Rondebosch" which were perceived as better managed from a cleaning perspective. There is noticeably more pedestrian traffic and informal trading in Wynberg contributing to this perception of public space that is less valued than other surrounding areas.

4.3.6 Cycling

There was little evidence of cycling in the area and there is no dedicated cycling infrastructure in Wynberg. A small number of male utility cyclists who travel in the mixed traffic in the area were observed.

4.3.7 Insights from Grand Central

In important respects Wynberg and central Cape Town are similar, offering a wide range of amenities in easy walking distance of a relatively dense area. Grand Central has special significance for Cape Town as it also provides access to the amenities of a good urban life to working class residents and migrants to South Africa.

Issues of urban planning and management are more acute in the Grand Central precinct than in central Cape Town, and reflect more directly some of the limitations in achieving the vision of transit-oriented development.

The area is overly shaped by its need to provide for access by car, which in turn has impacted negatively on the quality of the urban environment for pedestrians and cars. With its reasonable densities, and incoming workers, shoppers and scholars, there are also fairly high pedestrian volumes in evidence with conflict between modes, informal traders and hawkers in clear evidence. The lack of an adequate public transport interchange also contributes significantly to this.

It's likely though that the more chaotic features of this urban space, in contrast to the more orderly neighbouring Claremont, have kept property prices lower, and thus more accessible to lower-income households.

For these residents though a better functioning rail service would contribute materially to a better quality of life. Located within the indifference zone close to rail, Grand Central, if it was located in other parts of the world might not require any parking provision on the part of the planning authority. The relatively high parking ratios, which are however being somewhat reduced in the second phase of the development,

are in part attributable to a lack of confidence on the part of developers and the municipal planning authority in the ability of the rail service to deliver a reliable commuter service.

The limitations of the rail service's operating hours also represent a glaring barrier to the ability of residents of Grand Central to access a broader range of economic opportunities particularly in Cape Town's robust and growing tourism and hospitality economy which operates outside of conventional office hours. Other leisure activities available in central Cape Town and at beaches along the southern line are then also limited by the inadequacies of the services after working hours.

Finally there are overall inefficiencies associated with the rail service's unpredictability. In addition to inconveniencing commuters this impacts on the paratransit industry as it is expected to compensate at these times for the unreliable nature of the rail service, but does not benefit from the public subsidies available to the rail and bus industry. The expectation is that the paratransit sector must develop business models that cannot anticipate a predictable market demand. This is both risky and unsustainable for the paratransit industry and impacts the issuing of operating licences and enforcement.

4.4 IHS residential developments, Parklands

4.4.1 The developments and their context

Parklands is a relatively new suburb of Cape Town, with a number of greenfield developments currently underway. The area, which is between the N7 and the R27, on the west coast of the city and north of Blaauwberg Road, has been growing for a number of years, and is seen as an area of rapid growth by the municipality and developers. In important respects Parklands is a 'new South African' suburb. It was established in 1996 without the volume of apartheid baggage that has been so difficult for other South African suburbs to shake off and is home to a diverse and cosmopolitan mixed-income community including South Africans and people from across the continent and other parts of the world.

There is a wide range of property in the area spanning small and large free standing houses, townhouses and a large number of apartment buildings. The area and neighbouring Table View, an older suburb, house a wide range of amenities. Parklands is well served with a mix of public and private schools, a range of retail options and access to the coast with its beaches and nature areas.

In the 2011 census the area was estimated to have 24 614 people with 8 976 households averaging 2.74 in size, while Rawson Property Group was estimating in 2012 that the area included 16 000 homes. What is evident is that the area continues to grow and is visibly changing with a considerable amount of construction underway at the time of writing, and a high demand for residential accommodation. It has been described as South Africa's fastest growing suburb, as well as its fastest growing middle class suburb (Rawson Property Group 2012; Seeff 2016).

New developments in Parklands, August 2016.

The fieldwork in Parklands focused on a cluster of four recent developments owned by the private equity fund International Housing Solutions (IHS) which provides services in the affordable housing sector. It is a significant provider of housing to this market with offerings in Cape Town and other parts of South Africa. IHS has initiated 35 housing projects in South Africa since 2007, as part of a R2,9 billion fund. IHS is a unique participant in the affordable housing sector as it is the only private equity fund operating in this market in South Africa and draws on its international experience.

IHS is now raising capital for a second fund which will be between R2 billion and R3 billion when it is completed. The second fund will include affordable housing which is sustainable, with a portion of the fund as a 'green' fund with investment from KFW and the Global Environmental Facility. It is expected that 5 000 green units will be built across South Africa and already four of the agreements concluded for this second fund are 'green deals'. IHS is working closely with the Green Building Council and a development in Ravenswood, Midrand is the first green project in South Africa for affordable housing.

The developments that form part of this case study are four adjoining developments in and around Southwark Road namely Southwark Mews with 187 units (of which 73 two-bedroom units, of 55m^2 are available for rental), Riverside Mews with 60 units, Meadowridge Mews with 54 units and Hamsley Place with 57 units, of which 21 units (in the C block) are rental units. These three developments, and a portion of the fourth, are managed jointly by IHS Property Management, which is IHS's property management company which manages the units that are let to rental tenants. In addition to these rental offerings IHS has also developed units for sale within the same blocks, also aimed at the affordable housing market. Rentals for

the two bedroom apartments were R5 600 per month at the time of writing and two bedroom units in Hamsley Place were on the market for sale at the time of writing priced at R575 000.[13]

Very good property management has been key to the success of the units. Pamela Lamoreaux, the director responsible for investor relations at IHS says, "we learned early on in our business when we started doing rentals that it's all about property management. That's the key. If you are not on top of it, it is going to get away from you very, very quickly."

There are strong incentives to manage the properties very well as private equity funds are comprised of investors who "are looking very closely at the numbers" says Lamoreaux. They look at the vacancy rates, the delinquency rates, and the yields that IHS is able to generate on these projects. This benefits investors in IHS, which include international pension funds, who have a long-term interest in its yields. The benefits for residents of these developments is also evident and include being able to live and support families in well-run and well-built developments, without concerns about maintenance, personal safety and the management of the property and its immediate environs. The facilities included in each of the complexes include perimeter and front of house security, a children's play area and a laundry.

IHS operates primarily in the 'gap market', that is the market of households where breadwinners earn too much to qualify for a government subsidised house, but not enough to qualify for bank finance and a bond to purchase a home (UCT 2012: 3). In a social audit of IHS developments completed by the Department of Construction and Economics Management at the University of Cape Town in 2012, the researchers point out that developments of less than $80m^2$, which would include meeting the requirements of the gap market have tailed off significantly since 2004, when more than 35 000 units were completed and 2012 when less than 20 000 were completed in South Africa. This helps to explain the popularity of Parklands as meeting a market demand that other suburbs cannot – and providing housing options to a segment of the market that few developers are targeting.

[13] As advertised by IHS on http://hamsley.co.za/ accessed 24 July 2016.

Hamsley Place, located in a still-developing part of Parklands with public pedestrian infrastructure to the right.

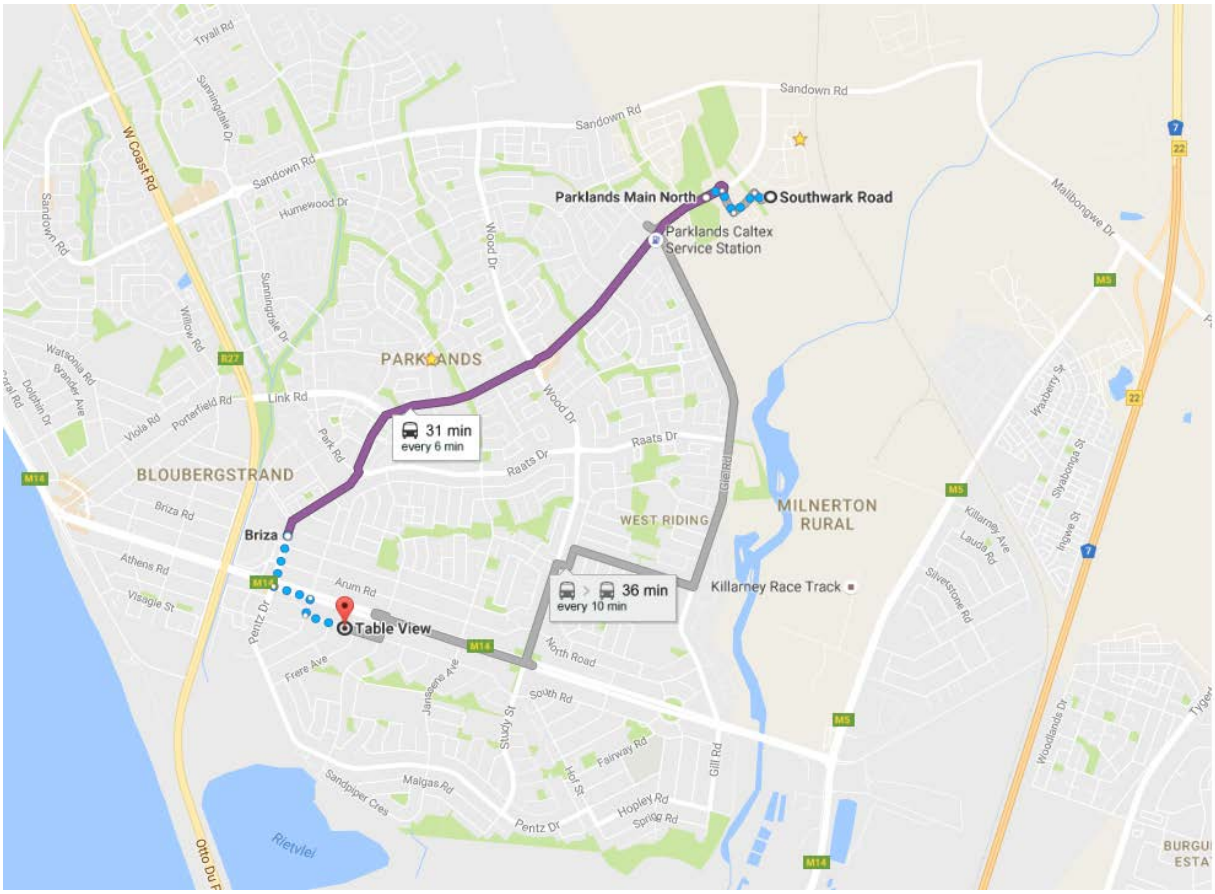
Since their completion by IHS in 2012 all of the buildings that they have developed in Parklands are fully let, and clearly meet market demand. The largest of the apartments, Southwark Mews was described by the initial property management company JHI Residential in a media release as a new 187-unit residential development, consisting of "two-bedroomed flats with modern finishes …. The complex includes an on-site building manager, access control for cars and pedestrians, free parking for residents and visitors, a children's play area, pre-paid electricity and water meters, coin operated laundry services and a communal DSTV dish." The complexes are three-storey walkups designed around an open courtyard which doubles as uncovered parking, with each unit allocated a parking bay.

Interviews with 11 residents of the four buildings were undertaken to better understand the role of public and private transport in the lifestyles of tenants of these building. The residents interviewed were randomly selected by the property manager of the four buildings based on who was available in the late morning of 28 April 2016 when a site visit was conducted.

A portion of the 187-unit Southwark Mews apartment block.

4.4.2 Local features of transit-oriented development

The complexes are a short walk from a MyCiTi bus stop. The MyCiTi service as it operates in Parklands is primarily a suburban style bus service which travels in the mixed traffic and stops kerbside for passengers. This bus then connects to Table View station, a hub of the MyCiTi service, at which passengers can change to another bus and then make use of the BRT type services with a dedicated busway, closed station and faster travel times.



The IHS developments are located in and around Southwark Road. The map, generated by Google maps indicates the estimated time it takes to reach central Table View using a MyCiTi feeder bus during the weekday peak, including a portion of walking time. The map also illustrates just how new the suburb is, with the land to the right of Southwark Road undeveloped. Malibongwe Boulevard, which opened in 2013 and links Parklands with the N7 is visible in the top right quadrant.

Parklands is not served by rail. MyCiTi was first introduced in greater Table View in 2011, with several additional service extensions provided in the period since then. The West Coast area was chosen for Cape Town's first BRT corridor as it had limited scheduled public transport services and the minibus taxi industry in the areas was well organised and open to discussions with the municipality regarding its transformation and participation in a new public transport model. Minibus taxi services and Golden Arrow bus services operating in the area were replaced entirely by MyCiTi as part of a negotiated contract concluded between the City of Cape Town and these existing public transport operators in the area. As part of this agreement operating licences were surrendered in exchange for participation in the companies that were formed to provide vehicle operating services to MyCiTi (Bassier 2015).

The MyCiTi service level in Parklands comprises a feeder or area route (bus number 214 Big Bay - Table

The MyCiTi stop that serves the four IHS developments in Parklands. The pedestrian infrastructure leading to the stop is not continuous and users wanting to catch the bus would sometimes have to walk on the grassy verge or on the road.

View – Parklands). The service has frequencies on weekdays of approximately six minutes in the morning and afternoon peaks, frequencies of 15 minutes during the day and evening frequencies of 20 minutes with the last bus at about 23:00. Over weekends service levels are reduced to approximately every 15 minutes on Saturdays between 07:00 and 23:00 and every 20 minutes on Sundays. The feeder route goes to the Table View MyCiTi station where passengers can transfer to the dedicated busway which takes them into the Cape Town central city via the R27.

Since an exact level of transit service for what constitutes transit-oriented development is not provided in the literature, whether it is adequate could be debated. Lund *et al* (2004) maintain that transit-oriented development must be located within an easy walk of a major transit stop. A kerbside suburban bus stop does not meet this standard, but in Cape Town there are actually very few major transit stops.

On the key role of transport infrastructure in the location of affordable housing Lamoreaux says:

> *"Transportation is always a big factor in looking at these projects … when we do our initial due diligence and market research on the location that's one of the key factors. We look at what transportation is in play, what's coming up, what is government committed to doing in this area. Here we saw that they were going to open up the R27 about six months after we were planning to be done with the project and we saw this as a huge beneficial factor to the project … So transportation is a key … we have done some social audits studies and we all know … that a big percentage of these people's income is going to transportation but when you actually talk to them you see that this is in fact quite true and that it's a serious factor that they think about when they are thinking about there they will live. Not only in terms of where they work but in terms*

of education for the kids - where can the kids go to school and how will they get there? So it really was one of the most surprising things that came out of our audit, was how big of a driver this was to a person's happiness with the project and why they went there in the first place."

The importance of transport in the development of affordable housing in South Africa relates to the large percentage of household income that is spent on transport. While the norm internationally is between 5% and 10%, in Cape Town low income households in some parts of the city spend as much as 45% of household income on transport (City of Cape Town 2015). In contrast with IHS projects in Gauteng the Western Cape is viewed by Lamoreaux as smaller, and with less sprawl and better infrastructure.

The completion of the link road that connects Sandown Road from the R27 to the M12 and N7 was developed as part of a public private partnership between the developers of the Parklands/Sunningdale area, the City of Cape and the Western Cape Government. The road cost an estimated R82 million and opened in October 2013 (City of Cape Town 2013).

4.4.3 Parking

Parking ratios applied to development in Parklands appear to be PT1 or standard. Parking provided in the complexes is uncovered and unstructured parking, reflecting the space for development that still exists in the area.

4.4.4 Behaviour

Southwark Mews with a children's play area to the left and courtyard parking being the defining features of the common area.

Residents interviewed in the complexes expressed a range of views about transport, with many making use of both MyCiTi and private cars. Cost was the major reason voiced for using MyCiTi instead of a car, with the bus seen as a cost-effective alternative to the high cost of fuel. On the other hand a paucity of weekend public transport services was seen as a reason to own a car. Several respondents cited the difficulty of getting to church by minibus taxi or bus as a reason for using or owning a car. The convenience of

having a car "for business" was also cited in one case, although this respondent noted that MyCiTi was a good alternative when he was tired and did not feel like driving, he described MyCiTi as "very excellent".

Some of those interviewed only used public transport. As the complexes are only a few years old, most of those interviewed had moved into the complexes between a month and two years previously and were able to contrast their current and previous transport experiences with ease. At the same time some of the residents interviewed were new to South Africa.

When asked about the ease of driving and parking, most respondents felt that it was very easy to both park and drive in the area, with one noting with respect to shopping in the area that there was "parking everywhere at the mall, making things easy for everyone". The same respondent though preferred using a car to public transport due to the convenience and flexibility associated with car use, and the need not to walk to access the car, also noting that "public transport will never do exactly what you want".

A young college student interviewed had traded down to the Parklands apartment following a death in the family. While still making use of MyCiTi, he was now living even further from his college in Woodstock and his transport arrangement had become more complex, and required that he take the feeder bus, or a minibus taxi requiring a minibus taxi journey to Table View station to access the MyCiTi trunk service into central Cape Town.

The addition of this extra leg to his trip, requiring a transfer at Table View station (the largest station in the MyCiTi network, where passengers can transfer from several feeder services to the MyCiTi trunk) had made his journey more cumbersome and less convenient. His view was that the service was not as reliable as it was from his previous location in Blouberg (where he was able to access the trunk service on the dedicated lane directly) and he often missed the connecting bus. At the same time he contrasted the bus service very favourably with minibus taxi services, which were seen as slower and less reliable. The scheduled nature of MyCiTi was viewed positively and he kept a copy of the bus timetable in his mobile phone in order to plan his journey:

> *"MyCiTi is quite a good transport, it's very nice, unlike a taxi. It's quicker. If you time yourself you can always get to where you want to … Even if I get a car, I will use the car from home and park at Bayside[14] and use the bus"*

One respondent interviewed had traded up from using minibus taxis to metered taxis since moving into Riverside Mews, one of the complexes. This was seen as an improvement in terms of comfort, with "no one squeezing" and the vehicles not "messy" and "overloaded". Private car was seen as the preferred mode by this respondent who had previously been able to travel in a sister's car and was planning to move to the United Kingdom where she anticipated being able to get around in a family member's car. Another respondent highlighted the stress of using minibus taxis as one did not know if a minibus taxi would actually arrive, particularly on Sundays.

Several respondents aspired to acquire a car, which was seen as more convenient. For some this was a very obvious aspiration that did not require a lot of explanation, with the advantages of having a car expressed as patently self-evident. As a Nigerian engineer resident in one of the complexes put it:

[14] 'Bayside' is the shopping mall very close to the MyCiTi Table View station. The station too is often referred to as 'Bayside'.

"I prefer the car because of the places I need to go. If I use MyCiTi or these small buses (minibus taxis) I cannot get exactly to the place I am going. I still have to take a walk. (With a car) anytime I feel like, I can go out and if it's raining you are not going to struggle."

Security was cited as a reason to change transport modes, with a woman respondent mentioning bag-snatching at MyCiTi kerbside stops and concern about personal security, particularly at night.

One respondent had moved from Cape Town's southern suburbs to Parklands and found that accessing the shops was more difficult as the distances were further. She made use of both public and private transport stating that the major convenience of now having a car was being able to drive her children to school as well as the convenience and lack of waiting associated with being able to use a car. She noted that:

"It's a little bit distant from here to the shops. We are far from the shops. If I need milk or bread there is no shop I can walk to. To go to the Pick n Pay and Checkers, I need a car."

A public park very close to the IHS developments. Many residents find the area to be quiet and relaxing.

In general the area, was perceived to be very quiet, peaceful and the complex safe and secure. "Quiet" was the main adjective used to describe the complexes and seemed to imply as well a strong feeling of safety and security. Other positive attributes were the presence of friends in the area, liking the area and that the complexes are clean and well-maintained. One respondent said she "loved it" as it was a change from her previous neighbourhood. She found the diversity of residents challenging, but in a positive way. She also appreciated the "energy and zeal" of fellow residents, many of whom are migrants from other

African countries, who she found to be “focused and determined”. She summed up what living in the area meant for her:

> *“This place is a place that has challenged me. I’ve met different people, how they live, and for me it was a challenge, not like the southern suburbs. It’s a very interesting space”.*

While the overwhelming sentiment was positive two of the respondents did not like the area, one expressing the view that there were too many foreigners. The proximity to the low-income township of Dunoon was also cited as a negative feature associated with crime by one resident.

4.4.5 Walkability

The walkability of the area is not ideal. The complexes are not located in walking distance of a diversity of destinations such as shops, public services, places of worship and leisure activities. In addition the quality of the sidewalks is mixed. There are not always sidewalks and pavements, thus encouraging pedestrians to walk in the streets, although given the newness of the part of Parklands in which the IHS developments are located, with an abundance of vacant land nearby, traffic volumes are low in the off peak, making walking on the roadway fairly safe. In the long term however better pedestrian infrastructure would contribute to both the quality of community life and the ability of public transport captive residents to access MyCiTi infrastructure with greater ease.

4.4.6 Cycling

Dedicated cycling infrastructure on Blaauwberg Raod, Table View, developed as part of the MyCiTi network. Photo Rodger Bosch

There are no dedicated cycle paths through Parklands, although the area borders the cycle paths on dedicated infrastructure created as part of the MyCiTi system on Blaauwberg Road and the R27 between central Cape Town and Table View station and on to Sunningdale station. The availability of this infrastructure suggests that more cycling could be encouraged in this flat area.

4.4.7 Insights from IHS developments

The IHS developments meet some of the criteria for transit-oriented development, although residents do not benefit from the ready availability of the range of amenities that are available on foot to residents of central Cape Town and Wynberg.

Going back to the definitions of transit-oriented development the key features include mixed-use development; development that is close to and well-served by public transport; and development that is conducive to making use of public transport.

The literature review noted that less universally subscribed to in the definitions are several other features including compactness, a pedestrian and cycle-friendly environment, public and civic spaces near to stations and stations as community hubs. These features are somewhat watered down in the area of Parklands where the developments are located, although the area continues to be developed with the possibility that a greater diversity of land uses could still be achieved.

The MyCiTi service in Parklands fits with Renne's definition of bus TOD, and in this respect is an important case study for South Africa, as the combination of a reliable, scheduled service, with good frequencies in the peak and after hours services with good, affordable accommodation meets a significant need in the city as a whole. Small improvements to pedestrian infrastructure – which is of a good quality but provides incomplete coverage, could contribute further to making this a "pedestrian pocket" as set out in Calthorpe's vision. The density of the area is at a human-scale with much of the area comprising three storey walkups set on generously proportioned plots which accommodate open parking and play areas. If there were less requirement for cars on the part of this community in the future, the parking areas could easily be repurposed or used as communal open space.

An observation made by the representative of IHS was that many of the private vehicles parked on site did not appear to be in service and several appeared to be experiencing maintenance problems. This could imply that for this market segment cars are not really affordable, but in the absence of more regular, scheduled public transport to a diversity of destinations cars would continue to be viewed as a desirable commodity. With high parking ratios in the complexes, of at least one parking bay per unit, there was also available space for out-of-service vehicles to be accommodated at no out-of-pocket cost to tenants or the complex.

Although IHS's Parklands complexes and other developments cater to the gap market, it could be argued that they illustrate how critical private transport remains in many areas of South Africa to cementing a household's place in the emerging middle class. For many of the residents having access to a private vehicle, even if it was used infrequently provided a degree of autonomy that meant that they were not subject entirely to the vagaries of the public transport system.

4.5 Drommedaris, Brooklyn

4.5.1 The development and its context

Drommedaris is one of the flagship social housing developments of Communicare, an organisation which describes itself as the oldest non-profit social housing company in Cape Town. Communicare was established as the Citizens Housing League Utility Company in 1929 and was renamed Communicare in 1990. The organisation has four internal profit centres and the income from these generate revenue for social housing and provide internal equity for new social housing developments (Communicare 2015).

Drommedaris opened in 2010 and as a social housing service it provides accommodation and a range of services for households earning less than R7 500 per month. In the Drommedaris model 70% of tenants earn up to R7 500, while the remaining 30% earn below R3 000. Communicare is currently advocating to

national government that the income brackets for social housing increase to household income of between R10 000 to R12 500 and R5 500.

Social housing is determined based on norms set by national government and in order to qualify for national grant funding social housing developments can only be located in designated “restructuring zones” which are gazetted by the national Minister of Human Settlements in consultation with local and provincial government. This is set out in the Social Housing Act. Criteria for restructuring zones include that they should be well-located in areas with access to economic and social amenities. Areas like Khayelitsha in Cape Town, are deemed too far to from these amenities to fulfil restructuring zone criteria.

Sectional title homes sold for the gap market as part of the Drommedaris development. Photo: SA Property News

The Drommedaris development caters to a range of needs with social housing, some affordable housing and accommodation for senior citizens. It has 219 rental units and the development included 20 free-standing housing units which were sold, aimed at the gap market. They sold quickly priced at R450 000 in 2014.

Drommedaris and a portion of Koeberg Road with empty parking bays in the foreground.

When it comes to proximity to public transport Communicare views the rail service in Cape Town as unreliable, with land located in the vicinity of stations not yet offering the kind of value proposition that would make social housing, as part of a transport-oriented development, especially attractive. So while land is the "treasure" that drives a good social housing development, its location in the vicinity of rail services is not seen as particularly important. The choice of Koeberg Road in Brooklyn for the location of Drommedaris was viewed by the Communicare prior to the development as

> *"an ideal location. There is excellent existing transport infrastructure and amenities close by which include hospitals, schools and libraries. All of which meet the Government's criteria for quality social housing".*

said Communicare Chairman Herman Fourie on the occasion of the development's sod turning in November 2009 (Communicare 2010).

4.5.2 Local features of transit-oriented development

Drommedaris is in Brooklyn on Koeberg Road, an area that forms part of a restructuring zone, is close to the industrial area of Paarden Eiland and Milnerton and is not far from the historic Cape Town city centre and central business district. Transport services in the area include minibus taxis, Golden Arrow Bus Service (the established subsidised bus service) and MyCiTi. Drommedaris is close to the Zoar Vlei MyCiTi

station on the dedicated trunk route between central Cape Town and Table View and more recently My-CiTi, in April 2016 began providing a service along Koeberg Road to the city centre via Maitland and Salt River.

The surrounding area includes many other social housing complexes managed by the City of Cape Town and Communicare as well as single residential housing catering to the affordable housing market and accommodation for the elderly. The retail offerings in walking distance comprise mainly small and informal shops with few national tenants, but the proximity to Century City was mentioned by residents interviewed as a good retail facility together with other public facilities that include a library, clinic and the Brooklyn Chest Hospital. Schools nearby include Holy Cross Convent, in walking distance, and a number of schools in nearby Maitland and Milnerton.

The area also benefits from its proximity to popular beaches including Lagoon Beach with its promenade, lagoon, safe swimming area and view of Table Mountain. This is a well-managed public open space and nature area. Residents of Drommedaris mentioned access to the beach as a feature contributing to the good quality of life in the area, their personal wellbeing and lifestyle.

4.5.3 Parking

In the process of obtaining the necessary permissions from the local authority for the development of Drommedaris to go ahead, parking standards became an issue of debate between the City of Cape Town as the planning authority and Communicare, with the City objecting to reduced parking ratios as set out in its correspondence with the developer (see annexure C). This was not the only complexity in acquiring the requisite approvals for the development, a process which took four and a half years, and included objections to the environmental impact assessment. In correspondence with Communicare regarding the development, the City's Director: Transport set out the parking requirement as:

- "1 bay per unit for low income dwelling houses
- 2 bays per unit for medium income residential houses (possibly tandem garages required due to limited street frontage requiring at least 9,0m between driveways for on-street visitor parking)
- 1,75 bays per unit plus 0,25 bays per unit for visitors for medium income group dwelling,
- 1 bay per unit plus 0,25 bays per unit for visitors for low income group dwelling,
- 1 bay per 2 rooms for a medium income old age home, and
- 1 bay per 4 rooms for a low income old age home."

The City set the parking standard at approximately 1.25 bays per unit and this was developed in the complex. In other words the City applied a parking standard comparable with that required by the Cape Town Zoning Scheme Regulations designation of areas as "PT1". PT1 are areas within the zoning scheme "where Council considers the provision of public transport inadequate or where the use of motor vehicles is limited" (City of Cape Town 2012: 108).

The majority of the bays are unutilized and Communicare is of the view that a parking standard of 0.3 to 0.5 bays per unit is more appropriate for a social housing development where by definition the household income of families that qualify for social housing is capped at a level that suggests owning a car would be unaffordable.

For Communicare, parking ratios can "make or break" a development, says Gavin Wiseman, the Property Development Manager for Communicare and are seen as a one of the biggest factors in determining

whether a “project will fly”. Parking is a “deal breaker of the highest proportions, maybe more than any other issue – it is fundamental.” For social housing developments the insistence on high parking ratios can render a project unviable, or it can result in a reduced number of units being built as a trade-off emerges between the provision of additional housing units or meeting the parking standards required by the planning authority. As the setting of affordable rentals is central to sustainable social housing the additional costs of parking requirements have the potential to put more strain on the tenant.[15]

The financial model for a viable social housing facility means that the higher costs associated with structured or basement parking is not affordable, which in turn requires that parking must be accommodated in the open space available to the development. In the case of Drommedaris visitor parking was provided on the public street by the developer and the two, three and four storey walkups that make up the social housing component of Drommedaris have been designed with parking at their centre, fundamentally informing the design. From an urban design perspective the development approach was to try and avoid having “expanses of blacktop”, by breaking this up with plantings or cobble stones, but a large proportion of the open space within the complex is shaped by the need to meet the parking requirement. [16]

[15] Interview with Gavin Wiseman, Communicare.

[16] This problem has been experienced with regard to other social housing developments by Communicare. A social housing development in Belhar, Cape Town of 630 units on a large erf could have accommodated more units if the parking ratio of 1.25 parking bays per unit had been reduced.

The Drommedaris complex with one of its many parking areas. This central courtyard is devoted to parking.

From a social housing perspective the view of Communicare is that the stance of the planning authority is not one of "let's try and make things work". Instead the process of achieving development approvals "is always a hang of a fight". The correspondence from the City regarding the findings of the traffic impact assessment carried out for the development does provide some insight into how the broad discretion available to officials in the approvals process can place time-consuming and expensive obstacles in the path of a development which is attempting to address a key challenge that faces the city and citizens – the need to provide affordable and well-located housing. A culture in which officials and social housing developers could work more closely together to achieve mutually beneficial objectives would be desirable from the developer perspective.

4.5.4 Behaviour

The residents interviewed all used public transport, including the only one who owned a private car. All five interviewees were employed in the formal economy and travelled to different areas for work namely Groote Schuur Hospital in Observatory, neighbouring Milnerton, Dunoon, Montague Gardens and Paarden Eiland, the neighbouring industrial area. The diversity of destinations underscores the extent to which employment opportunities in the manufacturing and services sector are scattered across the metropole, with implications for policy and city development.

In addition to making use of public transport the residents interviewed also walked and found this to be enjoyable, safe and contributed to maintaining their health, fitness and wellbeing. The resident with a car who worked in neighbouring Milnerton and used her car, public transport and walking to get around put it like this:

> *"I am a sales rep and if it is a nice day I will catch MyCiTi in the morning and if it's a nice day walk home at the end of the day. I definitely feel safe to walk."*

She had moved to Drommedaris mainly for its proximity to her workplace in Milnerton, observing that it was closer to work, which was an eight-minute drive by car and a 10- to 12-minute trip using MyCiTi or a minibus taxi.

The recent advent of MyCiTi, with a suburban type bus service in the area was also seen positively providing a leisure opportunity in the off peak:

> *"… when I get together with friends we use the MyCiTi. It is so convenient not to have to worry about driving and you can just relax in the bus."*

For the resident who worked at Groote Schuur Hospital the move to Drommedaris had complicated her travel arrangements. From previously being able to walk to work when she lived in student accommodation near to the hospital, there was no direct service to Observatory which meant that she travelled:

> *"Sometimes by bus (GABS) and sometimes by taxi to town, then changing to another bus or taxi to Groote Schuur. This takes about an hour depending on the waiting time for each bus".*

The poor connectivity between modes for this trip estimated at 5,4km by car, and the lack of a direct service, meant that this resident aspired to own a car. She also experienced the buses as being uncomfortably full in the peak. Other than the inconvenience of the work commute, this resident's experience of Drommedaris was that it was conveniently located:

> *"Everything is central. I can walk to Shoprite or take a taxi to Centre Point. Opposite here are the clinic and the library"*

The third resident interviewed had a positive experience when it came to her daily commute from Drommedaris to work. Having moved from Mitchells Plain to Drommedaris in 2012, she now had a 20-minute walk to work in Paarden Eiland, near to the MyCiTi Section station. This contrasted with her previous daily commute on a Golden Arrow bus in which:

> *"The bus was late most of the time. If it rained there was no bus – it did not come."*

In contrast her transport experience and the location of the Drommedaris complex was much more positive:

> *"It is quiet and you can walk in the area until 8 or 9 at night. I haven't experienced anything bad here. There is transport on my doorstep – MyCiTi which is very nice, you can come back from the Waterfront at 9pm, or catch the bus to town. Sometimes I catch MyCiTi to Woodbridge from work, then walk, it's actually cheap, sometimes it*

costs no points. If there is heavy rain I can catch the bus from one station to the next… I am very happy with the way I am travelling"

The fourth resident had moved to Drommedaris in 2010 from nearby Maitland. She worked in Dunoon, and was a member of a lift club with a colleague who owned a car and otherwise made use of public transport. When asked whether she had changed her mode of transport and what had encouraged her to change she explained:

"I changed from taxis to the lift club (because of) the way taxis are driving also time management. Also it is easier money-wise to contribute once and to budget."

Her comments underscore the significance of travel costs for this segment of the market and the relevance of mechanisms and fare products that can assist in household financial management.

The last interviewee had gotten rid of his car, as "the car had problems". He had no desire to obtain another car remarking that:

"I am happy with my current mode of transport … Everything is close. I work in Montague Gardens and it takes five or 10 minutes to get to work. More if I use MyCiTi as you have to change at Omuramba (MyCiTi station) and you can wait long for the next bus. We shop at Century City."

4.5.5 Walkability

Koeberg Road is a busy arterial and forms part of the M5, the section on which Drommedaris is located is a dual carriage way with a median island. The area includes paved sidewalks but the scale of the road infrastructure is considerable and it is only in the suburban roads behind the M5/Koeberg Road that the built environment exhibits the fine-grained, human-scale development that is conducive to a comfortable and interesting walking experience.

In spite of the somewhat intimidating nature of Koeberg Road, the residents interviewed experienced the area as a whole as walkable and safe, and as in the Parklands case residents experienced the area as "quiet". Some of the residents interviewed walked as far as Century City and the Shoprite in Milnerton, an estimated 40-minute walk.

Two residents walked to work, one female resident very regularly seeing walking as part of a healthy lifestyle:

"I walk to Paarden Eiland. It takes 20 minutes and it works very well. We are boot camping!"

4.5.6 Cycling

There is no dedicated infrastructure for cycling on Koeberg Road or in the surrounding area, although it is a short distance to the dedicated cycle path that forms part of the MyCiTi trunk route between central Cape Town and Table View, and which can be accessed at the precinct of the Zoarvlei MyCiTi station. Like the Parklands area the area is flat lending itself to more recreational and utility cycling than is in evidence. None of the residents interviewed were cyclists and there was no evidence of cycling in the complex such as the availability bicycle racks for secure storage.

4.5.7 Insights from Drommedaris

For all of the residents interviewed except one the move to Drommedaris between the years 2010 and 2012 had reduced their travel times and improved their travelling experience. One resident was able to get rid of his car, which had required ongoing maintenance, as the public transport to his place of work in Montague Gardens was on the whole good.

The recent addition of the MyCiTi service to the basket of public transport services available in the area was viewed positively by all interviewees. It was seen as more cost effective than the Golden Arrow Bus Service as the card-based MyCiTi fare system is based on the purchase of value that does not become redundant in a given period, in contrast with Golden Arrow's clip cards that are only valid for a calendar month.

While many of the residents interviewed made use of paratransit services, negative sentiments about the minibus taxi industry were expressed. The following observations were made in this regard:

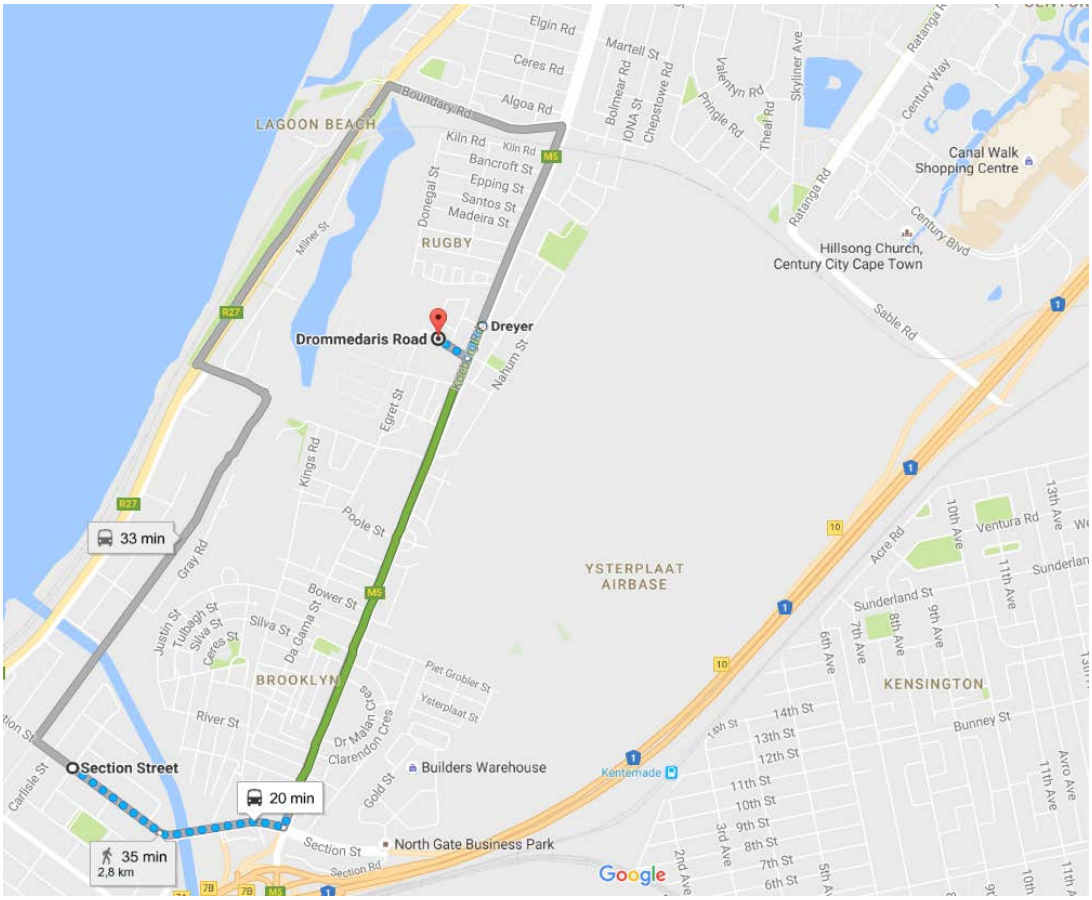
> *"On taxis they sometimes change the destination. Customer service is not good"* and
>
> *"I experienced problems especially with taxis where there were sometimes more than four people for one seat"*

Paratransit driver behaviour was also seen as being poor. At the same time the availability of minibus taxis was taken for granted and their availability for trips to the shops and back contributes to the utility of the area for public transport captive residents, who comprise the vast majority of Drommedaris's tenants.

Possibly because of the ready availability of a range of transport options the desire for a personal vehicle was only expressed by one of those interviewed and there was a good level of satisfaction with most of the transport options available, including those available to the children of those interviewed.

Overall the Drommedaris development demonstrates well how social housing can form part of and benefit from transit-oriented development. Although TOD is only being experienced at a modest scale in this part of the city, the optimistic views of the residents interviewed about their quality of life and the availability of transport, leisure activities, shops and public and health services is testament to the need to ensure that social housing is well located within South Africa's cities, and scaled up.

Empty parking bays at Communicare's Drommedaris development.



Drommedaris (at the red flag) is in a coastal suburb located in walking distance of Milnerton and the light industrial area of Paarden Eiland, close to Century City and Canal Walk. The MyCiTi services in the area are shown in green and grey.

5 Where policy meets practice: conclusions from the literature and case studies

This minor dissertation has reviewed the international literature relevant to transit-oriented development in South Africa and identified four residential housing developments located in areas which demonstrate nascent transit-oriented development. The interviews with developers and residents illuminate both the challenges and the opportunities facing the implementation of successful transit-oriented development in different parts of Cape Town. This section of the minor dissertation highlights key findings including the obstacles that stand in the way of achieving successful transit-oriented development across the diverse development contexts in which each of the case studies was conducted.

5.1 Defining transit-oriented development for the South African context

The literature review noted the loose definition of the term "transit-oriented development". The imprecision around the term seems of possible concern when viewed in the South African context where it is being appropriated into policy discourse without a very clear idea of what the term might mean in practice.

Related is the imprecise definition of what constitutes "transit" within transit-oriented development. The international definitions talk about "mass transit" and "major transit stops" — implying volume. But the definition does not quantify the carrying capacity of the mass transit, or its frequency or coverage in order to qualify for the TOD label. In addition it does not address the quality standards it should meet, including its reliability and safety, which will inevitably influence the extent to which a vision of transit-oriented development can be achieved, and in which the nature of the transit offering is able to attract development and shape behaviour change.

In spite of this, all of the case studies investigated areas that include a spectrum of the features and public transport services associated with transit-orientated development, and in the central city, Wynberg and Brooklyn there were enough features of TOD present to impact on lifestyles, in some instances shifting and locking in more sustainable travel behaviours on the part of residents to walk more and use public transport more and drive their cars less. In many of the areas paratransit services play an important role and deserve greater attention in the development of South African TOD.

5.2 Nascent transit-oriented development in Cape Town

Of the four case studies the ones in Wynberg, Brooklyn and the central city exhibit the most TOD-type characteristics. Wynberg and the central city are both dense, mixed-use areas close to major transit stops and on the rail system – Cape Town's only mass transit system. Both Wynberg and central Cape Town meet Cervero's requirement for mixed and balanced land use, which in turn contributes to mixed and balanced transit use (which helps transit achieve viability by increasing the likelihood of it being utilised outside of the peaks).

There is however a question about whether these areas are "oriented" to transit, or whether they are better described by the term transit adjacent development (TAD). As the literature points out transit adjacent development is development that is near to public transport facilities but which "fails to capitalize upon this proximity" to promote public transport use. Transit adjacent development is not functionally

connected with public transport through land use, through the means of accessing a station or the design of the site. Also missing from transit adjacent developments are pedestrian pathways and bicycle access routes. Transit adjacent development is a fair description of both the central city and its relationship with its rail system, as well as the major scheduled bus interchange for Golden Arrow buses and the station deck above Cape Town station which acts as a major interchange for minibus taxis. In many respects these facilities are not oriented to the mixed-use developments that abut and surround them. This is evident in the way-finding system and public signage, the quality of the pedestrian environment in the vicinity of these large public transport interchanges, the amenities and the design of the respective sites, and the facilities available to commuters at or close to them. Since the redevelopment of Cape Town station ahead of the Soccer World Cup in 2010 there have been improvements to the Cape Town station precinct and its integration with the surrounding city, but the very busy Strand Street which runs alongside the station and the major pedestrian desire lines to the station, such as Plein Street and Lower Plein are not very well-managed urban spaces with pedestrians competing with informal traders for space on the sidewalk, particularly in the peak. MyCiTi, which is a more recent offering in Cape Town, with newer infrastructure does better with clear wayfinding and signage and quality pedestrian infrastructure in the vicinity of its stations, achieving a far better integration and orientation with the surrounding destinations and developments.

With respect to the paratransit sector and transit-oriented development it is notable that of all the public transport infrastructure in central Cape Town the Station Deck, which has evolved as one of the city's major minibus taxi interchanges is least oriented to the city and its amenities, and vice versa. Despite the huge volume of commuters that make their way into the central city using this mode each day, the poor orientation of this infrastructure within the city echoes the marginal role that the minibus taxi industry and its patrons have occupied in city planning processes historically.

A South African TOD must though take into account this mode, which nationally is responsible for transporting the majority of commuters. The minibus taxi industry provides a flexible and responsive service in all of the case study areas (bar Parklands where the legal portions of the industry have been absorbed into the vehicle operating companies that supply MyCiTi services).

A similar observation about the orientation of train, bus and minibus taxi industry into the developments that make up Wynberg can be made, and was discussed in the case study and commented on by the developer.

The challenge then is to shift from transit-adjacent development to transit-oriented development.

Pedestrians and traders jostle for space on the sidewalk of Lower Plein, corner Darling Street, Cape Town, one of the main pedestrian routes from Cape Town station into the central business district.

5.3 Public transport service levels and headways

Essential to transit-oriented development is the existence of transit or public transport that provides a sufficiently satisfactory service offering that the very concept has meaning (Currie 2006: 9). The literature review revealed that there is not a single, agreed to definition of transit-oriented development, but a common theme in the spectrum of definitions underscores that transit-oriented development is always close to and well-served by public transport (Cervero 2002: 5), this has also been described as "high-frequency transit" (Bishop 2015: 2). What then makes an area "well served" by public transport?

Calthorpe says that the requirements of a "humane and efficient" transport system should include dedicated rights-of-way, infrequent station stops (with one mile minimums) and frequent headways of at least 15 minute intervals. "Most importantly" he adds, "destinations need to be varied and walkable so that riders are not stranded when they arrive" (Calthorpe 1993: 28).

The City of Seattle requires that new developments need not provide parking if they are in a ¼ mile (400m) walk of a stop with frequent transit service. They define frequency as a minimum 15 minute headway for 12 hours, six days a week and at least 30 minute headways for 18 hours of every day (2015: 1).

For Cervero the availability of public transport services to housing in the vicinity of stations creates an indifference zone in which those living in the vicinity of transit and its half mile radius (800m) will use

public transport regardless of other considerations (2006: 9). This is the ridership bonus that he states is partly due to residential self-selection.

While the four case studies selected for this minor dissertation are relatively, albeit to different degrees, well-served by formal public transport as well as paratransit services, there were indications from some of the interviewees that limitations in the frequency and availability of formal services mitigated against public transport use.

Also Cervero's indifference zone is not always in evidence, with some of the interviewees who live in the indifference zone still electing to drive rather than use transit. A number of issues arise in a discussion of the frequency and reliability of some of the scheduled public transport services servicing these areas.

The rail service has published timetables which are not adhered to. This was observed by many of the interviewees at Grand Central in Wynberg, who fall into the indifference zone as identified by Cervero. Additionally if the City of Seattle's definition of frequency is applied, the timetables also fall short of the minimum 15 minute headway for 12 hours, six days a week and at least 30 minute headways for 18 hours of every day.

As one of the interviewees observed regarding the southern suburbs line, the service does not start early enough for workers doing shift work, and starting before 05:00 to make use of the rail service. This was also observed as impacting on workers in the hospitality industry who often work late in restaurants and hotels. The limited services over weekends also fall short of this definition of frequency with the Cape Town – Simonstown service on Saturdays providing a train at frequencies of between 15 minutes and 45 minutes while on Sundays there are only 10 trains operating between 05:50 and 19:42. One of the interviewees in central Cape Town also elected to drive to work outside of the central city, despite being located in the "indifference zone". This related to a perception on the part of some middle-class commuters of the rail service as unsafe, and the frequencies for MyCiTi buses being insufficient.

In addition residents falling within the central city "indifference zone", did not in any way view the rail service as a way to travel outside of the central city over weekends or after hours. Most of the interviewees in the central city worked in walking distance of their places of work, so did not need to make use of transit for their commutes, but their presence in the "indifference zone" did not orient them in the least towards making use of rail service for leisure, although one interviewee indicated that in theory he would like to make use of it.

5.4 Rail in transit-oriented development

The role of rail in transit-oriented development for South Africa has policy implications for both national and local government.

A key issue is the lack of investment in the rail system, which in South Africa is funded and managed by national government. At the same time the health of the rail system impacts profoundly on the way the city functions at the local level. This can mitigate against the possibility of successful transit-oriented development. As in many other contexts internationally (Edghill *et al* 2009: 139) large scale improvements to rail infrastructure, such as the purchase of additional rolling stock, the upgrading of signaling systems, investment in human resources including security and the maintenance and securing of the rail reserve are all outside of the scope of the City of Cape Town as the municipality to achieve. The inability of city government to substantially change this reality acts as an objective brake on the promotion of transit-

oriented development in Cape Town. There is currently no firm indication from national government that this governance arrangement will change, and the current investment in rail infrastructure by the Passenger Rail Agency of South Africa (PRASA) has been beset by corruption and delays. From parts of national government there has been some indication that policy reform could be on the agenda. Most recently the Integrated Urban Development Framework, a national government policy document of particular relevance for metropolitan municipalities notes that metropolitan municipalities "need an appropriate functional authority to respond to the demands of urbanisation" (2016: 84). The framework detailed the short and medium term actions required as,

> *"To support the implementation of the NLTA (National Land Transport Act), national guidelines covering functional consolidation should be developed, and (where appropriate) national government should support and accelerate the devolution of functions. In the meanwhile, cities need to develop plans on how to organise transport functions and create transport authorities, with the capacity to implement and operate the planned integrated public transport networks (IPTNs). National programmes should be introduced to support the development of transport-related human resource capacity and institutional learning in cities. PRASA and the relevant metropolitan municipalities, with support from national government, need to agree on mechanisms to strengthen PRASA's accountability to metropolitan municipalities as the transport planning authorities" (2016: 41).*

It is self-evident that a well-functioning rail system that is attractive to both captive and choice public transport users would act as a stimulus to development and contribute to the achievement of greater urban efficiency. The suboptimal performance of the mode will no doubt impact on the potential for transit-oriented development in the city to shift behaviour and encourage more development in the vicinity of stations. Addressing this is the highest priority for successful transit-oriented development in Cape Town with the potential to change transport behaviour and unlock new appropriate development at a scale that bus-related investment is unlikely ever to achieve.

5.5 Amenities for transit-oriented development

Another factor for consideration in achieving the ambitious vision of transit-oriented development in Cape Town is the extent to which the nascent transit-oriented development nodes identified are able to provide the menu of urban services needed for quality of life. This is the mixed and balanced land use referred to by Cervero and others and required for functional communities and also contributing to viable transit services with regular seat renewal. The literature does not enumerate what the menu of mixed and balanced uses should be, but drawing on the observations made by the individuals interviewed, in the South African context they should at least include the following:

Health services

- Hospital
- Pharmacy
- Clinic

Amenities that contribute to wellbeing

- Park

- Nature area or beach
- Places of worship

Education

- Creche
- Pre school
- Primary school
- High school
- University or college

Food, nutrition, daily supplies

- Corner shop
- Range of shopping options

Financial services

- Bank
- ATM

Public services

- South African Police Service
- Post office
- Library
- Public transport services
- Home Affairs office

Entertainment

- Sports facility
- Museum / art gallery
- Restaurants, bars and coffee shops
- Movie houses and video shops

For residents living in the nascent transit-oriented developments that were discussed in the case studies the extent to which “mixed and balanced” land use is being achieved differs between the areas. Wynberg and central Cape Town, the two oldest nodes fare best, with the majority of the services identified above easily accessible on foot. Brooklyn has a lesser menu of these available on foot, with more available via a short trip in transit, paratransit, private car, taxi or by bicycle. Parklands is primarily residential, albeit with newer stock and a greater presence of national retailers and developed shopping centres. Most of these services would have to be accessed using transport.

5.6 Pedestrians in city planning

Starting with Calthorpe and progressing through all of the literature on transit-oriented development is a strong emphasis on the need for good non-motorised transport infrastructure, and for the environment to be conducive to walking and cycling.

In central Cape Town and Wynberg walking is a means of getting to work, as well as a means to access transit or to get to the leisure and other services available in the area. In these areas many things are easily accessed in daylight hours a short walk away. Personal security for pedestrians was not seen as an issue, and in this respect it is notable that the portions of Wynberg and the central city where the case studies are located both benefit from being part of improvement districts or special rating areas in which additional levies are paid by property owners and then administered according to locally determined priorities. This provides for additional municipal and urban management services targeting especially 'crime and grime', but also responding to other urban management challenges that might otherwise impact negatively on the quality of the pedestrian experience. This is an important aspect of successful TOD as well managed, clean and safe urban environments will encourage more people to walk, with personal safety top of mind for many South African residents.

Calthorpe's observation that the absence of pedestrians "in our thinking and planning is a fundamental source of failure in our new developments" (1993: 17) is extremely relevant in the light of the case studies and the development of a form of transit-oriented development that can work in the South African context and is achievable in the context of limited resources.

It is instructive that while parking and vehicular access became a source of much debate between developers and the City of Cape Town as the planning authority, as evidenced in the cases of Grand Central and Drommedaris, and in the correspondence from the City with regard to Drommedaris (see Appendix C) pedestrian access and infrastructure is not an issue. Similarly the presence or absence of cycling infrastructure does not feature in the world of traffic impact assessments and statements. As the planning authority the City of Cape Town underestimates the role that good pedestrian access has in meeting the dual goals of inclusion and livability.

5.7 Cycling

The cycling infrastructure and signage in all of the case study areas is minimal, and where cycle paths do exist they are not part of a comprehensive network of dedicated cycle paths. Parklands and Brooklyn fare better when it comes to the potential for more cycling as they are less densely congested. In both areas there is some dedicated cycling infrastructure forming part of the MyCiTi network, as well as provision for cyclists to travel with their bikes on MyCiTi buses.

While there is a modest uptick in the number of cyclists in all of these parts of Cape Town, there is nothing approaching a strong cycling culture, with isolated infrastructure for cyclists which does not collectively meet the needs of a cycling network. Utility cycling is not a robust part of Cape Town's urban culture and a bit more thought regarding its role in future transit-oriented development is required, particularly as the City has indicated that it would like to increase utility cycling from the current estimated 1% of commuter journeys to 8% (City of Cape Town 2016). All of the areas studied are relatively flat suggesting that this mode could become more attractive for individuals, while meeting a collective need for a cleaner mode of transport that occupies less road space.

5.8 Parking

The literature on parking points out that parking policy and practice is an area that has the potential to negatively impact on the quality of urban life and the financial sustainability of new developments. At the same time parking requirements exist in a dynamic relationship with the availability, or not, of good public

transport. At times the approach to parking is in response to the likelihood that private transport will have to compensate for public transport that is inadequate or not fit for purpose.

The case studies show however that parking policy is at times a blunt instrument. In the cases of Drommedaris and Grand Central the parking standards applied by the planning authority in terms of the Cape Town Zoning Scheme regulations added significantly to the cost of the developments overall and contributed to considerable delays in the Drommedaris social housing development getting underway. This in spite of the well-documented need for the development of social housing in Cape Town, and the urgency of this in the light of historical injustice and inequality.

In addition the high parking ratios that were applied to these two developments impacted on their design – with the open space available largely given over to parking. At the conclusion of the development process for each of these buildings and upon occupation by new tenants and owners it was immediately evident that parking supply exceeded demand by a considerable measure.

Both the developers of Drommedaris and Grand Central believed that this had been costly and wasteful for the developments with the provision of excessive "terminal capacity" for cars in the context of low-income communities largely dependent on public transport and paratransit services. As the Institute for Affordable Housing has pointed out the financial burden of unnecessary parking provision is borne by residents, and is regressive as low-income households spend a larger proportion of their income on housing. In Seattle the City has noted that there is a trade-off between lower costs for building housing or investing in the "storage of automobiles" (City of Seattle 2015: 1) noting the importance of preserving and enhancing the ability of people of all economic means to be able to live in Seattle. The importance of parking standards in low-income housing is emphasised by Communicare's Property Development Manager, who believes that they can "make or break" a development more than any other issue in the development process.

The need for a more nuanced approach to parking standards is evidenced through these case studies which suggest that South African TOD needs to proceed with care when it comes to parking. When residential developments are located in an indifference zone it should be possible to reduce parking standards by a much greater proportion than is provided for in the Cape Town Zoning Scheme Regulations, particularly when the development targets a segment of the community in which car ownership levels are low. In a growing number of cities internationally the approach now is to deregulate parking standards.

The other contemporary trend that is disrupting the need for voluminous parking is the rise of e-hailing, which has also quickly garnered a large market amongst the middle class in Cape Town. E-hailing services make an important contribution in TOD settings such as central Cape Town, as they provide an efficient and cost-effective way of travelling short distances, which in a private car would involve navigating congestion and paying parking fees. The costs and benefits involved in exchanging this for an e-hailing service is very evident and is likely over time to contribute to the need for less parking "terminal capacity". For residents of central Cape Town, the ready availability of e-hailing has become an important part of their transport decision-making, contributing directly to the decision of interviewees to no longer own a private car, or reduce the number of cars per household.

The Church Square model in which the development's parking is not located within Church Square, is a model that is being recognised internationally for its utility. This 'park and walk' approach can contribute

to more efficient use of available parking resources when residents are able to make a mindset shift which is needed to accept that structured parking within a given building is not essential.

Finally it is important as well to focus on the relationship between parking and the creation of an inclusive city. By insisting on high parking ratios, the City of Cape Town as the planning authority can also stand in the way of inclusion. The Drommedaris case study illustrates the extremely negative role that the insistence on high parking ratios played in the roll out of this much-needed social housing facility. The 4.5 years that it took to achieve development approvals represents a significant amount of time and the opportunity to make a real difference in the services available to low-income families. It flies in the face of the political commitments to being a 'caring and opportunity city', which the political leadership aspire to, and suggests a lack of urgency on the part of officials to meet the needs of poor Capetonians. Although this may only point to a lack of a lack of policy coherence across city silos, it could be indicative of the observation by Boarnet and Crane (2001:116) that the public sector will erect regulatory barriers to transit-oriented development In this case the obstacles to the development also acted as barriers to inclusion.

5.9 Behaviour that supports transit-oriented developments

The literature points out an array of 'carrots and sticks' that support successful transit-oriented development. The habits of people who live or work in TOD settings will also play a role in the success or otherwise of TOD. The people interviewed for the case studies demonstrate gradual shifts in their travel behaviour that had come about when successful features of transit-oriented development encouraged walking and public transport use. These range from the residents of Church Square House who found themselves using their cars less and less, to the residents of Drommedaris who have sufficient public and paratransit on their doorsteps that they do not aspire to car ownership, or in the case of one of the interviewees increasingly take advantage of fine weather days and public transport availability not to drive. The advent of MyCiTi has also provided a good quality transport option for leisure travel, seen as preferable to using a private car.

In Grand Central residents have a somewhat vexed relationship with the rail system. Located as they are in the indifference zone most residents make use of rail where possible, limited only by the service failings of the system itself. In conversations with these residents a direct relationship between car use and aspirations to own a car flowed from the lived experience of a rail system that cannot be relied on.

In Parklands the quality offered by the MyCiTi service is not sufficient to effect a similar commitment to public transport use, given the location of the IHS developments outside of the indifference zone, and in walking distance of a suburban bus stop, not a major transit stop or MyCiTi station. The new infrastructure that is being developed in Parklands has also missed an opportunity to nudge residents toward greater non-motorised transport use by failing to extend the cycle and walking path into the residential areas that surround the major transit hubs of the MyCiTi trunk route on Blaauwberg Road. This possibly flows from the traffic planning process being concerned only with motorised transport. Given the newness of Parklands and the ongoing development of new roads and new apartment buildings there is an opportunity to proactively accommodate pedestrians and cyclists in the provision of new infrastructure.

5.10 Developers and transit-oriented development

The role of developers in TOD is an area deserving of greater consideration. For the most part development in South Africa is undertaken by the private sector and its entrepreneurs. Developers will play a key

role in moving TOD closer to reality. Within this it appears that there is an organic synergy between the goals of transit-oriented development and developers targeting the affordable housing market.

Similarly in dense, mixed-use areas such as the central city there are areas of common interest between the well-managed, mixed-use goals of TOD and developers and their clients in these areas. The ongoing interest in central Cape Town, with compact, mixed-use developments continuing to be developed, suggesting that this is an area where return on investment is guaranteed despite the modest economic growth phase South Africa is in. The literature notes that property market processes are mediators of economic change – both reflecting and shaping it. In Cape Town property developers appear to invest in areas with robust local economies and a range of attractions, areas that already include the key features of TOD. This too will shape TOD, which will not succeed in areas where the state wants development but the private sector is reluctant to go. The opportunity then is for the municipality as the planning authority to work with development applications to ensure that the features of good transit-oriented development are enhanced, and that parking ratios for new developments and pedestrian and cycling infrastructure in the vicinity of new developments contributes to, rather than undermines the attributes of good transit-oriented development. At the same time ensuring that it is not only affluent households that are able to live in Cape Town's prime TOD areas is also an important consideration, which has not really been addressed.

6 Conclusion

This minor dissertation sought to explore the hypothesis that nascent TOD is in evidence in parts of Cape Town and that this is attributable to the actions of different agents. It is partly attributable to the policy shifts on the part of the state, which now encourage density and mixed-use development and partly attributable to developers who have responded to policy shifts and market demand resulting in new medium- to high-density developments which exhibit the characteristics of a nascent TOD. The emergence of a nascent TOD is also partly attributable to the existence of a growing and diverse community of people who are embracing emerging TOD lifestyles.

The dissertation posed the following research questions:

- Are the residents of nascent TOD-type developments patrons of transit services, paratransit services and users of non-motorised transport?
- What are the barriers to making use of public transport and non-motorised transport?
- To what extent do municipal parking and other requirements support or detract from TOD and sustainable development?
- How are public transport services being extended and is urban planning and urban management being used strategically?
- Are the residents of new TOD-type developments changing their travel behaviour?

The case studies draw on a set of nuanced responses and insights provided in the light of real changes that are taking place in all of the areas reviewed. They highlight the dynamic changes that are underway in these parts of Cape Town, where development as well as social and economic shifts within each of these localised communities are palpable.

6.1 Nascent TODs and patronage of public transport and NMT

The case studies show that developments that are oriented to transit and have good NMT facilities, together with the other features of TOD, particularly a mix of land uses and amenities does encourage the use of public transport as well as paratransit and e-hailing services. Walking is also high, but the case studies show that Cape Town's nascent TODs have not yet created the conditions for cycling to become a mode of choice for more than a brave handful of mainly male cyclists.

6.2 Barriers to making use of public transport and NMT

The key barriers to making use of rail, which is Cape Town's major mass transit service is its unreliability and its limited service frequency and operating hours. Perceptions about safety were also a factor. A marked improvement in the rail system would have a very significant impact on development along the rail corridor and would give additional impetus to TOD.

6.3 Parking requirements and TOD

The City of Cape Town's cautious approach to parking reflects the charged nature of this issue. Internationally parking is political with motorists strongly resisting the removal of parking bays by planning authorities. The City has continued to insist on high parking minimums, which suggests that it would like to

avoid conflict over this and is unlikely to use reduced parking availability as a way of incentivizing greater public transport and NMT use and more social inclusion. A consequence of this is the sharp increase in the city's congestion levels, as new dense developments come on stream, in areas that are served by public and paratransit, but retain generous parking provision.

Viewed differently, the insistence on high parking standards in developments that are aimed at low income households and the social housing market, actually places entire developments in jeopardy, by driving up costs and delaying development approvals. As the literature shows, successful TOD does require reduced parking minimums, to support both the affordability of TOD-type development, and to free up land to achieve Calthorpe's vision of walkable areas that enhance quality of life. This impacts directly on efforts to create a more inclusive city.

There is a strong argument for deregulating parking minimums, particularly since developers themselves are better placed than the city to determine the appropriate parking standards for a given development, and deregulation is unlikely to impact negatively on parking availability. Overall the terminal capacity for cars in Cape Town is considerable, with large amounts of parking unused in 24-hour periods. As new technology develops there will likely be new opportunities for the more efficient use of available parking.

6.4 Public sector responses

It is argued that there are nascent forms of TOD emerging in parts of the Cape Town, shaping and being shaped by dynamic changes to the urban form and the attitudes and behaviour of residents of Cape Town, as well as an underlying demand for new developments, reflecting buoyancy in the city economy. It is also argued that the key strands that make up TOD in other contexts have something to offer South Africa, with our unique transport and land use challenges.

The process of laying down South Africa's, sometimes dysfunctional, urban form was an incremental one shaped by our history of colonialism, apartheid and now a democratic state. Reshaping our cities to be more inclusive and sustainable is also proving to be an incremental process, and will likely only be successfully achieved one considered development at a time.

The state, both locally and nationally enables development, creating much of the environment that shapes development decisions. Making South Africa's public transport the best that it can be, with services appropriate to the needs of the economy and people will be its most critical contribution to achieving transit-oriented development. For cities the limited control they have over rail, is a significant stumbling block to extending the benefits of TOD beyond established parts of the city's urban landscape.

City governments also have the potential to proactively shape the pedestrian experience and in large parts of Cape Town enable a shift to utility cycling with the provision of dedicated cycling infrastructure. An important part of the South African landscape too is the resilient minibus taxi industry that continues to adapt to the needs of its customers and the changes that are taking place in the urban form. It is deserving of a place in South African TOD and consideration given to the benefits that might be associated with a form of paratransit-oriented development in parts of the city where appropriate.

6.5 Behaviour change

The case studies shed interesting light on the potential of Capetonians to change their travel behaviour and make more sustainable transport choices contributing to a cleaner environment and a reduction in congestion. Interviewees across the social and economic spectrum exhibited a willingness to walk and use

public transport when it was safe and pleasant to do so. This was seen as having health benefits and contributing to quality of life.

When walking was perceived to be unsafe and public transport unreliable and of a poor quality, private cars were seen as a very good option, and in households that did not have a car, were a source of aspiration. The qualitative nature of the case studies provided insight into how travel behaviour changed incrementally, with quite fundamental changes also possible, and eventually locked in, with the decision for example to sell a car.

In conclusion, viewed from the perspective of the case studies undertaken, TOD lifestyles and developments are taking shape in Cape Town, where a 'density dividend' is being experienced by the individuals and household members whose views informed the case studies. This dividend is in turn passed onto the city as a whole, when individuals make transport choices which do not contribute to pollution and congestion. The evidence suggests that TOD lifestyles also contribute to the health and happiness of the people who live and work in transit-oriented developments, and that the emergence of these nascent communities provides a modest basis from which to achieve more extensive changes that have the added potential of creating diverse and socially-inclusive urban communities.

7 Bibliography

Bassier, A., 2015. *Minibus-taxi Transformation.* Presentation to the UATP Workshop 2015 Best Practice in Public Transport.

Been, V., Brazill, C., Madar, J. and McDonnell, S., 2012. *Searching for the right spot: minimum parking requirements and housing affordability in New York City*. Policy Brief. Furman Center for Real Estate and Urban Policy, New York.

Belzer, D., Autler, G., and Strategic Economics. 2002. *Transit oriented development: Moving from rhetoric to reality*. Washington, DC: Brookings Institution Center on Urban and Metropolitan Policy.

Bishop, Z., 2015. *Transit-oriented development.* Ball State University, Virginia Ball Center for Creative Inquiry.

Boarnet, M.G. and Crane, R., 2001. *Travel by design the influence of urban form on travel*. Oxford University Press.

Calthorpe, P., 1993. *The next American metropolis: Ecology, community, and the American dream*. Princeton Architectural Press.

Carlton, Ian, 2009*. Histories of Transit-Oriented Development: Perspectives on the Development of the TOD* Concept, Working Paper, Institute of Urban and Regional Development, No. 2009, 02.

Carlisle, Robin, 2013. *Official Opening of the Sandown Road* (speech). https://www.western-cape.gov.za/speech/official-opening-sandown-road. Accessed on 1 November 2016.

Cervero, R., 2006. Transit oriented development's ridership bonus: a product of self-selection and public policies. *University of California Transportation Center*.

Cervero, R., 2009. *Public Transport and Sustainable Urbanism: Global Lessons in Transit Oriented Development,* Farnham Ashgate.

Cervero, R., 2013. Mobility and urban form, in UN-Habitat*, Planning and design for sustainable urban mobility: global report on human settlements 2013*, United Nations Human Settlements Programme, Earthscan, Abington.

Cervero, R., Adkins, A. and Sullivan, C., 2010. *Are Suburban TODs Over-Parked?.* Journal of Public Transportation, 13(2).

City of Cape Town, 2013. *Comprehensive Integrated Transport Plan 2013 – 2018*.

City of Cape Town, 2010. *Business Plan Phase 1A of Cape Town's MyCiTi Integrated Rapid Transit System.*

City of Cape Town, 15 March 2016. *Mayoral Committee adopts development strategy to address apartheid spatial planning and transport inefficiencies.* Statement by the City's Mayoral Committee Member: Transport for Cape Town, Councillor Brett Herron.

City of Cape Town, 2012. *City of Cape Town Zoning Scheme Regulations*.

City of Cape Town, 2016. *Transit Oriented Development Strategic Framework*.

City of Seattle, 2015. *Parking Review: Report to Council PLUS Committee*.

Communicare, 2010. *The Drommedaris – Heralding new beginnings* in Let's Talk. Issue 2.

Communicare, 2015. *Annual Report 2015*. http://www.communicare.org.za/downloads/pdf_page/index.html. Accessed on 1 November 2016.

Currie, G., 2006. *Bus transit oriented development—strengths and challenges relative to rail*. Journal of Public Transportation, 9(4).

D'Arcy, E. and Keogh, G., 2002. *The Market Context of Property Development Activity* in (eds) Guy, S. and Hanneberry, J., Development and Developers: Perspectives on Property. Blackwell Science Ltd.

Department of Cooperative Governance and Traditional Affairs, 2016. *Integrated Urban Development Framework.*

eProp Commercial Property News 2, February 2004. *Johannesburg CBD Parking resurges.* http://www.eprop.co.za accessed 7 March 2016.

Edghill, J., A. Kroen and J Scheurer, 2009. Promoting Transit Oriented Development at the Local Level: The Opportunities and Challenges for Local Governments. .in *Transit Oriented Development: Making it Happen.* Ed Curtis,C., Renne J., and Bertolini, L. Ashgate.

Graham, N., *The economic and fiscal costs of inefficient land use patterns in South Africa* power point presentation 24 February 2014.

Handy, S., 2005. Smart growth and the transportation-land use connection: What does the research tell us?. *International Regional Science Review*,*28* (2), pp.146-167.

Hinton, J. and Le Cordeur M., Inside the tallest green building in Africa. http://www.fin24.com/Property-Issue/Multimedia/Inside-the-tallest-green-building-in-Africa-20141001 accessed on 17 July 2016.

JHI media release http://www.sapropertynews.com/jhi-residential-to-manage-parklands-complex-for-ihs/ accessed on 1 November 2016.

Litman, T. A., 2007. Economic Value of Walkability. Victoria Transport Policy Institute.

Lund, H.M., Cervero, R. and Wilson, R.W., 2004. *Travel characteristics of transit-oriented development in California*. publisher not identified.

National Land Transport Act, No. 5 of 2009.

National Planning Commission, 2012. National Development Plan 2030.

Newman, P., 2009. Planning for Transit Oriented Development: Strategic Principles.in *Transit Oriented Development: Making it Happen.* Ed Curtis, C., Renne J., and Bertolini, L. Ashgate.

Niles, J. and Nelson, D., 1999, April. Measuring the Success of Transit-Oriented Development: Retail Market Dynamics and Other Key Determinants. In *APA National Planning Conference. Seattle, WA.* (Vol. 28).

Patrick, M., Manhire, T and Clift, H., 2006 *Background history & trial excavations on Church Square Cape Town.*South African Heritage Resource Agency.

Pucher J. and Buehler R., 2010: *Walking and cycling for healthy cities*, Built Environment, vol 36, no 4.

Randall T. and Baetz B., 2001: *Evaluating pedestrian connectivity for suburban sustainability*, Journal of Urban Planning and Development, Vol 127, No 1, March.

Rawson Property Group, 2012 `Fastest growing middle class suburbs in South Africa: Parklands and Tableview' https://www.rawson.co.za/news/fastest-growing-middle-class-suburbs-in-south-africa-parklands-and-tableview-id-792 accessed 23 July 2016.

Renne, J.L., 2005. Transit-oriented development in Western Australia: attitudes, obstacles and opportunities. *Transit oriented development: making it happen, 2005, Perth, Western Australia*.

SA Property News, 3 April 2012. Affordable homes in new Brooklyn development. www.sapropertynews.com accessed on 5 November 2016.

Seeff, 2016. Property in Parklands Table View, Western Cape. http://www.seeff.com/western-cape/parklands.html accessed 23 July 2016.

Shoup, D.C., 2005. *The high cost of free parking* (Vol. 7). Washington, DC, USA: Planners Press, American Planning Association.

Transport for Cape Town, 2014. *Parking policy for the City of Cape Town* (policy number 17913). Approved by Council 24 April 2014.

Transport for Cape Town http://www.tct.gov.za/en/news/general/citys-council-approves-projects-to-alleviate-traffic-congestion/page-1/ accessed 23 July 2016.

Tom Tom Traffic Index https://www.tomtom.com/en_za/trafficindex/list accessed 17 July 2016.

Tumlin, J. and Millard-Ball, A., 2006. Parking for Transit-Oriented Development. In *Institute for Transportation Engineers Annual Meeting, Milwaukee*.

University of Cape Town, Department of Construction and Economics Management 2013
A social audit of IHS residential units 2012 What are the derived social benefits of occupying affordable housing in South Africa?

Whitehead, M., 20*15. Transport Development Index a baseline understanding of the 'state of transport' in Cape Town.* Transport for Cape Town.

Willson, R., 2005. Parking policy for transit-oriented development: lessons for cities, transit agencies, and developers. *Journal of Public Transportation*, *8*(5).

Willson, R. and Menotti, V., 2007. Commuter parking versus transit-oriented development: evaluation methodology. *Transportation Research Record: Journal of the Transportation Research Board*, (2021).

Zimmer, J. 18 September 2016. *The third transportation revolution Lyft's Vision for the Next Ten Years and Beyond.* https://medium.com/@johnzimmer/the-third-transportation-revolution-27860f05fa91#. 1sft7b3q6 . Accessed 28 October 2016.

Websites

http://www.metrorail.co.za/TimeTables/WesternCape/Area%20South.pdf

http://www.myciti.org

http://www.tct.gov.za

8 Appendices

8.1 Appendix A: Questionnaire for developers

Good day. Thank you for making time for this interview. The information that you provide will be used in minor dissertation research being undertaken for the purposes of an MPhil degree at the University of Cape Town.

The research concerns changes that are taking place in parts of Cape Town, where flats and apartments are being developed close to public transport services. The research interest is with the things that encourage or discourage public transport use, walking and cycling in place of cars. The research is also interested in the notion of "transit oriented development" that is development which takes places in the vicinity of public transport infrastructure, thus incentivizing greater public transport use.

Your views are of great interest and the data collected in the research will not be made available to any third party for any other purpose.

Are you happy for your company's name to be stated in the dissertation? Yes / No

May I proceed? Yes / No (terminate interview)

Background and approach

1. Regarding the (name of development). This development is in a part of the city where greater densities are being encouraged based in part on the availability of public transport services. Could you describe how your development was positioned for this new market?
2. How did the development differ from conventional suburban housing developments?

Parking standards

3. When undertaking the development what were the parking standards applied, and why?
4. The proximity to public transport suggests that parking standards could be reduced in buildings like this. What is your view regarding this?

Traffic Impact Assessment / Statement

5. Was a traffic impact assessment or traffic impact statement required for the development?
6. If so, what were the main findings?

Impact of parking on developments

7. Could you comment on the cost that parking adds to a development?
8. What is the impact of parking on overall design?

Development for TOD

9. When undertaking developments in areas where walking, cycling and public transport use is being encouraged, does this impact on the design of the development and its precinct?

Public transport and development

10. Do you think increased public investment in public transport is creating new opportunities for development?
11. Do you think developments will change as communities become less reliant on cars to get around?
12. What would facilitate more development in areas that are well located for public transport use?

8.2 Appendix B: Questionnaire for residents

Good day. Thank you for making time for this interview. The information that you provide will be used in minor dissertation research being undertaken for the purposes of an MPhil degree at the University of Cape Town.

The research concerns changes that are taking place in parts of Cape Town, where flats and apartments are being developed close to public transport services. The research interest is with the things that encourage or discourage public transport use, walking and cycling in place of cars.

Your views are of great interest and they will be treated confidentially. Your identity will not be revealed in the dissertation, and the data collected in the research will not be made available to any third party for any other purpose.

May I proceed? Yes / No (terminate interview)

Before moving to this apartment

1. Where did you live before you moved to this apartment?
2. When did you move?
3. Why did you move?
4. How did you travel before you moved to this apartment?
5. If you had a car, where did you park it?
6. What problems did you experience in your daily travel?

Since moving to this apartment

7. Since moving, how have you travelled to your main destinations?
8. Have your experienced any problems in reaching your destinations?
9. Do you still own a car?
10. Where do you park the car(s)?
11. What problems do your experience when it comes to driving and parking here?
12. What problems do you experience driving and parking at your destinations?

Behavior change

13. If you have changed your mode of transport, what encouraged you to change?
14. If you are still using a car, what are the main reasons?

Future transport

15. Thinking about the future, do you think that you will change the way you travel around?
16. What would make you change your current mode of transport?
17. What would make you keep to your current travel habits?

Community life in a 'transit-oriented development'

18. What do you like about this area?
19. Are there things that you don't like about the area?

8.3 Appendix C: Communication from the City of Cape Town to Communicare

CITY OF CAPE TOWN | ISIXEKO SASEKAPA | STAD KAAPSTAD

Royal Ascot
Bridle Road
Milnerton 7441
PO Box 35
Milnerton 7435
Tel: +27 21 400 2964
Fax: +27 21 419 8536

Royal Ascot
Bridle Road
Milnerton 7441
iBhoksi 35
Milnerton 7435
Umnxeba: +27 21 400 2964
Ifeksi: +27 21 419 8536

Royal Ascot
Bridlestraat
Milnerton 7441
Posbus 35
Milnerton 7435
Tel: +27 21 400 2964
Faks: +27 21 419 8536

E-mail: **Stephen.fautley@capetown.gov.za**

Ref:

Date: 28 January 2008

S M FAUTLEY – TIA's and Development Control

NWE
PO Box 5263
Tygervalley
7536

Attention: Mr M Smuts

Dear Sir

PROPOSED REZONING AND SUBDIVISION OF ERVEN 20645 AND 21086, BROOKLYN: TRAFFIC IMPACT ASSESMENT FOR PHASE 1

Your correspondence, Ref. 06/025TIA dated 18 Jan 2008, regarding the subject properties at the intersection of Koeberg and Stanberry Roads has reference.

Note is taken of the proposed rezoning for Phase 1 of the development on the subject properties comprising 91 (low income) residential opportunities, 20 medium income residential opportunities and 143 "old age" beds.

The envisaged development is to be served by access on Stanberry Road and via a proposed side street with left-in / left-out access on Koeberg Road approximately 120 m north of Stanberry Road.

The TIA reveals that the Koeberg Road southbound right-turn movement into Stanberry Road requires a 30 m right-turn slot and that the right-turn manoeuvre from Stanberry Road into Koeberg Road could become problematic. The TIA did not consider the right-turn as a two-stage movement. Traffic from the development will however be able to execute a protected right-turn manoeuvre towards Cape Town from the Koeberg Road / Wemyss Road intersection that is to be signalised in the near future.

In view of the imminent signalization of Koeberg / Wemyss Roads intersection, this Branch has no objection to Phase 1 of the proposed development, subject to:

1) Construction of a 30 m right-turn slot on Koeberg Road southbound carriageway at it's intersection with Stanberry Road,

2) Construction of the left-in / left–out access side street approximately 120 m north of Stanberry Road,

3) On-site parking being provided at a ratio of:

- 1 bay per unit for low income dwelling houses
- 2 bays per unit for medium income residential houses (possibly tandem garages required due to limited street frontage requiring at least 9,0 m between driveways for on-street visitor parking)
- 1,75 bays per unit plus 0,25 bays per unit for visitors for medium income group dwelling,
- 1 bay per unit plus 0,25 bays per unit for visitors for low income group dwelling,
- 1 bay per 2 rooms for a medium income old age home, and
- 1 bay per 4 rooms for a low income old age home.

4) Site Development Drawings and building plans being submitted to the Transport Department: Traffic Impact Assessment's and Development Control Branch: Cape Town for approval prior to development proceeding on site,

5) Engineering Drawings for the above road works being submitted to the District Manager: Blaauwberg, for approval prior to development proceeding on site, and

6) All costs associated with the above works being to the developers account.

Please note that this letter does not in any way whatsoever constitute approval of the proposed land use, and is merely this Branch's comment on the TIA from a traffic and transportation perspective. When the application for a change in land use is submitted other departments within the City of Cape Town would need to give input, as would the Provincial Government of the Western Cape.

Yours faithfully

Signed

PP DIRECTOR: TRANSPORT
Ms M MAZAZA

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CC Deputy Director General
Transport and Public Works
PO Box 2603
CAPE TOWN
8000

Fax - 914 2260

CITY OF CAPE TOWN ISIXEKO SASEKAPA STAD KAAPSTAD

Royal Ascot
Bridle Road
Milnerton 7441
PO Box 35
Milnerton 7435
Tel: +27 21 400 2964
Fax: +27 21 419 8536

Royal Ascot
Bridle Road
Milnerton 7441
iBhoksi 35
Milnerton 7435
Umnxeba: +27 21 400 2964
Ifeksi: +27 21 419 8536

Royal Ascot
Bridlestraat
Milnerton 7441
Posbus 35
Milnerton 7435
Tel: +27 21 400 2964
Faks: +27 21 419 8536

E-mail: Stephen.fautley@capetown.gov.za

Ref:

Date: 5 February 2008

S M FAUTLEY – TIA's and Development Control

NWE
PO Box 5263
Tygervalley
7536

Attention: Mr M Smuts

Dear Sir

PROPOSED REZONING AND SUBDIVISION OF ERVEN 20645 AND 21086, BROOKLYN: TRAFFIC IMPACT ASSESMENT FOR PHASE 1

Your correspondence dated 31 January 2008 concerning a possible reduction in the parking ratio for the subject properties at the intersection of Koeberg and Stanberry Roads has reference.

It is apparent from your parking survey (excluding Sakabula Communicare Development in Ruyterwacht as an outlier), that the occupants of the residential units would in reality require some 90% of the required parking ratio of 1 bay per Unit (this excludes visitors parking). Using the same logic would require 0.23 bays per Unit for visitors. Consequently one would expect 91 residential Units to require 82 resident / occupant bays plus 20 visitor bays, totaling 102 bays. The 91 parking bays are therefore insufficient to provide for both residents and visitors, based on the survey information available.

As this is the first phase of the envisaged development, it is the opinion of this Branch that any shortfall in parking in Phase 1 could be accommodated in Phase 2. The retail component in Phase 2 could also result in some shared parking and hence an overall reduction in the parking ratio could be realized, i.e. the 11 visitor bays could be accommodated in the retail parking lot, provided that it is in close proximity to the residential units. If necessary the envisaged retail component parking area could be sized to accommodate the visitor parking lacking on the residential site.

In light of the above it would seem prudent to provide the necessary parking on-site, or alternatively, make provision for such in Phase 2. It is suggested that a parking survey be undertaken after the subject residential development is fully occupied, to ascertain the real parking need, including that of visitors, and that any parking shortfall be accommodated in Phase 2.

Yours faithfully

Signed

PP DIRECTOR: TRANSPORT
Ms M MAZAZA
D:\Erf 20645 & 21086 Brooklyn reduced Parking.doc

8.4 Appendix D: Ethics approval from the University of Cape Town

EBE Faculty: Assessment of Ethics in Research Projects

Any person planning to undertake research in the Faculty of Engineering and the Built Environment at the University of Cape Town is required to complete this form before collecting or analysing data. When completed it should be submitted to the supervisor (where applicable) and from there to the Head of Department. If any of the questions below have been answered YES, and the applicant is NOT a fourth year student, the Head should forward this form for approval by the Faculty EIR committee: submit to Ms Zakiya Chikte (Zakiya.chikte@uct.ac.za); New EBE Building, Ph 021 650 5739).

Please note – It is important to keep a signed copy of this form as students **must include a copy of the completed form with the dissertation/thesis when it is submitted for examination.**

Name of Principal Researcher/Student: Katharine McKenzie **Department: Centre for Transport Studies**

If a Student: **Degree: MPhil** **Supervisor: Prof R Behrens**

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

Research Project Title: Realising the density dividend? Changes in urban lifestyle and culture as compact developments emerge on Cape Town's transit corridors.

Overview of ethics issues in your research project:

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

If you have answered YES to any of the above questions, please append a copy of your research proposal, as well as any interview schedules or questionnaires (Addendum 1) and please complete further addenda as appropriate.

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

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

Signed by:

	Full name and signature	Date
Principal Researcher/Student: Katharine Mary McKenzie		22 March 2016

This application is approved by:

Supervisor (if applicable):		23 March 2016
HOD (or delegated nominee): Final authority for all assessments with NO to all questions and for all undergraduate research.		11/4/16
Chair : Faculty EIR Committee		

8.5 Appendix E: Interviews

Pamela Lamoreaux, Investment Director, International Housing Solutions, 28 April 2016.

Michael Smith, Development Director, Leisure Development Company (Pty) Ltd, 19 May 2016.

Gavin Wiseman, Property Development Manager, Communicare, 5 May 2016.

Owners at Church Square House, Cape Town central business district, 19 – 20 July 2016 (four interviews).

Tenants at IHS developments in Parklands, 28 April 2016 (11 interviews).

Tenants at Grand Central in Wynberg, 17 June and 24 June 2016 (six interviews).

Tenants at Drommedaris in Brooklyn, 17 – 18 October 2016 (five interviews).