Public finance mechanisms for urban infrastructure:

A case study of the MyCiTi BRT, Cape Town

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I dedicate this study to my Momma.

Abstract

Public finance mechanisms for urban infrastructure: A case study of the MyCiTi BRT, Cape Town

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With tight budgets and shifts in the global economy, urban infrastructure has become a critical investment municipalities are struggling to fund. Innovative land-based financing tools have emerged as a means of funding critical urban infrastructure. At times, land-based financing tools enable local municipalities to meet their spatial goals. This dissertation reports on research highlights the potential applicability of land-based financing tools in cities of the Global South, namely Cape Town. The findings show that the City of Cape Town has the necessary supportive regulatory frameworks, urban planning policies and robust market conditions to use the land-based financing tools. While harnessing land value to partially fund infrastructure is not new, this study provides hearty evidence for policy makers and practitioners who seek to transform the spatial legacy of apartheid in a tangible way.

List of Maps and Tables

Abbreviations

BID	-Business Improvement District
CID	-City Improvement District
UDZ	-Urban Development Zone
CoCT	-City of Cape Town
TIF	-Tax-Increment Financing
PPP	-Public-Private Partnerships
SAD	-Special Assessment Districts
SDF	-Spatial Development Framework
IPTN	-Integrated Public Transport Network
PTISG	-Public Transport Infrastructure and Systems Grant
PTNOG	-Public Transport Network Operations Grant
PTNG	-Public Transport Network Grant
SPLUMA	-Spatial Planning and Land Use Management Act
MSA	-Municipal System Act, Act 32 of 2000
IDP	-Integrated Development Plan

1.1 Significance of the Study

South Africa currently sits at the precipices of its economy's future. Two decades after the fall of Apartheid, and into the age of democracy, the State must cope with the demands of an increasing globalized economy while maintaining the interest of the average citizen. This is true of many States in the Global South. To achieve this, Governments must make greater investments in critical infrastructure, needed to cement their nation's growth. Infrastructure investment is so crucial to the development of the Global South because it stands at the most tangible byproduct of the struggle to achieve economic transformation. While we recognize infrastructure as critical to economic development, how do we pay for it? In the aftermath of the Global Economic Crisis, national, state and local budgets have tightened, leading to the question; in times of austerity, how do authorities choose between projects? The leading response would be greater investments in public-private partnerships to fund capital projects.

What exactly is infrastructure? It's the basic structures and facilities needed for the operation of a society, for example; health facilities, roads, power supplies, and water distribution. Cities around the world have looked for innovative ways to finance these projects, from capital markets, to the bond market and most recently through land based financing tools. Typically referred to as Land-Value Capture, land based financing tools are a diverse portfolio of options for local authorities to utilize to fund infrastructure projects.

Land-based financing mechanism are to date perhaps the best set of tools available to the public sector to fund critical urban infrastructure. The basic principle of land based financing tools is to capture the value of the land and harness it to finance infrastructure projects. Improvements on land, in theory, contribute to appreciated property values, which then are used to finance capital projects or urban infrastructure. While these tools have proven records in the Global North, this research aims to support the applicability of land-based financing tools in the Global South. It must be noted that each of the mechanisms applicability is dependent on regulatory conditions, the market and specifically the project.

Using global case examples, I set up criteria to assess a case study in South Africa. South Africa has been a leader in efforts to maximize the potential of Cities, and to capitalize on their economic capacity. With the highest concentration of economic activities taking place in the Country's 5 largest cities, urban infrastructure has become critical to the long-term economic development of the country. These agglomerations of economic activity are supported by a vast network stratum, which connects municipalities regionally, nationally and internationally. The South African government, acknowledging the importance Cities hold to the national economy, has established a Cities Support Programme through its National Treasury. The programme seeks to "improve targeted areas such as business-enabling environment; public financial management; infrastructure finance; land management and urban regeneration; and integrated urban transport planning over a five-year period." (The World Bank, 2017)

The aim of this report is to explore how land-based financing tools can be used to fund urban infrastructure, impact spatial development policies and support private developers. Striking this balance will prove critical to the long-term financial health of municipalities across the global South, along with cities around the world.

1.2 Study Objectives

The objective of this study is to provide policymakers, practitioners and researchers an opportunity to consider the applicability of land-based financing tools to fund critical urban infrastructure in cities of the global South. To achieve this, I will present a theoretical foundation of these tools, followed by an analysis of secondary data from a case example and study of applying the tool. The case example will show the applicability of a tool, while the case study will assist in putting forward recommendations for best use of these tools, as well as direction for future research.

1.3 Establishing the Primary Research Question and the Research Methods

Infrastructure, a public good, is a necessary commodity used by all sectors of the economy. It is the common thread that binds us, and based on this principle, should be invested in by all citizens. This in theory has been the basis for using tax-based revenue to fund infrastructure. As infrastructure cost has skyrocketed, competing interest have mounted, and public coffers have tightened, the use of new financing methods have become critical.

Land Based Financing Tools have been proven to be instrumental in funding urban infrastructure projects around the world. The application of these tools will undoubtedly have implications for spatial policies and the private developers impacted by them. How then do we utilize these tools to fund critical urban infrastructure, establish new spatial policies, all the while creating an environment where private developers can meet their own goals?

To answer the main research question, the following research methods will be used: Case Study Research, Critical Discourse Analysis, and quantitative research methods.

To present a solid and thorough analysis, I plan on conducting qualitative research along with presenting quantitative data and research. Most of my research will come from case example and case study analysis. These research methods are important as they provide a different perspective to a broad topic with wide reaching effects.

Critical Discourse Analysis will be essential when analyzing different economic theories and models, along with infrastructure financing tools, and models. As both a research method and analytical tool, critical discourse analysis, will serve as the essence of my research approach.

To support the discourse analysis, case study research is vital to provide a tangible source of information, which ideally is widely accessible. Case example research provides the best source of examples from a wide range of realized projects, and typically will provide for both quantitative and qualitative information and sources. Cases examples will prove useful in generating further questions and providing insight. The analysis of the secondary data sources will demonstrate how cities of the global South have invested in and managed critical urban infrastructure. Utilizing case examples will serve as the foundation of answering the primary research question.

1.4 Structure of the Study

Chapter 2 of this study will provide a literature review of Land Based Financing Tools and Urban Economics. The chapter also includes an analysis of various legal and regulatory frameworks that govern municipal finance and infrastructure investment. The information garnered in this chapter informs the

analysis, and provides the assessment criteria for the applicability of these tools. The information in this chapter also provides a basis for the recommendations put forward in later chapters. This chapter also goes through the various financing tools and their applicability. Chapter 3 provides a breakdown of the research methods used in this study; this chapter also looks at the limitations of the methods used.

Chapter 4 presents the case study. Chapter 5 provides answers to the main research question, along with the subsidiary questions. This chapter provides recommendations to policymakers, practitioners and researchers, and concludes with a reflection of the study, its applicability and relevance.

2.1 Introduction

The purpose of the literature review chapter is, firstly, to explore the existing literature on the topic under review. The literature ranges from publications on land value capture and its application to public sector financing, to more specific examples of the process of applying land-based financing tools. The assessment criteria established in this chapter are drawn from the review of the literature. These criteria are used to assess the MyCiTi case to determine how urban infrastructure can be financed while benefitting both the public and private sector. Secondly, this chapter also seeks to establish subsidiary research questions. These questions are informed by the assessment criteria identified in this chapter.

As this research focuses primarily with the application of financing tools, the literature reviewed is drawn primarily from government publications, reports by multilateral development agencies and academic papers. The first explores land-value capture, and then looks at land-based financing tools specifically. The urban economic and public finance literature analyzed in this chapter outlines the conditions necessary for the application of land- based financing tools. A review of the South African legislation is also analyzed in the chapter, as it contextualizes the local case study through an analysis of the government policies currently in place. The chapter concludes with a summary of the main arguments put forward, and a recap of the assessment criteria and subsidiary research questions posed in this chapter.

The application of this study is intended to assist professionals in creating spatial plans, which consider the land-based financing structures, which can be achieved. This chapter aims to provide clear theory and applied experiences to elucidate the value of land-based financing tools in the planning profession.

2.2 Land-value Capture

Financing tools for local capital investment historically has been divided into two streams: specialized financial institutions and local investment funds. (Paulais, 2012; 161-162) The specialized financial institutions are typically charged with lending. The local investment funds, on the other hand, serve as conduits of donor funds for specific projects. As governments have become more efficient in managing and structuring their finances, the issuance of bonds or borrowing from the bond market has emerged as new tools for local capital investment. (Ravi 2016) The use of land to fund initiatives is not new, but only recently has it been hailed as an integral part of the municipal financing system. (Paulais, 2012; 17) Land-value capture is viewed as a very effective tool for cities. It is a means through which a municipality can finance its own projects by utilizing the value of the land within its demarcated area. The term 'land value capture' is most commonly used to explain a process in which increases in property values are recouped through taxation or a financing structure in which the State secures a profit. While the value created is generally attributed to public investment, there are many instances where market forces contribute to the creation of new value. How then do land-based financing tools differ from land-value capture tools? This question is answered at length in section 2.3.

2.2.1 Criteria for (successful) land value capture

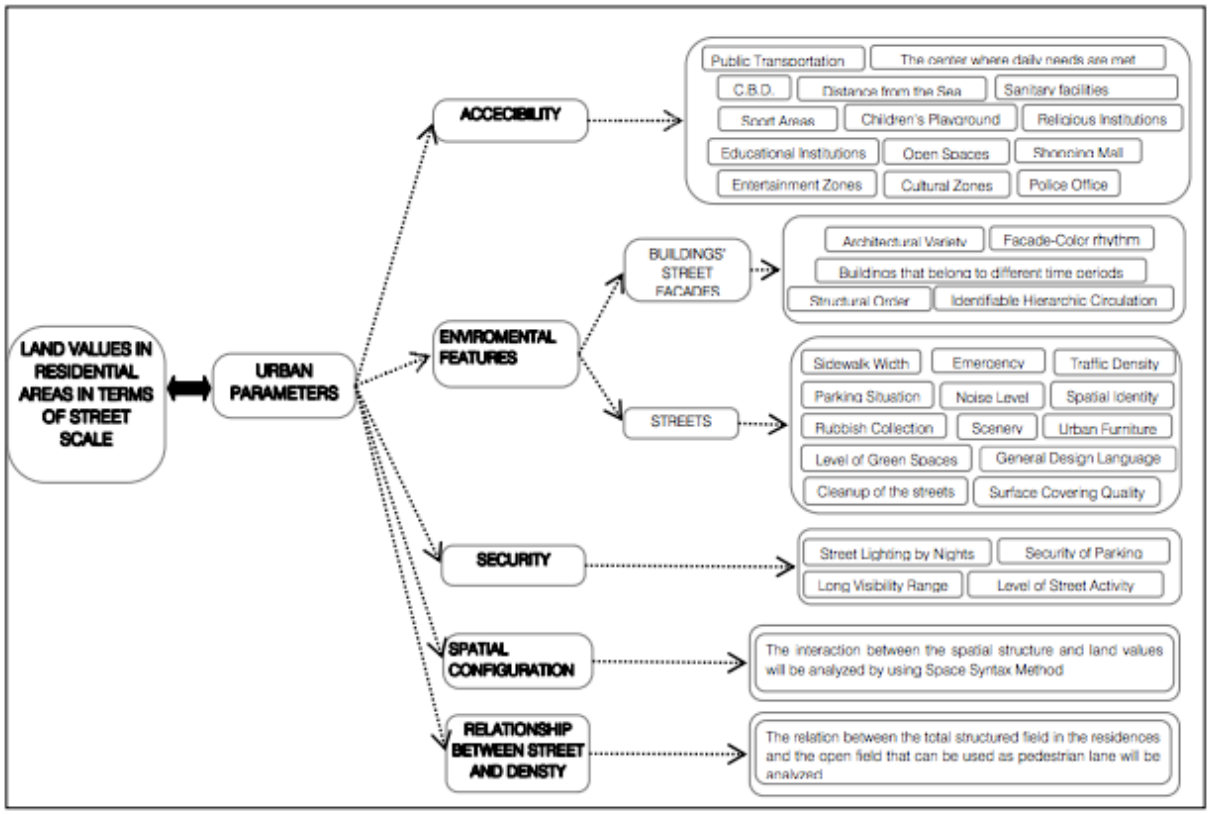
2.2.1.1 Efficient Land Markets

George Peterson, a noted public finance and urban infrastructure specialist with the World Bank, has studied the full gamut of land-based financing tools. His book titled *Unlocking Land Values to Finance Urban Infrastructure* (2009) explores how land values can be used to help pay for urban infrastructure. The basis for his study is that land maintains value. Generally, municipalities as tax collectors can harness the value of said land as a financial instrument. As a financial instrument, land-based financing is generally used for borrowing from the private entities to fund public infrastructure. This is done at market rates. Consequently, and according to Peterson (2009), land-based financing is a form of market finance. Land-based financing tools are wholly dependent on the market, which determines the value of said land. Once again, the market determines the value of this land and reinforces the fact that land-based financing tools are indeed a form of market finance. As a form of capital financing, land-based financing tools reinforce the necessity of strong spatial planning policies. Efficiency in urban land markets is a prerequisite for applying land-based financing tools, and efficiency in the land market is a direct result of spatial planning policies.

2.2.1.2 Spatial Planning Policies

Land-value capture is a by-product of spatial planning policies and frameworks. How? Land values are measured by the economic principle of highest and best use, which is determined by the highest return over a period. As an economic concept, utility is determined by the willingness of a consumer to pay for a commodity based on highest and best use analysis and the resulting utility of that commodity. (Johnson 2005) The central theoretical concept in the urban land market that connects supply and land is the Bid Rent Theory. The Bid Rent theory is a hypothetical figure valued as the "maximum rent per unit of land that the household can pay to reside...and maintain some given level of utility" (McDonald & McMillen 2007). The Bid Rent Theory functions as the price and demand for land changes in relation to distance to the central business district. This means that different land users (retail, residential and industrial) will compete for space closest to a central business district, or economic node. (Ibid) In laymen terms, land or property is valued at the rate one is willing to pay for it and the utility then derived from the property.

How does this relate to spatial planning? Most if not all-economic concepts exist because of socio-political and spatial variables, this is true of planning as well. We live in urban environments, which are governed by planning, which drives development. What makes one land parcel more attractive than another? Or one neighborhood more appealing than another? It's the physical attributes designed by planning legislation. Researchers from the Selcuk University and Istanbul Technical University presented at the 7th International Space Syntax Symposium a model designed between land values and urban parameters. In the model below we see that land values are a result of characteristics such as accessibility, environmental features, security, spatial configuration, relationship between street and density. (Topcu & Kubat 2009)



[*Fig.1* The Analysis of Urban Features that Affect Land Values in Residential Areas. Source: Topcu & Kubat 2009]

These features are very important for buyers and renters, but also for the developer in making the investment. In compact and sprawling cities alike, accessibility factors highly into land values as consumers will pay more for greater access to transport networks, business districts or public services. The same can be said of environmental features such as landscaped avenues, and quiet, well monitored streets. Outside of these constituting factors of the built environment, planning governs land assembly, zoning, community engagement and spatial visioning, which serve as critical areas required to ensure the land market functions, and by extension there is value to indeed capture. Underestimating the position of planning in the land-based financing process is counter-productive. Spatial planning is one of the prerequisites to establishing value, and utilizing these tools.

2.2.1.3 Public-Private Partnerships

According to the Nedbank-UCT Urban Real Estate Research Unit, value capture is "the process of extracting (in different ways) the additional value that accrues to a property following different types of public investment." (McGaffin et al., 2016;6) Classical economics teaches us that land is a factor of production, while innovations in the 20th century have taught us that land can be used as a reinvestment tool for development. (Ramparsad 2015 & El-Barmelgy et al., 2014) The private sector must 'buy-in' to land value capture processes for these processes to be successful. There have not been many documented arguments against public and private partnerships or land-based financing tools specifically. This is primarily because parties are typically in agreement before entering a contract.

2.3 Land-Based Financing

Land-based financing is partly based on the concept of land value capture. Land-based financing is the process of generating revenues for the explicit purpose of investing in infrastructure. Land-based financing tools can afford a 'cash strapped' municipality the opportunity to reinvest in critical infrastructure, while achieving the municipality's long-term spatial goals. It must be noted that land-based financing tools have the capacity to generate increased land values. (UN Habitat 2015) The local authority, therefore, has the right to reinvest the additional land value in infrastructure.

According to Peterson (2009), the most basic tools used in land-based financing are:

> "-Public Donations of Land to Support Private Investment in Infrastructure:
> The public granting of land to private entities to fund infrastructure in the interest of the public sector. The American rail industry developed in this fashion, as private entities were given vast tracks of land to develop the infrastructure, while also reaping a commercial benefit as well.
> -Sale of Public Land to Finance Public Infrastructure Investment
> As one of the most valuable assets of most municipalities, land is sold to private entities for a financial profit and at times to incentivize developers.
> -Sharing of Gains in Land Values Created by Public Infrastructure Investment
> Private developers and land owners tend to be the first line beneficiaries of public investment, as such local authorities can negotiate with those stakeholders to recoup the land-value gain associated with the public investment. This process is only successful if all parties can agree on the valuation of the post-investment."

<u>The subsidiary research questions raised from the literature discussion in this section are:</u>

- Do any of the City's policies speak of land-value capture?
- Does the City currently employ any land-based financing tools?
- What are the financing mechanisms most often used by the City of Cape Town?

2.3.1 The Tools

Land-Based Financing tools vary in scope and applicability. Depending on the nature of the project, multiple tools can be used together to create a package, which supports the developer and achieves policy goals. Some of the tools include, but are not limited to: tax increment financing; special assessment district; development charges, and; density bonuses.

While this list is not exhaustive, it accounts for those tools, which will be explored in this study. The other land-based financing tools include: the leveraging of Municipal Real Estate, Sale of Development Rights and Land Readjustment Schemes.

2.3.1.1 Tax Increment Financing

According to SB Friedman Development Advisors (n.d.), Tax-Increment Financing (TIF) is a structure "that allocates future increases in property taxes from a designated area, or TIF district, to pay for improvements within that area" (S.B. Friedman n.d.). Tax Increment Financing is a method for capturing

new taxes. These taxes are created when a redevelopment project increases the tax-base of the current property. The report states that:

> "All properties in the district are assessed in the same manner as all other properties and taxed at the same rate. TIF is not an increase in taxes. It is only a re-allocation of how they are used. Increases in property taxes experienced by property owners are due to reassessment and rate increases, not TIF." (Ibid)

Generally, municipalities around the world bear the brunt of guiding development, developing and collecting taxes, providing and maintaining infrastructure. The World Bank in a series of reports outlines the general structure of a TIF. TIF involves, first, a process of determining what type of infrastructure (public transit, water and sanitation, disaster risk mitigation, and resilience) is being provided. Second, a determination of which areas will benefit from this infrastructure is made and the geographical area is demarcated. Ideally the infrastructure must improve property values within the demarcated area. The term incremented refers to the increase in taxable value charged after the infrastructure has been developed or after the base year (when the district is established). The 'incremented' tax is then collected over an agreed period and deposited into a trust, bond or escrow account. Ideally the municipality borrows funds against the anticipated cash flow of the TIF district. The bond capacity is determined in conjunction with the lending institution and the municipality. This capacity includes terms, assets and responsibilities.

Depending on the circumstances of the municipality, funds generated from the TIF will assist in expanding budget capacity. These funds are generally viewed as "off-sheet" activities. (McGaffin et al., 2016; 10)

2.3.1.2 Special Assessment District

Special Assessment Districts (SADs), like Tax-Increment Financing, are a geographically demarcated area in which tax revenues collected are earmarked for certain projects. Unlike TIF, SADs are not financed by anticipated increases in property values but rather on a set percentage of existing tax revenue, with the possibility of apportioning future increases in property value (MacCleery & Peterson, 2012). SADs are in fact an additional tax paid by property owners to fund public improvements explicitly. Ideally, those owners who will benefit directly from the public improvement are included in the district. SADs are established either by the local authority, property owners or in a collaboration between property owners and the local authority via public-private partnerships (PPPs). SADs are, ideally, governed by local regulations or community defined by-laws. The length of time the assessment will be levied and rate determined by the governing entity.

The SAD generally functions in conjunction with a local authority, who guarantees the up-front cost for the public improvement. An explicit agreement, which notes that the loans is to be repaid via the SAD tax is made. Consequently, the tax or the revenue from the SAD is accrued and used to pay for the public improvement.

While tax-increment financing is well apportioned for large capital projects, special assessment districts are best for small public improvements. For instance, in many countries around the world, improvement districts have been implemented to encourage urban regeneration and renewal. In South Africa for instance, SADs are referred to as Special Ratings Area. These areas are known as City Improvement Districts, governed by by-bylaws, provide services such as security and public management. As per the by-

law, the special rate is over and above the standard rate (tax) paid and used exclusively within the special ratings area. To date, Cape Town has over 20 Special Rate Areas.

[

[Fig 2. The City of Cape Town's CIDs. Source: Geocentric Information Systems]

As with all things involving the government, there is always a counterargument against policy and interventions. While many would agree that land based financing of infrastructure is in the interest of the public, one could argue against the different forms of land value capture schemes. Austerity driven, financially conservative and anti-government enthusiasts argue that increased taxes in the form of special assessment districts are not helping government sustain or encourage growth. This is because local authorities already impose taxes on property owners for that reason. A government's ability to levy taxes

is codified in law, and unofficially through the social contract, which puts forth the logic of government delivering services to the public in exchange for the public paying for those services. In the case of Special Assessment Districts, some opponents argue that they do not directly benefit from the proposed public improvement, or they just have no interest in funding it.

There is, however, an argument against the distribution of burden and reward. In the case of tax-increment financing, municipalities take on the cost and debt of infrastructure with the expected increase in taxable property values to repay this debt. However, what happens if the anticipated increase in value is not realized? That is to say what if some land parcels respond differently to the development of this infrastructure? In theory, the agreement between the municipality and those within the taxable district will have already agreed on the rate and any provision for changes depending on the actual incremental change in value (Smolka 2013). The value of the financial tools is that they have the ability to be negotiated, and therefore stakeholders have the opportunity to engage in the crafting of these agreements (ibid).

2.3.1.3 Development Charges

Most land-based financing tools are generally appropriate for established land and property owners. There are, however, opportunities to benefit from new developments for small scale projects. Development charges are fees paid by the Developer to pay towards the cost of infrastructure needed to support that development. Development charges are typically levied by municipalities to pay for or go towards the cost of public services required for the new development. Small municipalities have used development charges to give a stimulus to their budget and pay for unrelated infrastructure or public services. While development charges should be assessed on the basis of the cost of the specific development on the existing infrastructure systems, some municipalities have a standard development charge while others use ranges.

2.3.1.4 Density Bonus

Another land-based financing tool applicable to developers is the density bonus. Density bonuses are typically regulated by zoning schemes, whereby a municipality allows for the developer to build over and above the zoned maximum density. This exchange is made only if the developer provides a public good or improvement. The public good or improvement may be in the form of a park, or public space. As part of the development application, both the developer and local authority must confer on the details of the exchange. Density bonuses are perhaps the best tool for creating an environment in which private developers are able to meet their own goals while meeting the goals of the municipality. (von Hausen, 2004) Urban design and planning in practice requires either framework directives or, in the case of municipalities which lack that capacity, incentives such as density bonuses. Further study of density bonuses lend itself to a brief look at the Public Role of Private Developers.

Developers are very much the creators of the urban fabric, which are cities. Developers either out of the love of profit or love of the built environment have taken on the responsibility of building our cities. In so doing, they have taken on a public role. (Dewey 1997) How then do local authorities capitalize on the roles of developers? Policy alone won't achieve goals, nor will incentives like density bonuses. A concerted effort to ensure developers achieve their financial deliverables is the key to capitalizing on the public role of developers. Is urban planning the true link between the interests of the private sector and of the local authority? This question in the context of land based financing tools is critical to understanding how public-private initiatives can be balanced and generate greater agency for the local authority. Creating a

'buy-in' model for developers to actively seek out PPPs is a testament to a City's ability to capitalize on the public role of the private developers.

The financial incentive of a density bonus can have many benefits. First in of itself as a density bonus, and secondly through value creation in the form of adjacent parks or income generation with public space which accommodates economic activity. In many developed economies, municipalities utilize density bonuses to incentivize developers to set aside a certain number of below-market-rate units.

As a land-based financing tool, density bonuses do not generate revenue. Rather it is a mechanism by which the municipality is able to get a new public amenity at no cost to the municipality. However, taxes levied broadly to develop infrastructure may have a direct impact on a localized area, which only benefits land owners adjacent to the development. While this is often true, the reality is that taxation is a common investment, and that dividends are ideally to be reaped by all citizens. This however is not realistic. In truth, standard property rates may not be equitably distributed, however this is a context specific reality which must be addressed directly by stakeholders.

The subsidiary research questions raised from the literature discussion in this section are:

- What are the land-based financing strategies used in the MyCiTi case?
- Which tool or tools are used by the CoCT to finance the roll out of the MyCiTi?
- How did the CoCT access the capital to finance the short- and long-term rollout of the MyCiTi infrastructure?
- Have the same tools been used finance the rollout of the MyCiTi in subsequent phases?
- Who is benefitting from the rollout of the MyCiTi service?
- How does the CoCT capitalize on the roles of developers in procuring public services/improvements/amenities?

2.3.2 Criteria for Application of Land-based Financing Tools

For any of the land-based financing tools to be used, there must be some form of institutional basis to support public entities engaging in financing activities through legal convention, or policy directive, as well as municipal capacity to manage the tools.

2.3.2.1 Legal Convention and Policy Directives

An aspect, which is critical to the implementation of land-based financing tools is the existence of legal frameworks which support use of these tools, or the ability to enact special legislation, amendments or processes by which these tools can be supported. The ability for a local authority to invest, procure or obligate public monies is governed by some form of legal convention. This is true of agreements made with the private sector.

Viruly, McGaffin Kirova and Michell (2016) looked at the applicability of these tools and identified a few challenges. Chief amongst these challenges is the fact that provisions for tax-increment financing are not well articulated in existing legislation (ibid.) This challenge while not insurmountable is something that needs to be addressed in order to address the formalities needed to execute the requirements for successful application.

2.3.2.2 Creating Value and Return on Investment

For the tools to have any form of viability, they must create some sort of value. Value creation is essential in any public investment for the simple concept of 'the bottom line'. From a developer's standpoint, if a project does not, at the very least, break even and generate a small profit, what is the point? Municipal officials should consider this approach as they are investing public funds for the purpose of achieving spatial and/or financial goals. This stance while rooted in neoliberal thought, should be contextually refined as these investments typically will result in cost that far outweigh short-term profits. The idea of being money-minded should not deter from achieving policy goals, but rather inform decisions. For instance, tax-increment financing only works if a differential is created between the tax pre-(re)development and the tax post-(re)development. That differential, apart from the intended value of a new development, is value created. Harnessing this new tax base creates an engine for which the development can be financed. Similarly, a density bonus in exchange for a public good is indicative of some form of value creation. Case in point, a developer seeks to build a 4-storey apartment building in a zone, which restricts building heights at 4 stories. In exchange for creating an adjacent park, the City can offer the developer a density bonus to build a 5th story. Why would the City make a concession contrary to the zoning mandate? Because the developer has created a public good which is of value to the local residents and helps achieve spatial goals. In effect, the developer has created something of value to the City. In turn, they have allowed the developer to create an opportunity to make a return on his investment. This mutually beneficial environment therefore is one based on meeting goals and creating value. The end result is, hopefully, a return on investment, which will support the growth of future developments in the area.

2.3.2.3 Municipal Capacity

Municipalities must have a sound understanding of market conditions, legal frameworks and developmental context before employing certain tools.

The report by Viruly, McGaffin, Kirova and Michell (2016: 10) also addresses the lack of capacity in providing "regular supplementary valuation rolls" which are necessary to ensure that increases in property values are captured in the incremental structure.

Municipal finance the world over is a jigsaw that must be balanced with political theatre, the realities of residents, and the constant strains on bulk infrastructure (ibid.). In many municipalities of the Global South, this reality is underpinned by a lack of access to capital. Deficient tax collections structures, incomplete land registries and a lack of long-term vision are factors that have perpetuated this imbalance in municipal finance. In the wake of the Global Financial Crisis, cities emerged as a key to economic resurgence of many national economies, leading to debates about bolstering their performance and capacity. (Turcu, Karadimitriou & Chaytor 2015)
The strain on municipal budgets typically leads to a reorganization of budgets in order to manage current and pressing matters, while delaying much needed long-term investments. In the South African case, this has led to an imbalance between municipally generated funds and those granted by national government. Lagging tax revenues, unequal growth in the land market, and increasing burdens on household finances are some of the greatest challenges for South African municipalities. Delaying long-term investments for short-term operational needs will have residual effects on municipal economies in the long-run.

Further, structural constraints have emerged as stumbling blocks in the advancement of municipal financial capacity. Municipalities are generally responsible for providing public goods, such as roads, schools and access to energy. Increasingly, these municipalities are tasked with greater responsibilities,

such as providing low cost public housing and public utilities. How then do municipalities, with limited budgets and inadequate access to capital, finance short term and long-term infrastructure critical to their growth?

Borrowing, either through loans from commercial banks or by issuing debt is a form of direct funding which governments undertake typically for capital projects. In markets where there is a lack of competition, governments are restricted to high interest rates and unfavorable terms. In many developing economics, the onus is on Western donor countries and institutions which sometimes present its own set of challenges. Some countries lack the frameworks to support these transactions, others are considered too 'high-risk' resulting in a lack of access to capital markets.[1]

Furthermore, current accounting standards applied by the South African government requires bonds issued by municipalities secured only by incremental tax revenues be 'on-balance sheet' for the municipal budget. Any 'on-balance sheet' activity would be recognized by lender institutions as debt and therefore influence the municipal credit rating. The report by Viruly, McGaffin, Kirova and Michell (2016) suggests the introduction of a Special Purpose Vehicle (SPV) to serve as fiduciary. In so doing, the SPV will then be held liable for managing the revenue. This is achieved by the municipality transferring its rights to the incremental tax revenue to the SPV and rescinding any rights or responsibilities. The primary issue with the transfer of these rights is not addressed in the Municipal Finance Management Act or any other legal framework.

2.3.2.3.1 South Africa Municipal Finance Framework

Early in the transition to democracy, the South African government established that economic transformation must take place at the local government level. Economic transformation is seen as a critical step to ensuring the longevity of the national economy and can only be achieved if all citizens have access to economic opportunities (ANC Economic Transformation Discussion Document 2017). To ensure local government have the tools to support this transformation, the decentralization of government provides agency to local governments to provide a range of services to residents, including access to energy, water, and public transportation. (Stanton 2009) To start, maintain and expand these services requires capital-intensive expenditures, incumbent of course on the municipality.

Thanks to the devolution of government powers, local governments are increasingly burdened with the task of providing costly services. The fiscal burden is growing as revenue sources are outpaced by the growing needs of residents. The primary revenue sources are taxes and a multitude of grants from the National Treasury and National Department of Human Settlements, for the purpose of delivering transport and housing stock. (Submission for the Division of Revenue 2012/13, 2011)[2]

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[1] The City of Cape Town financial model is currently structured between funds received by National Government and property rates (taxes)

[2] Some of these grants are:
Urban Settlements Development Grant;
Municipal Infrastructure Grant ;
Integrated City Development Grant;
Human Settlements Development Grant ;
the Public Transport Network Grant; and
Integrated National Electrification Programme Grant.

South African municipalities typically have two budgets - an operating and capital budget. The funds for the operational budget come from the municipalities' own revenues and the 'Local government's equitable share'. Local governments in South Africa can raise their own revenue through taxation, service charges and other levies. The 'Local government's equitable share' is a convention promulgated through The Intergovernmental Fiscal Relations Act (1997) and codified by Section 214(1) of the Constitution. (National Treasury 2017 Budget Review) The unconditional and formula-based transfer of the City's contribution to revenue raised nationally is allocated to the municipality "to enable it to provide basic services and perform the functions allocated to it as stated in section 227 of the constitution" (Bahl & Smoke, 2003: 182) Municipal operating budgets are also offset by numerous conditional grants, created specifically for infrastructure delivery.

The municipal capital budget is funded through capital grants, transfers from national and provincial government, municipal borrowing and surplus in operating budgets. Surpluses in the operating budget are generally used to repay debts or fund capital projects. Each municipality is governed by an individual financial strategy and therefore use of surplus funds is dependent on the unique situation of that municipality.

South Africa's sub-national borrowing is regulated by Municipal Finance Management Act of 2003 (Act No. 56 of 2003). The Act was created with the aim of "maximising the ability of municipalities to deliver services to all their residents, customers, users and investors. It also aims to put in place a sound financial governance framework". (Municipal Service Delivery and PPP Guidelines, n.d.; iii)

The subsidiary research questions raised from the literature discussion in this section are:

- Does the CoCT have a financial strategy? How often is it revised?
- What does the strategy say surplus in operating budgets can be used for?

2.3.2.3.2 Spatial Planning

The City of Cape Town, as with other South African Cities, enjoys extensive and robust legislation which governs the spatial development of the city. The City's Metropolitan Spatial Development Framework has a ten-year lifespan with a five-year mid review, which occurs simultaneously as the Integrated Development Plan. (CoCT, "Cape Town Municipal Spatial Development Framework", n.d.) Per Section 35 of the Municipal System Act, Act 32 of 2000 (MSA) the Spatial Development Framework functions as the principal strategic planning instrument to guide and inform long term planning and development in the municipality. (Section 35 of the Municipal System Act, Act 32 of 2000) Furthermore, the City's Planning By-law and the national Spatial Planning and Land Use Management Act (SPLUMA), Act 16 of 2013 have stipulated that land development decisions are managed by the Spatial Development Framework (SDF). (CoCT, "Cape Town Municipal Spatial Development Framework", n.d.) In addition to providing the long-term vision for the desired spatial form and structure of the city, the SDF identifies areas that are suitable for urban development, which will in turn should receive private and public investment.

Per the Municipal Spatial Development Framework and Comprehensive Integrated Transport Plan Review, more than 190,000 households are located within informal settlements, roughly 440,000 citizens are unemployed (as of 2nd quarter 2016), and there are about 500,000 people who cannot access any transport due to income constraints. The review indicates that 95% of the public transport user group are

low to low-medium income group, and that they spend an average of 43% of their income on access to transportation.

The SDF includes an implementation plan and capital expenditure framework. The plan and framework are crafted based on SDF, IDP and Municipal Budget. At present, the City's capital funding is sourced from the Capital Grants, the Capital Replacement Reserve (CRR), the External Financing Fund (EFF) and Revenue (Cameron, 2017)

The subsidiary research question raised from the literature discussion in this section is:

- Do any of the City's policies speak of land-value capture?

2.4 Special Assessment Districts in the development of transport infrastructure

Critical Urban Infrastructure are those public services such as public transportation infrastructure necessary for the functioning and further development of the local economy. It is, quite frankly, what makes it possible for millions of people to traverse distances to their destination. Public transportation, while a conduit of economic activity is in and of itself an economic activity whereby millions have access to opportunities. Transportation systems function as the network infrastructure by which commodities traverse the global economy, consumers interface with retailers and laborers can get to and from work. In theory, people should have access to these opportunities, however this is not the reality.

Public transportation also happens to be one of the costliest endeavors for local and regional authorities. Primarily because of the increasing cost of infrastructure, coupled with the high cost of maintenance, public transportation remains one of the most demanded services and most expensive for local authorities to provide. As highlighted above, land-based financing tools are regarded as some of the most effective means by which critical infrastructure can be financed. To mitigate these costs, local authorities can enact a Special Assessment Districts (SAD) which oftentimes is regarded as the best tool to apply based on its requirements.

2.4.1 Conditions for a SAD

To establish a SAD at a large scale (to include funding of large infrastructure projects) there are at least 5 pre-conditions which must be met. These conditions, as outlined by the World Bank, include a complete, updated property registry. (Santos 2016) This ensures that there is accountability as to who will pay for what, and who benefits from the public upgrade. Second, there must be a demonstrated history of tax payments by land owners. In more established areas, delinquent tax payers typically lose their rights to the land. If owners have a history of not paying taxes, there's a likeliness that they will not pay for the SAD. Third, there must be robust real estate market demand. An unstable market or one in decline, where there is not demand cannot realistically support an infrastructure upgrade or new development. Fourth, there must be an enabling regulatory framework. Such a framework must enable an institution to establish fiduciary rights or support activity in the debt market upon which SAD can be legally established. Lastly, the debt-issuing entity must be credit worthy. As the SAD is a public-private endeavor, the debt-issuing entity should have the financial capacity to undertake this venture.

In addition to these conditions, local stakeholders must be motivated to participate in the infrastructural venture, as it will have longstanding consequences for all parties involved.

2.4.2 Pitfalls of Special Assessment Districts

Thanks to the process of establishing a Special Assessment District, there is typically little room for failure. However, that does not mean it is a fail proof tool. When applied as a guarantee for debt capital, the SAD is subject to market conditions. An unexpectantly weak market can result in reduced revenues, which can translate to a decrease in land values. Additionally, SADs can fail if they do not achieve policy goals. If the SAD fails to spur growth in the property market in a particular area, this can constitute as a failure to reach a policy goal.

It is incumbent on organizers of debt capital related SADs to communicate with all stakeholders the dependency of success on market conditions. For instance, the development of a new rail line with anticipated ridership benchmarks might fail because the development of property surrounding the rail line is less than expected. Communication and transparency are key to the success of these types of projects as it is a communal effort.

2.4.3 Design of a Special Assessment District

A SAD can be established based on different factors, typically at the behest of a local authority and/or the property owners. In relation to large transport infrastructure, SADs can be part of a comprehensive plan or urban development framework. They are established in areas which are demarcated as under-served by the existing transport network. Alternatively, the local authority establishes SADs when seeking to establish a new system or upgrade an entire system. In the case of an existing system, the managing transport agency typically measures the feasibility of developing a new transit line, or upgrading from bus to rail. In assessing the feasibility of the project, the transit authority seeks different forms of financing. In the case of a deficiency in public funds, the transit authority can approach property owners to see if they are interested and willing to contribute to the financing of this critical infrastructure. It is incumbent on the public authority to communicate why the infrastructure is critical to them, not only over the long-term but in their daily lives.

Once it has been determined that private entities are willing to participate, a vote should ensue. This vote must either include the mechanics of the SAD or there should be subsequent votes. If there is support for the SAD, a proposal should then be created for the local authority to decide if they will form the district. If agreed to, in accordance with the local frameworks and legal statues, the district is established. In addition to determining which property will benefit from the district, there needs to be a determination of the special assessment and if relevant, the distinction of those properties slated to benefit more than others. This distinction determines who pays higher and lower fees within the district if applicable. In the interest of transparency and cooperation, property owners must be given the opportunity to appeal the proposed fees. Reassessment of the fee must only occur within the scope of achieving financial benchmarks. Once all aspects of the SAD, including the funding structure are agreed to, the fiduciary entity must take the necessary steps to ensure the SAD contributes to the project. These steps include the local authority paying upfront for the cost and recouping revenue from the SAD or issuing a bond with the SAD revenue being used as a guarantee.

Once the transit development has been completed, it is anticipated that property values will increase, and the area will become more attractive to potential developers and land owners. There must be a provision in the SAD agreement that new developments or property owners in the district are to participate in the SAD. This provision must be enforced by the local authority.

The SAD concludes at the end of the funding schedule. This means a SAD is established for a 23-year period, for example.[3] The SAD is assessed at a fee level 'X' to pay 'Y' amount towards the total project cost or for the repayment of the bond.

It must be noted that Special Assessment Districts can be combined with other land-based financing tools, such as density bonuses to encourage development within the district and can have other benefits, such as a tool to affect the spatial form of the area.[4]

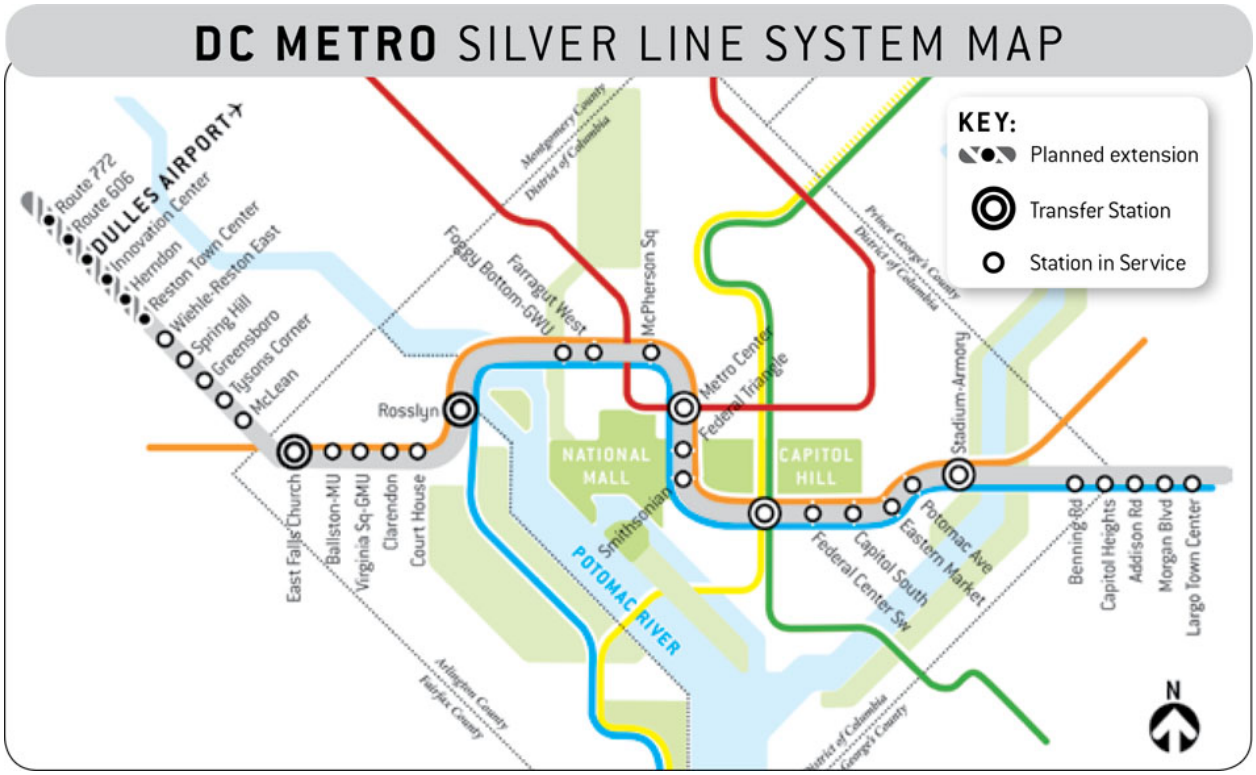
2.5 Case Example: Washington Metropolitan Area Transit Authority's (WMATA) Silver Line project, Virginia, USA

The example below aims to plainly explain the process, procedure and results of a SAD in application.

Globally, the Washington Metropolitan Area Transit Authority's (WMATA) Silver Line project exhibits the intricacies involved with aligning multiple spheres of government to craft a financing package for a transit line. The Silver Line traverses Virginia's Loudon, Fairfax and Arlington Counties, the District of Columbia (National Federal Capital), and Maryland's Prince Georges County. The line is an extension of the current Orange line, and will conclude just past the Dulles International Airport. Dulles Airport is one of America's busiest and most important international gateways. It must be noted that the WMATA does not have a fixed funding structure. Rather, it relies on passenger fares, grants from the Federal, State (Maryland and Virginia), and Local (Montgomery, Fairfax, Arlington, Prince Georges Counties) governments. (Mullins & Gaynor, 2015)

While the transit line is owned by the WMATA, the extension project was designed and constructed by the Metropolitan Washington Airports Authority. The project is being completed in two phases. The first, completed in 2014, cost $2.906 billion. The 11.5 miles' project, includes 5 rail stations. The second phase of the project is officially scheduled to be completed in 2019, with operation commencing soon thereafter. The second phase at 11.6 miles long is to include 6 additional stations. The projected cost as of March 9, 2016 is $2.778 billion. In total, the project is extending the WMATA system by just over 20%. (American Public Transportation Association, 2015)

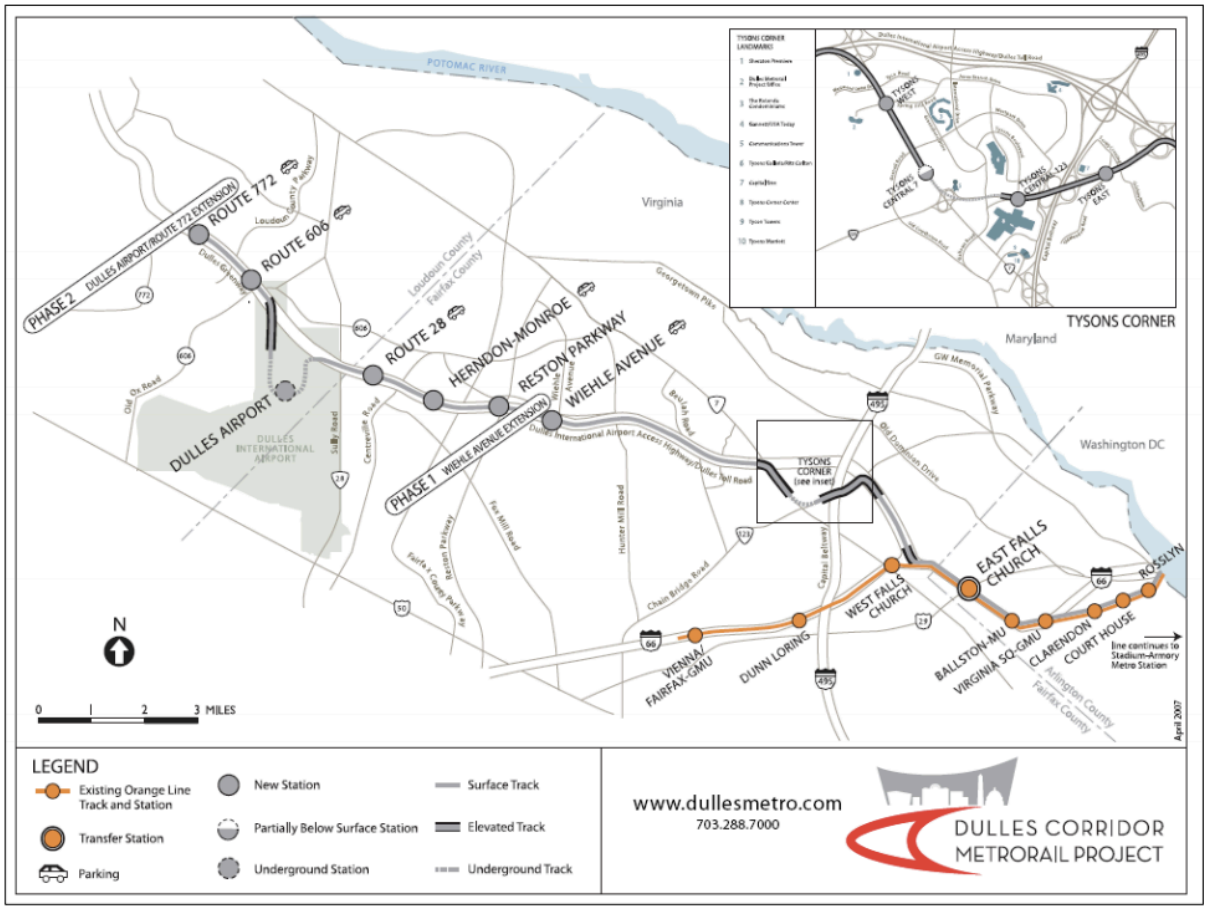
[3] The choice of 23 years is just an example, a SAD can be established for any agreed upon terms.
[4] When combining land based financing tools, consideration for regulatory policies and negotiated goals should be taken into account.



[*Fig 3*. WMATA System Map. Source: PlacesBook]

Financing of the extension project is being undertaken by the Federal government, Commonwealth of Virginia (State), and both counties where the extension is taking place (Local Government). The local governments are using special assessment districts for their contribution. As per the Code of Virginia, the State's statutory law, property owners have the right to petition the State's Board of Supervisors to be taxed to raise funds for transportation improvements in their area. (Nichols, 2015 and Code of Virginia) According to the Fairfax County Finance Plan, 75% of the cost allocation went to the Federal and State Governments, 16.1% to Fairfax Co., and 4.8% to Loudon Co. (LaHait, Fairfax County, 2016)

The extension, voted on 3 July 2012 by the Loudon County Board of Supervisors, has been established to help reshape "the auto-oriented suburban job centers into mixed-use, walkable transit districts." (Corbalis, 2012) According to the World Bank, the region is expected to have 45 percent population growth and 60% employment growth over the next 25 years. (Special Assessment Districts, World Bank, n.d.) The silver line corridor during the same period is estimated to have 63% growth, while Dulles airport is estimated to accommodate 55 million travelers annually. (Dulles Corridor Metrorail Project, n.d.) This large growth over a relatively short period of time is indicative of the strong job market, and other attracting factors which will create public service strains on the regional and local authorities over time. In Loudon County specifically, the SAD enacted on commercial and undeveloped properties within a half-mile of the future stations would pay a tax of 20 cents per $100 of assessed properties, while properties further afield would pay less than the 20 cents per $100. (Corbalis, 2012) This hybrid structure also includes a provision which states that all but 37 parcels of existing residential property are excluded from the SAD, and all future residential developments within the SAD will be required to pay the levy. (Gibson 2012)



[*Fig 4*. Silver Line Extension. Source: Dulles Corridor Project]

In neighboring Fairfax County, two special assessment districts have been introduced for both phases of development. Unlike Loudon County, Fairfax is only taxing commercial and industrial properties along the Silver Line. Per the Metropolitan Planning Council:

> The Phase I special assessment has collected taxes since 2005, and as of the end of 2013 the assessment has collected nearly $200 million of the $400 million that the assessment is designated to raise. The Phase II assessment area started off in 2011 by levying a 5-cent tax per $100 of assessed value, and, per the initial agreement, has incrementally risen to 20 cents per $100. This assessment has collected a little over $21 million of its designated $330, but with the rate now at 20 cents it is likely to fulfill its obligation at a much faster pace. Both of these special assessments are capped—$400 million for Phase I and $330 million for Phase II—and they will continue to accrue tax revenue until the cap is reached. (Nichols 2015)

According to the county finance plan for the project, after phase 2 when the passenger rail service begins, the tax rate may be increased to $0.25 per $100 of Assessed Value. (LaHait, Fairfax County, 2016) After the initial $400 million Phase 1 SAD, the county is responsible for Phase 2 which amounts to $915,112,868. The Phase 2 SAD is expected to generate $330 million, with the remainder of to be covered by the County and Regional Transportation Projects Fund and Northern Virginia Transportation Authority. (ibid)

Such hefty investments yielded tangible results. Thankfully, within two months of commencing operations, Phase 1 saw ridership over projections at some stations. (Washington Metropolitan Area

Transit Authority 2014) Since Phase 1commenced operations, 11 high-rises were built in Tysons Corner, and more than 2 million square feet of development is in the pipeline. (Aratani 2017)

The Washington Post reports, though, that ridership in the 3 years since opening of the Silver line is lower than projections for this period. (ibid) This must be viewed in the context of the entire metro system which has seen a 12% drop in ridership in 2017 and 9% in 2016. (Smith 2017) With an increase of developments around the Silver Line, and impending completion of the Phase 2, it is hoped that ridership will balance out.

The Silver Line expansion, to date, has had significant impact in the region as property development along the line has increased substantially. In planning for the future growth of the region, the silver line serves as a conduit for connecting people and places.

2.5.1 South African applicability

South Africa serves as perfect example of an economy in transformation. As one of the world's largest economies, South Africa is steadily making progress in creating equitable access to a national economy once completely dominated by the minority population. The rapid recovery from the 2008 Global Financial Crisis, and relative stability of its currency has rendered South Africa an example of an industrialized economy on the rise. Much of the success attributed to the South African economy stems from strong urban economies which are supported by decentralization as codified by the constitution. South African cities maintain a strong sense of autonomy from the central government which has aided in the emergence of differing development strategies. Uniform across South Africa is the drive to propel the economy, as evidenced by the Business Improvement Districts employed across the country.

2.5.1.i Improvement Districts

Globally, improvement districts have been utilized by local authorities to leverage private funds for urban regeneration. The model has been replicated and applied by local organizers to achieve many long-term goals. Section 22 of the Municipal Property Rates Act 2004 and the Municipal Finance Management Act outline the specifications of a special rating area or improvement district. Individual municipalities in South Africa have created Improvement District By-laws as a means of contextualizing the legislation to their respective jurisdictions.

An improvement district is a geographically bound area, in which most property owners (51%+) confer to contribute a supplemental levy for additional services in that area. Some of the services rendered by the Improvement District are: Security, Maintenance, Social Services, and Capital Improvements. The finance structure of an improvement district includes a fee paid by participants within the district, and occasionally support from public coffers. It must be noted that the improvement district is a voluntary endeavor, to supplement the services provided by the local government in hopes of improving the area.

In Johannesburg, it is reported that City Improvement Districts collect R91million annually from property owners, with R61million earmarked for public space safety, cleaning and maintenance. (Johannesburg CIFD Forum, 2016) In Cape Town, the Central City Improvement District (CCID) alone collected almost R50 million in 2016. (Central City Improvement District , 2016) The Cape Town CCID has been lauded internationally for its social and urban development model. (Cape Town Central Improvement District, n.d.) This district, along with others in the country, show the willingness of the private sector to partner with the public sector to enable growth and development.

2.5.2 Bus Rapid Transit System

The case study under review is of a BRT systems. These systems are designed to increase public transport capacity. BRT systems occasionally serve as a precursor to expanding into a fully fledge metro rail system. In South Africa, and the Global South at large, BRTs have been pushed as a conduit for development. In Latin America, more than 45 cities have invested in BRT, accounting for 63.6 percent of BRT ridership worldwide. (Rodriguez & Tovar, 2013) While this system works for Latin America, and countless other cities, it is not a model that can be replicated everywhere. Very much like democracy, public transportation should be available everywhere. But there is not a one size fit all model that can be applied. In the South African context, BRTs have a relatively new history. In Gauteng, the country's economic powerhouse, the local BRT system is regarded as a flop. According to media reports, Transport minister Joe Maswanganyi acknowledges the failure of the R15 billion project. With most "commuters shunning the system in favor of taxis and conventional buses" (Mabena 2017), what lessons can be learned from Gauteng's BRT?

Cost. This is the primary concern for all parties. How much it will cost to develop, fund, and operate the system is the concern of the municipality. The consumer is concerned with how much it will cost them in relation to other forms of available transportation. Keeping the cost low is a double edge sword which the municipality must balance. Finding a way to invest in this infrastructure, while not transferring the cost to the consumer is an issue most business, or in this case municipality, must handle.

2.6 Subsidiary research questions

The main aim of this research is to understand how we utilize land-based financing tools to fund critical urban infrastructure, through the establishment of new spatial policies, all the while creating an environment in which private developers can meet their own goals? The question can only be answered by addressing other subsidiary research questions raised in this chapter.

1. Do any of the City's policies speak of land-value capture?
2. Does the City currently employ any land-based financing tools?
3. What are the financing mechanism most often used by the City of Cape Town?
4. What are the land-based financing strategies used in the MyCiTi case?
5. Which tool or tools are used by the CoCT to finance the roll out of the MyCiTi?
6. How did the CoCT access the capital to finance the short- and long-term rollout of the MyCiTi infrastructure?
7. Have the same tools been used finance the roll out of the MyCiTi in subsequent phases?
8. Who is benefitting from the rollout of the MyCiTi service?
9. How does the CoCT capitalize on the roles of developers in procuring public services/improvements/amenities?
10. Does the CoCT have a financial strategy? How often is it revised?
11. What does the strategy say surplus in operating budgets can be used for?
12. Do any of the City's policies speak of land-value capture?

These are pertinent questions to ask, and that my research aims to answer (see Chapter 5), if we are to unpack the extent of the applicability of land-based financing tools in South Africa, and the Global South at large. The answers to these questions will be developed through the analysis of the case study.

2.6.1 Analysis Criteria

In assessing the case study, I've developed a set of criteria based on the literature reviewed:

- Legal convention: There must be some legislation or policy in place to support the use and application of these tools either in name or practice.
- Creating value and return on investment: In order for the tools to be utilized, there must be some form of value they create and generate some form of return on the investment.
- Municipal Capacity: The local authority must have the capacity to generate, manage and execute the tools.

2.7 Conclusion

This chapter has outlined the various land-based financing tools. While acknowledging the Global South scope of this research, this chapter specifically addressed the regulatory framework of South Africa as it provides context for the case study in Chapter. 4. The next chapter will discuss the research methods employed in this research.

Assessment criteria derived from the literature review.	Subsidiary research questions derived from the assessment criteria and literature
Legal convention: There must be some policy in place to support the use and application of these tools either in name or practice.	- What are the land-based financing strategies used in the MyCiTi case? -Which tool or tools are used by the CoCT to finance the roll out of the MyCiTi? - How did the CoCT access the capital to finance the short- and long-term rollout of the MyCiTi infrastructure?
Creating value and return on investment: In order for the tools to be utilized, there must be some form of value they create and generate some form of return on the investment.	-Have the same tools been used to finance the roll out of the MyCiTi in subsequent phases? -Who is benefitting from the rollout of the MyCiTi service? -How does the CoCT capitalize on the roles of developers in procuring public services/improvements/amenities?
Municipal Capacity: The local authority must have the capacity to generate, manage and execute the tools.	- Does the CoCT have a financial strategy? How often is it revised? -What does the strategy say surplus in operating budgets can be used for? -Do any of the City's policies speak of land-value capture?

[*Table.1 Summary of Assessment Criteria and Subsidiary Questions]*

3.1 Introduction

The theoretical basis for the research—as well as the assessment criteria and corresponding subsidiary research questions are established in Chapter 2. This chapter details the research methods and techniques followed to gather the data needed to answer the main and subsidiary research questions. The first part of the chapter outlines the research methods adopted in this research. In particular, I discuss the case study method and Critical Discourse Analysis. The second part of this chapter discusses the research techniques employed to gather the data.

3.2 Research Methods

In order to answer the primary and subsidiary research questions, various research methods are followed. These methods have been chosen with the aim of providing a rounded and robust argument of the applicability and circumstances for using land-based financing tools. The Case Study method and Critical Discourse Analysis are outlined in brief below. It is to a discussion of the case study method that the chapter now turns.

3.2.1 The Case Study Method

A case study is the "detailed examination of a single example" (Flyvbjerg 2006: 2). The use of a case study enables a researcher to generate hypotheses for later testing, and to provide context for theory. Case studies are unique in that they provide closeness to real-life situations. Having a context for the application of a theory is just as important as understanding the theory, if not more. For example, economic theorems consist of formulas and graphs, which have little meaning if not applied to the various variables of economic activity. As a researcher, having a firm understanding of theory coupled with an understanding of its application renders one capable of taking their research to the next level. Consequently, a case study's multiple wealth of details is important for the development of a nuanced view of reality and for researchers' own learning processes in developing the skills needed to do good research (ibid.).

A carefully chosen case can be used to achieve two main goals: generating and testing a hypothesis. Many scholars suggest that the case method should be exclusively used to generate hypotheses based on context-dependent experience. However, Eckstein (1975) stresses that case studies "are valuable at all stages of the theory-building process, but most valuable at that stage of theory-building where least value is generally attached to them: the stage at which candidate theories are tested." (Eckstein,1975: 80) This of course can only be achieved if a case study is chosen with the intention of learning the "greatest possible amount of information on a given problem or phenomenon". (Flyvbjerg, 2006; 13) There are no set of criteria to determine which case will provide for this. Flyvbjerg (2006) does provide some guidance on choosing a case. According to Flyvbjerg, "it is a good idea to look for either 'most likely' or 'least likely' cases, that is, cases which are likely to either clearly confirm or irrefutably falsify propositions and hypotheses." (ibid) Why? Because these cases in a way help prove or disprove the position of the researcher with tangible actions which employ the theory and propositions.

The case study for this research is the MyCiTi, Cape Town's Integrated Rapid Transit System (IRTS). The MyCiTi has been chosen as the case study for this research because of the greater context in which it is located. Cape Town is a city on the rise from a very dark past. Cape Town is faced with many challenges,

namely trying to reverse apartheid (spatial) planning, a stagnant economy, growing income inequality and a tight municipal budget. Therefore, understanding how land based financing tools are and can be used to fund critical urban infrastructure, establish new spatial policies, all the while creating an environment where private developers can meet their own goals is critical. This is true not just for Cape Town but for many other cities of the Global South as well.

The research is complemented through the use of a case example. Case examples are the best source of examples from a wide range of completed projects, and typically yield both quantitative and qualitative information and sources. Cases examples are useful in answering the primary and subsidiary research questions as well as providing insight to the contextual difficulties of applying land-based financing tools in Global South cities. Utilizing the case example served as the foundation for answering the primary research question.

The case example in this research is uniquely focused on financing public transport. This is done to maintain uniformity with the case study for this research, which is the MyCiTi. The criteria for selecting the case example are: breadth of available information, transit related infrastructure projects, legal frameworks which support the use of land-based financing tools. The criteria are realistic and allows for a researcher to make use of examples from around the world. Having a wide variety of information sources is important for providing a detailed and rounded explanation of the case example. As the case study is about the financing of public transportation, it only makes sense to provide an example that is transit oriented.

The case study method affords the researcher an opportunity to present recommendations and demonstrate that theories can possibly be applied in different context related circumstances. Or as Yin (2003;15) puts it: "A case study is "a way of investigating an empirical topic by following a set of [guiding] principles" within its real-life context". The context specificity provides for insight into examples that have unique conditions which can be an example for future application in other municipalities within South Africa and around the world. For example, in many countries tax collection is a function of national government and then funds are dispersed to municipalities while in others, the municipality may have that responsibility. The differences of these functions may inform the processes in which land-based financing tools are applied. Another example would be the limitation of municipal capacity. A city like Conakry, capital of Guinea, is governed by an appointed Governor, while in neighboring Cote D'Ivoire, the Mayor of Abidjan is directly elected by citizens. This significant difference means there's a difference in political will to support the planning initiatives and fund infrastructure. By understanding the different influences, and dynamics within a given context, the researcher is able to present an argument, which then can be put forward as an example for future study. (Babbie and Mouton, 2001: 281)

Learning occurs through various mediums, this includes through the examples of others. Case examples are important as they impart lessons learned. While some might contend that the case study method is used to generalize based on an individual case, the case study cannot, therefore, contribute to scientific development. This notion is false as information gained for a case study is used to further advance knowledge, and be applied to context-dependent situations. The extensive narrative that is needed to examine and explain a case study typically provides for extensive 'real life' information which can only be generated via the case study method. In part, it is because of the case study methods process of context-dependent experiences that I am able to answer the research questions.

Research methods have limitations. This is true of the case study method as well. While a case study provides context and examples of applicability of theory, process, or experience, there is the opportunity for a researcher to introduce personal bias into his/her research. Many opponents of the case study

method cite "a bias toward verification, that is, a tendency to confirm the researcher's pre- conceived notions". (Flyvbjerg, 2011) Francis Bacon noted early that this bias is not only present in case study research, but in most forms of human activity. (Bacon,1853; xlvi) If it is indeed true that as humans we have a bias towards verification of our preconceived notions, then this would be true of all methods of inquiry. Flyvbjerg (2011) addresses this when he speaks of the "black swan" cases, where researchers attempt to present information in a biased manner as to suggest an outcome. However, true and genuine research will contradict these 'black swans' as the research will support the true conclusion. Flyvbjerg (2006) informs us that case studies were designed for researchers to present valid facts, as contextualizing their findings would prove impossible.

The case study method is most appropriate in this research for two reasons. First, examples are used to examine how land-based financing tools have been applied. Secondly, through close examination, how application of land-based financing tools can be improved (bolstered by the case examples) for subsequent roll out of the next phases of the MyCiTi case study. This is an advantage in my research as it will provide context for answering the research and subsidiary questions.

3.2.2 Critical Discourse Analysis

Critical Discourse Analysis (CDA) is essential when analyzing different theories and models, as well as infrastructure financing tools. Critical discourse analysis "provides theories and methods for the empirical study of the relations between discourse and social and cultural developments in different social domains." (Jorgensen & Phillips, 2002; 71) As both a research method and analytical tool, critical discourse analysis, uncovers the authoritative context of land-based financing tools. The term 'authoritative context' refers to the institutions, researchers and practitioners who possess the credentials and extensive or specialized knowledge about land-based financing tools. Whereas the case study method is elucidating the process, experience and application of the hypothesis, critical discourse analysis is best suited to analyze various theories and models, and inform the hypotheses testing.

According to Fairclough and Wodak (1997), there are five common features of critical discourse analysis:

Firstly, the character of social and cultural processes and structures is partly Linguistic-Discursive. That is to say texts, which are "*produced* (created) and *consumed* (received and interpreted) – are viewed as an important form of social practice which contributes to the *constitution* of the social world including social identities and social relations". These are Discursive Practices. Second, discourse is both constitutive and constituted, which means discourse has a *dialectical* relationship. Discourse in effect shapes social structures, but also mirrors those relationships. Third, language use should be Empirically Analyzed within its Social Context. Language is often purposeful and in social interaction intended to convey certain information. Critical discourse analysis seeks to study the use of language. Fourth, Discourse Functions Ideologically, meaning that the role of discursive practice is instrumental in the maintenance of the social world, including the relations of power. Last, critical research is an aspect of Critical Discourse Analysis. CDA should employ 'explanatory critique' and 'critical language awareness', to uncover the role of discursive practice in the maintenance of power relations. (ibid)

As a research method, critical discourse analysis primarily serves as a tool through which concepts and theories can be analyzed through the social and cultural developments of different social domains. In relation to the land-based financing tools, this method is used to understand the socio-economic-political climate, and institutional capacity, which has led to the innovation of these tools and their subsequent application in Cape Town.

3.2.2.1 Policy Discourse Review

This research is primarily contextualized by the policy and regulatory frameworks needed to support the application of land-based financing tools. A policy discourse review was essential in Ch.2 to understand the legislation which governs South African municipalities as the case study under review is Cape Town. The review consists of national, provincial and local legislation focused on municipal finance. The policy discourse review is useful in evaluating and generating knowledge in relation to relevant policies. This process, is necessary for contextualizing the application of the land-based financing tools as different governments will articulate their legislation to their sphere of responsibility.

3.3 Research Techniques

Research techniques are the ways in which the data is collected. The primary technique followed in this research is desktop research. Secondary data sources are critical to providing context and answering the research questions. While the majority of the research will be qualitative in nature, I will make use of quantitative data to justify and verify many crucial points. It is to a discussion on desktop research that the chapter now turns.

3.3.1 Data Collection

The land-based financing tools analyzed in this research are not new, and many resources are found via the desktop platform which is why desktop research is a chosen research technique. Desktop research, a form of secondary research, is the summation and synthesis of existing research through the collection of data. The greatest limitation to desktop research is the availability of data. In the digital age, accessibility of information has become an important tool in conducting research with a global scope. However, some areas of the Global South still face challenges providing access to this information. This is primarily an assumption based off an attempt to gather information from municipalities which have large economic footprints relative to their national and international position yet have insufficient information available. This, therefore, makes it incredibly difficult for some to present a rounded argument. The case example presented in Ch.2 was chosen in part because it is well documented, with sufficient information available. To determine if a case example has sufficient information for it to be presented, I looked for government documents, along with media reports which cited credible sources.

Understanding the policy and regulatory frameworks which govern municipal finance is the first and most critical part of this study as it is the basis for applicability of the tools. This is accompanied by an analysis of legal documents and frameworks. These frameworks are critical as they govern all transactions. Secondary sources include reports by multilateral agencies, real estate consultancies, municipal reports and other institutional information such as financial models, feasibility studies, incremental tax structures and municipal budgets to mention a few. I also rely on media reports which typically quote stakeholders, present facts, figures and cite credible sources. Reports by real estate consultancies and municipal entities provide context for the case example and the case study.

The sources chosen are an assemblage of informants. They have been chosen with the aim of obtaining a rounded understanding of municipal finance and land-based financing tools. As the use of land-based financing tools is a collaborative endeavor consisting of public and private entities, reports from multilateral development agencies such as the World Bank or African Development Bank have also been collected and analyzed. These agencies have, at one time or another, prescribed these tools as effective tools for urban development.

3.3.2 Sampling

In determining the organizations appropriate for review for this study, a sampling process is required. Sampling, or rather non-probability sampling works in tandem with the case study method, as it informs which reports were appropriate. (Babbie & Mouton, 2001: 166)

In selecting the organizations as a sample, those which have knowledge of the land-based financing tools and its application are most appropriate, as they provide relevant information on the case example and case study.

3.4 Ethics

Ethics in research is a matter of extreme importance. As researchers, our subjectivities invariably influence our research through our choice of research question, the sources we choose and even the methods and techniques we decide to employ. Furthermore, the way we interpret the information we have gathered and present that information is of ethical importance. As I have not collected primary data, it is presumed that secondary data sources sought the appropriate ethical clearances.

Ethics is important because research is often diffused to institutions, policymakers and other bodies which might utilize the findings to inform decisions. Misinformation, due to human error or unethical research is unacceptable.

3.5 Conclusion

This chapter outlined the research methods and techniques that are used in this study. The case study method and critical discourse analysis were determined to be the most appropriate research methods for this research. The strength and weaknesses of these methods and the desktop research technique were also discussed in this chapter. Chapter 4 will present the case study.

4.1 Introduction

This chapter will present a detailed discussion on the MyCiTi case study.

4.2 MyCiTi Case Study

Across the various documents which constitute the vision for Cape Town's spatial development, public transportation is consistently presented as the connecting thread of the City's urban fabric. Public transportation has emerged as a tangible mechanism with which the City is transforming Cape Town's built environment. The City has pledged its commitment to the MyCiTi Bus Rapid Transport (BRT) system. As City Councillor Brett Herron[5] indicates it:

> "[I]s a key part of ensuring that our city is sustainable, and that we achieve our goal of reversing the spatial legacy of apartheid so that everyone can access work opportunities, services and all Cape Town has to offer." (Transport and Urban Development Authority (TDA), 2017)

As of October 28, 2017, there are forty-one (41) routes connecting residents from Hout Bay to as far as Atlantis. According to the 2016 MyCiTi stakeholder report, these routes transport 1.6 million passengers per month. (TDA, Stakeholder Report, 2016)

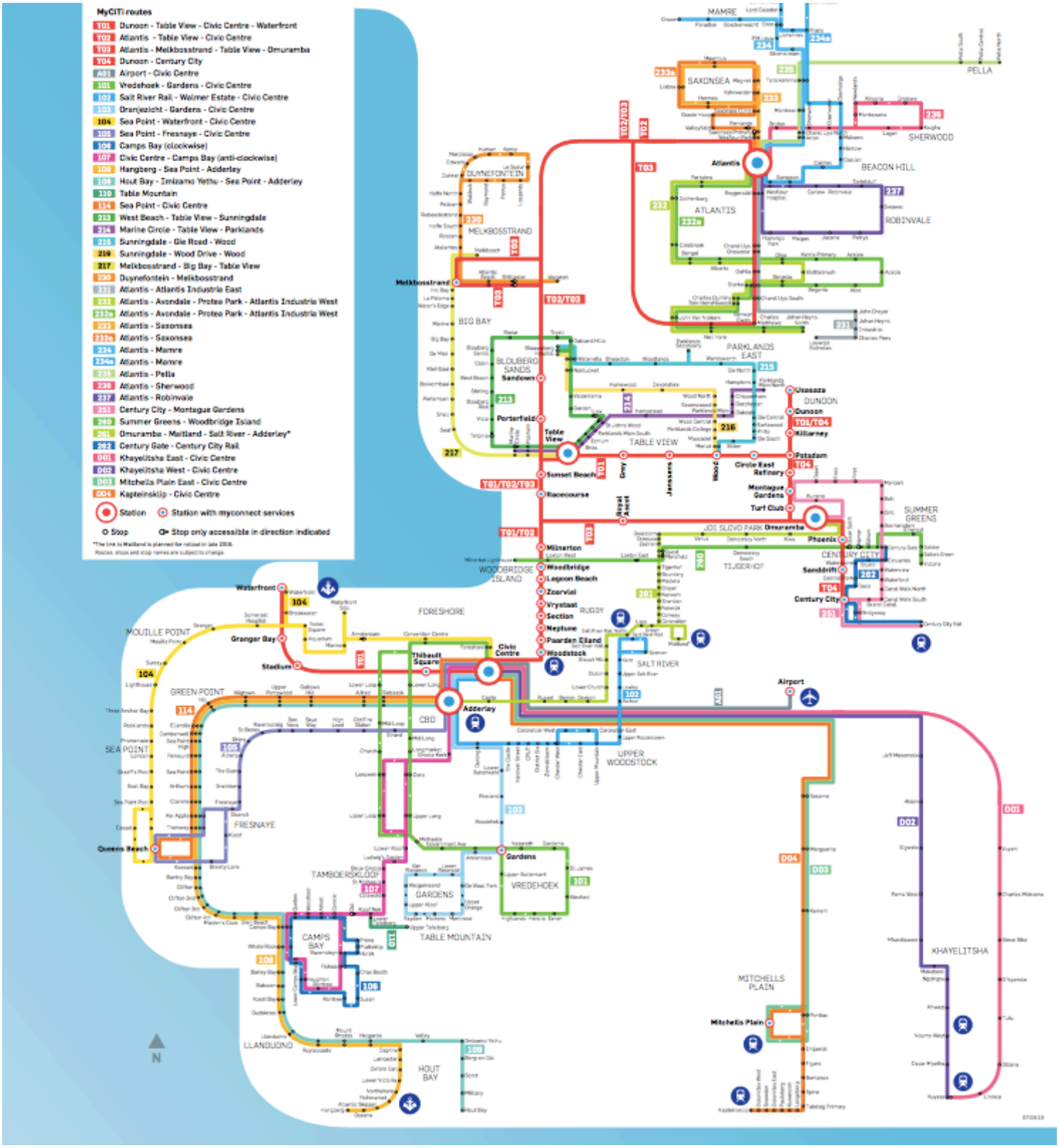
In 2007, the City initiated an Integrated Rapid Transit (IRT) system with the aim of integrating various modes of transport, namely bus, minibus taxis and rail in the city. In concert with the investments for the 2010 FIFA World Cup, the City delivered the preliminary facets of the MyCiTi system in 2008. In May 2011, the first full phase of the MyCiTi was launched. By October 2011, the MyCiTi had counted its one-millionth passenger. This was an impressive feat.

The first phase of the system connects the Central Business District (CBD) to Table View (see figure 5). The West Coast, as the areas around Table View are referred to, has, until the launch of this MyCiTi route, been linked to the rest of the city via a limited number of public transportation options. There are even fewer options connecting the CBD and Atlantis, which is further afield. (ibid) The West Coast according to the City is a major growth area due to the development of

> "several new suburbs established there in the last decade including Parklands, which continues to grow, as well as the popular new coastal suburb of Big Bay and the low-income suburbs of Dunoon and Doornbach located on Potsdam Road close to oil refineries and manufacturing industries. Century City, a growing mixed-use development making a huge impact in Cape Town, also forms part of this dynamic corridor." (ibid).

The City is currently rolling out phase 2, with the full completion of this phase being slated for 2021. (CapeTalk 567AM, 2016) In addition to routes to Mitchells Plain and Khayetlistha, the second phase includes trunk routes to Strandfontein and Ottery. According to Councillor Herron, it is anticipated that

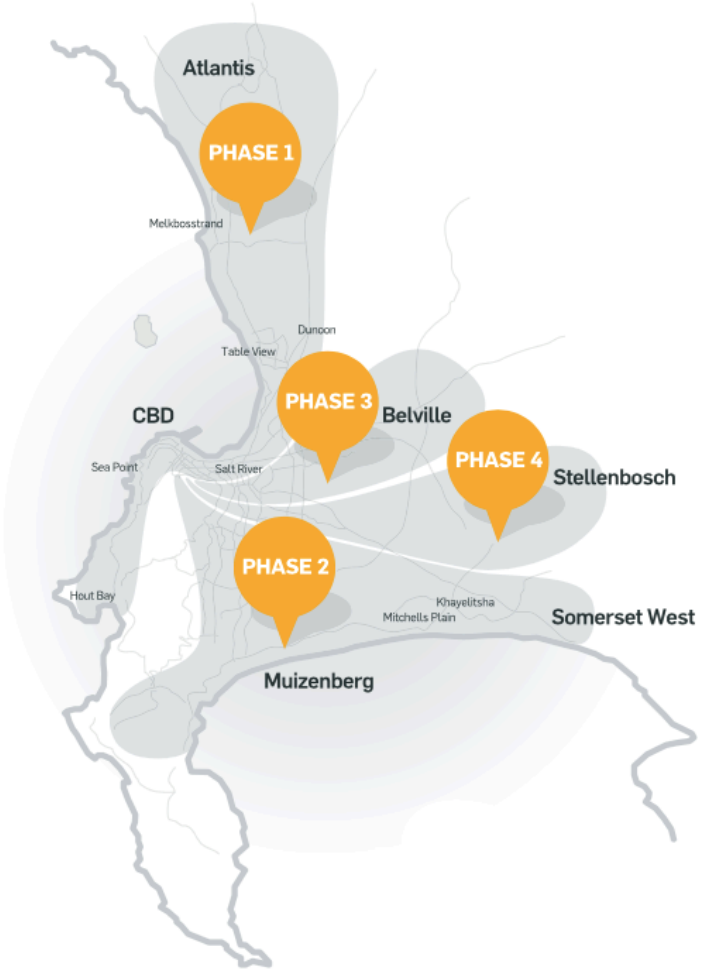
[5] Councillor Herron is also the City's Mayoral Committee Member for Transport and Urban Development



[*Fig 5*. MyCiTi System. Source: 2015 Stakeholders Guide]

once complete the second phase will service roughly thirty-four (34) residential communities with feeder buses for each of those communities. (ibid)

The system is being completed in phases and as funds become available. According to the Transport and Urban Development Authority, the subsequent phases include: firstly, the provision of an extensive service to the southeast parts of the city, including Mitchells Plain and Khayelitsha, to destinations across the peninsula. This is phase 2 of the MyCiTi rollout. For phase 3, the plan is to include Bellville, Delft, the rest of the northern suburbs and Stellenbosch. The final phase, phase 4 involves the extension of the service to the Greater Helderberg area. (MyCiTi, History, n.d.)



[*Fig 6*. Phases of the MyCiTi. Source: 2013 Stakeholders Guide]

In 2016, 2.5 million passengers used some form of public transportation daily. Ninety-five percent (95%) of these passengers are characterized as low to low-middle income persons. (TDA, Cape Town Transport 2016) It has been cited many times that in Cape Town, low income households spend a disproportionate amount of their household income on transport in comparison to other households. (MyCiTi, 2015) Delivering a transit system, which cuts down on cost and provides access to economic activities is critical to transforming Cape Town in the wake of its apartheid past.

To better service citizens and push forward the IDP agenda, the Transport and Urban Development Authority (TDA)[6] needs to successfully roll out the subsequent phases of the MyCiTi. While Phase 1 cost the City R2.9billion, it is estimated that phase 2 based on 2018 projections will cost R4.7 billion. (Dentlinger 2016) Phase 2 calls for the development of "20 median stations (a station located in the middle island of a double carriageway)" by 2022. (ibid) The system, once complete will connect most of the Cape Town economic catchment (see figure 4.2).

The MyCiTi like other BRT systems around the world has been designed to be a cost-effective means to increase the capacity of the public transport sector in Cape Town. According to the MyCiTi:

> "BRT has virtually all the performance and comfort of a modern rail-based transit system but at a fraction of the cost – typically four to 20 times less than a tram or light rail transit system and 10 to 100 times less than a rail system." (MyCiTi, n.d.)

As a multi-billion rand endeavor, the MyCiTi is slated to be more cost effective than a rail system. The MyCiTi's capital expenditures include, but are not limited to: road works, the construction of stations and stops, setting up the quality automated fare system, and the control system, which monitors safety and reliability. These are financed primarily through the Public Transport Infrastructure and Systems Grant (PTISG). (MyCiTi, 2012 Business Plan)

The Public Transport Infrastructure and Systems Grant, was created to support the development transport-related infrastructure for the 2010 FIFA World Cup. Initially, the conditions for receiving funding revolved around a mandate to "fund public transport infrastructure and systems that promote public over private transport". (Department of Transport, 2011) The grant evolved into the primary funding source of Public Transport Strategy and Action Plan (new Bus Rapid Transit systems). (MyCiTi, 2012 Business Plan) [7]

Other components of the MyCiTi funding structure include, first, system revenue (fares and advertising revenues). Revenue generated from the operation of the system is split between passenger fares, and revenue from advertising (on properties and on vehicles). In the business plan, estimated fare revenues have been understated by twenty-five percent (25%), while the operational modelling of the system has been designed to increase levels of patronage and maximize fare revenue. (ibid) By understating potential revenues, the MyCiTi was possibly planning for potential unforeseen failures as the initial rollout of this type of endeavor may fail or succeed due to unexpected circumstances. Second, the MyCiTi funding structure includes the City's own contributions. The City's contributions are used mainly to fund associated operating costs. (ibid) These contributions are generated through property rates and a share of the fuel levy. The fuel levy is collected nationally by the South African Revenue Service on every litre of fuel sold[8]. ("Almost half of…", 2016) Funds generated by the levy are then administered by the National Treasury and distributed to various functions of government. Initially, 23% of the fuel levy was earmarked for Metropolitan Municipalities in the 2009/10 fiscal year. (SALGA, n.d.) Presently, roughly a third of the fuel levy goes to Metropolitan Municipalities. (van Wyk, 2014)

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[6] Over the past year, the City of Cape Town has restructured its Spatial Planning, Transport, and Environmental Management divisions into the uniform Transport and Urban Development Authority (TDA).

[7] The Public Transport Strategy and Action Plan was an initiative of National Government to establish Integrated Rapid Public Transport (IRT) Service Networks in urban and rural areas.

[8] During the 2014/2015 fiscal year R48.8 billion was generated from the levy. In 2016, the levy increased from 2.55 to R2.85 a liter

In the 2011/2012 fiscal year, the City contributed R187 million from rates and other general revenue sources to the MyCiTi project. (MyCiTi, 2012 Business Plan) These funds were earmarked for implementation and day-to-day operations. The City's contribution was based on provisions set in the Division of Revenue Act (Act 5 of 2012) which mandates a recipient municipalities contribution in addition to the PTISG to share system costs. The system costs that were taken into consideration for this calculation include recurrent costs not covered by fare and advertising revenue.[9]

As one of the primary municipalities to make use of the PTISG for developing a BRT system, Cape Town has enjoyed little competition for what is expected to become a dwindling share of the grant.[10] While the funds have been allocated, the Municipality fears the slow implementation and continued development of the MyCiTi system will result in less funding being allocated for the full rollout.

In addition to the reality of losing capital from the PTISG, there is the real possibility of losing revenue from fares. This scenario would be exacerbated by an increase in operating costs. The business plan states that:

> "A scenario has been run where fare revenue is 25% lower than anticipated and vehicle operator costs are 15% higher. Under these assumptions, the crucial implication is that the gap between direct vehicle operating costs and system revenue is about 10% higher than the City's cap. But because this gap may not be funded by PTISG the City would be forced to exceed its cap. Thus, if the City is to maintain a cap of R187 million escalated by 6% per year it will not be able to sustain both a fare income reduction of 25% and a vehicle operator contract increase of 15% compared with the modelled figures in the outer years, and will have to manage this accordingly." (ibid)

This scenario could have devastating consequences for the MyCiTi. An increase in fares, while unfavorable is likely, and current funding sources are limited. It is reported that MyCiTi is facing a potential deficit of R52 million for the 2016/2017 fiscal year. This amounts to roughly R1 million a week. (Lewis, 2015) Why is the system struggling to meet its benchmarks? Primarily because the system has yet to be rolled out in its entirety. Secondly, the cost is far outweighing the revenue streams necessary to cover them. The failings of the MyCiTi financial structure prompted the Municipality and stakeholders to update the 2012 Business Plan to include a hybrid MyCiTi/minibus-taxi model. This model was codified 24 August 2017 as part of the City's Integrated Public Transport Network (IPTN) Business Plan.

4.2.1 Integrated Public Transport Network

As a means of increasing ridership and minimizing competition along certain routes, the City developed the MyCiTi/minibus taxi model. To initially roll out the system, the MyCiTi financially compensated taxi associations and bus companies for rights to certain routes.[11] Some taxi associations and bus companies were given equity in various aspects of the project. For instance, the "Golden Arrow Bus Service (GABS) has a 5.07% market share and Sibanye a 15.28% market share in the current Phase 1 area" (MyCiTi, 2012 Business Plan; 129) The MyCiTi unfortunately has not accounted for the fact that minibus taxis remain a cheaper and inadvertently more attractive means of transportation to riders. The MyCiTi has also failed

[9] Please see appendix/annexure for tables of all recurring cost based on the 2012 MyCiTi Business Plan
[10] The 2012 MyCiTi Business Plan outlines the risks of less funding than projected being made available through PTISG for capital expenditure.
[11] The City created a compensation policy for taxi associations and operators but fail to provide exact individual cost.

to account for the myriad of private operators who function outside of a taxi association and are penalized without compensation. Currently, minibus taxis account for twelve percent (12%) of public transport usage in Cape Town. (TDA, Cape Town Transport 2016) Historically, the minibus service has been characterized by low cost and general efficiency in getting to and from nodal areas. While plagued with a number of problems, such as safety, the taxi system has significantly more coverage than the MyCiTi, rendering it still yet more appealing.

As a means of tapping into the extensive network that the taxi's currently hold, the City established an Integrated Public Transport Network Business Plan with hopes of achieving "long-term financial and fiscal sustainability of operations". (City of Cape Town, 2017) The plan seeks to integrate the established passenger rail, MyCiTi, and contracted bus services, with the minibus-taxi industry. The City's Mayoral Committee Member for Transport and Urban Development, Councillor Brett Herron indicated that the "minibus-taxis will provide on-demand services in future MyCiTi service roll-outs and transport commuters to stations and stops from where commuters can transfer to a MyCiTi trunk route". (ibid) This integration will hopefully streamline travel resources for commuters, but also streamline more passengers for the MyCiTi. The councilor went on to say that "the reason for this major shift is that we have learned that removing minibus taxis along routes where the MyCiTi service is operating, such as in Phase 1, is financially unsustainable in the long-term" (ibid)

The City's willingness to implement adapt innovative mechanisms for supporting the success of the MyCiTi should translate to adapting innovative financing mechanisms.

4.2.2 The reshaping of the MyCiTi Financial Structure

While all of the upfront costs associated with the design, planning and development of the initial infrastructure related to the roll out of the MyCiTi have been covered by the PTISG, National Government has realized that revenue generated by the MyCiTi and the funds generated by the municipality are not enough to cover the operations of the BRT system. As a result, National Government has established the Public Transport Network Operations Grant (PTNOG)[12]. This grant is designed to cover expenses related to the operation of BRTs. The PTISG and PTNOG have been reorganized as one Public Transport Network Grant (PTNG) with a Network Operations Component and a Network Infrastructure Component. (MyCiTi, 2015 Business Plan Update)

As the initial costs are covered, the bulk of the financial insecurity currently faced by the MyCiTi relates to the operational cost of the system. As a result, the City has proposed that the PTNOG and subsequent PTNG:

> "Cover 50% of the combined vehicle operating costs and ancillary costs up to a level that represented 100% of all ancillary costs, while the City would commit to a maximum of 4% of its property rates income for the public transport system as a whole." (MyCiTi, 2015 Business Plan Update; 134)

In the 2014/2015 fiscal year, one percent (1%) of the City's property rates were R59.3 million, up from R55.2 million in 2011/2012. With a total contribution of R237 million in the 2014/15 fiscal year, the City is contributing less than what is possible based on land-based financing tools available to fund the extension of the MyCiTi system. The City has not, to date, employed any land-based financing tools for the MyCiTi project.

[12] The PTNOG was established in the 2013/2014 fiscal year.

According to Brett Herron, the MyCiTi recovers forty-nine percent (49%) of its operating cost through fares. This recovery unfortunately does not account for all the system's operating expenses. The City must find a means of contributing more while not transferring the difference to consumers. If the City is unable to figure out a reasonable means to finance the operations of Phase 1, it is unlikely they will have the resources to successfully roll out and operate future phases. Herron has also submitted that the National Government subsidy for capital expenditure will be cut by R400 million over the next three years up to 2020. (Lewis, 2015) This is a substantial loss for the system as they gear up to roll out Phase 2.

In order to understand the financial shortfalls, one has to understand why the MyCiTi is not performing at projected levels. From a spatial planning perspective, Cape Town is characterized by low urban density and growing urban sprawl. Average densities in Cape Town as of the 2011 census is 1530 persons/km2. (Statistics South Africa, 2011) However, this figure drops if you exclude the 437 informal settlements, where some of the densities are as high as 465 dwellings per hectare. (Ndifuna Ukwazi et al, n.d.) The great distances between residential and commercial areas result in longer commutes and higher transportation costs. In a 2015 report from Statistics South Africa, it was noted that "with just more than half (51,0%) of the households that use public transport (76,7%) relying on [minibus taxis], followed by busses (18,1%) and trains (7,6%)", coupled with the fact that "households from the lowest income quintile spent a higher proportion of their income on public transport compared to households from the highest income quintile." (Statistics South Africa, 2015) The report goes on to state that taxis are more expensive than busses and trains, yet remains the most popular means of transportation. The MyCiTi has learned this through the rollout of the first phase of the system.

While the City has outlined the benefits of the BRT, I submit that they have failed to adequately present how this system will spatially change a fragmented Cape Town. The city's urban fabric does not accommodate the MyCiTi as presently designed. The BRT system is ideal for urban areas with a mix of typologies and uses in between destinations. (Rodriguez & Tovar, 2013) These spaces are, in a sense, destinations of their own. This is part of the success of the BRT in Latin American countries. In contrast, South Africa is still trying to unpack apartheid planning policies, which have isolated not only people but economic activities. Case in point, Century City is Cape Town's largest commercial and residential development north of the N1 Freeway, it is a precinct that integrates a fine balance of urban planning and design principles, however is regarded as a white elephant. Century City is a white elephant because it purpose was that of a mixed-use development and economic node which has become an enclave for wealthy residents and tourist.

4.2.3 Future of the MyCiTi

With the projection of recurring deficits, the City will be forced to contribute more than the four percent (4%) of property rates as is currently earmarked for the MyCiTi system. The 2015 update to the MyCiTi Business Plan identifies several strategies to handle the deficit. (MyCiTi, 2015 Business Plan Update) The first is, the implementation of the five-pronged strategy to reduce projected operational costs and improve revenue. The mechanisms to realize this strategy include:

> -Mechanism 1: Evaluating which components of operating costs can be considered to be ancillary in terms of the grant funding framework conditions. In short, by assessing against the wording of the PTNG framework, determine what can be deemed an ancillary cost and thus capable of being subsidised through the grant.

-Mechanism 2: Increasing fare income. There have been recommendations to increase fare revenues more than inflation during the 2015/16 fiscal year. A general fare increase of 9.08% and boarding fare increase a further 5%.[13] Peak fares are further increased, as per Mechanism 5 below.
-Mechanism 3: Reducing vehicle operator rates. The City contends that operators were not faced with an "imperative" to negotiate. Operators therefore received more favorable terms in the agreement. Through a decrease in operator rates the MyCiTi system will be able to lower its operating costs.
-Mechanism 4: Further moderation, without compromising service quality. While the first round of moderation proposals is still being implemented, it has been recommended that a second and third round of moderation be implemented to lower the deficit.
-Mechanism 5: Improving the passenger demand profile. The reduction of the number of vehicles supplied during off-peak times will help reduce the deficit.

The second strategy involves engaging with National government to change the PTNG framework formula to widen the definition of ancillary operating costs, or to provide an exemption from the formula's constraints to increase the contribution to ancillary operating costs. This can reduce the amount of capital available for Phase 2 rollout and operational subsidy. If capital is reduced, the City would have to find alternatives for meeting the gap.

The third strategy involves more aggressive moderation. This will result in a significant reduction in the quality of the service, which is likely to compromise the integrity of MyCiTi as an alternative mode for users. This will result in a loss of passengers, with concomitant impacts on revenue collection. It is, therefore, not recommended.

These strategies, while a step in the right direction, absolve the City of its responsibility as the primary stakeholder in this project to manage the cost and operations of the MyCiTi. Seeing as National Government has already paid the upfront infrastructure costs associated with establishing the system, and is poised to pay the upfront costs of subsequent phases, why is the City of Cape Town so reliant on the PTOG?

4.2.4 Lack of Land-Based Financing of the MyCiTi

As an important contributor to the South African economy, Cape Town's workforce relies on the City to provide a range of services including public transportation. Part of why public transportation is so critical stems from the inequalities posed by apartheid planning. With the majority of residents using some form of public transportation, the City is rightly investing in greater means of providing access to economic opportunities to the most in need. To accomplish this, the City can make use of land-based financing tools.

Firstly, by enacting a special assessment district the City can reapportion its current contribution from four percent (4%) of property rates. They can then engage private entities to contribute based on their prospective benefit from the BRT. Secondly, the City can achieve its spatial strategies by integrating the MyCiTi into the desired spatial fabric of the city. While the MyCiTi is designed with the intent of aligning with certain economic corridors, it can also directly affect the City's desire to build an inclusive, integrated, vibrant city, as well as plan for and improve access to economic opportunities. That means mandating certain densities around stations, or typologies to accommodate different income groups.

[13] A boarding fare is charged when you tap in at the start of your journey.

Lastly, as the connective tissue of the built environment, access to public transportation is a factor of success for the property market. As such, working with developers to build the city of tomorrow will require working together today.

The MyCiTi traverses commercial, residential and industrial areas within the City's urban edge. By introducing gradual impact areas around bus and multimodal stations, the City can quickly determine which entities can pay a higher contribution in relation to the incremental increase in their property value. Alternatively, as to not overburden those households not capable of contributing, the City can work strictly with commercial and industrial stakeholders. The incentive for the private sector would be the guarantee of assisting employees and potential customers commute to and from economic areas. The City already understands the importance of engaging property developers in achieving spatial goals as evidenced by the Urban Development Zone (UDZ). The UDZ is a tax incentive for commercial and property developments within the inner city.

To move forward with the MyCiTi, the City needs to first needs to engage the private sector in determining if a Special Assessment District (SAD) can be beneficial to both sides. Second, the City needs to ensure that provisions in national and local government legislation can be amended to accommodate the SAD structure. Third, the City and stakeholders also needs to determine the uses of the SAD funds. At present, operating funds for the MyCiTi are most needed. Utilizing the SAD as a stimulus over a 15 to 20-year period for the operating funds during the roll out of the entire BRT system and ridership fares to cover operating costs would be most beneficial to municipal coffers.

The City's implementation of CIDs and UDZs means it can implement SADs for the MyCiTi project to use in conjunction with those financing tools. But this has not been done yet. Why? Perhaps because of lack of understanding of the tools available to them. The City of Cape Town, perhaps more than any other City on the African continent maintains a bevy of resources, stakeholders and institutional knowledge which has kept the City at the forefront of technological and policy innovations. The City's Economic Areas Management Programme is a testament to this innovation, as the data modelling tool which helps plan future development of business precincts is one of a kind on the continent. (World Design Capital, Case Study 6, n.d.)

4.3 Assessing the Case against the criteria for applying land-based financing tools

The criteria for the application of land-based financing tools are: existence of legal conventions (regulatory framework), value creation and return on investment, and municipal capacity.

Based on the criteria established in Chapter 2, the City of Cape Town has the capacity to establish and implement land-based financing tools in the case of the MyCiTi. While certain provisions may not yet be feasible, such as taking on debt capital against the income generated by Tax-Increment Financing, the City is fully capable of making use of other tools. For example, in the case of the MyCiTi, the City could use a Special Assessment District coupled with density bonuses.

The idea of engaging the private sector for public upgrading has a long and successful history throughout Cape Town in the form of Business Improvement Districts (or City Improvement Districts). As highlighted in Chapter 2, a special assessment district is a feasible mechanism for expanding the MyCiTi.

4.3.1 Assessing the Case against the criteria for Legal Conventions

The first criterion for applying a land-based financing tool is the existence of a legal convention which regulates and specifies the guidelines for use of the tool. In this case, Special Assessment Districts can be established based on Section 22 of the *Municipal Property Rates Act 2004* and the *Municipal Finance Management Act*. The former outlines how a municipality can go about establishing a Special Ratings Area, S22 reads as follows:

"22. (1) A municipality may by resolution of its council-
(a) determine an area within that municipality as a special rating area;
(b) levy an additional rate on property in that area for the purpose of raising funds
(c) differentiate between categories of properties when levying an additional rate for improving or upgrading that area; and referred to in paragraph (b).
(2) Before determining a special rating area, a municipality must-
(a) consult the local community, including on the following matters:
(i) the proposed boundaries of the area; and
(ii) the proposed improvement or upgrading of the area; and
(b) obtain the consent of the majority of the members of the local community in the proposed special rating area who will be liable for paying the additional rate.
(3) When a municipality determines a special rating area, the municipality
(a) must determine the boundaries of the area;

(b) must indicate how the area is to be improved or upgraded by funds derived from the additional rate;
(c) must establish separate accounting and other record-keeping systems regard- 40 mg-
(i) the revenue generated by the additional rate; and
(ii) the improvement and upgrading of the area;
(d) and may establish a committee composed of persons representing the community in the area to act as a consultative and advisory forum for the municipality on the improvement and upgrading of the area, provided representivity, including gender representivity, is taken into account when such a committee is established. Such a committee must be a subcommittee of the ward committee or committees in the area, if the municipality has a ward committee or committees in the area."

The latter outlines the specifications of a special rating area. At present, this legal convention is used almost exclusively for business improvement districts (or city improvement districts) as elucidated in Chapter 2. Based on the continued success of the current application (BIDs/CIDs), the City in conjunction with the National Treasury can craft further guidelines for Special Assessment Districts. Chapter 5 provides recommendations on how a SAD can be established for the MyCiTi.

But, the application of Special Assessment District should be undertaken after careful evaluation of the capacity of those stakeholders able to contribute. A complete SAD, inclusive of commercial and residential properties may not be responsible as households may not have the financial ability to contribute over and above current taxes responsibilities. As the City is currently experiencing forms of gentrification, and subsequently the displacement of already disadvantaged communities, the City should strive to work with the business community to implement a mutually beneficial SAD.

4.3.2 Assessing the Case against the criteria for Value Creation and Return on Investment

The second criterion is the creation of value, and in the event of new developments a return on investment. As indicated in Ch. 2, properties in proximity to public transportation stations and routes typically see an increase in property values. While the City has yet to produce any statistics or figures, property brokers, Greeff Properties, argue that:

> "[F]igures and sales data indicate that demand for City Bowl properties is increasing and that there is currently a shortage of stock. Properties on the MyCiTi bus routes are getting the lion's share of attention". (Property24, 2016)

The City should conduct studies to indicate how much property values in a Special Assessment District would be affected. This forecasted value creation will factor into the success of the SAD.

4.3.3 Assessing the Case against the criteria for Municipal Capacity

The third criterion is municipal capacity. Engaging in a public-private endeavor to fund large scale infrastructure is an exercise which requires intensive capacity by the both parties. As either party has the primary fiduciary responsibility, municipal capacity is critical. The City through its engagements with the CCID has demonstrated its capacity to manage a special ratings area. Further, the City has the support of the National Government as exemplified by contributions thus far by the National Treasury.

The enactment of density bonuses will be an endeavor undertaken by the Transport and Urban Development Authority. As the centralized spatial planning office, they have the capacity to incentivize developers, either as part of the UDZ or as a stand-alone density bonus in conjunction with the SAD.

4.4 Conclusion

This chapter elucidated the MyCiTi as a public transportation system with the capacity to benefit from use of land-based financing tools. Chapter 5 provides succinct recommendations for the application of Land-Based Financing Tools in the MyCiTi project and for further study.

5.1 Introduction

This chapter concludes the research under study and provides recommendations for applying land-based financing tools in Cape Town. Section 5.2 answers the primary research question, the answer to this question hopefully assists policymakers and practitioners in delivering practical urban solutions. Section 5.2.1 provides answers to the subsidiary research questions, and section 5.3 provides recommendations. The recommendations, while primarily for South African application, are intended for further research in municipalities across the Global South. Section 5.5 addresses the limitations of the study and section 5.6 serves as a reflection for the researcher.

5.2 Answers to Main Research Question

How do we utilize land-based financing tools to fund critical urban infrastructure, establish new spatial policies, all the while creating an environment in which private developers can meet their own goals?

The urban fabric of any city is product of a thousand designers. The connective tissue of this fabric is the urban infrastructure provided by local authorities. In the aftermath of the 2008 Financial Crisis, many public coffers are subject to austerity measures. Municipalities have tight budgets. The question then is: how do we fund this infrastructure? Furthermore, how, as policymakers, do we impact the property market in way that includes the neediest?

Spatial policies are key to this process, as is a robust property market. Land value capture is a process which has been used for decades to recoup money for public upgrades. Land value capture has been refined into processes through which revenue is generated for the explicit purpose of investing in infrastructure. In the Global North, land-based financing tools have a storied history in the development of mass transit systems, affordable housing, urban regeneration and other forms of critical investment. In the Global South, they are used far less.

The aim of this research is to understand how land-based financing tools can be used to fund urban infrastructure, impact spatial development policies and support private developers. The ability to streamline these three interdependent actors will prove critical to the long-term financial health of municipalities across the Global South, along with cities around the world.

Based on the Silver Line Case Example, striking the balance between financing critical urban infrastructure, impact spatial development policies and supporting private developers is achievable. In application to the Cape Town case study, the balance seems viable. If we look at the question in three silos we'll understand fully what is being asked:

How do land-based financing tools fund urban infrastructure?
Land-Based financing tools were designed explicitly to fund infrastructure. Specifically, Tax-Increment Financing and Special Assessment Districts serve as the primary mechanism through which municipalities can fund large scale infrastructure.

How do land-based financing tools impact spatial development policies?
One of the prerequisites for applying a land-based financing tool is the existence of planning regulations, be it zoning regulations for a density bonus, a land registry for tax-increment financing and special assessment district or development applications for development charges. Each of these tools are predicated on the fact that planning practices are in existence. Land-based financing tools have the capacity to shape and tangibly bring about the realization of future policy, such as density mandates and special zoning (urban development, TOD, inclusionary). For many cities, a comprehensive plan or spatial development framework guides development. Updating these plans to accommodate areas for future land-based financing application is both smart and can have long-term benefits.

How do land-based financing tools create an environment in which private developers can meet their own goals?
Each of the land-based financing tools encompass to some extent, developer interaction. Density bonuses can be viewed as most applicable to assisting developers. However, I submit that special assessment districts and tax-increment financing have more long-term benefits, as these tools encompass some form of infrastructure development or upgrade. These can add value to the development, typically as a public service but also in proximity to public transportation.

For the most efficacy, the tools must be used as an incentive to encourage public-private initiatives or to aid in achieving a spatial goal. They are a product of robust spatial policies and have the capacity to inform future spatial planning policies. These tools also can create an environment in which private developers can meet their own goals.

5.2.1 Brief answer to Subsidiary Research Questions

The literature review provides robust and in-depth thoughts on the application of land-based financing tools as well as the conditions needed for their success in the case study. The subsidiary research questions are:

1. Do any of the City's policies speak of land-value capture?
2. Does the City currently employ any land-based financing tools?
3. What are the financing mechanism most often used by the City of Cape Town?
4. What are the land-based financing strategies used in the MyCiTi case?
5. Which tool or tools are used by the CoCT to finance the roll out of the MyCiTi?
6. How did the CoCT access the capital to finance the short- and long-term rollout of the MyCiTi infrastructure?
7. Have the same tools been used finance the roll out of the MyCiTi in subsequent phases?
8. Who is benefitting from the rollout of the MyCiTi service?
9. How does the CoCT capitalize on the roles of developers in procuring public services/improvements/amenities?
10. Does the CoCT have a financial strategy? How often is it revised?
11. What does the strategy say surplus in operating budgets can be used for?
12. Do any of the City's policies speak of land-value capture?

In short, the MyCiTi is not currently financed through land-based financing strategies. The City of Cape Town has made use of generous grants from the South African National Government to fund the infrastructure of the system. National Government has also provided further funds to pay part of the BRT system's operating costs. The City has made use of property taxes to contribute to the ongoing project. Under the current agreements between the City and National Government, the development of the next

phase is to be financed by the National Government. The City, on the other hand, is required to take greater responsibility for the operating funds going forward. Based on projections by the City, this is financially unsustainable as the City cannot afford to increase the property rate contribution above four percent (4%).

To understand who benefits from the rollout of the MyCiTi service, one would have to speak directly with the riders. To date, the City has produced reports indicating the desire, need and appreciation of the BRT system. While I as the author of this report agree with the City that a BRT system has positive impacts on the economy, I believe this system was ill-conceived. The spatial formation of the city does not adequately accommodate a BRT system. This may change over time if the City implements a density mandate, to include a moratorium on extending the urban edge, and requirements of densities around economic nodes.

Currently, the City has used density bonuses on a few developments and redevelopments around the city. One of the most notable cases is the Towers redevelopment in the Foreshore precinct. In exchange for a large public open space (pedestrian walkway), the City provided the developers with a density bonus. (SolutionStation Consulting Engineers, n.d.) The redevelopment is noted for its main retail tenant, Food Lovers Market. This was in fact a win-win situation whereby the City could add a public open space. While the City does not have a dedicated financial strategy, it does have an economic growth strategy. Per the City's 2017/2018 budget, the City's operating budget of R 37,5 billion (85% of the total budget) was completely accounted for. The capital budget (R6,8 billion) was identified as being in:

> "[A] positive cash position, [resulting in] projected cash on hand at year-end [which allowed for], an additional R340 million…to projects and programmes in rates funded services where further service enhancements were identified". (van Der Merwe, 17)

As the City of Cape Town relies heavily on grants from the national government, a financial strategy may prove useful in the long run.

5.3 Recommendations for the City of Cape Town and MyCiTi

5.3.1 Establishment of a Framework on land based financing tools for the CoCT

As municipalities continue to invest in infrastructure critical to their long-term growth, the need to generate or access capital for said investments is ever-present. In South Africa specifically, and across the Global South, an assessment of which land-based financing tools can have the greatest effect on urban economies should precede any codification of the tools. A framework on land-based financing tools is a step in the right direction. This framework must include provisions for spatial planning tools, mechanisms for application and usage as a forward planning tool. The framework must strive to streamline current legislation, as well as to encourage future amendments as new tools emerge.

As the functional designers of the city's urban fabric, developers should participate in the crafting of this legislation as they will in some capacity work in conjunction or towards the goals of this framework. Part of the success of a developer is their ability to gain approval for their projects. Acknowledging and understanding their role in the development cycle, should inform their willingness to work alongside the public sector to achieve mutual goals.

5.3.2 MyCiTi

The case study highlights the shortfalls in the MyCiTi's current funding structure. In establishing a Special Assessment District (SAD), the City can tap into a new revenue stream to meet its current deficit. When the current public transport grants administered by National Government are no longer available to the City to fund the MyCiTi's operating costs, the City will be forced to contribute more than the currently mandated four percent (4%) of property rates. This, for the reasons outlined in chapter 4, is unsustainable as the municipal budget is already constrained and reductions in other projects would ensue.

The City has an opportunity to establish either a commercial and industrial only SAD or one that is also inclusive of home owners. The legal, regulatory and institutional pre-conditions for using the SAD have been met. As this is an endeavor which would encompass the property market, the City has to decide how best to incentivize new developments along the MyCiTi corridors.

At present, the City employs an Urban Development Zone (UDZ), which has been extended through to 2020. The UDZ generated R2.13billion in new developments and R1.23billion in refurbishments between 2006 and 2012. (CoCT, Urban Development Zone FAQ, n.d.) Modifying areas along MyCiTi routes within the present UDZ to incorporate a density bonus incentive can have catalytic effects on the urban fabric of the city.

The City of Cape Town can learn from the Case Example in Ch.2 which shows how across various governments, and agencies, the extension of a multi-billion dollar rail extension was successful. The Silver Line was financially conceived as a possibility only with the financing of the local governments, and not as an initiative of the Federal Government. The MyCiTi very much echoes this as the City of Cape Town is primarily responsible for the management of the BRT system. Local governments, considering their financial constraints, used a Special Assessment Districts as it is both effective as a financing tool and incentive for developers to utilize prime locations near the transit route. The MyCiTi is expected to extend to the Stellenbosch Municipality. Perhaps the City of Cape Town, and Stellenbosch Municipality can confer about a possible land-based financing structure which will ensure the successful rollout of the system.

5.3.3 Investment in critical infrastructure

While the MyCiTi and other BRTs around South Africa is a critical component to mobilizing the urban economy, they are not the only important factors of development. Critical infrastructure, be it to expand the economic capacity of a city, prepare or rebuild from natural disaster is vital for the longevity of our cities. It is upon practitioners and policymakers to engage with the private sector to mitigate the cost associated with this infrastructure, including transportation infrastructure. This must be done in a way in which the private sector becomes a long-term partner.

Major infrastructural needs, including water and sanitation, disaster risk mitigation, and resilience structures are emerging as the most critical in elements preparing for the growing effects of climate change. At the time of writing, Cape Town's water dam storage levels are at 37.4%. They are decreasing at a rate of 0.4% each week. (CoCT, Water Dashboard, 16 October 2017) The city's usable water is roughly twenty-seven percent (27%). In short, Cape Town is facing a water crisis. If private entities around the city initiated a special ratings area or special assessment district could they not fund a reserve desalination plant? While controversial, it furthers the conversation about the possibilities of future investment in critical infrastructure.

5.3.4 Future Research

In my estimation, land-based financing tools can be transformative for the application of spatial planning practices. By creating comprehensive plans or development frameworks with a long-term financing lens, cities can be better equipped to guide spatial development with the intent of utilizing these tools to fund infrastructure and design their urban fabric. Future research must look to explore ways in which land-based financing tools can be used to:

1) Fund municipal special purpose vehicles: Municipal solvency is important for maintaining a reasonable credit rating and assessing the debt market. A City's ability to undertake investment in financial instruments and other operations has important implications for future municipal funding structures. Research on how land-based financing tools can provide initial capital in this endeavor can be revolutionary for middle income cities or cities in the Global South.

2) In relation to resilience planning: Resilience planning is the next major turn in the study and practice of urban planning. Cities around the world are going to have to understand how to become resilient not only to the effects of climate change but to global economic shocks. The financial crisis of 2008 has shown us just how important cities are in the global economy, and how the financial resilience of cities can reverse the effects of crises. How can cities make use of density bonuses in exchange for developers who use sustainable or resilient materials? Or how can SAD's be implemented to fund coastal fortifications? There is a need to understand the financing implications of resilience planning and I submit that land-based financing tools might be a critical factor in that study.

3) Incorporated into planning education: As a planning student, I feel that the discipline has the capacity to be shaped by any number of niche interests. As an individual who believes in the power of planning to shape the long-term physical urban fabric of our cities through economic policy, I believe there is a gap that needs to be filled in planning education. Understanding planning as well as 'planning finance' will aid the next generation in developing plans which are both viable and applicable. Land-based financing tools are byproducts of planning tools and therefore should be taught as an integral part of planning education.

5.4 Limitations of the Study

As a desktop study, I encountered information gaps, which prevented the presentation of case examples from the Global South. While I aimed to frame the study in a Global South lens, it was not feasible as there was not enough information available to present a full analysis of current applications of land-based financing tools in the Global South. To counter this limitation, I presented a case study relatable to many cities around the world. The provision of public transport is a costly endeavor, that must be designed contextually appropriately, within the scope of short term and long-term budgets. Acknowledging that the Global South is not a homogenous entity, I am aware of the diverse contexts and histories that make up cities of the Global South.

5.5 Reflection

This research was chosen as it is a synthesis of my professional interest in planning, development and finance. In approaching the writing process, I realized that writing multiple chapters at once was beneficial as I believe it is impossible to highlight the research methods when they are not complete. Nor could I fully complete the literature review at one time as I continued reading throughout the entire process.

Having previously worked with land-based financing tools at a macro scale, I enjoyed the opportunity to read through various applications of the tools. Unfortunately, many of the readings reflect a global north experience which continues to mold planning education.

The Global South's contribution to the entire global economy is poised to become greater in the coming decades. These economies must be supported by urban centers with adequate infrastructure, as well as provisions for supporting themselves in the event of another global recession. The Cape Town case study is important because of its implications for other cities in South Africa, and the Global South. Cape Town's spatial-political legacy in relation to its current real estate market are unique. Successfully applying land-based financing tools in Cape Town can serve as an example for other cities in the global South.

5.6 Conclusion

Chapter 1 introduces the research under study and the main research question. This chapter not only contextualises the problem, it also outlines the aims of the research. Chapter 2 contains a review of the literature on the theory and practice of value capture for infrastructure investment. The chapter explores the legal and regulatory frameworks in South Africa, as the case is in South Africa. The chapter also establishes criteria to assess the case. Chapter 3 outlines the research methods used in this study. Chapter 4 presents the case and, using the assessment criteria established in Chapter 2, determines the applicability of land-based financing tools in the MyCiTi case. Chapter 5 provides answers to the main and subsidiary research questions. The chapter also presents recommendations for to the application of land-based financing tools as well as guidance for future research.

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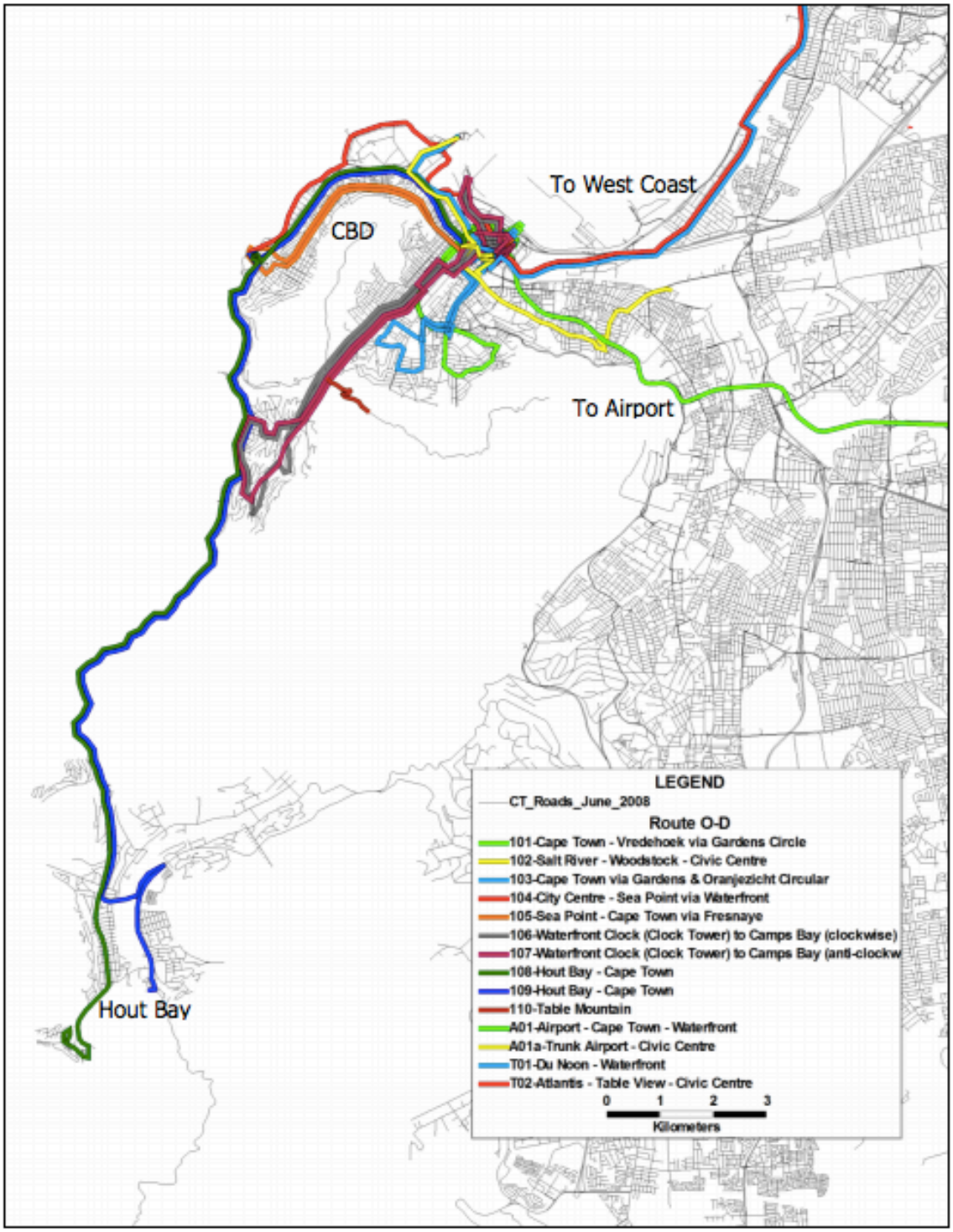
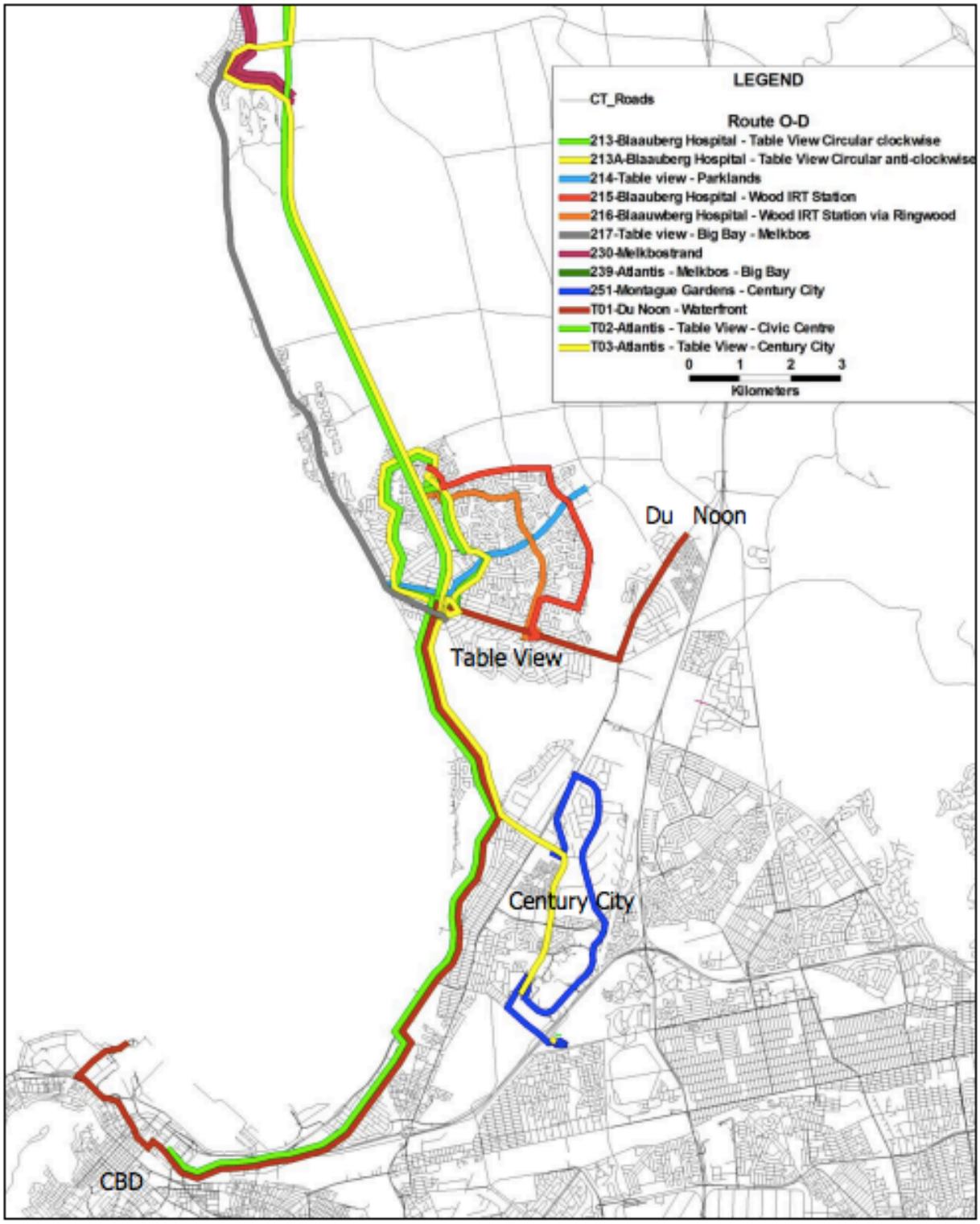
Appendix A: MyCiTi

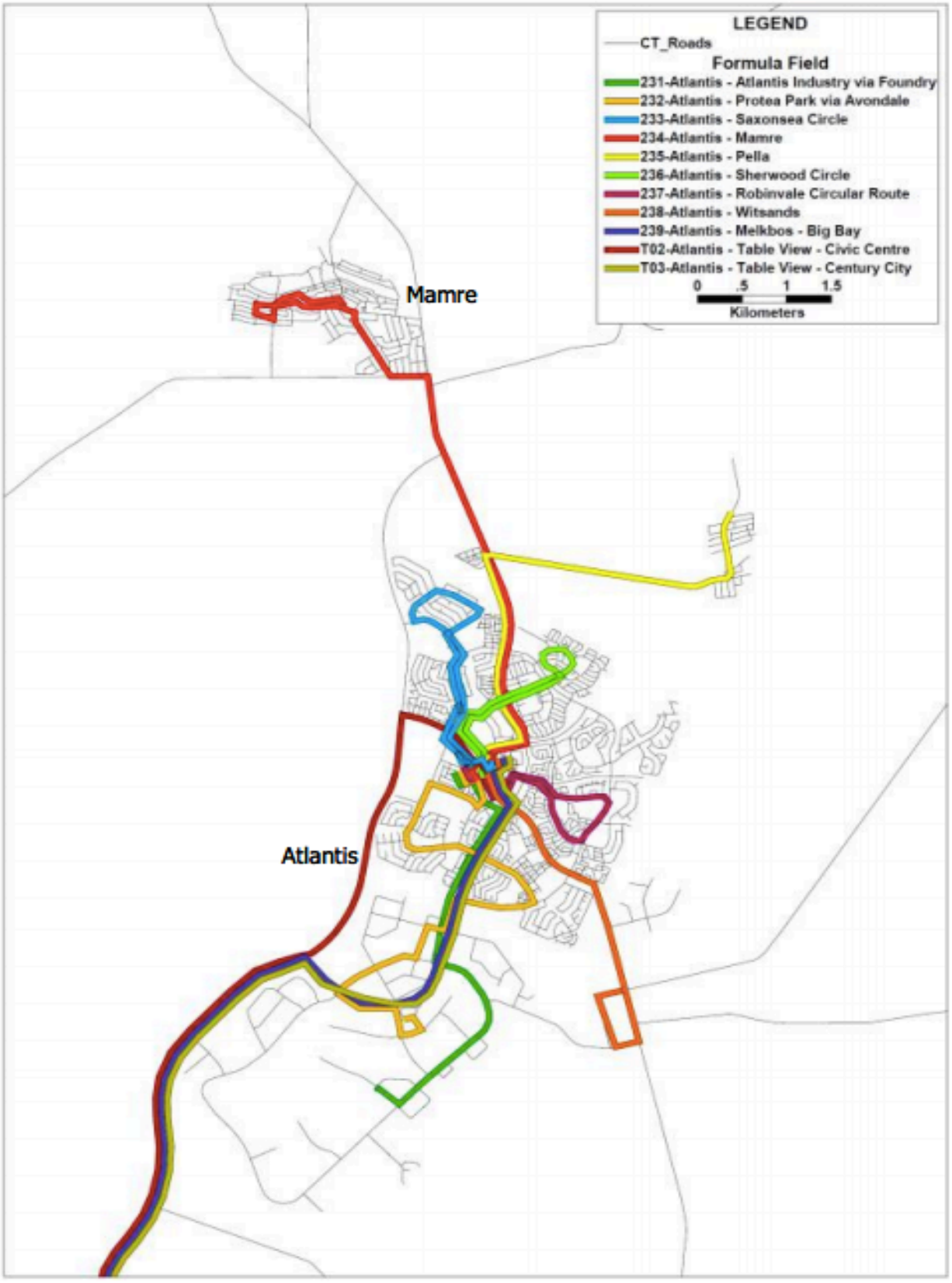
Appendix A provides maps of the MyCiTi



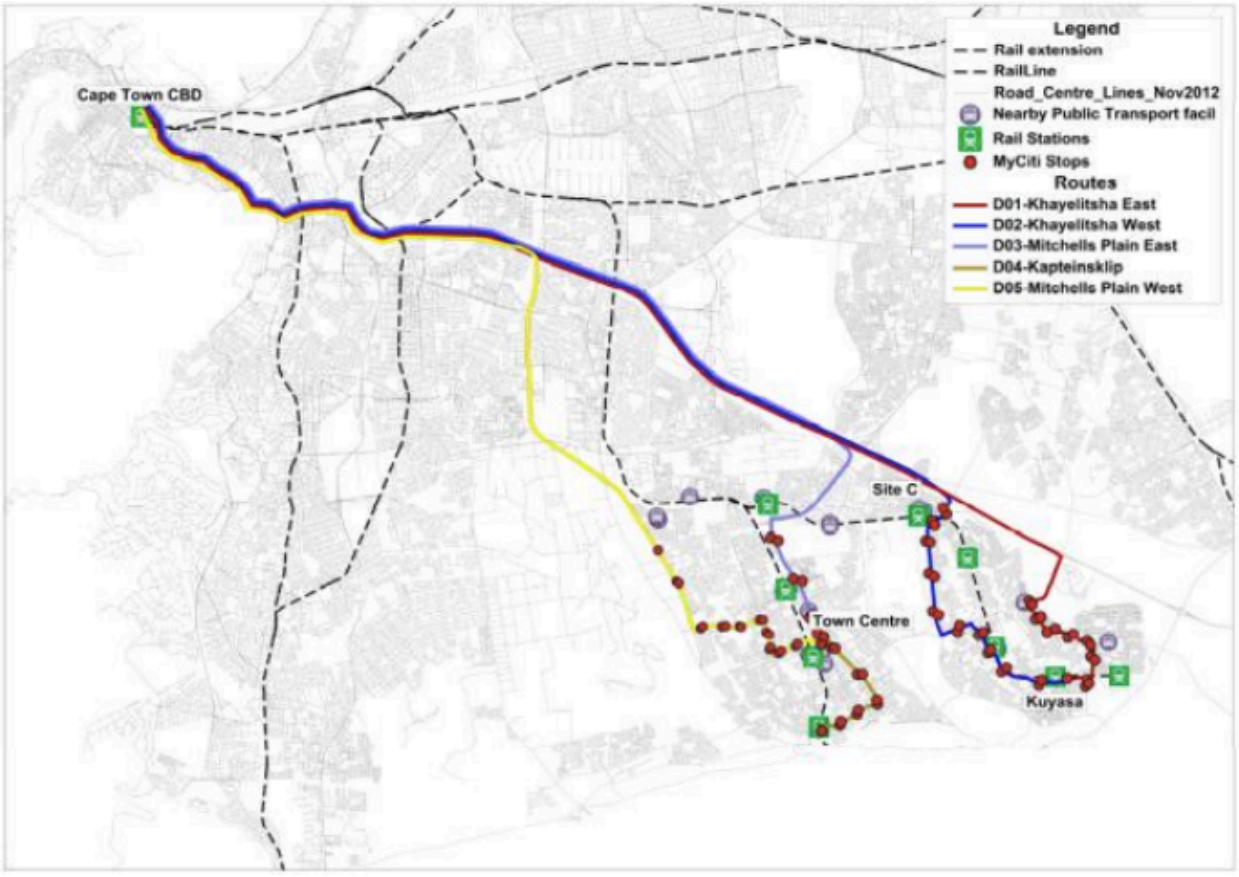
[*Fig A*1. Phase 1A IRT System, Inner City and Hout Bay Source: MyCiTi 2015 Business Plan]



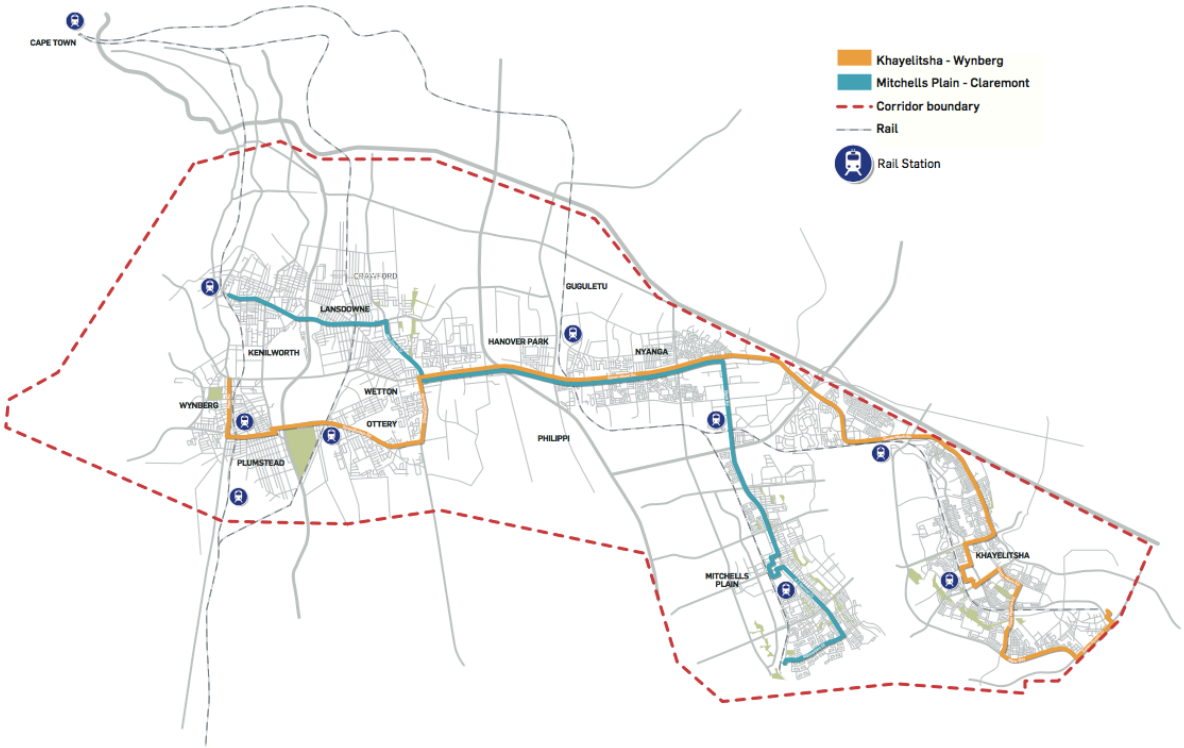
[*Fig A*2. Phase 1A IRT System, Table View and Century City Source: MyCiTi 2015 Business Plan]



[*Fig A*3. Phase 1A IRT System, Atlantis Source: MyCiTi 2015 Business Plan]



[*Fig A*4. Phase 1A IRT System, N2 Express Route: MyCiTi 2015 Business Plan]



[*Fig A*5. Phase 2 IRT System: MyCiTi]

Appendix B: Approval of Ethics in Research

Application for Approval of Ethics in Research (EiR) Projects
Faculty of Engineering and the Built Environment, University of Cape Town

APPLICATION FORM

Please Note:
Any person planning to undertake research in the Faculty of Engineering and the Built Environment (EBE) at the University of Cape Town is required to complete this form **before** collecting or analysing data.The objective of submitting this application *prior* to embarking on research is to ensure that the highest ethical standards in research, conducted under the auspices of the EBE Faculty, are met. Please ensure that you have read, and understood the **EBE Ethics in Research Handbook**(available from the UCT EBE, Research Ethics website) prior to completing this application form: http://www.ebe.uct.ac.za/usr/ebe/research/ethics.pdf

APPLICANT'S DETAILS		
Name of principal researcher, student or external applicant		Ryan Manzie Macauley
Department		School of Architecture, Planning and Geomatics
Preferred email address of applicant:		ryanmanzie@gmail.com
If a Student	Your Degree: e.g., MSc, PhD, etc.,	MCRP
	Name of Supervisor (if supervised):	Associate Professor Tanja Winkler
If this is a researchcontract, indicate the source of funding/sponsorship		Click here to enter text.
Project Title		Building Economic Capacity through Land Based Financing Tools

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	Signature	Date
Principal Researcher/ Student/External applicant	Ryan Manzie Macauley	signature removed	01 Jun 2017

APPLICATION APPROVED BY	Full name	Signature	Date
Supervisor (where applicable)	Tanja Winkler	signature removed	24 May 2017
HOD (or delegated nominee) Final authority for all applicants who have answered NO to all questions in Section1; and for all Undergraduateresearch (Including Honours).	Prof T. Berlanda Click here to enter text.	signature removed	6/6/17 Click here to enter a date.
Chair : Faculty EIR Committee For applicants other than undergraduate students who have answered YES to any of the above questions.	Click here to enter text.		Click here to enter a date.

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