Critical Analysis of Station Area Development on PRASA owned land: The case of the Northern Corridor Railway Line Cape Town

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ABSTRACT

The presence of well-located vacant land parcels within a city plays a contributing factor towards undermining the urban form and purpose of a well-run city. Property developers who seek out land for development in South Africa are limited to options of well-located small vacant land parcels or land parcels with existing developments that do not quite meet the demands within the property market. The presence of vacant rail station land parcels within South African cities provide an opportunity for improved urban form through the development of these prime locations. In the past the Passenger Rail Agency of South AFRICA (PRASA) have undergone the development of a restricted number of these land parcels, however given the total number of stations in South Africa the number of developed station area land parcels has been limited. The Northern Corridor railway line in Cape Town includes twenty-six rail stations, twenty of which are owned by PRASA, and the other six are owned by Transnet. The twenty PRASA owned rail stations include a total of 72 hectares of vacant station land parcels along the line with only two stations, with a total of 16 hectares between them, having seen progress towards development to date. This research has identified a gap in South African academic research that critically analysis the lack of development at vacant station land parcels in South Africa, and thus focus' in on the Northern Corridor as a case study, with particular attention on PRASA owned land parcels.

This research seeks to answer the question of, why have real estate developments not been enabled and located at stations along the Northern Corridor railway line in Cape Town? Which is done through a literature review that unpacks theory on property development processes, Transit Oriented Development (TOD) and the Transport land use feedback cycles. Furthermore, the paper has made use of international precedent studies and empirical research to inform the research, and seeks to critically analysis legislative and policy pieces that govern and influence how station area land parcels are developed and managed in South Africa, and Cape Town in particular. These reviews provided valuable input into the design of the semi-structured interview questionnaires that were used as the basis of my research interviews. Through the completion of twelve semi structured interviews the primary data had been collected for this research, which informed the findings chapter for this paper and predominantly was used to provide direct insights to answering the research question put forward in this paper. Using these insights, proposals are made that PRASA together with the City of Cape Town and the Western Cape Provincial Government could apply towards improving the development of station area land parcels along the Northern Corridor.

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ABBREVIATIONS

CAPEX	Capital Expenditures	OPEX	Operating expenses
COCT	City of Cape Town	TMG	Tokyo Metropolitan Government
MSDF	Municipal Spatial Development Framework	TOD	Transit Oriented Development
PRASA	Passenger Rail Agency South Africa	VRC	Voortrekker Road Corridor

CHAPTER 1: INTRODUCTION

1.1. Research Area

According to Herron (2020) there are several vacant, well-located public land parcels in South Africa, majority of which are owned by different spheres of government. Vacant land in cities is an important resource as it presents an opportunity for urban renewal, urban integration and revitalisation and can contribute to municipal revenue (Brown-Luthango, Makanga and Smit, 2013). However, contradictory to this, the presence of multiple vacant land parcels in a city can also contribute to a poor urban form that undermines the purpose of the city (Michael et al., 2010). This paradox of vacant land is a contemporary issue in South African cities as it continues to contribute to inefficient urban planning and a dysfunctional land market. One of the primary locations of vacant land in South African cities are land parcels that surround the immediate location of railway stations (Venter, 2011). The underdeveloped and lack of development at stations that are located within relatively established communities represents a disjuncture between urban planning and the urban land market in South Africa. These land parcels at stations undermine the purpose of the city as places for production, consumption, information processing and government expenditure (Michael et al., 2013). This is further perpetuated by the lack of investment in the development of these stations and the relative surrounding land parcels.

According to Turok (2015) the built environment is an integral part of the economic and social life of a city, and by adapting the physical fabric of the city to periodic shifts in business requirements and household expectations is essential for its continued functionality. The City of Cape Town (2016) identified that there is a growing disjuncture between transport and land use in Cape Town. Furthermore, this is evident in the physical disconnection between low to middle income communities, and economic and social opportunities. According to the Institute for Transportation and Development Policy's TOD Standard (2017) the immediate land surrounding and at rail stations play a significant role in promoting TOD. In terms of TOD in South Africa, current and established railway stations are within optimal locations for TOD due to the influencing role stations have on the surrounding established community and vice versa. However, this market and its associated economic and social opportunities have not been strategically targeted for development.

According to Eprop (2013) PRASA (Passenger Rail Agency of South Africa), alone, owns a property portfolio including 374 rail commuter stations which account for a small portion of 4475 properties registered in its name and 4200ha of land spread across Durban, Johannesburg, Cape Town and Pretoria. These individual large vacant land parcels have been subject to land invasions, thievery and looting of rail infrastructure on a regular and annual basis (Turok, 2015). With the collective of 4200ha of land available along and at accessible station points, these land parcels possess the very characteristic requirements of typical TOD. However, these land parcels remain largely undeveloped, with little to no value exchange within their respective areas. In 2009 PRASA set out to deliver efficient transportation through the modernisation of the rail system. Despite this, the implementation of TOD has been slow within the urban land market at close proximity to the rail stations (Cooke et al., 2018).

The modernisation of the South African railway system has been a mega catalytic project that aims towards the delivery of (i) rolling stock fleet renewal, (ii) depot modernisation, (iii) rail infrastructure, (iv) station modernisation and (v) technology improvements (PRASA, 2013). The governments investment into this programme to modernise passenger rail infrastructure is anticipated to cost R172 billion (PRASA, 2012). The provision of funds into this massive capital project is projected to decrease future allocation on operation cost of the rail, thus improving funds available for the allocation to other new capital projects.

This proposed and envisioned high quality rail system seeks to improve rail operations and thus seeks to increase ridership numbers. The City of Cape Town (2017) have identified that the current dispersed urban form of Cape Town results in high ongoing operational costs of public transportation. Such expenditure is financially unsustainable as the current land use patterns have resulted in longer distance trips, tidal flows and limited seat renewals which results in insufficient revenue generation to meet the level of subsidisation (COCT, 2017). Thus, with the improved provision of high-quality modern railway systems, the current land use patterns will still perpetuate the present operational costs as a result of urban sprawl and mono-functional land use patterns.

1.2. Case Study: Northern Corridor Railway Line

Chorus (2012) identified rail corridors as a defined railway line that operates at a regional level, which includes the land at and around train stations of that line. The corridor therefore provides an opportunity for development patterns to occur at stations, that are connected through the railway line, thereby seeking to encourage a hop on and hop off behaviour at stations. This development of a rail corridor and its associated station land parcels has a dual emphasis on the development of the rail system and the development of the associated land parcels. Pojani and Stead (2017) argued the same and furthermore identified rail corridors as not a new concept, as rail corridors have been stimulated in literature and government plans for over a decade to encourage development to take place in agglomerated clusters rather than in a linear formation along the rail. Therefore, through the use of the rail corridor concept emphasis could be placed on ensuring a greater significance on station area land parcels and the development thereof.

The Northern Corridor is one of the City's five major strategic corridors and had been identified by the City of Cape Town as a long-term growth corridor for projected densification to eliminate future urban sprawl (COCT, 2017). The Cape Town Municipal Spatial Development Framework (MSDF) (2018) encourages targeted investment and land use management based on inward growth along the Northern Corridor. Thereby improving access to opportunities and offering a means of conveniently integrating communities with service provisions and full filling a range of economic and social needs (COCT, 2018). The resulting location of railway stations, within established neighbourhoods and/or urban activity nodes, provide potential for new urban development and urban regeneration opportunities.

The Northern Corridor railway line as identified by the City of Cape Town (2018) is defined by two Northern Lines that run from the inner-city Cape Town and then fork into two directions but run parallel to one another, indicated in blue and yellow, as seen in figure 1 below. In this map, the blue indicates, PRASA rail ownership – the study area, and the yellow is Transnet rail ownership – excluded from the study area. These two rail lines merge at the Bellville station, before they split out into three different directions, this study include the lines that run to Sarepta and the second to Belhar. The study area, identified in the blue, consists of the twenty railway stations and their respective station areas as indicated in figure 1, with the Cape Town CBD station been the only station area that has been developed and still under construction to date. The study area is located parallel to Voortrekker Road, a well-established activity corridor with mixed use developments. The study area, as seen in figure 2, runs parallel to an activity route – identified in red - Voortrekker road, and includes several established and emerging business and mix use nodes. However, despite this potential the COCT (2018) identified the Northern Corridor railway line and surrounding land parcels as areas that have reached urban decay and therefore require urban regeneration and re-development. The presence of these vacant station area land parcels, and the proposed improved rail system, provide an opportunity to stimulate TOD and smaller developments at railway stations. However, despite the identification of the Northern Corridor line that has been premise on the presence of the railway line, and the identified need for redevelopment along and within the Northern Corridor, the question on why station area land parcels have not been identified for development has provided a foundation for this research.

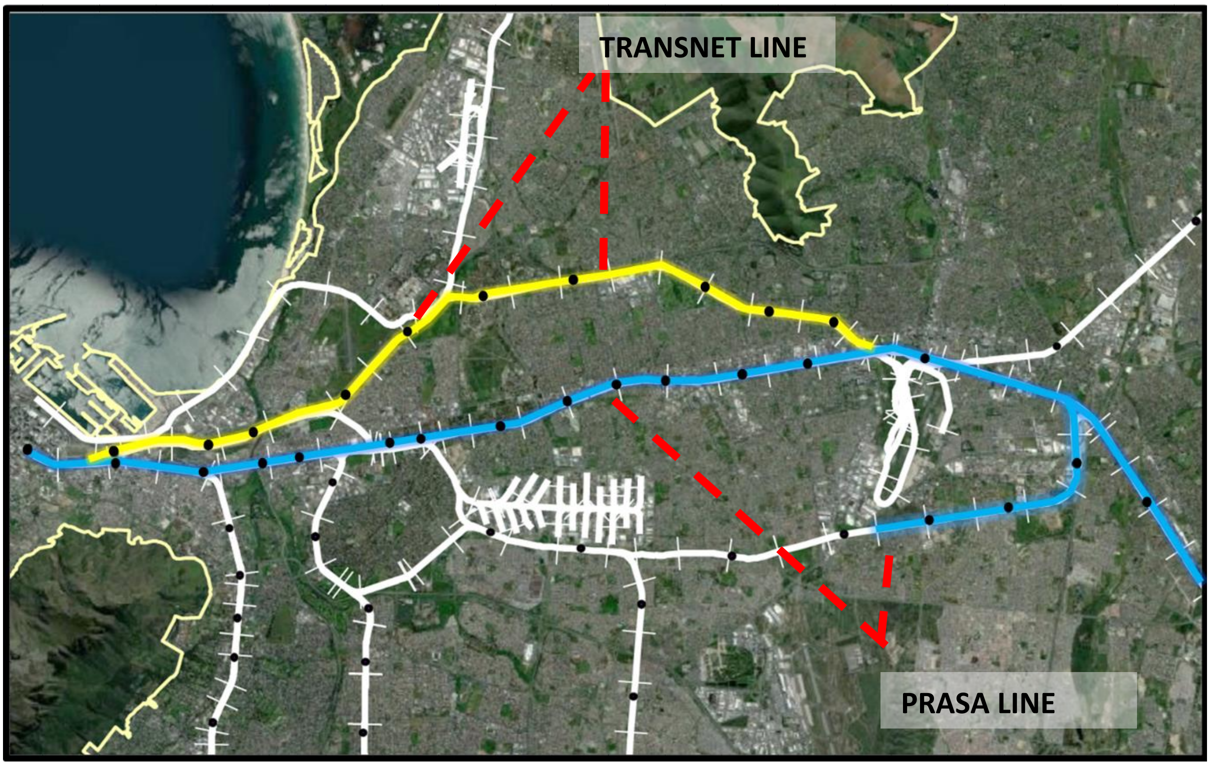


Figure 1: Identification of the Case Study Area, the Northern Corridor Rail ownership between PRASA and Transnet (Authors Own, 2021)

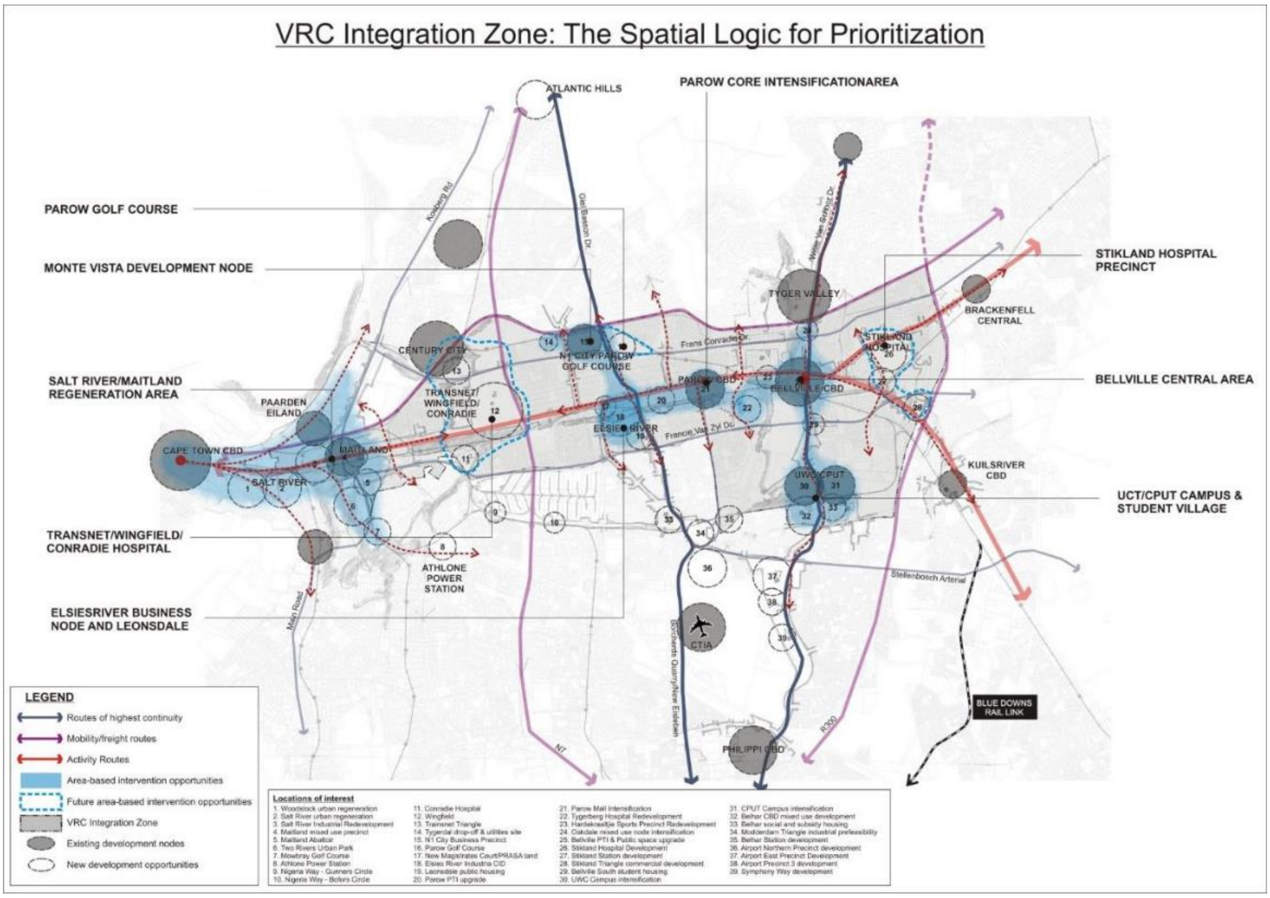


Figure 2: Study Area Northern Corridor, also known as the VRC Integration Zone (COCT, 2018)

1.3. Research Problem

The majority, if not all, of train stations in South Africa are located on large vacant land parcels, which have become 'white elephants' within their respective communities. Thus, contributing to the poor urban form of South African cities. According to Michael et al., (2008) a poor urban form fundamentally undermines the very purpose for the existence of cities, which are potentially centres of production, consumption, and information processing and government expenditure.

<u>The research problem statement for this research is that:</u>

There is a gap in South African academic research that critically analyses the lack of development to date on PRASA owned station land parcels.

1.4. Research Questions and Research Proposition

The research question for this research is:

Why have real estate developments not been enabled and located at stations along the Northern Corridor railway line in Cape Town?

Based on research to date, the lack of real estate developments on station area land have been attributed to the current zoning of station area land that have hindered the type of developments that could be development, the lack of responsibility and the lack of innovation in PRASA, and the continued reliance on state subsidies which have further perpetuated rail service failure.

1.5. Research Aims and Objectives

The aim of this research is to investigate the reasons why real estate developments has not been enabled and located at PRASA owned stations along the Northern Corridor railway line in Cape Town. Furthermore, this research will seek to identify how development at stations could be enabled in future.

The research objectives of this study will be to critically analysis and investigate the reasons for the lack of development at railway stations. This will be completed by;

i) To unpack precedent studies of where development of station land has been successful.
ii) To critically analysis current legislation, policy frameworks and institutional influences that govern station area land.
iii) Investigating the ***current status of station area land parcels*** and the ***current development processes*** for railway station land.
iv) Investigating the ***current incentives*** that have been enabled to attract developers to station area land parcels and the ***hindering factors*** to date for station area development.
v) Investigate if there are ***current development initiatives for station area land parcels along the Northern Corridor***.
vi) Investigate if there are ***successful developments of station area land parcels*** other than those located along the case study area.

The purpose of this research is to provide valuable insight to the built environment academic field through an empirical approach. This research will base the findings off of observations made through desktop research and site visits, which will form secondary data for this research. Additionally, through the direct experiences from participants who work and have worked within the research area their input will inform the primary data for this research.

1.6. Limitations and Scope of Research

The planning authority for municipal rail in Cape Town is the Cape Town Municipality and the owners of the rail and associated land parcels are PRASA. As the planning authority the COCT have identified the Northern Corridor at a regional scale within the municipality, along with the other four rail corridors in Cape Town. A limitation to this study is that these rail corridors are a part of the COCT's spatial planning initiatives and policies to enable future development along these routes, however, that PRASA as the rail owner do not identify these corridors as key planning tools when the institution plans for rail in Cape Town. Therefore, through answering the research question, and addressing the research aims and objectives this research places a dual emphasis on unpacking and answering the research question from a holistic and national perspective, which is rather generic given that PRASA own a majority of station area land parcels in South Africa, however this paper will seek to narrow focus to the Northern Corridor through detailed research.

The scope of this research includes a detailed analysis into answering the research question, and to address the research aims and objectives of this paper. Therefore, detailed and descriptive recommendations have not been a key focus of this paper. However, given the detailed findings gathered through this research, this paper has put forward preferred recommendations to enable future development at rail stations in reflection of the research put forward in this paper. Additionally, this research will seek to be a significant academic piece to inform policymakers, academics and property developers of the current development processes undertaken by PRASA to enable development of station land parcels, and why this has not been a prompt output at station land parcels throughout South Africa, specifically along the Northern Corridor.

1.7. Structure of Research Report

This chapter is structured into six chapters, namely

Chapter 1: Introduction

Chapter 2: Literature Review

Chapter 3: Research Methodology

Chapter 4: Legislative, Policy and Institutional Review

Chapter 5: Findings

Chapter 6: Insight Based Recommendations and Conclusions

CHAPTER 2: LITERATURE REVIEW

2.1. The Purpose of this Chapter

According to McGaffin, Viruly and Boyle (2019) successful development of the property market requires an in-depth understanding of; the factors that shape it and who stimulates these developments. Therefore, this chapter beginnings with a review and analyses of property development process literature. Secondly, given the focus of this research (station area development) this review will also unpack essential aspects of *Transit Oriented Development (TOD)*, and that of *land use and transport interaction*s. This chapter will conclude with a review of two instrumental precedent studies, namely *Japan,* and the *Netherlands*.

2.2. Development Processes

According to Michael et al., (2008) urban areas in South Africa remain spatially inefficient and exclusionary, which is largely as a result of the spatial structure that consist of a sprawling nature and poor linkages to public transport. The character and shape of urban areas come into existence through human need for space, however, are also significantly influenced by historical, political, economic and other contemporary influences. Such influences shape the type of demand and where the demand is for space in the built environment. This demand for space in turn shapes the supply that is created and recreated through property development processes. The property development process is directly responsible for the creation and transformation of the built environment that is carried out by property developers, governing structures and built environment professionals (Jonathan, 2020; Kirova, 2015). This section of the chapter will seek to provide an overview, unpack and analyses the multiple pieces of literature that contribute to the theoretical approaches of development processes.

The development process and associated location preferences for development can be seen to have originated with neo-classical economist Adam Smith (in 1776) who largely focused on economic profits and his work aimed to generate and drive land-based wealth, which later led to the development of the concepts, supply and demand (Harvey and Jowsey, 2004). These concepts explain that there must be a demand for what is being supplied to a market to generate a profit from the supply (Cannon, 2002). In 1826 Von Thunen introduced the concept of distance into the theoretical development of location theory. He argued that companies locate in particular locations based on their sensitivity of production in particular locations (Krugman, 1991). Therefore, enabling companies to make trade-offs between land prices and the transportation costs. This results in costs of rent within an economic node or city centre to be higher, which is because of the value of the land being included into the production costs, as was expanded on by Ricardo (in 1877). McCann and Sheppard (2003) have argued that companies in close proximity to transportation hubs will similarly experience higher rental costs, due to the improved level of production that the close proximity to modes of transportation enables. Therefore, supporting the neo-classical economist contribution to location preference for specific developments.

The ***equilibrium model*** (also known as the economic model) has been driven through the previously mentioned neo-classical economic traditions of rents, yields, property values and land values. The equilibrium model views the supply and demand for space as the primary driver of the development process, however, are framed within broader perspectives (Kirova, 2015). The assumption of this model is that the development process is driven by the demand for new property (Healey, 1992). The model places emphasis on the impact of demand-led considerations and supply-side constraints on development activity (Healey, 1991). According to Bulloch and Sullivan (2009) the equilibrium model is often highly data driven, that uses rigorous quantitative analysis and statistical techniques to project various variables, such as rents, costs, vacancies and investment yields.

The equilibrium model has been critiqued for not providing an understanding to the complexity of development processes. According to Healey (1991) the model places less emphasis on the different role players who take part in the production process of land development. Adding to this Ismail (1996) added the equilibrium models are ill-equipped to consider the non-economic values which influence the development process. Furthermore, the model fails to unpack the activities that constitute the development process that go beyond time value of money. The model also does not include the understanding of exogenous factors (GDP) and endogenous (internal workings of the property market). Furthermore, the model does not unpack the power dynamics of those who are involved in the development process.

The ***structure model***, provides a shift in perspective to the development process, compared to the equilibrium model. The structure model focus' on the forces which organize the relationships of the development process, and which drive its dynamics (Healey, 1991). The model is used to explain that property development is as a means of economic production, with exogenous forces that positively and negatively affect the process (Guy and Henneberry, 2002). A few examples of such forces include institutions and conventions that organize and that are able to constrain relationships in the development process (Bulloch and Sullivan, 2009). In addition to this definition of the structure model, Harvey (1985) added that that there are three circuits that make up the structured development process. These are, namely the production of capital by labour, the flow of capital into fixed assets and consumption assets- and the flow of capital and direction capital is invested (Guy and Henneberry, 2002). There are two critics of the model, that include that, the model does not provide adequate attention to the role of human agency and decision making within the broader framework of capital flows (Healey, 2020; Ismail, 1996). Secondly, that it is highly abstract, which provides constraints towards understanding how to break the model up into parts (Jonathan, 2020).

The ***agency model*** (contrasting the previous model) focus' on actors in the development process, and the roles that they play and the interests which guide their strategies (Healey, 1991). Furthermore, the model places emphasis on the interrelationships between different actors and impact these have on the development process (Guy and Henneberry, 2002). According to Healey (1992) there are various approaches to the agency model and that these generally attempt to deconstruct the complexity of the development activity. The agency model dates back to William Form in the 1950s, Weiss and Kaiser in 1970, Goodchild and Munton in 1985, Barrett, Stewart and Underwood in 1978 and McNamara in 1988. Each piece of work by each of these authors covers separate identification of main actors interacting within the development process. It is for this reason that a major criticism of the model includes that it does not clearly define who exactly is interacting with who and why these interactions are important. Furthermore, that the model does not relate the development process to the wider power relations of the economy and society (Healey, 1991). Nor does the model provide sufficient direction at a project level, which has been a result of its focus having been on a high-level abstraction of the development process which had been put together through multiple academic lenses.

The ***event-sequence model*** was developed and implemented to provide a series of stages to a project, and further explained that certain events and actions take place in the process (Healey, 1991). Lichfield (1956) as a contemporary author initiated and conceptualized the real estate development process, which was later adapted through a seven-step process by Goodchild and Munton (1985), as depicted in Bulloch and Sullivan (2009). The event sequence model suggests that there is a level of complexity that successful completion of a real estate development process will have to undergo to reach a conclusion (Bulloch and Sullivan, 2009). The process includes:

> "1) the 'maturing of circumstances' that make possible a change in land use to one which is more suitable or intensive; 2) the purchase of the land by a person prepared to develop it; 3) the preparation of the land for development, including both physical construction work and the less tangible operations such as establishing legal titles; 4) the preparation of the development scheme including obtaining the necessary approvals; 5) the sourcing of finance to carry out the development; 6) the construction of the development scheme; and 7) its occupation by the developer, a new owner or tenant"
>
> (Kirova, 2015:5).

Miles, Berens, Eppli and Weiss (2007) proposed a more contemporary version of the event-sequence model, namely the eight-stage framework. This framework highlights that there are sequenced stages that are seldom followed exactly this way and that activities can run concurrently or be repeated until completion of the process (Jonathan, 2020). The eight stages of the development process, as per Miles et al., (2007) includes:

1. The inception of an idea
2. Refinement of the idea
3. Feasibility
4. Contract negotiation
5. Formal commitment
6. Construction
7. Completion and formal opening
8. Property, assets and portfolio management.

The event-sequence models have been criticised, through literature for not considering varying actors involved in the property development process (Jonathan, 2020; Kirova, 2015). In addition, the model does not consider how external forces affect and influence the development process (Ismail, 1996). As such the model fails to depict the dynamic and cyclical nature of development and tends to isolate the development process from the rest of the built environment and other external factors (Kirova, 2015; Batbileg, 2010).

Adding to literature on the development process, is the ***systems approach*** which captures the complexity of the development process and highlights that it is a highly dynamic and adaptive system that can respond to changes in its surrounding cultural, political and economic environment (Bulloch and Sullivan, 2009). Trevillion (2002) conceptualised the property development process to be one element within a complex adaptive system, and that while the system can affect the development process, the development process itself can influence the system. The system model describes the development process to be a systematic process with interconnections and feedback loops that are characterised by the behaviour observed in reality (Trevillion, 2002). Furthermore, the model explains that there are endogenous (supply and demand cycles, stocks and flows) and exogenous forces (interest rates, investments yields and economic activities) that influence the development process (Bulloch and Sullivan, 2009). Trevillion (2002) argues that the systems approach can be used to address and integrate a diverse range of factors influencing multidimensional frameworks. The approach places emphasis on maintaining a holistic perspective between different elements and actors, especially between those that are interconnected. Contrast to this a disadvantage of this model is that it describes existing market structures on a retrospective basis, and therefore is not able to provide insight on how the approach might adapt when needed and if there are new variables that arise (Trevillion, 2002).

Lastly of the traditional approaches is the ***Institutional model***, which is well known to have been shaped by Healey's (1992) 'institutional model' and Ball (1998) 'structures of provision model'. Healey's approach takes account for the complexity of the events and agencies that are involved in a development process, and accounts for the diversity of forms that the process may take under different conditions (Healey, 1992). Furthermore, the model places importance in unpacking the strategies and interests used to influence the development

(Ismail, 1996). Similarly, Ball (1998) argues that there is significance in the roles of various actors in the development process, and that the model is a useful tool to unpack the roles and responsibilities of those parties involved. The model has been criticised for not addressing critical aspects that underline a property development process, and furthermore not defining the strategies undertaken by certain actors during the development process (Healey, 1991).

More contemporary approaches include work by Miles et al., (2007) who identified an eight-stage model, which combines historical project trends, *as discussed earlier*. Two years later Bulloch and Sullivan (2009) developed the Design Structure Matrix, which comprises of six stages and ninety-one tasks, and draws on the bases of the event-sequence model. The underlining fundamentals of this model had been to identify the interdependencies between tasks that are iterative due to feedback relationships that the tasks share (Bulloch and Sullivan's, 2009).

In 2010 Sumsura, Van der Krabben and Van Deemen developed a model that defines the development processes as a social situation that depends on the interaction between individuals. The model places significance in the behaviours and interrelationships between various actors within the development process (Sumsura et al., 2010). However, the authors have criticized their model to be incomplete and that is a requirement for the refinement of the model in the future (Sumsura et al., 2010). Lastly, Drane (2013) put forward a new model which draws on key theories developed through the systems model. Drane's model addresses three important aspects of the development process, namely the land parcel, the developer and the local authorities and public lobby groups, which each belong and interact in their own economic, commercial, and social context, which ultimately influence the development process (Drane, 2013). This model is identified to be abstract and limited in application thereof (Jonathan, 2020).

Through the expansion of development theory and approaches to understanding the development process, it is evident that each model/approach had been shaped by work put forward before, therefore shaping one another. However, newer development processes literature provides minimal integration of previous literature pieces on the topic. Which has resulted in less of a holistic approach to understanding the development process, and thus provides limited collaboration of new ideas with traditional thinking. However, each approach provides a valid truth on how property development processes unfold, however each one is narrowly developed within their schools of literature (Jonathan, 2020). Therefore, the models individually are unable to provide adequate guidance in understanding the property development processes. Nor has there been a means of providing a collaboration of different thoughts, approaches, and models to design a complete theoretical development process approach. Nevertheless, this was not the objective of this study, however, based on current development process theories, this study does question what types of development processes will be needed to develop station area land? *This question is answered under recommendation 1 in Chapter 6 of this study.*

2.3. Transit Oriented Development (TOD)

Transit Oriented Development (TOD) has been coined by Peter Calthorpe in 1993, and placed emphasis on density, walkability, public spaces and mixed land use (Calthorpe, 1993). Many scholars have since developed on TOD which has become a core contemporary planning tool, primarily based on New Urbanism planning, as part of regional planning and city revitalization strategies (Ibraeva, Correia, Silva and Antunes, 2020). Lund (2006) argued that TOD is a form of development at public transport nodes that are intended to raise development densities to generate more public transport patronage. TOD has been described as a planning approach that aims to integrate land use and transport planning (Straatemeier and Bertolini, 2020). Therefore, it seeks to harness the concept of locating residential units, amenities, jobs, and shops within a cluster and within proximity to transportation hubs. Thus, enabling and promoting transit use and non-motorized travel through cohesive spaces and places, that reduce reliance on driving private cars and encouraging low carbon transportation options (Vale, 2015). Lund's (2006) study revealed that planners and developers seek to encourage transit use to increase housing opportunities and to facilitate neighbourhood revitalization. Similarly, residents in these areas experience the same expectations, and are drawn to the amenities such as low-cost housing and other mixed housing options, local shops and employment hubs (Lund's, 2006).

The success of TOD has been witnessed through to a number of studies on land use and varying densities around transportation nodes. These studies have found that the higher the development densities, the higher the transit passenger volumes will be (Pan, Li, Shen and Shi, 2017). Papa and Bertolini (2015) have identified that people's choice to make use of specifically rail-based transportation is likely to be higher in numbers within TOD areas within high residential/commercial mixed-use densities. Furthermore, that the success of rail services is higher within areas that include high levels of accessibility to the rail service and other means of public transportation (Pan et al., 2017). These elements of land use, densities, accessibility, and surrounding access routes have contributed to the success of many railway stations and other public transportation hubs, as defined by several studies (Pan et al., 2017; Li et al., 2017; Papa and Bertolini, 2015; Chorus, 2012).

Conversely, Lund (2006) argued that daily transportation choices of passengers are increasingly influenced by their attitudes and preferences. Similarly, differing socioeconomic conditions, cultural traditions and preconceived perceptions of public transport can also play a contributing factor to the success of transit modes (Pan et al., 2017). Therefore, those who are new to TOD areas with rail services, are much likely to make use of the rail service given its close proximity (Lund, 2006). On the other hand, Lund (2006) argued that those who had resided in an area before the improvement of the rail system, are more likely to be indifferent to the service due to their preconceived preferences of using other modes of transportation.

The location of stations, in relation to their surrounds, possesses a unique and individual sets of morphological characteristics (the number of access routes, street density and character) and functional characteristics (position and diversity of economic entities in a station area) (Lyu, Bertolini and Pfeffer, 2016). These morphological and functional characteristics are used to predetermine the level of investment that can be afforded at various stations, and similarly used to assist in planning and designing capital and operational projects at station areas (Lyn et al., 2016). Through a set of regional planning tools, such as railway corridor developments, developers and local governments can plan and design an integral strategy for the whole area aimed at specific target groups (Bertolini and Rietveld, 2008). This can be achieved through an increased focus on railway corridor development that allow for planned strategies along a railway line, and that improve the coordination between a number of stations along a rail line (Chorus, 2012).

There are several researchers who have supported the implementation of TOD at a corridor scale (Thomas and Bertolini, 2020; Chorus, 2012). Chorus (2012) defined a railway corridor as a railway line that operates on a regional/metropolitan level and includes several surrounding land parcels along the line or at stations. Through these land parcels focused interventions could allow for a coordination of plans between stations along the railway corridor. Thomas and Bertolini (2020) and Chorus (2012) argue that railway corridors seem to be a logical unit of coordinating transport and land use developments, which has proven to be more advantageous compared to focusing on single station areas. This does not mean that corridor coordinated development is better than focused interventions. However, that land development along and at rail stations within a corridor provide coordination and synergies between station developments to occur, that would not naturally occur if these locations had not been linked together by planning tools, such as corridor development (Chorus, 2012). Furthermore, railway corridor developments make it possible to utilize public transport in a more efficient way by focusing on redevelopments that generate off-peak travel or bi-directional traffic flows. Therefore, the improved land use could have a ripple effect on improved rail ridership rates.

According to (Berawi, Saroji, Iskandar, Ibrahim, Miraj and Sari, 2020; Lyu et al., 2016; Curtis, 2012) implementation mechanisms for TOD have been driven successfully through local governments providing opportunities within Town Planning Scheme's (TPS). The TPS encourages TOD planning by prioritizing a diversity of land uses (Lyn et al., 2016). Policy makers contribute to this by establishing instrumental policy frameworks regarding land use diversity patterns to support TPS and to further foster a set of development patterns within a particular rail corridor and in station areas (Curtis, 2012). The TPS includes faster planning permissions and building approvals for area-specific developments, granted that the proposed developments are in line with station area developments set out by local authorities (Curtis, 2012). The application of a TPS over a particular area/along a rail corridor would ensure that proposed land developments meet the vision and plans set out by a local government. Through the implementation of TPS, station area development will take place at a gradual pace (Berawi et al., 2020) According to Lyn et al., (2016) these forward planning tools will enable and attract developments, and therefore will be continuously working for the local government and continuously attracting developers to locations.

To date there have been several critics of TOD. Firstly, it has often been perceived by developers to be too expensive. This can be seen in the high development costs for vertical mixed-use and high-density developments. Vertical mixed- use developments require unique solutions for which standard cost models are more difficult to apply (Hrelija et al., 2020; Venner and Ecola, 2007). Furthermore, these associated costs increase the complexity of implementing TOD, which result in higher risks associated with TOD (Hrelija et al., 2020). Secondly, developers perceive TOD to be a market with less appeal for private developers, and to be more for those who live in subsidized housing, which as a result of low income depend on public transportation (Guthrie and Fan, 2016). Therefore, TOD requires elaborate mechanisms and tools, *as discussed earlier in this section,* to enable participation from the private sector. Lastly, developers experience several barriers to implementing TOD or implementing developments within TOD hotspots (Hrelja et al., 2020). According to Renne (2009) developers who are willing to engage in TOD experience issues such as; inaccessibility to station locations, the unfriendly pedestrian station locations, the lack of an urban design framework for the station area, regulatory barriers, lack of community involvement and participation and the lack of institutional commitment. These barriers to development will require further elaboration by local government authorities through the application of implementation mechanisms such as TPS.

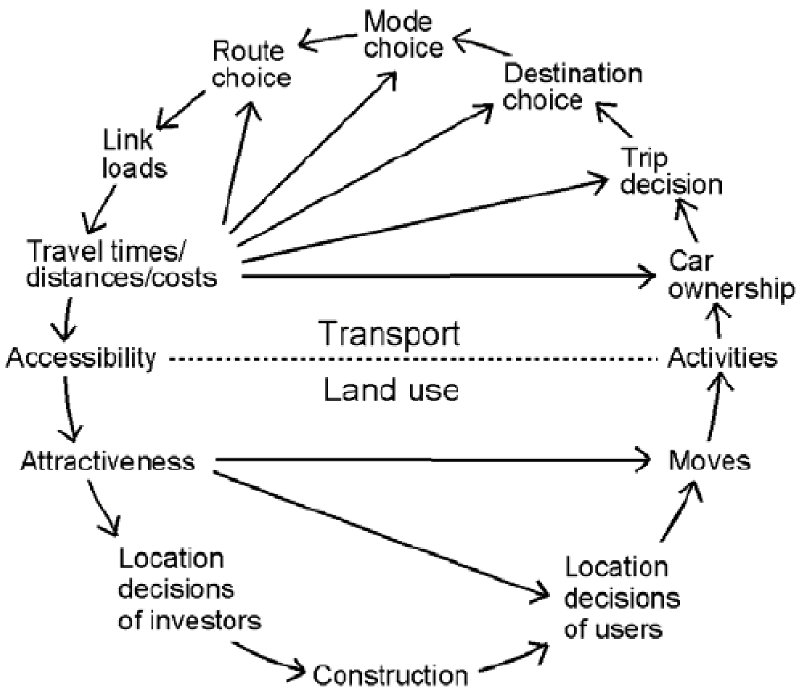
2.4. Transportation and Land Use Interaction

According to Straatemeier and Bertolini (2020) the success of rail station area development is dependent on positive cohesion between transportation planning and land use planning. It is a common understanding among planners that land use and transportation patterns are closely related, however, the interrelationship between the two are uncoordinated (Chorus, 2012). Papa et al., (2007) argued that transport planners tend to base their decisions off standard future land use patterns derived from market projections, as opposed to land use plans. As a result, transportation planning is unable to respond well to urban planning directions (Chorus, 2012). On the other hand, land use planners tend to make land use decisions (approving densities and the location of activities) on an urban plan without considering its future consequences on the transport system (Chorus, 2012). As a result, institutional integration coupled with coordinated and cooperative planning processes is required to ensure successful implementation of transport land use policies (Straatemeier and Bertolini, 2020).

In the 1950's the first studies regarding the interrelationship between transport and spatial development had begun. Hansen (1959) argued that locations with good accessibility have a higher chance of being developed at higher densities. Additionally, Wegener and Furst (2004) argued that location decisions and access to transportation co-determined each other. This has been a commonplace in the American planning literature, and which can be seen in the land use transport feedback cycle (Wegener, 2004).

The land use transport feedback cycle, as seen in figure 3, has often been used to illustrate the complex relationships between land use and transportation (Chorus, 2012; Meyer and Miller; 2001). The cycle seeks to illustrate that land use and transportation patterns have an influence on one another. Land use patterns predetermine the location and distribution of human activities (live, work, recreational). This distribution of human activities creates a set of disperse patterns in cities and towns, which generates a need for mobility. Wegener (2004) states that the cycle demonstrates that the quality of transport service available to commuters will determine their choice of mobility. According to Meyer and Miller (2001) as illustrated in the feedback cycle, improved transportation results in an increase in accessibility, which has a pre-determining influence on the location decisions of investors, business owners, landlords and households. These location decisions thus influence the land use change and improves the attraction to particular areas.

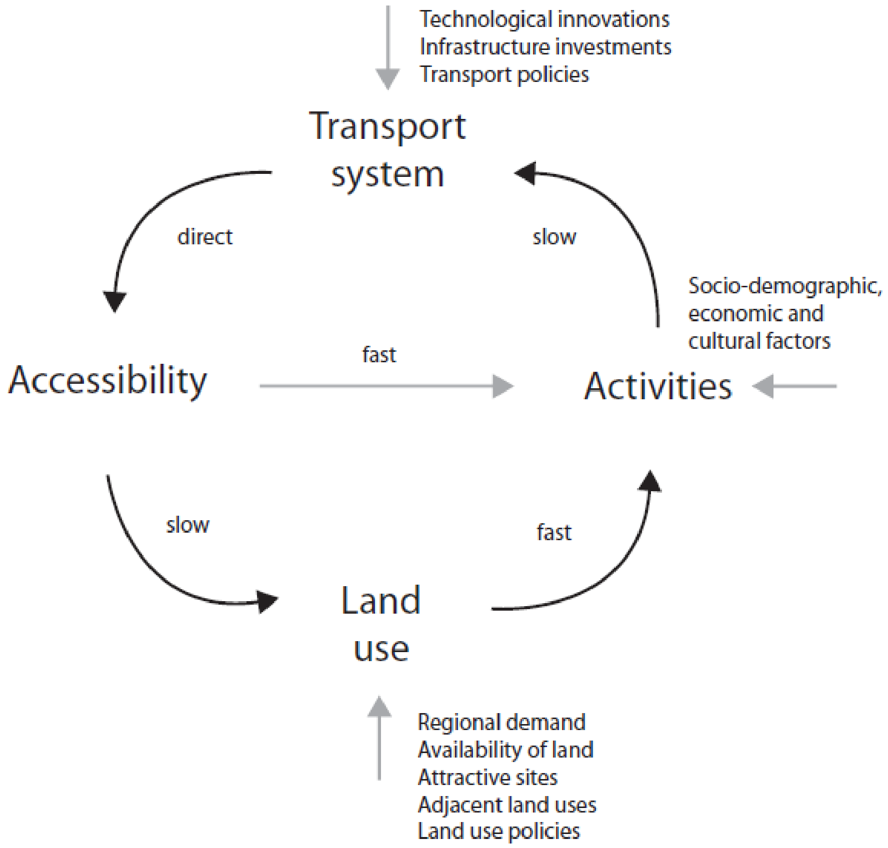
The cycle can be successfully applied to explore interdependencies and trade-offs between land use and transportation (Straatemeier and Bertolini, 2020). According to Meyer and Miller (2001) the co-relationship between land use and transportation has improved efficiency in travel between different areas, and between different needs, however, has also enabled an opportunity to improve access to transportation options. According to Straatemeier and Bertolini (2020) at the centre of the land use transport feedback cycle, the link between land use and transport is illustrated as a connecting point between accessibility and activities in the model. Movement between different locations of activity require transportation, and therefore creating a need for accessibility to transport stations (Bertolini, 2012). The improved access to transport stations increases the attractiveness of these locations for



certain land use developments. Wegener and Furst (2004) argue through the feedback cycle that this improved access provides opportunities for increased land use close to transport stations and its surrounding areas. Therefore, creating choice for passengers to move closer to station areas or to move between station areas to access services or goods (Straatemeier and Bertolini, 2020).

Figure 3: The Land Use Transport Feedback Cycle (Wegner and Furst, 1999)

The simplicity of the land use transport feedback cycle is both its strength and its weakness, as the cycle is easy to grasp but the developments in the real world are determined by many more factors (Bertolini, 2012; Meyer and Miller, 2001). According to Bertolini (2012) the cycle overlooks the role of individual agents such as transport providers, land use developers, households, and firms. Therefore, Bertolini (2012) adapted the land use transport feedback cycle, as seen in figure 4. Like Wegner and Furst (1999) Bertolini's adaptation of the cycle also considered land use and transportation to be co-determined by other factors, however had indicated that the cycle should be seen as open. As seen in figure 4 land use developments are not only depended and influenced by accessibility conditions, but also on the availability



of land, characteristics of the local environment, land use policy and/or the economic dynamism in a region (Bertolini, 2012).

Figure 4: Transport Land Use Feedback Cycle (Wegener and Furst, 1999, adapted by Bertolini 2012)

Figure 4 indicates that transport service provision is more than the supply of a service, and also includes technological innovations, infrastructure investments and transport policies (Chorus and Bertolini, 2011). The impact of accessibility has a slow impact on land use, as land use and the development there of, is based on regional (and local) demand, the availability of land, attractiveness of the sites, the surrounding land uses, and the current land use polices (Chorus, 2012). Therefore, the land use Transport Cycle argues that investment in transport systems and their associated land developments do not only have an impact on land use, as suggested by Wegener and Furst, 1999, but rather that it also impacts regional economics and neighbourhoods (Bertolini, 2011). According to Chorus and Bertolini's (2011) study, improved densities, land use mixes and pedestrian-friendly urban spaces adjacent to railway stations create a robust urban space and thus contribute to the success of the surrounding activities/ businesses. According to the cycle, as per figure 4 once land uses are approved and are constructed these have a fast impact on activities and movement within the area. However, is dependent on the surrounding socio-demographic, economic and cultural factors. Chorus (2012) argues that socio-economic variables such as household income and household size play an important role in influencing travel behaviour, and how and if surrounding communities will be affected by associated land use changes (Chorus, 2012). This has been another key aspect that had been missing in Wegener and Furst's 1999 model.

The land use transport feedback cycle has been used in various studies to explain how the supply of capital investment projects and infrastructure investments influence the provision and transformation of transportation systems and their surrounding land parcels (Chorus and Bertolini, 2011; Meyer and Miller, 2001). Furthermore, Bertolini (2009) indicated that if the cycle is to be applied to actual planning practices to improve transportation, land use and station area developments, the surrounding context of the area of application should be considered. The first critic of the feedback cycle had been that it is a highly simplified representation of reality, that excludes important external factors (an example being broader socio-economic processes) and that internal complexities are seemingly denied (Straatemeier and Bertolini, 2020). Drawing on this criticism, the adopted model by Bertolini (2011) had considered key external factors that would affect land use and transport. Secondly, the relationship between urban development and transport is not a simple one, and that urban processes, such as macroeconomic development, interregional migration, demography, household formation and technological innovation are not taken into account (Wegener, 2004). And, lastly, the relationship between land use and transportation have been argued not as mutually exclusive, due to the external factors that influence their co-development (Chorus, 2012).

2.5. Precedent Studies: Railway Station Development

According to Chorus (2012) in the case of railway developments, it is still quite common that railway infrastructure is constructed before the urban development's starts. This is true for both the precedent studies discussed in this section of the chapter, *as is the case for the Northern Corridor railway line in Cape Town, South Africa*. This section provides an in-depth analysis of rail station development in Japan and the Netherlands. The insights from these precedent studies meet one of the objectives of this study as identified in chapter 1.

2.5.1. Japan Rail Station Development

In the 1980's the Japanese government had seen a steady surge in budget deficits because of a continuous increase in funds required for the public rail companies from the Japanese government. As a result, several large national rails monopolise were transferred from the public to the private sector (Chorus, 2012). Given that the private sector had taken over most of the rail in Japan, the government still leads initiatives and departments that seek to steer the planning and operations of the rail system. These include the Japan Railway Construction Transportation Technology Agency (JRTT), and the Transportation Policy Council who are involved in the planning stages of the railway improvements (Yin, Bertolini and Duan, 2015). Additionally, the Ministry of Land, Infrastructure, Transport and Tourism (MLIT) are responsible for the granting of licenses to railway companies, who may operate a railway indefinitely provided that it they do not create management or safety concerns (Shoji, 2005).

The Japanese government only offer subsidies to semi-private, semi-public and the few public rail operators, however private operating companies are required to be self-supporting (Chorus, 2012). The subsidies granted to non-private companies are granted through JRTT, who are an integration of the Japan Railway Construction Public Corporation (JRCC) and the Corporation for Advanced Transport and Technology (CATT) (Chorus, 2012). According to the Transportation Analysis (2014), in April 2005 which had been a year post the full privatization of the rail, there had been a fatal accident as a result of a commuter train entering a curve at too high a speed. This had led to the death of 107 people and with 562 injuries. The accident was a sharp reminder that continuous improvement in railway management is critically required even after privatization (Chorus, 2012). Therefore, despite the requirement for private companies to be self-supporting, subsidies are specifically granted to the private sector for; the optimisation of travel times, the improvement of transfers between tracks and platforms, and the improvement of station buildings, the promoting of barrier-free stations and eliminating level railway crossings (Yin, Bertolini and Duan, 2015; Chorus, 2012). This further highlighted the required need for strong direction and to a greater extent control of the railway sector by the government, despite the ownership thereof having been granted to the private sector.

According to Zacharias, Zhang and Nakajima (2011) the Tokyo Metropolitan Government (TMG) specifically have since the year 2000 placed significant attention on station redevelopment as part of new urban regeneration programmes. These redevelopments are aimed towards transforming the railway stations and surrounding areas to accommodate new urban functions, while improving rail passengers' travel experience. According to Bertolini et al., (2012) the redevelopment of stations has had a positive effect on the re/development of surrounding areas adjacent to the stations. To achieve this spin off effect of development at station areas, the TMG had put in place a number of proactive planning and financial instruments (Chorus, 2012).

The TMG have approved and enabled station areas in Tokyo to have higher Floor Area Ratio (FAR)-values than their surroundings, which provides developers with the development rights to enable higher building volumes and thus potentially more profits than can be realised (Zacharias et al., 2011). Furthermore, the TMG had worked towards the zoning of all station land within the city to commercial zoning. By zoning the land, and by enabling higher densities for sites, the TMG had set out to encourage private sector developers to invest in real estate and commercial use of station area land in the city (Chorus, 2012). To date the real estate developments of station area land have also improved the urban design of surrounding areas through the improvement of NMT connections between rail stations and the surrounds (Zacharias et al., 2011).

The TMG seek to encourage different functional programmes around different stations, and thus seek to promote a specific profile by granting companies that match a certain functional profile a temporary real estate tax exemption. Thus, ensuring that when matches are made between the development company and the pre-envisioned plan for a particular station, that those development companies are granted preferential development rights and furthermore a temporary real estate tax exemption (Bertolini et al., 2012). These actions taken by the TMG require medium to long term planning, that are done through the transportation policy council who are tasked with drafting master plans for the future of railway investments and improvements for every 15-year period (Chorus, 2012). This master plan, together with the real estate tax exemptions are used to ensure that the same company is not chosen for multiple station developments but is also a process of ensuring that smaller/local companies are granted an opportunity at development. According to Zacharias et al., (2011) Tokyo's rail station development hosts a comprehensive set of services and products, equivalent to city core shopping districts with highly integrated real estate developments, and with smaller community led station area developments. The diversity of service provision is a result of the TMG's selective process of choosing developers and enabling developers through a temporary real estate tax exemption.

How have these planning and financial instruments assisted station development?

Private railway operators usually own considerable amounts of land along their railway tracks. The previously mentioned planning and financial instruments have proven influential to enable the construction of housing, universities, offices, shops and amusement parks (Chorus, 2012). This opportunity provided companies with a chance to diversify their business, especially given that the regulated fare system for rail results in minimum profits been generated (Zacharia et al., 2011). The development of station areas provides a mutual relationship to exist. Firstly, the mutual relationship between transportation and real estate has improved transportation network and has improved attraction to station areas (Hiratsuka, 2019). The improved access to real estate developments and services surrounding rail stations and at stations has increased the number of people surrounding the railway and potentially making use of the rail (Chorus, 2012). Secondly, a mutual relationship between transportation and retail estate has resulted in improved rail usage, as retail and services at stations have encouraged more people to move between stations and to make use of the services at these stations (Chorus, 2012). This increases the potential for customers, thus increases revenues of railway stations and increases revenues at station retail and service facilities. Lastly, the development of station areas has increased the attraction of station areas, and thus reflects a higher rental price for these spaces.

According to de Hiratsuka (2019) Japan was one of the first countries to implement institutional features from other countries based on best practice studies/precedent studies. The implementation of international initiatives launched in Japan to privatize rail services had been an implementation of best practices at the time from the UK, France, and the US (Chorus, 2012). However, to date the Japanese Government have tailored incentives, master plans and initiatives to address the envisioned development that is required within the country. The approach taken by the Japanese government has been a market-conscious approach, used to estimate how and where planning interventions create value for both the investors and the end-users (Hiratsuka, 2019).

However, this approach does create local tensions, despite its development success. According to Chorus (2012) a critic of this approach is that from a resident's perspective there are little to no certainty of what one can expect a development to look like, and there are no means to appeal against a development that might affect their residence or development. The Japan City Planning Law and Building Standard Laws provide residents with limited opportunity to object against proposed developments, that provides a rather contrasting cityscape (Chorus, 2012). According to Bertolini et al., (2012) the Japanese government have consistently applied a market-conscious approach to planning which has enabled them to achieve flexibility in development, and certainty of success, especially in spaces that are contested. This market-conscious approach has enabled a successful station development approach and outcome at Tokyo Stations, which has proven progressive in Japan however does not enable a 'cookie cutter' opportunity for implementation within another country. However, does provide useful insights in the way incentives are used to enable development that are the perfect fit for various stations.

An Example of Station Development in Tokyo: Osaki Station

In addition to the previously stated planning and financial instruments used by the TMG to ensure development at railway stations, the Japanese Government also seek to implement incremental policies and legislation to address dire situations of concern. An example of this was in 2002, the Urban Renaissance Special Measures Act (URSMA) was instated that allowed the national government to directly intervene in a matter that would have originally been considered a local government matter (Hiratsuka, 2019). The involvement of national government in local government decision making was rare in Japan, however highlighted the urgency and need for revitalization in the city. The URSMA had allowed the national government to designate so-called priority areas for urban renaissance, most of which had been designated around stations (Chorus, 2012). This had displayed the potential that station area development could contribute to the revitalization of a city. The enablement of priority areas included government grants to financially support the development of public facilities and to support the start-up of station development projects (Chorus, 2012). Tax benefits were allowed that involved interest free loans, and lastly allowed the developers to bypass regulations for application for land use zoning changes (Hiratsuka, 2019). As seen in figure 5 below, one of these station areas developments included the JR Osaka station area, where eight priority zones were identified, one of these zones had been the JR Osaka station area and in total the eight priority areas amount to an area of 2 514 hectares (Hiratsuka, 2019). The enablement of the station area zone had been instrumental to the development of the other seen priority zones.

JR Osaki Station is one of these priority areas, set for completion by 2027. The station was granted higher FAR-values than its immediate surrounding areas and had been identified by the TMG as an emerging node of development (Zacharias et al., 2011). The conceptual plan for the development is displayed in the images identified in figure 5. The Osaki station area includes many surrounding industrial and research facilities. The new development of the area has resulted in the TMG re-classifying the station area as a 'sub-centre for research and development industries' in Japan.

Figure 5: Osaka station area development, and surrounding priority areas (Labiak, 2019 adapted from Grow with UMEDA, nd)

2.5.2. Netherlands Rail Station Development

The Netherlands planning system is carried out in three levels of governance, namely national, provincial and local level. According to (Bertolini et al., 2012) each government tier is required to set out policies in one or more structural vision, regarding spatial planning and infrastructure. At a provincial level, governing structures are required to coordinate policies at the sub-national/regional level regarding planning, transport, and arts and cultural related affairs (Chorus, 2012)). Lastly, at a municipal level, the government are responsible for a wide range of policy sectors, such as roads, public transport, housing, planning, environment, social affairs, economic development, education, health care etc (OECD, 2007). In the Netherlands, the municipalities have the prime authority of making land use zoning plans (Bertolini et al., 2012). However, national and provincial ordinances are used by the national and provincial government to establish rules on content of municipal land use zoning plans (Chorus, 2012). Therefore, enabling national and provincial government to steer development at a municipal level, however also enabling national government to steer development at a provincial government (which is similar to South Africa).

How do railway operations take place in the Netherlands?

The Dutch railways (Nederlandse Spoorwegen - NS) is a state-owned company and are the principal passenger railway operator in the Netherlands, it also owns the station buildings, and in many cases the land surrounding its stations (Heurkens, Daamen and den Heijer, 2015). Evidently, the Dutch Railway line is also a key role player in initiating development of station areas in the Netherlands. However, the development, management and operation of the railway network is run by two main actors, namely the Ministry of Infrastructure and the Environment (IenM) and ProRail (a government ran agency). IenM provide annual subsidies to ProRail for the maintenance, management and when required the extension of the national railway network (Bertolini et al., 2012). ProRail on the other hand are the infrastructure managers of the whole network, who are required to submit an annual infrastructure management plan to the ministry (Chorus, 2012). ProRail are responsible for the railway infrastructure and transfer facilities at stations such as the escalators, elevators, stairs, and the station halls (Chorus, 2012). As infrastructure manager, ProRail lease out their rail tracks at a charge to the NS and the other much smaller railway operators for the use of their tracks (Bertolini et al., 2012).

NS had been founded in 1938 and provide rail services on the Dutch main railway lines. The NS, like other railway services in the Netherlands, are not provided with subsidies from the National Government (unlike in South Africa). However, are required to pay an annual concession fee to IenM, as an incentive for NS to focus on continuously improving its services, and pay a leasing fee to ProRail (van Hagen, 2015). NS Poort (a subsidiary of NS) are responsible for establishing commercial facilities at railway stations, such as shops, kiosks and restaurants. However, NS Poort also own land and/or buildings within station areas, that are used for developing activities such as shopping, working, leisure, living and education (Chorus, 2012). Therefore, despite being the rail service provider, and commercial exploitation of stations, NS Poort are the developers of the station area properties within the Netherlands. The rights and responsibilities of each NS and ProRail regarding development at and around stations are summarized in table 2-1 below.

Table 1: Key Responsibilities between Prorail and NS (Author Own, adapted from Chorus, 2012)

	PRORAIL	NS
STATION BUILDING	Construction/renovation and maintenance of station building	Legal ownership and Commercial exploitation
PLATFORMS	Legal ownership	Commercial exploitation, right to build over and under platforms.
ESCALATORS/ELEVATORS	Legal ownership	Cleaning and maintenance
PASSENGER TUNNEL	Legal ownership	Commercial exploitation
RAILWAY TRACKS	Economic ownership (legal ownership is in the hands of Railinfratrust Company)	Right to build over and under railway tracks near stations.
RAILWAY YARD	Legal and economic ownership	In case of disposal NS has the first purchase right
STATION SQUARE	Legal ownership, maintenance and management are usually the responsibility of the municipality	First development right
BICYCLE PARKING FACILITIES	Construction	Legal ownership and commercial exploitation

Station Area Development in the Netherlands

According to Chorus (2012) and as illustrated in table 3-1, ProRail receive funds from national government to construct and remodel station buildings, and once completed the buildings are handed over to NS, while the management remains in the hands of ProRail. NS are the end users of the buildings however have a limited contribution to the development process. This is odd since NS own the commercial spaces, however, do not own the stations, transfer spaces and rail. Nevertheless, NS are granted preferential treatment with regards to the use of railway infrastructure and are granted development rights to build over and/or under railway tracks or near stations (Chorus, 2012). To enable their property portfolio, NS is divided into two namely, passenger services and hub development and operations.

Passenger services is made up of - *NS Reizigers* responsible for transport services, *NS Hispeed* who are responsible for cross boarder passenger services and high-speed railway services, *Abellio* who handle the acquisitions and operations, and *Nedtrain* who deal with maintenance of the rolling stock (Chorus, 2012). While, hub development is completed by *NS Poort*, who are responsible for the commercial operation and management of station developments in the Netherlands and for the development of land owned by NS surrounding the stations (NS, 2020). NS Poort are responsible for the management of approximately 4 500 hectares of land, 350 station buildings and 450 other buildings with various functions (van Hagen, 2015). According to Heurkens et al., (2015) NS Poort divide their real estate and land holdings into strategic assets, that is held onto for development, and non-strategic assets that include station assets that they seek to get rid of. Their responsibility includes ensuring the development, management and commercial exploitation of NS strategic real estate holdings are kept to high standards and value.

An Example of railway station development Netherlands: Utrecht

Utrecht railway station had been a by-product of the proposed development of the Hoog Catharijne shopping complex that gained political support of the local municipal council in the early 1980s. This support had a powerful effect on the success experienced through the Utrecht railway station area redevelopment project, despite the development of the surrounding area having taken place more than 20 years post conceptualisation (Buijze, 2013). In the early 1980's Corio, the owners of the Hoog Catharijne, aimed at redeveloping the shopping complex, and aimed at partnering with the municipality who had a stake in the potential redevelopment given its vicinity of the station (Buijze, 2013). The Utrecht rail station adjacent to the Hoof Catharijne, is located within a prominent commercial hub in

Netherlands, and with a steadily growing population the station itself and surrounding facilities became insufficient to serve the growing number of people using the hub (Buijze, 2013). In addition, the Utrecht rail station area had been made of train tracks, with a six-lane rail yard that increased the barrier between the station and the city. This lack of cohesion between the station areas and the surrounding public spaces, limited pedestrian movement between the station and the surroundings (Buijze, 2013).

Through political support to develop the Utrecht rail station area, the Utrecht City Project (UCP) was collaborated between the municipality and private parties who own real estate in the surrounding areas (Buijze, 2013). This collaboration continued, meanwhile the Dutch Government had in 1997 embarked on an ambitious programme to upgrade the nations high speed train stations and to develop the surrounding station areas (Bouwman, Bekkering and Rotterdom, 2007). These programmes further supported the private-public partnerships of the UCP. In 2000, the Leefbaar Utrecht (local political party) who had been critical of the UCP, won local elections. Following their take to office, Leefbaar Utrecht had rejected public-private partnerships in the development of the railway station area redevelopment and argued for more citizen participation (Bouwman et al., 2007). This initiative later became the 2001 referendum that provided the basis for the 2004 masterplan that has since formed the basis for the development of the Utrecht station area redevelopment (Buijze, 2013). Post the final masterplan approval by the City Council in December 2005, contracts were drawn up with NS Poort (the privatised development company of NS), Corio and Royall Dutch Jaarbeurs (developers of their own land within the precinct).

NS Poort as a privatised development company of NS, have been successful in station area development in Utrecht through joint partnership in the private sector and with that of the public sector. To date, the Utrecht station has undergone metamorphosis through the re-development initiated through the 2004 Masterplan. Which has since enabled new buildings, conversions and renovations, and the construction of the Moreelsebrug Bridge. Besides the large-scale development and the redevelopment of station areas, NS have developed a research method that is based on environmental psychology, and to understand what negatively impacts the passengers when waiting at the station and experiencing the station space (van Hagen, 2015). In the Netherlands, the development of the railway station and surrounding areas has enabled a better sense of place around transport nodes, and to date is still in the process of continuing to improve development around station areas. While, planned projects and development are planned to further improve commuter travel experience and the commuter use of spaces within close proximity to stations. The development at Utrecht station has enabled further exploration of similar projects around the Amsterdam Sloterdijk in a similar collaboration with local authorities, ProRail and private companies.

2.5.3. Summary and Comparison: Precedent Studies

The insights gained through the two precedent studies are summarised in table 2-2 below. *These insights will be drawn on in chapter 5 of this this dissertation.*

Table 2: Summary and Comparison: Precedent Studies (Authors own, adapted from Chorus, 2012)

	Rail Sector Japan	**Rail Sector the Netherlands**
Ownership	Private	Semi-public (NS – State Owned company)
Concession period	Life-time concession	10 years
Subsidy Provision	Subsidies for optimisation of service, and improvement of station buildings	Annual subsidies to ProRail, who lease rail infrastructure to NS
Relation infrastructure management and transport services	Fully integrated between infrastructure management and transport services	Fully separated between infrastructure management and transport services
Role of Government	Limited influence on the performance of railway companies. Large influence in the required planning and financial instruments	Large influence on the performance of railway companies.
Financing railway developments	Mostly privately financed	Mostly publicly financed (by the government)
Planning of railway developments	Transport Policy Council	Ministry of Infrastructure and the Environment
Degree of Business diversification	Strong	Moderate
Station area Land Use diversification	Highly efficient land use model, which makes maximum use of the space under, over and beside the stations	Moderate efficient land use model. Land zoning changes are applied for based on required and motivated land use changes. NS has right to build over and under platforms.

Station area development	Private Rail companies own majority of surrounding land parcels and develop these land parcels. The remaining land parcels are owned by other private developers and by the Government. Preferential development rights are granted to companies who meet the pre-envisioned plans for the area.	ProRail are responsible for construction/renovation and maintenance of station building, however NS has ownership of station building and commercial exploitation
Vision for station area development	Pre-envisioned plan by government through 15-year Master plans.	Responsibility of NS, in conjunction with surrounding property owners.
Application of station area development	Government preapproved and provided development rights.	NS application for development rights.
Development Approach	Market Conscious Approach	Collaborative approach

2.5.4. Empirical Studies

This section highlights a select few empirical studies completed by previous researchers that are similar to the aims and objectives of this study. These studies are in addition to the key finds of researchers used to support previous literature pieces discussed in this chapter. The aims and outcome of each of these studies are outlined below.

Schuetz's (2015) study aimed to investigate whether rail investment in California stimulated retail activities as a component of mixed-use developments. However, the paper concluded that new stations in California have been located within previously high employment densities, and somewhat outside of city centres. Therefore, the new stations continued to stimulate what had already been in existence prior to the development of the station areas. Similarities, this had been the outcome from Lombard, Behrens and Viruly's (2017) study that indicated that the implementation of the Gautrain in Gauteng had seen an increase property values and increase in surrounding station land use. However, the Gautrain stations had been introduced primarily into previously unused urban spaces, and therefore the introduction of new infrastructure had been easily absorbed into the surrounding land uses. Both studies by Schuetz (2015) and Lombard et al., (2017) have re-enforced that station area development thrives best in areas of high employment and in areas that have established surrounding developments.

In Curtis (2012) the research had been based on an examination of the extent to which different town planning approaches succeed in implementing TOD and station area development at stations located within low-middle income areas. The study placed particular significance on the articulation of town planning policy to implement development change on land surrounding stations (Cutis, 2012). The outcome of this study had been that town planning schemes require revisions over time, due to the shift in political vision and plans over the years. Furthermore, that a 5-year review of these policies will enforce an audit and review what has been done over the past few years and how it can be improved going forward (Curtis, 2012). The same was seen in Cervero's (2009) work, where he argued that station area developments are shaped by policy levers such as permissive and incentive-based zoning around stations, co-financing – such as the creation of benefit assessment districts to generate income from land appreciation -, the ability to target supportive infrastructure and public investments around station areas, and the ability to assemble and purchase land to support that planning for real-estate projects. Cervero (2009) argued that there is a requirement for government and other stakeholders to have active participation in achieving visions and plans within station area spaces. Therefore, it is not enough to identify land parcels for development, but that action and involvement of government officials and required stakeholders is instrumental.

In a paper by Bickford and Behrens (2015) they aimed to explore the notion of TOD and station areas development, and what it might mean in South Africa. The outcome of the paper was that local TOD stakeholders often have contradictory and competing interests and understandings, which poses a risk to achieving the objectives of TOD (Bickford and Behrens, 2015). The paper concluded that a greater effort is required to understand local TOD stakeholder dynamics, and that local governments need to provide frameworks and associated strategies through which competing interests can be resolved (Bickford and Behrens, 2015).

In Seo and Lee's (2021) paper they aimed to explore whether railway station areas can be categorised according to locational characteristics on a nationwide level and whether the typological classification is valid for planning and development. In their study they analysed and categorised thirty-four railway station areas across Korea. The results of their study had proved that for all locational characteristics of land use, transit accessibility and spatial form, station areas could be categorised based on priority or based on urban/suburban categories (Seo and Lee, 2021). The study contributes to the discussion on diversifying the planning and development of station areas as the heart of sustainable cities by verifying the types of station areas and their differences according to locational characteristics (Seo and Lee, 2021). Lastly, Chorus (2012) sought to identify what the driving forces are behind the development of station areas in Tokyo, and to what extent similar forces can be applied to Randstad. These key drivers, as it related to Tokyo had been included in the precedent study section of this paper. Chorus's work had been used to guide my own research, while his work had focused heavily on Japan and the Netherlands, reference to his work in this regard had shaped the precedent studies section of this study, since these countries have well established station area developments.

2.6. Synthesis

The review put forward in this chapter has highlighted from an academic perspective what constitutes, determines, and defines a development process. From this review it is evident that a development process cannot be prescribed and that the process is defined by various internal and external factors. Due to the unique nature of each development process this review has highlighted the need to investigate as part of this research what types of development processes will be needed to develop station area land. Furthermore, to investigate what constraints and trade-offs could be expected for such development. Additionally, this chapter has reviewed the TOD concept which in contemporary development has played a significant role in driving and planning development within areas of close proximity to transportation nodes and stations. Therefore, this review has highlighted the need to investigate the types of interventions that are applicable to initiate development at/on station area land. Furthermore, the concept of TOD has also left a lingering question of who will develop these land parcels, and what will the involvement of government be in this process. Lastly, the review of the transport-land use feedback cycle together with the review of the precedent studies has highlighted that the success of rail station area development (and verse visa that of the rail) is dependent on positive cohesion between transportation planning and land use planning.

Given the conducted review of empirical studies and literature review, as noted in this chapter, it is imperative to point out that the research question put forward in this study has not been investigated in academic research to date. Through the review of empirical studies, it has been evident that while previous bodies of literature could contribute to this study, as it has in this chapter and will in the chapters to come, this final piece of work will contribute significantly by filling a research gap in South African academic literature. And the literature covered in this chapter will inform the finding and recommendations put forward in this paper.

CHAPTER 3: RESEARCH METHODOLOGY

3.1. Research Approach

According to Denzin and Lincoln (2008) the socially situated researcher is able to create realities and representations based on their unique interaction with the subject matter of inquiry. It had been through my own personal and academic interaction with station area land parcels, and through observation at informal site visits that this research began to take shape. The research methodology used in this paper is based on an empirical approach, which according to Litosseliti and Edley (2010) makes use of verifiable evidence, through observation and/or data collection methods, in order to arrive at research outcomes. The empirical approach had been used in order to provide the researcher with methodological freedom and room for creativity, in order to explore evidence-based data and theory in order to answer the research question put forward in this paper (Diefenbach, 2009).

Firstly, this empirical approach began with defining a research question, which had been an explanatory research question. According to Litosseliti and Edley (2010) the wording of a research question is key, as every content word in the research question matters and it provides a working definition for the purpose of this dissertation. Furthermore, the research question is required to be understood by anyone who reads the final dissertation, to enable others to replicate the research in future (Litosseliti and Edley, 2010). Once the research question had been set, it was used to guide the investigation, as it is built the core of the research and forms the central subject that the research seeks to address. In order to enable and guide the investigation further, this research drew on the research question in order to identify the key aims and objectives for the research.

Secondly, the research aimed at the collection, analysis and interpretation of secondary data from previous empirical research, precedent studies, and a critical analysis of relevant theory through the literature review. The research provided this study with a set of ideas and reasoning's that will be used in order to proceed with answering the research question put forward in this paper (Punch, 2013). Furthermore, the secondary data gathered through this research had informed the qualitative research methods and data collecting techniques used to collect primary data for this study. The use of qualitative methods and techniques provided this research with primary data based on human experiences that are informative and powerful, and sometimes more compelling than quantitative data (Anderson, 2010; Diefenbach, 2009). Qualitative research is often criticized as biased and to lack rigor (Anderson, 2010). Building on this, Diefenbach (2009) argued that qualitative research is biased by implicit assumptions, interests, world-views, prejudices and one-sightedness of the researcher. This research had therefore applied reliability and validity to its application process to combat such biases, as discussed later in this chapter. However, despite these critics the application of qualitative research to complete this paper had provided numerous benefits to this study. The application of qualitative research provided an opportunity for issues to be examined in detail and in depth, and the findings collected had been collected from a few sources, thus providing less room for the findings to be generalised (Anderson, 2010; Litosseliti and Edley, 2010). Furthermore, the application of qualitative research provided an opportunity for the findings to be transferable to another settings (Anderson, 2010). Therefore, in order to gain a better understanding and insights into a number of contents, this research sought to make use of the case study method.

3.2. Research Method

Case Study Method

Using the Case study method, the researcher was able to make a descriptive account of the research problem area. Rowley (2002) indicated that the case study method generally aims to provide a deep and detailed investigation that assists the researcher with answering a set of predetermined research questions. Additionally, Farthing (2015) argued that we live in multiple social realities, which result in multiple truths based on an individual's interpretation of their social and economic world. Therefore, those interpretations can lead to a generalization of the case study area (Flyvberg, 2006). The researcher sought to reduce generalizing the case study area through a means of gathering information on railway stations along the Northern Corridor from multiple sources. However, the identification of a case study before proceeding with the research provided the researcher with streamlining information gathering. The case study was used as a beacon point that the research came back to, through the research task.

A strength of this method is that it provided an opportunity for a rich body of knowledge to be uncovered based on a prior set of aims and objectives (Flyvberg, 2006). Therefore, the method was used to generate an investigation that could be used to analyze and reveal information that had not been articulated through the legislative and policy context review (chapter 4) nor through the literature review for this study (chapter 2). With the case study method, the researcher was able to achieve a broader understanding and investigation of the reasons why development had not been enabled along station land to date, through carefully analyzing existing developments and attempts of development along the Northern Corridor.

The common concerns regarding the case study method, it that the method requires unmanageable amount of effort to facilitate. However, the use of this method is proven to be useful for generating objectives and hypotheses at the beginning phases of the research process (Flyvberg, 2006). This provided the research direction specifically at the beginning of the process. A second concern with this method is that the case study method provided the researcher with rich context that was unrelated in answering the research questions. Therefore, the researcher had to be careful to analyze the data collected, and weigh these against the aims and objectives of the study in order to filter through the primary data and represent the findings for this research. Lastly, Yin (2013) identified that the method is proven to leave room for the researchers own bias. It is for this reason two data collection techniques were used for the completion of this study – e.g. semi structured interviews and desktop research. However, this was also mitigated through filtering through the primary data based on the previous set of research aims and objectives put forward in this research.

3.3. Data Collection Techniques

The data collection techniques used for this study include semi structed interviews and desktop research, the data collected through these two techniques formed the basis for the findings chapter.

Semi structured interview

According to Given (2008) a semi structured interview is a research technique that probes the subject matter through a predetermined set of questions. Compared to a structured interview, the semi structured interviews unfold in a conversational manner and encourages the participant to explore issues that are important to them (Clifford, Cope, Gillespie and French, 2016). However, the interviewee is required to understand the purpose of the study before continuing with the interview to ensure direction is granted to the interview. It was for this reason that the researcher decided to compete the literature review, and legislative, policy and institutional review chapters first before setting up and conducting the semi-structured interviews. Through the insights drawn from these chapters, the researcher was able to probe the interviewee to gather more information on questions that were more important to answering the research question.

The researcher set out to engage with the main rail organisations that operate the Northern Corridor line, the municipal entity, private rail consultants and successful developers at rail stations along the Northern Corridor, in order to understand the development process for station area land parcels and what the factors are that have affected development at most stations along the case study area. Through the policy review chapter, it became evident that there have been attempts to devolve rail from PRASA to local government authorities. This became an important aspect of the research as this might affect the future ownership of station area land parcels, which will affect the way in which these land parcels are developed in the future. This information had provided the researcher with an in-depth understanding of rail operations and the development process of station area land before engaging with research participants.

A limitation to this technique, was due to the current CoVid-19 pandemic, the interviews took place online, via Microsoft Teams and the Zoom applications. This provided a few limitations to the research process, as a few research participants ran late for our meeting online, which resulted in two research participants having been interviewed over two separate sessions. Furthermore, majority of the research participants did not sign the consent form to gain permission to record the interview before the interview began. These consent forms had been emailed to each research participant prior to the predetermined interview time. The interviewer had to provide each research participant with time to complete the form and to email it back to her at the beginning of each interview before proceeding. Most research participants provided consent for the use of their names in this research, however given the sensitivity of the topic the research excluded all research participant names, and these were replaced with intuitive coding. The list of the research participant and their respective coding were included as Annexure A of this research paper.

Through the completion of these interviews, knowledge and information was generated that assisted the researcher to gain perspective to compile the findings chapter for this research. The semi structured interviews also provided a platform to gain information pertaining to the institutional review of PRASA, and therefore the application of the intuitive coding to the primary data was also applied in chapter 4 of this research. With the bulk of the primary data findings having been represented in chapter 5. The main objectives of this research, as represented in chapter 1, were used as a framework to structure chapter 5 and were used to sort through the primary data gained from the semi-structured interviews.

Desktop Research

According to Farthing (2015) data collection in research is generated from people, but publications, administrative records, maps, plans, diagrams and laws can also be seen as data sources for research. Through the semi structured interviews, the researcher set out to collect qualitative primary data to answer the research questions put forward in this paper. However, the desktop research provided a platform to make use of secondary data, which allowed for cross-referencing between primary data and secondary data. Using desktop research, the researcher was able to contextualise, understand and explain the laws, plans and maps referred to during the semi structured interviews (Jonathan, 2017). This technique was used to improve insights drawn on the legislative, policy and institutional review chapter, and later in the findings chapter of this research.

Furthermore, using desktop research, the researcher was able to complete research on key precedent studies that have informed this study. The inclusion of precedent studies was to provide examples of relative past and present station area land parcels that have been successfully developed. These precedent studies were included in chapter 2, which include a review of station area developments in Japan and the Netherlands. Due to the lack of development of rail station land development within countries of the Global South, there were little to no precedent study options for direct comparison to the social and economic contents of South Africa. Thus, Japan and the Netherlands were used as precedent studies to learn from in this study. Furthermore, to inform this study and to enable a bridge in the current lack of academic research on this topic within countries of the Global South.

3.4. Data Analysis

Data analysis is a flexible process of analysing the contents of research findings, which does not take a linear form (Jonathan, 2017). Although flexible, data analysis requires a firm direction, and procedure to potentially eliminate skipping analysis of data or overseeing an important aspect of the research (Hsieh and Shannon, 2005). The researcher undertook a ***systematic approach*** to complete the data analysis for this research. Firstly, this included the establishment of a research question, aims and objectives for the research. Secondly, the researcher needed to complete the literature review before conducting interviews, which assisted the researcher to draw up the questions for the semi structured interviews.

The researcher ensured that the research questions and objectives guided the research. This provided an anchor point throughout the process of completing this study. After each recorded interview, the findings were transcribed and once all twelve semi-structured interviews were completed the researcher then ranged the responses into categories. The identification of these themes was based on the aims and objectives but forward in chapter 1. Due to the empirical approach used in this research, the researcher sought to write out the findings in such a way that it is clear that the aims and objectives of the study were achieved. The findings chapter was also used to provide a contextual analysis for the case study area. The finding chapter concludes with a synthesis of the findings in order to answer the research question put forward in this research, which was also drawn upon to generate recommendations based on the insights from this study. Desktop research was used to cross reference information/data received through the semi structured interviews.

3.5. Sampling

According to Given (2008) sampling is the process of choosing actual data sources from a larger set of possibilities. In order to complete this process, first the researcher narrowed the set of possibilities for the research by defining the population that will be helpful in gathering information from to answer the research questions. The set of possibilities that were used for this study were chosen from the set of officials who have worked or are currently working on the development of station area land parcels along the case study area. Through this process the researcher identified officials at PRASA, Transnet, and the City of Cape Town, and through research the researcher identified developers who are in the process of developing land parcels. This process is known as purposive sampling, and as a non-probability sampling procedure, in which the participants are chosen through the research needs (Given,2008; McIntyre, Lopiano, Morse, Amin, Oberg, Young and Nuzhdin, 2011).

An advantage of purposive sampling is that through the selection of the sample by the researcher, a process of conducting research can be prepared beforehand. However, a disadvantage of this process is that it can be quite subjective, and the selection criteria could be influenced by the researcher's own judgement (Given, 2008). However, using semi-structured interviews, the researcher provided the research participant with enough room to explore their answers in a less rigorous manner. This provided less room for the researchers own judgement to guide the discussion and the data collected.

The interview processes included a technique of enquiring from the research participants whether they knew anyone else who might contribute to the research. This is known as a snowballing technique (Page and Meyer, 2000). Through this process the researcher was able to gain the contact details of current developers who are in the process of commencing with a development along the Northern Corridor for further interviews, which required the researcher to make a judgement call on if these contacts could be suitable subjects for the research. The selection process for these interviews were based on judgemental sampling. According to Page and Meyer (2000) a judgemental sample include respondents who, in the judgement of the researcher, will best contribute to the findings of the research. However, a disadvantage of snowballing and judgemental samples are that the researcher's potential bias is brought through into the research process of selection. However, if the initial list of participants is chosen with variety, this will lead to a more varied selection sample made available through snowballing (Given, 2008; Jonathan, 2017). Through the process of snowballing the researcher had enquired from the research participants at PRASA if they would be willing to share the contact details of those developers who have been successful at developing station area land parcels. This process of enquiry led to the contact details of the only two developers along the Northern Corridor who at the time of conducting this research were in the process of developing their respective station area land parcels.

3.6. Research Criteria

According to Kirk, Miller and Miller (1986) reliability is the degree to which the study can be repeated, and the degree to which the assessment and evaluation thereof will remain consistent. The researcher attempted to ensure reliability by making use of interviews conducted during the same phase of the research, and thus all interviews were completed post the completion of the literature review, and legislation and policy review. The researcher ensured an accurate documentation and recording of the methods that were used to conduct the research. If there were any changes or adaptions made to these methods, these were included into the current chapter post completion of the study. According to Joppe (2000) this process of documentation will allow the study to be repeated in the future.

Validity (internal and external) determines the credibility that research can present. Internal validity seeks to ensure that the research is measuring what is had set out to complete. This was conducted by ensuring that a predetermined list of questions were put together before conducting all the interviews. External validity is a means of ensuring the findings of the research are not abstract or unrelated to the subject at hand (Morse, Barrett, Mayan, Olson and Spiers, 2002). External validity had been ensured with the completion of desktop research within this study. This provided the researcher with valuable secondary data collection prior to and post the completion of semi structured interviews. This process of external validity assisted the researcher to confirm the primary data findings collected through the interviews.

Triangulation is the process of making use of multiple methods to clarify and verify an observation or interpretation (Rowley, 2004). By making use of a variety of data collection methods outlined above, this research ensured reliability and validity throughout the study.

3.7. Limitations

There were a few limitations to this study that resulted in a few alterations to this research. Initially the researcher identified the Northern Corridor that include two rail lines, a lower and upper line, as the primary Case study, as seen in figure 1. However, through the process of procuring interviewees for the semi-structured interviews, the researcher could not get in contact with anyone within the property department at Transnet. After several phone calls and emails the researcher decided to confine the study to the lower portion of the Northern Corridor which include only PRASA owned land parcels, as seen in figure 1. The upper portion of the Northern Corridor is owned by Transnet, and the stations along this line are managed by PRASA and are owned by Transnet.

CHAPTER 4: CASE STUDY LEGISLATIVE, POLICY AND INSTITUTIONAL CONTEXT

This chapter seeks to unpack one of the main objectives set out for this research. Which had been to critically analysis the legislative and policy frameworks that might influence the case study, and critically analysis the influence that PRASA exert that govern station area land.

4.1. Legislative Context

The Constitution of the Republic of South Africa Act 108 of 1996 states that public transport is a concurrent function between national and provincial government, and that municipal public transport is a local authority function. It further states that the national and provincial government authorities have legislative and executive authority to ensure effective transport is delivered by municipalities. Through this authoritative role, the national government grants subsidies to the provincial government who manage and distribute these funds between municipalities. This distribution of funds is done in accordance with the Public Transport Operations Grant (PTOG) and the Public Transport Network Grant (PTNG). This process is in terms of the annual *Division of Revenue Act 2 of 2013*. These grants can only be used for the maintenance, capital construction and operation of commuter bus services. The commuter rail system is funded separately by the National Department of Transport (DoT) who transfers funds directly to the Passenger Rail Agency of South Africa (PRASA) (National Rail Policy, 2017).

The National Land Transport Transition Act 22 of 2000 (NLTTA) sought to prioritize public transport over private transport, while highlighting the requirement to enable integration between transport planning and land use planning. The NLTTA commissioned individual municipalities to draw up Integrated Development Plans (IDP) that include a Transport Plan for their respective municipality. According to Van Ryneveld (2018) the NLTTA provided theoretical frameworks to enable institutional plans to be written at municipal levels, however failed to lead the creation of effective municipal bodies to take responsibility for public transport. Therefore, the National Land Transport Act (Act 5 of 2009) (NLTA)*,* which is an amendment of the NLITTA, places responsibility largely with metropolitan authorities who are mandated with the responsibility for road based public transport (Van Rynveld, 2018). These include BRT systems, example being Cape Town who gained authority over managing the BRT system, the MyCiTi. According to Walters (2014) the aim of the NLTA, which is in line with section 156(4) of the constitution, is to eventually devolve public transport systems to the municipal level of government. Until then, municipalities are tasked with the planning, implementation and management of modally integrated public transport networks and travel corridors and are further tasked with the planning functions related to service level planning for passenger rail on a corridor network (Van Rynveld, 2018). To date the devolution of responsibility to municipal governments to manage, and plan capital and operational projects has been slow in terms of commuter rail.

Another piece of legislation that seeks to promote consistency and uniformity in procedures and decision-making is the Spatial Planning and Land Use Management Act 16 of 2013 (SPLUMA). Through application of a set of sustainable development principles, SPLUMA has been drawn up to guide and inform spatial documentation that define strategies and policies. The five SPLUMA principles are, namely Spatial justice, Spatial Efficiency, Spatial Sustainability, Spatial Resilience and Good Administration. These principles are a means of guiding components of the planning system, namely through Spatial Development Framework's (SDF's) and the Land Use Management System's (LUMS). According to SPLUMA (2013) SDF's can be prepared at a provincial, regional, municipal, local or precinct scale, and cover medium to long term spatial development planning. Simultaneously, these plans should entail sufficient clarity and direction to provide guidance to land use management decisions, however also enabling flexibility and discretion when implemented. The Cape Town SDF is discussed in the sub-section to follow.

At a provisional level, and guided by SPLUMA and elements of the Constitution, the Western Cape Government Land Use Planning Act 3 of 2014 (LUPA) had been adopted to merge and guide spatial planning requirements and public investment in the Western Cape. The Act is set to guide functions of municipalities and provincial government departments within the Western Cape. A large portion of the Act provides guidance to provincial and municipal government on how and when to draft spatial development frameworks, and local development plans. This Act by right of existing as a legislative piece, does not direct investment or provide suggestions, however, governs how land use planning takes place, how land can be development and how development is prohibited within the Western Cape.

This kind of end state in mind type of planning is impossible as cities cannot be comprehensively planned and managed in the manner indicated in these legislative pieces (Botha, 2015). According to Dewar and Todeschini (2004) land use plans can only prevent certain activities from occurring at certain locations, however if there is no demand for a particular land use then the plan cannot make these set land use developments take shape. The assumption that each land parcel has an identifiable use is incorrect, as different activities have many options on where to locate and these activities compete for locations in cities (Dewar and Todeschini, 2004). Therefore, legislative guidance has been deemed incoherent with the varied dynamics that take place temporally. This can also be seen in the NLTA that sets out a desired end state of devolution of transportation systems to respective municipalities, however institutional action to date has been slow in relinquishing power and responsibility to municipal entities. The action behind legislative pieces has lacked rigour and determination in practice compared to legislative recommendations put forward in these pieces. According to the World Bank publication, related to service delivery, at the local level South Africa has an excellent set of legislative pieces, however these pieces lack practical guidance and there have been multiple unintended failures of institutional participation to enable plans put forward in these legislative pieces (The World Bank, 2018).

4.2. Policy Review

Public policy making is carried out at various levels of government, therefore national policy is generally broad in nature and provide a reference framework within which more detailed policy is made at provincial and local authority level (DoT, 1996). The National Transport Policy White Paper of 1996 had been a means of strategically directing public transport, and stresses the need for comprehensive information as the basis for developing further policy and strategy. This policy and its contexts, led to the National Household Travel Surveys taking place in 2003 and a follow up a decade later in 2013, which were aimed at achieving improved customer-oriented transport services and therefore gathered empirical data to support and inform the integration and inter-modalism of transportation (Van Ryneveld, 2018). Furthermore, the National Transport Policy White Paper stated that transport challenges would never be effectively addressed without effective land use patterns and urban forms (DoT, 2017). The policy led to the regulation of land use developments at local levels, to ensure that development approvals conform with local integrated land use and transport plans (Van Ryneveld, 2018). This policy together with the framework set in the NLTTA (2000) subsequently drove the enablement of single tier metropolitan governments as of December 2000. The enablement of single tier metropolitan governments was actioned through the Local Government White Paper (1998). The enactment of the Local Government White Paper (1998) had been much simpler at achieving the same objectives of the Transport White Paper of 1996. This process of enabling single tier metropolitan governments took drafting and enactment of numerous legislative and policy pieces. This out winded process of action by the South African Government has been critiqued to be the result of inadequate technical and managerial capabilities at governance levels (Walters, 2014). This was supported by Botha (2015) and Dewar and Todeschini (2004) who argued that the repetitive nature and continuous enactment of similar policies regarding authority over transport, has resulted in slow change to the current urban form to support integrated transport systems in South Africa.

The National Rail Policy Green Paper (2015) states that the Passenger Rail Agency of South Africa (PRASA) is a Schedule 3B National Government Business Enterprise, and reports to the DoT via a board. The National Rail Policy Draft White Paper of 2017 had been drawn up and approved, with the intension of correcting decades of policy uncertainty in the South African rail sector (PMG, 2017). Furthermore, the Draft White Paper drives a long-term vision for the 2050 agenda horizon, which setup rail as a backbone for South Africa's freight logistic and passenger mobility systems that will support the economic and social development of the country (PMG, 2017). The National Rail Policy Draft White Paper (2017) provides an indication that PRASA is funded by the fiscus (53%), fare revenue (40%) and rental income (7%) (DoT, 2017).

In terms of the devolution of rail, the National Rail Policy Green Paper (2015) and Draft White Paper (2017) agrees that urban rail should be a local government function, and therefore states out that the DoT are tasked to complete a devolution strategy that is in alignment with the Integrated Urban Development Framework. Therefore, through this process if municipalities are deemed capable, the devolved operational subsidies for urban commuter rail are proposed to go to these municipalities, and therefore those funds will be managed as part of their Comprehensive Integrated Transport Plans. Therefore, until then PRASA will

manage operations and maintenance of their urban rail systems. Furthermore, as per the long term planning for rail, the DoT (2017) indicates that urban rail functions to municipalities, including planning, funding, procurement, operations, and maintenance shall be achieved after completion of PRASA's current phase of rolling stock recapitalisation plan.
The National Rail Policy Draft White Paper provides emphasis on the future implementation of high-speed rail, and provides direction to provincial government to ensure the maximum total of economically justifiable passenger rail catchment areas by 2050, and to maximize the connectivity between urban and regional areas through modern rail systems and high-speed rail systems, and to voluntarily minimise the number of motor cars that traverse urban areas by providing affordable, convenient, safe and secure rail services (DoT, 2017).

Furthermore, the National Rail Policy Draft White Paper indicates that South Africa's human settlements have far lower population densities than in other international countries that use urban rail intensely (DoT, 2017). Therefore, the policy seeks to encourage the alignment of human settlement development along railway lines and to improve direct pedestrian access to railway stations. This policy realignment is incoherent with local plans that seek to encourage mixed use development along merging transportation hubs. The National Rail Policy Draft White Paper provided progressive plans to enable future management and operational support of the rail service, however, does not seek to guide development specifically at station areas or its immediate surrounds (DoT, 2017). Thus, compared to the National Rail Green Paper (2015) which had been the first ever Green paper on National Rail Policy, the National Rail Draft White Paper (2017) drives a long-term vision, which is necessary for local and provincial long-term planning, however has not provided guidance for station area land parcels specifically that remain vacant along railway lines.

In 2012 the National Planning Commission sought to guide specific development opportunities and structure the country's development imperatives. Thus, this had been completed through the National Development Plan 2030 (NDP). The vision set out by the NDP 2030 is to enable opportunities and conditions that result in sustainable and inclusive economic growth. With specific reference to rail, the Republic of South Africa (2012) identifies that the rail services in South Africa are currently dominated by outdated, malfunction-prone railway technology and poor intermodal linkages. Therefore, planning, and future investment should prioritise improvement of passenger capacity, and rail efficiency and sustainability. Consequently, there is a requirement to enable a strong network of economic infrastructure designed to support the country's rail on the medium to long-term. And, to further improve space economy that includes the upgrading of all informal settlements and improving the provision of social housing on suitable and well-located land. However, also increasing urban densities to support public transport and to reduce sprawl; promoting mixed housing strategies and compact urban development in close proximity to services and livelihood opportunities; and investing in public transport infrastructure and systems to ensure more affordable, safe, reliable and coordinated public transport (Republic of South Africa, 2012).

Additionally, the Republic of South Africa (2012) seeks to encourage the enablement of economic opportunities through catalytic development, and emphasis' that this can be achieved through national gross fixed capital formation which will need to reach 30 percent of the GDP by 2030. Furthermore, that the public sector investment should reach 10 percent of GDP, to realise a sustained impact on growth and household services (Republic of South Africa, 2012). The location of station area land parcels provide an opportunity for these envisioned economic opportunities to be realised, that area currently not included in the NDP. There are 585 train stations across South Africa, with varied sized land parcels that possess varied and yet specific catalytic opportunities for communities in which they are placed (DoT, 2021).

At a municipal level, the Cape Town Integrated Development Plan (2017-2022) (IDP) which is a five-year plan is a requirement for all municipalities as per the Municipal Systems Act, Act 32 of 2000. The IDP is a strategic planning instrument that guides and informs all planning, development, and decisions in the municipality, and therefore is required to align with national and provincial strategy (IDP, 2017). The IDP is reviewed and amended where required on an annual basis. The IDP places strong emphasis on Transit Oriented Development (TOD) and refers to the city adopted Transit Oriented Development (TOD) Strategic Framework of 2016 which sets a transit-led development agenda at all levels of the built environment. This agenda is to promote and prioritise TOD and supported densification. The IDP sets out to strategically locate new mixed-use developments around existing and planned public transport and further seeks to ensure coordinated implementation of infrastructure planning and programmes are done in partnership with PRASA (IDP, 2017). Despite these aims and visions set out in the IDP, the IDP has not identified concrete direction through public investment and plans on how the Municipality seek to achieve strategically located mixed-use developments at and around public transport. Thus, further perpetuating the lack of mixed use development as the need for development has been identified but direction on how to achieve development is not provided or realised in these plans.

The IDP (2017) and TOD Strategic Framework (2016) have indicated that the adoption of TOD will address urban inefficiencies through integrated and intermodal transport systems. In terms of institutional support in managing and directing such development the IDP (2017) has identified that rail interventions and an incremental devolution strategy should be developed, approved, and rolled out to facilitate integrated and sustainable transportation. It is noteworthy to point out that the quest for devolution of transport functions has been a continuous process and has seen a slow change since the enactment of the Constitution in 1996 and the enactment of the NLTTA in 2000 that were directed to do the same. Devolution of transport functions at a municipal level in Cape Town also require improved control and management of the Golden Arrow Bus Services (GABS) and Commuter Rail service, that are currently ran respectively by Provincial and a National Government entities. As supported by the IDP (2017) devolution of rail will ultimately be required to enable final integration of different modes of transport, and to enable improved interaction between rail and land use development.

The IDP (2017) and the TOD Strategic Framework (2016) have further been important informants to the Cape Town Municipal Spatial Development Framework (COCT) 2018. A COCT includes a 10-year vision for a municipality which is reviewed after 5 years coinciding with a City's new political term-of-office IDP (COCT, 2018). The COCT, as per requirements of SPLUMA inform the annual update of the 2017-2022 IDP. The MSDF is a spatial interpretation of the City of Cape Town's IDP and follows the previous MSDF that was drafted in 2012. The COCT (2018) fundamentally seeks to ensure spatial transformation via dense and transit-oriented growth, and through development anchored by an efficient and integrated transport systems. The COCT (2018) had also identified localised challenges such as a routinely failing rail systems and increasing levels of congestion of the City's roads as a structural inefficiency in the City's current urban form and function. Therefore, highlighting the problematic nature of the commuter rail system and the arising need for improvement of the service.

The City of Cape Town developed four land use models between 2013 and 2015 which were used in strategic City Documents, that include the MSDF 2018, the Integrated Public Transport Network 2032 (IPTN) 2014 and the Medium-Term Infrastructure Investment Framework (MTIIF) 2000. These land use models/scenarios encompass both road and rail based public transport and encourage the development of corridors and transit accessible precincts (TAPS) which will be important spatial restructuring elements to generate and attract people and trips and will contribute to economic growth and public viability (COCT, 2018). The MSDF supports and encourages these plans that will ultimately be achieved through Cape Town's Integrated Public Transport Network 2032. These principles are further supported through the Comprehensive Integrated Transport Plan (CITP) for 2018 to 2023, which like the IDP is updated on an annual basis. The CITP sets out how the city plans to build on the progress it has made in delivering integrated, intermodal, and interoperable transport in Cape Town. These plans have comprehensively been set out and envisioned for at municipal scale planning, however the identification and inclusion of station area land parcels within these plans are less prominent. Which could be attributed to the ownership of these land parcels, and the way in which these land parcels have been planned for to date, which has been less planned for by municipal institutions and predominantly been planned for by PRASA.

4.3. Institutional Review of PRASA

The Northern Corridor railway line includes two railway lines, the Northern line and the lower line that runs parallel to Voortrekker Road. The Northern railway line portion of the Northern Corridor and associated station area land parcels are owned by Transnet. According to PRASA (2020) PRASA manage the Transnet station area land parcels, however Transnet have been less willing to hand over land parcels to developers or municipality while ownership of these land parcels is under their umbrella. Through the research conducted to inform and answer to the research question set out for this paper, it was evident that there are a number of institutional forces that influence station area land. PRASA as the main custodian of railway lines and associated station land are key role players in this research.

PRASA consists of three divisions and two subsidiary companies, as seen in figure 6 below. The three divisions include **PRASA Technical**, which is responsible for improving the rail system performance, improving rolling stock capacity and the implementation of the modernisation programme (PRASA, 2020). **PRASA Rail**, is the organisations passenger rail operating division, and is the custodian of their mandate to deliver commuter rail services in South African metropolitan areas and long-distance (inter-city) rail services (PRASA, 2020). The third division of PRASA is **PRASA Corporate Real Estate Solution (CRES)** who's mandate is to maintain, upgrade and improve the condition of railway stations, depots and office buildings in key focus areas enhance commuter and/or user experience (PRASA, 2020). **Autopax Passenger Services (SOC) Ltd.**, a wholly-owned PRASA subsidiary that manages PRASA'S bus business. Lastly, **Intersite Asset Investments (SOC) Ltd**, is a wholly-owned subsidiary of PRASA and has been in existence for ten years to date (PRASA, 2021). Intersite's main purpose and objective is to carry out PRASA's secondary mandate of commercialising its assets, therefore is mandated to leverage PRASAs large asset base, facilitate private sector investment in these assets and to focus on new and innovative ways of generating income on commercial grounds (PRASA, 2000).

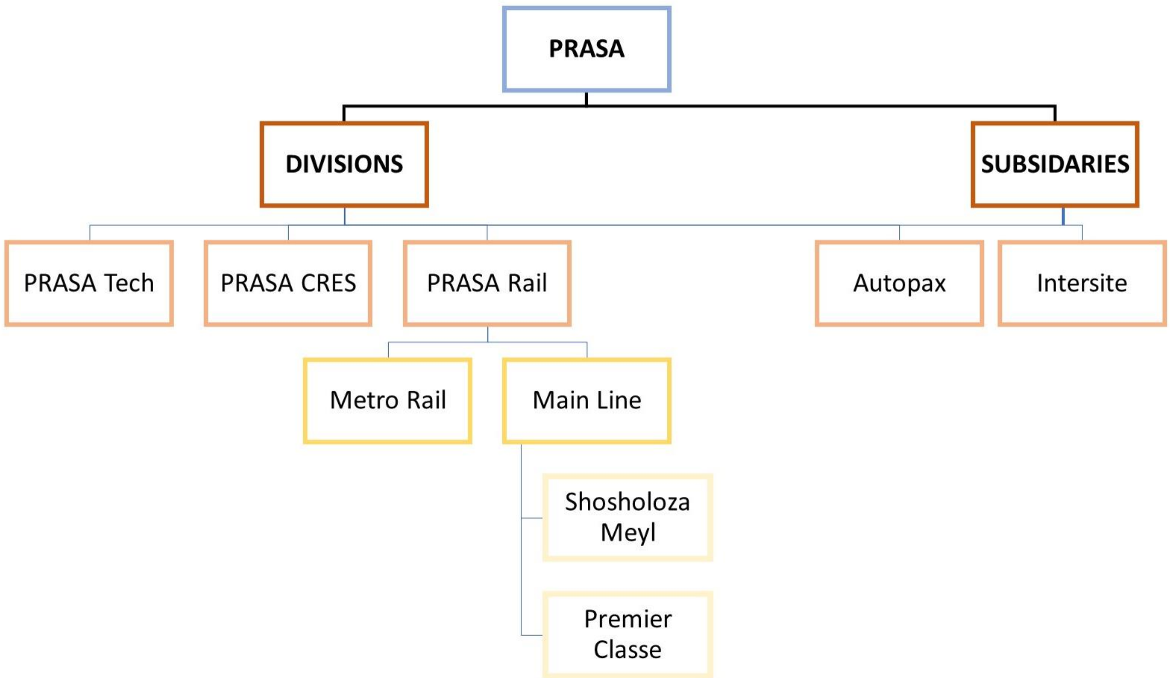


Figure 6: PRASA Organisational Structure (PRASA, 2020)

PRASA, like Eskom, is a South African state-owned enterprise which had been initially designed to promote effective and efficient service delivery in the country. According to Chitiga-Mabugu, Henseler, Mabugu and Maisonnave (2021) global experience shows that when state-owned enterprises are well managed and good governance is in place, these state-owned enterprises could provide essential commodities and services to the population at affordable cost. However, the reverse is also possible as poor management and corrupt governance further disadvantages the urban poor who have less access to an alternative supply. The PRASA Annual Report for 2019/2020 indicated despite PRASA having been able to provide safe, reliable, affordable and clean passenger rail services, PRASA continues to perform poorly overall. These include, but are not limited to, numerous instances of irregular expenditure and an increase in repeat findings regarding property development or the lack there of, which are not addressed (PRASA, 2020). Furthermore, the enterprise is burdened by exorbitant and long-outstanding liabilities that include its vacant land holdings (PRASA, 2020).

In a Parliamentary discussion on PRASA's growth opportunities, it was highlighted that there were no reasons why PRASA, which already owned land, should not also own established property developments along its network (Parliamentary Monitoring Group, 2016). To date PRASA have an asset base of 4640 registered land parcels (4 700ha) with book value of R2,1 billion (PRASA, 2021). Many of these land parcels are vacant or underdeveloped within respective areas of high demand for improved development opportunities. The Acting Group CEO, Thandeka Mabija highlighted that PRASA has performed poorly at implementation of projects and programmes including at their inability to leverage investments into their vacant land parcels (PRASA, 2020). According to Makinana (2021) the auditor-general's office had called for an urgent intervention to save the country's struggling rail agency.

In particular, and of interest to this study, Intersite as an investment subsidiary of PRASA, are required to leverage PRASA’s large asset base, facilitate private sector investment in these assets and focus on new and innovative ways of generating income on commercial grounds (PRASA, 2020). Within the 2019/2020 financial year, Intersite’s financial results reflected a loss of R14,4 million, compared to a loss of R18,125 million in the year prior (PRASA, 2020). According to C1, Intersite has been running at a lost, and their financial results have reflected at a lost in accumulative revenue generation for a number of years. SM4 indicated that

Intersite's performance has been as a result of the lengthy processes of obtaining development rights from the City in order to develop land parcels. Furthermore, SM4 indicated that Intersite's ability to leverage PRASA's larger asset bases is reliant on the property market demand and the level of interest shown from investors to invest in the land that PRASA makes available.

On the other hand, PRASA CRES, who are responsible for the Real Estate Asset Management, Facilities Management and Strategic Portfolio Management, have seen significant growth in their investment portfolio and operating revenue generation (PRASA, 2020). This growth has expedited since 2012/2013, as seen in the graphs displayed in figure 7 and figure 8. This growth since 2012 had been a result of PRASA in 2012 having received a grant of R1,5 billion to purchase out lease agreements of their land holdings at respectable stations, as a means to raise its income profile in the shortest possible period from investment properties (PRASA, 2013). SM4 advised that PRASA received the R1,5 billion grant, and used the grant to optimise PRASA's property portfolio's revenues and returns. The grant was used to buy out leases from developers who had successfully gone through the land zoning processes, and/or were in the process of development, or partially developed with acquired retail sublease portfolio (SM4). The strategic buying out of these leases provided PRASA with an increased operating revenue and investment portfolio, which had originally been conceptualised and planned for by private developers. These purchased were largely in Kwa Zulu Natal and Gauteng. According to SM4, PRASA does not develop land parcels, due to the lack of internal capacity to develop and plan for the development of its land parcels. Therefore, land parcels are handed over to developers who become the Lessee. To date, PRASA still do not have the internal capacity to develop their own land parcels, and the current investments and revenue returns, as displayed in figure 7 and figure 8, were as a result of a R1,5 Billion grant, and less so of the internal capabilities of PRASA (C1).

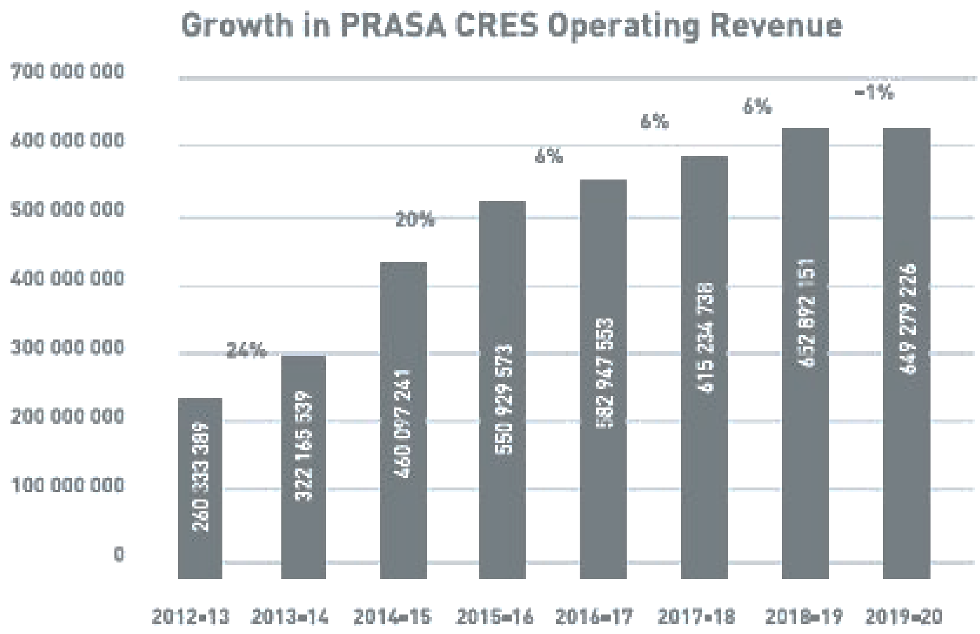


Figure 7: Growth in PRASA CRES Operating Revenue (PRASA, 2021)

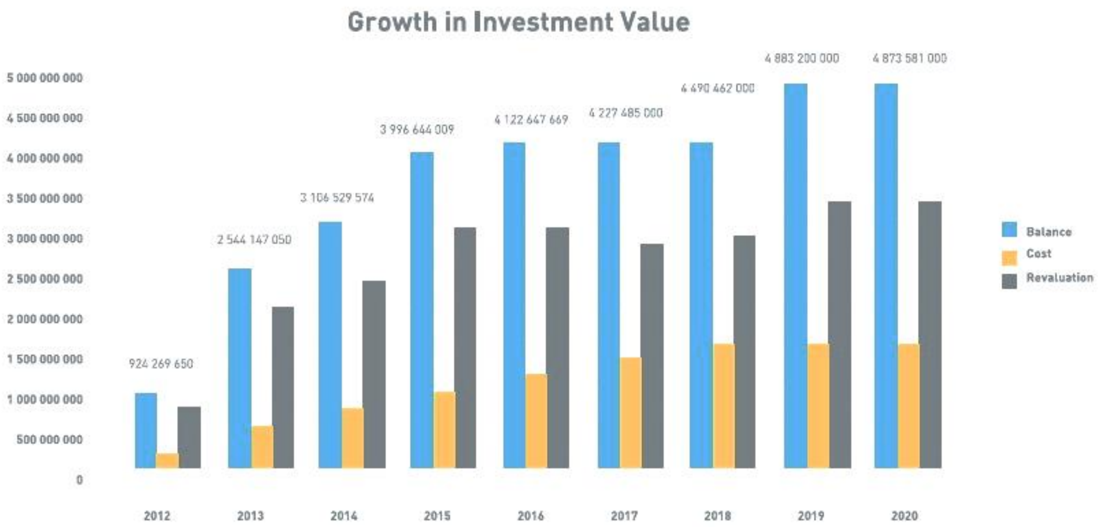


Figure 8: Growth in Investment Value (PRASA, 2021)

The performance of PRASA as outlined above, does not directly answer the main research question for this paper, however, it does highlight high-level fragmentations in PRASA's operational and capital methodology to date, that have had an impact on how station area land is planned for within the organisation. PPO1 argued that the development process of land is a multi-phased approach and takes time, however, this process is further complicated when it comes to institutional land holdings. PRASA owns multiple land parcels, which had justified the formation of its subsidiary Intersite, however the development of these land parcels provides a level of complexity that has decreased measurements of the organisation's performance (SM4). According to PPO1, PRASA's low property development performance can be attributed to the way in which the organisation, which is a government ran entity, values land holdings as a financial good and as an asset. Therefore, has hindered collaboration between the COCT and PRASA, and has led PRASA's efforts towards development into the hands of private developers, who are required to agree on long term leases of select land parcels.

According to PRASA (2019) Intersite has a competitive advantage as a result of exclusive rights to the development of PRASA owned land. However, PRASA are not land developers and rely on partnerships with municipalities and private developers. According to PP01, there have been opportunities of co-planning between PRASA and the COCT, however these have been slow and have resulted in minimal land developments. This has often been a result of incompetents or short-lived careers at Intersite/PRASA or a conflict in interest between the municipality and PRASA when it comes to profit generation (C1). Furthermore, the lack of organisational stability in PRASA has led to a number of restructurings at PRASA and has caused a re-shift in priorities on a very regular basis and has often occurred midway through plans and projects between the COCT and PRASA (PPO1). However, PRASA is not the only hindering factor in perusing partnerships and development of their land parcels. The COCT also experiences changes in organisational structure, as employees resign or retire, and leave a gap in institutional knowledge within the organisation (C1). Furthermore, due to short-term political cycles and administrative changes at the COCT, this has often changed direction of priorities and in most cases has led to a halt on projects or slowed progress down (PPO1). Similarly, political conflict between Provincial and National government, given that the Western Cape is ran by the Democratic Alliance (DA) and the National Government being the African National Congress (ANC) often results in hindering factors to partnerships and development which have also impacted progress (C1).

Despite these hindering factors, the COCT through the MSDF and municipal district plans provide an indication, based on development trends, of the forecasted land development and land zonings that are envisioned for particular areas within the municipality. An example of this can be seen in figure 9 from the MSDF 2018 that indicates areas of economic opportunity and potential business nodes, among other factors. According to PPO1, PRASA have this opportunity afforded to them through municipal forward planning tools to apply for relevant land zoning changes to attract development to their land parcels through the use of these forward planning tools. However, it had been argued by SM4, that station area land parcels are a part of the rail reserve and are thereby are for operational purposes as a priority and not for development, and therefore only core land and a few non-core land parcels are targeted for development through long term lease agreements that provide the lessee with the leased right to enable the land parcels for development through their own means.

According to M1, the lack of development at PRASA's smaller/non-core land parcels can also be attributed to the lack of integrated transport systems that link station area land with other areas. The COCT's public transport department have developed long-term plans to integrate the public transport system by implementing the BRT system in a way that it supports and supplements the rail service, as seen in figure 9. The implementation of these plans will seek to influence the transport and land use interaction in Cape Town, and to further improve the application of TOD. However, in order to enable such transport and land use interaction that is required to implement and support integrated transport, the development of most station land parcels, whether big or small, will be required (M1). Therefore, the current institutional complexity that influence rail and rail station area land needs to be effectively addressed.

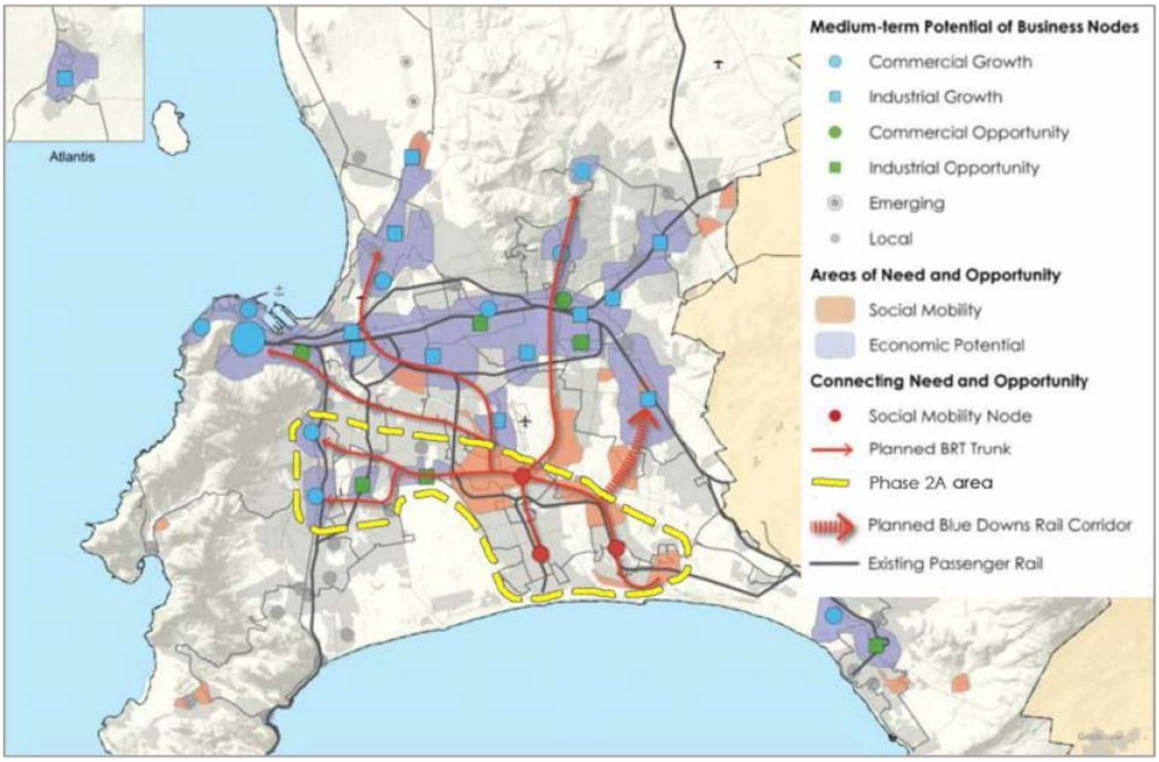


Figure 9: Location of economic areas and Transport Connections (COCT, 2018)

In 2012 the COCT was the first metropolitan in South Africa to launch its own transport authority, as permitted by National Legislation to facilitate taking over the management of all public transport within Cape Town (Dentlinger, 2016). This move to a Transport Development Authority (TDA) would have enabled the COCT to take over the transport functions and associated land ownership (including rail functions and rail land) from parasitical companies. This institutional influence over public transport and associated land parcels would have expedited plans to implement TOD. According to M1, as a TDA the City would have been enabled to negotiate with PRASA. These negotiations were to include, the taking over operational functions of the rail, and required that PRASA repair and replace deteriorating/missing facilities and cables, which would have been too expensive for the City to take over from PRASA (SM2). However, to date the COCT have moved from being an established Authority to being a department, which means that the City are unable to take over parasitical companies, unless devolution is granted from National Government (M1).

4.4. Synthesis

This legislative and policy review indicates that there is a lack of direction towards land development at railway stations. However, legislation has processed towards the integration between rail and its surround land parcels, which have been strengthened through municipal policy. Yet, both legislation and policy have placed less significance on the development of station area land parcels, in association with these surrounding land parcels. This has been seen through the increased significance placed into the development of corridor development along railway lines in Cape Town, as areas of densification however with less emphasis on station area land parcels that are consistently empty throughout the corridor. Based on the institutional review of PRASA this lack of inclusion of station area land parcels into municipal policy could be attributed to the ownership of rail laying with PRASA, and thus removed from municipal planning. Secondly, the policy as reviewed in this chapter, indicate the aims and visions of the municipality to enable TOD at rail stations, however have placed less emphasis on the role that station area land parcels play in such development. Furthermore, these policies have not provided mechanisms by which such development could be achieved, therefore leaving less opportunity to incorporate station area development into existing plans. Lastly, both legislation and policy has indicated support of the devolution of rail and associated station land parcels, however action to enable these actions have been slow.

CHAPTER 5: FINDINGS

This chapter seeks to unpack the four main objectives put forward in chapter 1. These objectives have been met through this chapter and have been provided each a subheading under which each objective is discussed. These objectives are, namely

a) the ***current status of station area land parcels*** and the ***current development process for these land parcels,***

b) ***current development incentives and hindering factors*** for station area land development,

c) ***the current development initiatives*** for station area land parcels along the Northern Corridor, and

d) examples of ***successful station area land parcels other than those located along the case study area.***

This chapter will begin by seeking to unpack a contextual analysis of the research case study area, the Northern Corridor, and will conclude by answering the research question put forward in chapter 1 of this is paper. The limitations to the findings carried in this research had been included in chapter 3 of this paper.

The primary data collection methods used to structure and inform this chapter had been the completion of twelve semi structured interviews and through desktop research. The respondents to the conducted interviews that were coded and used in this chapter as listed in table 3 below. A sample of the questions used to steer the interviews have been included in annexure 2.

Table 3: Respondents to the twelve Semi Structured Interviews

PARTICIPANT ID	ENTITY	DATE	ACTIVITY	Additional Notes
PPO1	City Growth Management at Municipal entity	02 September 2021	Semi-structured Interview	45 minutes
SPO1	Integrated Transport Planning, at Municipal entity	03 September 2021	Semi-structured Interview	45 minutes
SM1	Interface Coordination on Station Developments, at South African Rail Entity	10 September 2021	Semi-structured Interview	30 minutes
M1	Development Management, at Municipal entity	10 September 2021	Semi-structured Interview	45 minutes
SM2	Infrastructure Management, at South African Rail Entity	10 September 2021	Semi-structured Interview	30 minutes

C1	Private company	13 September 2021	Semi-structured Interview	1 hour
SM3	Property leasing, at South African Rail Entity	13 September 2021	Semi-structured Interview	1 hour
SM4	Property Investment , at South African Rail Entity	29 September 2021	Semi-structured Interview	45 minutes
DEV01	Property Developer at a station along the Northern Corridor	8th November 2021 And 9th November 2021	Semi-structured Interview	40 minutes And 55 minutes
DEV02	Property Developer at a station along the Northern Corridor	10th November 2021	Semi-structured Interview	43 minutes
DEV03	Property Developer at a station in eThekwini Municipality	19th November 2021	Semi-structured Interview	40 minutes
DEV04	Property Developer at a station in Cape Town	24th November 2021	Semi-structured Interview	55 minutes

5.1. Contextual Analysis

The commuter rail system in Cape Town consists of nine radial railway routes that originate from the Cape Town station and divide into five main commuter routes, namely the Southern Suburbs line, Cape Flats line, Central line, the Malmesburg/Worcester line and the Northern line (COCT, 2018). The Case Study area for this research includes the lower portion of the Northern Corridor line as indicated in figure 10 below.

SM4 indicated that PRASA groups stations into four primary station typologies based on their function, frequency of use by passengers and surrounding land use. These typologies are, namely **halt stations** that have no concourse nor ambulation facilities, and are located in industrial areas, the **intermediate stations** that include a thousand or less passengers alighting and boarding the trains, **core stations** that are neighbourhood stations and those in employment hubs, and lastly the **super core stations** that include the Cape Town and Bellville stations, and area located in main economic centres. These typologies have been used in table 4 to define each station within the study area.

Figure 10: Northern Corridor Location within the Cape Town Context (Authors Own, 2021)

Table 4 includes the total of rail passengers alighting and boarding data for each station, as per PRASA's latest survey in 2012. SM3 advised that a more recent survey had not been done, however that the modernisation of the rail system will include technology to enable such data to be recorded and kept on a database. The alighting and boarding data of passengers had been used to identify the level of activity at and around each station and to further categorize each station, as seen in table 4. PPO1 indicated that the passenger numbers have deteriorated sharply since 2012, due to the decline in the rail service provision. Therefore, the numbers displayed in table 4 are higher than the current number of passengers who make use of the rail service. However, does provide an indication of the last time rail services were at its best, and a benchmark towards which rail services could work towards achieving again in the future (SPO1).

As displayed in table 4, the South African Census Data (2011) had identified mutiple areas of low, and medium to low income mixes along the lower portion of the Northern Corridor line. The socio-economic profile of those within the study area are less vulnerable than those who reside and/or operate along the other railway lines in Cape Town. However, the surrounding areas to the lower Northern rail have been susceptible to urban decay and require urban reinvestment (COCT, 2018). As per table 4, there are strong correlations between the surrounding land uses and the surrounding socio-economic status of those who reside/work within the greater station precincts. These include the strong correlations between areas of predominant residential or industrial land use, and primarily low income areas. This similar correlation can be seen in table 4. With the exception for the Koeberg, Ndabeni and Maitland stations, that are identified within low income areas, however these stations are located within high activity industrial mix areas that are located directly adjacent to the busy Voortrekker Road. The Koeberg, Ndabeni and Maitland stations attract a high passenger demand, of +/- 5000 passengers a day, with the exception of Maitland station performing much better with an average of +/- 15 000 passengers a day. However, stations such as Woltemade, Thornton, and Serepta, Pentech, Unibell and Behar, as seen in table 4, attract an average of +/- 2000 passengers (boarding and alighting per a day), and are located within low income areas. As seen in figures 11 - 15, the surrounding land use of Woltemade, Thornton, and Serepta, Pentech, Unibell and Behar stations are the least developed compared to the other station precincts along the Northern Corridor. The surrounding land use, rail passenger numbers and footflow densities have an influence on the type of developments that could be enabled at stations. As per table 4, Pentech station has the highest population density per km and one of the largest vacant station land parcels along the corridor, however it has one of the lowest users of the rail system. This low rail usership at Pentech, similarly at Unibell and Belhar, would limit the footflow at stations, and have a negative impact on the type of developments that could be enabled at these stations. However, if the rail were improved this would improve footflow at staions, and improve the conditions for retail development at these stations, as a start (SM3; SPO1). All twenty station area land parcels along the lower portion of the Northern Corridor have been measured and recorded in table 4. According to SM4 these land parcels have been apart of the rail reserve since the establishment and implementation of rail in 1857.

Table 4: Contextual Analysis: Twenty station land parcels owned by PRASA along the Northern Corridor (Authors Own, adapted from COCT, 2018; COCT[2], 2018; COCT, 2017)

	STATION	TYPOLOGY	LAND SIZE	PASSENGER MOVEMENT	SURROUNDING LAND USE	SURROUNDING POPULATION	SURROUNDING SOCIO-ECONOMY
1	**Cape Town**	Super Core	16ha ***(TR1,GB 7)***	40 819	Mixed Use	1 971,6 ppl/km	Medium-high income
2	**Esplanade**	Halt	0.12ha ***(TR1)***	6335	Industrial	2 798,8 ppl/km	Low-Medium income
3	**Woodstock**	Intermediate	0.18ha ***(TR1)***	9358	Mixed Use	2 642,3 ppl/km	Medium income
4	**Salt River**	Super Core	0.85ha ***(TR1)***	18 359	Mixed Use	2 642,3 ppl/km	Medium-high income
5	**Koeberg**	Core	0.54ha ***(TR1)***	5798	Residential	2 798,8 ppl/km	Low-Medium income
6	**Maitland**	Core	1.73ha ***(TR1)***	15082	Mixed Use	2 798,8 ppl/km	Low-Medium income
7	**Ndabeni**	Core	0.9ha ***(TR1 +TR2)***	5180	Industrial	1 692,6 ppl/km	Low-Medium income
8	**Woltemade**	Intermediate	1.97ha ***(TR1)***	2312	Residential	1 692,6 ppl/km	Low-Medium income
9	**Mutual**	Core	7.2ha ***(TR2)***	21 174	Mixed Use	1 692,6 ppl/km	Medium-High income
10	**Thornton**	Intermediate	2.8ha ***(GR4)***	1785	Residential	1 692,6 ppl/km	Medium income
11	**Goodwood**	Core	4.0ha ***(GR4 + TR2)***	3406	Mixed Use	3 609,9 ppl/km	Low-Medium income
12	**Vasco**	Core	1.7ha ***(TR1)***	3427	Mixed Use	4 850,7 ppl/km	Medium income
13	**Elsies River**	Core	0.6ha ***(TR1)***	4917	Industrial/ Residential	4 850,7 ppl/km	Medium income
14	**Parow**	Core	3.5ha ***(TR1)***	6910	Mixed Use	3 242,3 ppl/km	Medium income
15	**Tygerberg**	Core	2.65ha ***(TR1)***	5901	Mixed Use	2 758,6 ppl/km	Medium income
16	**Bellville**	Super Core	18,6ha ***(TR1)***	24 227	Mixed Use	2 758,6 ppl/km	Medium-High income
17	**Serepta**	Intermediate	1.7ha ***(TR1)***	1178	Industrial and Residential	3 343,7 ppl/km	Low income
18	**Pentech**	Intermediate	1.7ha ***(TR1)***	1629	Residential and Institutional	9 284,4 ppl/km	Low income
19	**Unibell**	Intermediate	2.9ha ***(TR1)***	2039	Residential and Institutional	3 939,7 ppl/km	Low income
20	**Belhar**	Intermediate	1.9ha ***(TR1)***	2043	Mixed Use	3 939,7 ppl/km	Low income

Transport Zoning 1 – ***TR1*** _ Transport Zoning 2 – ***TR2*** _ General Residential 4 – ***GR4*** _ General Business 7 – ***GR7***

Figure 11: Cape Town – Woodstock - Esplanade – Salt River Vacant Station Area Land Parcels (Adapted Google Maps, 2021)

Figure 12: Koeberg – Woltemade - Maitland – Ndabeni Vacant Station Area Land Parcels (Adapted Google Maps, 2021)

Figure 13: Mutual –Thornton – Goodwood – Vasco Vacant Station Area Land Parcels (Adapted Google Maps, 2021)

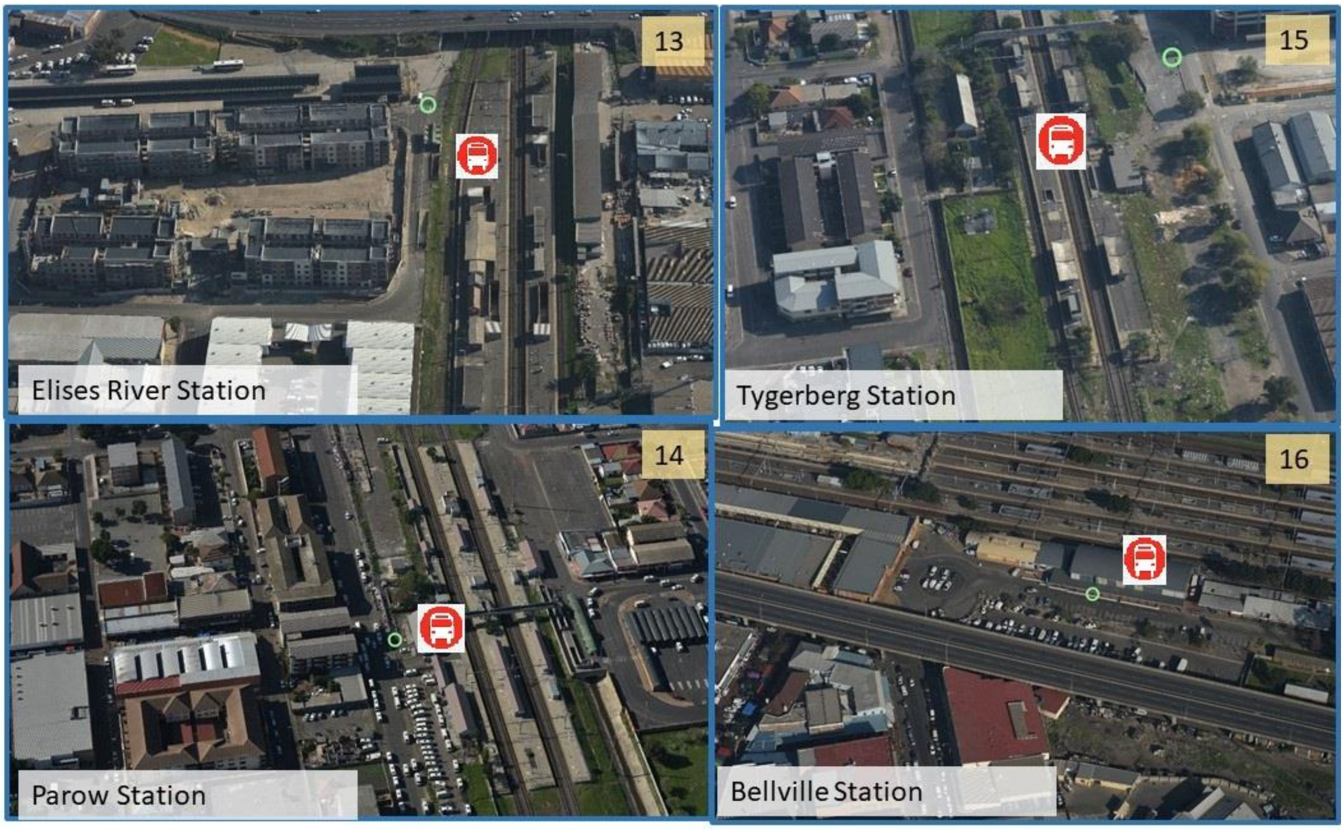


Figure 14: Elises River – Parow – Tygerberg – Bellville Vacant Station Area Land Parcels (Adapted Google Maps, 2021)

Figure 15: Serepta – Unibell – Pentech – Belhar Vacant Station Area Land Parcels (Adapted Google Maps, 2021)

As per the City of Cape Town Municipal By-Law (2015) the land zoning of the station area land parcels are legally zoned as Transport Zoning 1 or Transport Zoning 2, as seen in table 4. According to the City of Cape Town By-Law (2015) all land subject to section 13 of the Legal Succession to the South African Transport Services Amendment Act, Act No. 38 1989, amended in 2008, is deemed to be zoned as Transport Zoning 1. This land was legally handed over to PRASA in 2008, except for the land parcels along the Transnet line, as displayed in Figure 1 previously. The land parcels zoned as Transport Zoning 1 are transportation systems that include railway lines and provision is made to approve other uses on these land parcels that can help to support these transport undertakings (COCT, 2015). Despite the provision been made to permit PRASA to develop land parcels as seen fit, and in line with the provision to support the rail undertakings, to date such developments by PRASA personally have taken shape in the form small kiosks developments at stations. However, large and strategic land parcels are leased out to private developers through lease agreements, *which is discussed later in this chapter*.

In addition to Transport Zoning 1, Transport Zoning 2 is deemed to be, “any public road or public street and portion of the land proclaimed or reserved under any law as public road or public street or the widening or improvement of any such existing public road or street or specified on a General Plan of a registered township as public road or public street” (COCT, 2015). Transport Zoning 2 is more restrictive than Transport Zoning 1, which will limit the establishment of developments on station area land parcels, due to the requirement of these land parcels remaining vacant to enable future transport based functions that should complement and enable better rail services. According the City of Cape Town zoning scheme, Mutual station is the only station zoned as Transport Zoning 2 along the Northern Corridor, with the exception of the land on which all the rail tracks are positioned.

The significance of this land zoning is that it limits the type of developments that could take place and is a land regulatory tool used by the municipality to influence certain developments. However, if development were to take place on these land parcels, an application to the COCT will be required to re-zone the land parcel accordingly. As seen in table 4, there are three staion land parcels that have been rezoned, these are namely the Thornton and Goodwood station land parcels which had been rezoned from Transport Zoning 1 to General Residential 4, however these land parcels to date have not taken shape into the proposed developments that their land use rights permit. The current phsycial status of these land parcels can be seen in figure 11. The Cape Town station is zoned as Transport Zoning 1 and a portion of the site, is zoned as General Business 7, as discussed later in this chapter.

The rail service in Cape Town is seen as the backbone of the city’s public transport system and accounts for 54% of daily public transport passenger journeys (COCT, 2017). However, SPO1 argued that the Cape Town rail operational services has deteriorated sharply since 2012 According to the COCT (2017) rail passenger numbers in Cape Town have fallen by 30% between 2016 and 2017. According to du Toit, Jooste and Conradie (2019) this steady decline in performance has largely been a result of ageing rolling stock and obsolete technology. Additionally, the open nature of the rail system creates spaces for the rail to be susceptible to vandalism, theft, and operational incidents (du Toit et al., 2019), *a visual display of the open nature and lack of station area land is displayed in figure 11 – 15*.

During the COVID-19 pandemic, between 2020 and 2021, the lack of activity at station land parcels, and limited security of the rail service resulted in heightened vandalism and thievery (Hlati, 2021). PPO1 argued that this lack of supportive transport infrastructure, station development and the lack of continuity of the rail service, has negatively impacted property values at and around stations. PPO1 argued that as one moves geographically closer to the rail - property values decrease because rail stations in South Africa, other than the Gautrain, are not seen as gateways to a service, which has had a negative impact on the types of development that are afford on station area land parcels, if at all. C1 argued that the reasoning for the lack of development at railway stations will require a station-by-station analysis, however the overarching institutional influence, institutional procedure and control would to a greater extent be similar for all station areas with the same owner and that are within the COCT jurisdiction.

5.2. Current Status: Station Area Land

Station Land Development Process

SM3 argued that the development of station area land parcels is a new concept to PRASA Intersite. In the early 2000 a handful of land parcels were placed out on tender by the South African Rail Commuter Corporation (SARCC), and thereafter only again in 2010 by PRASA Intersite (SM3). SM4 indicated that PRASA's land development process entails an internal identification and approving of land parcels that should be taken to the market, these land parcels are then advertised. As per the State Land Lease and Disposal Policy (1995) potential lessees for state owned land should be acquired through the updated local district database of potential lessees, that is maintained by the Director of land reform. This process is followed as PRASA is a state-owned entity and not a private entity, and to ensure a fair and open procurement process is followed. SM4 indicated that once bids and proposals are received, PRASA evaluate these and through a selection process choose a winning bid to enter into a long-term lease agreement with PRASA. SM3 indicated that,

> "As part of this selection process, PRASA undergoes financial assessment of the potential developers to ensure that if the developer were granted the opportunity for a lease agreement, that they would be able to afford and maintain their lease agreement".

This part of PRASA Intersite's development process takes on an event sequence approach. However, once these land parcels are handed over to the lessees there is an automatic shift in development processes depending on the developer and depending on the preferred development process that the developer might follow. SM3 indicated that once developers are granted the right to proceed with their proposed developments, it is the developer's responsibility to ensure that the correct land zoning rights are acquired from the COCT in order to proceed. The process of obtaining the required development rights from the municipality is a lengthy process, which has delayed development in the past. However, developers are responsible for an Intersite facilitation Fee once they are awarded the land, which is payable before the developer enters into the land rezoning process (DEV1; DEV2). Subsequently, after receiving the required development rights, developers are expected to pay a development fee, which could be paid together with the Intersite facilitation Fee or once construction commences (DEV2). This is dependent on the financial stability of the development company, and dependent on the preferred contractual agreement entered into by PRASA Intersite (DEV1).

Once the land is developed the lease payments will include the predetermined percentage of the sub-rental earns, that PRASA Intersite receives as the land owner (SM4). According to SM3, once the lease term had been met, the development on PRASA's land reverts to PRASA and is managed through rental agreements by PRASA CRES. In a number of incidents, the developer has applied for an extension of their lease (SM1). However, these extensions are only granted post a property valuation of the development is completed by PRASA in order to facilitate this process, and if approved by PRASA the developer is offered a new rental agreement (SM1). At this point of the lease agreement the developer/lessee is 'in the mercy of PRASA because lease agreements state that once the lease expires the ownership rights of the developed property are reverted to PRASA (SM1). While the private developers who seek out development on PRASA owned land undergo their own development process, PRASA still maintains a level of control due to their ownership rights of the land. PRASA's involvement in the development process is a structured process, which drives and influences development of these land parcels to ensure their own objectives of maximum investment returns are met. According to SM4, it is the private developer's responsibility to test the market to determine the highest and best use for the respective land parcels. Furthermore, the developer is responsible for attracting tenants to sublease rental space once the development is under way (SM4). The development of PRASA owned land is accompanied with a large sum of responsibility and risk to the private developer. It is for this reason that smaller PRASA land parcels that do not afford promising economies of scale, are unfortunately less of interest to developers (C1). According to SM4, in very seldom cases smaller land parcels are sold out or rented, however there are little to no demand for the smaller station area land parcels. In those cases, the land parcels remain as a staging area for alighting and boarding of the train, and for ticket sales. DEV1 argued that their company had placed in unsolicited bids to PRASA for various land parcels of various sizes over the past ten years, however have not moved forward on one of these land parcels. DEV2 argued the same, and add that their companies had placed in bids with elaborate proposals, however have not hear back from PRASA on these unsolicited bids. C1 argued that PRASA do not have a strategic direction for station land parcels, and therefore unable to respond to unsolicited bids, yet alone able to respond to bid and proposals on land parcels that were advertised. DEV1 advised that their company have placed in bids and proposals for land parcels that were advertised by PRASA, however have not hear back from PRASA more than five years later.

Station Land Development Focus

SM4 indicated that PRASA's main development and investment focus has primarily been on their Core and Super Core assets/station area land. PPO1 argued that previously PRASA and the COCT had undergone a study to identify PRASA non-core assets that have development potential and how to develop these land parcels. These non-core assets are primarily undeveloped, and to date generate minimal to no income. PPO1 advised that the outcome of this study recommended to PRASA to internally develop these sites based on a few proposed developments that will generate an income for PRASA and benefit the surrounding communities. However, PRASA chose not to develop these land parcels due to the negative impact the initial development could have on their balance sheets, and the potential risk of not generating enough revenue (PPO1). As a result, the current status of non-core stations has remained unchanged and undeveloped, as a result of PRASA's inability to leverage their assets, to generate improved income and sustainable development (C1). SM4 argued that, PRASA are not property developers and have in the past pursued studies with the COCT to potentially develop station area land parcels, however, despite this PRASA's key focus has been on the development of the rail service. Therefore, if there were a requirement to invest large sums of capital into an investment, these would first be directed towards the development of the rail service, than into land development (SM3). SM4 indicated that,

> "this is not a question of why the station land parcels are not developed. These land parcels are in the rail reserve, and are for operational purposes and not for development. The key purpose of these land parcels are to service the rail".

SPO1 indicated that partnerships between the COCT and PRASA have been minimal in terms of land development due to differing ideologies between these two institutions. According to PPO1 the COCT undergo development processes in order to provide service delivery as a municipal planning authority. Therefore, the COCT seek to purchase land parcels for effective service delivery, as opposed to agreeing to long term lease agreements to enable service delivery options (PPO1). On the other hand, PRASA's sole property development process hinges on the issuing of long-term lease agreements to commercialise the land parcels (SM3). SM1 indicated that this has to date, left less opportunity for partnership between the COCT and PRASA for property development. However, PRASA continue to pursue development, despite being a slow process, through long term lease agreement with private developers. PPO1 argued that the COCT have been in communication with PRASA to purchase station land parcels, however this has not materialise to date.

DEV1, who is a senior manager in a national development company, argued that very few of the land parcels that PRASA put out to tender are actually developed. DEV1 advised that PRASA Intersite placed the Woodstock station area land parcel out on tender in 2012, however to date the land parcel has not been developed nor have the developers received a response from PRASA on whether their bids had been deemed unsuccessful. DEV2 argued the same, in that land parcels are put out to tender, and that developers put together elaborate proposals, feasibility studies and financial viability studies, and once submitted PRASA Intersite has either removed the land parcel from the market or has not responded to developers. SM4 argued that the process of entering into a long term agreement with developers is a sensitive concern, given that when developers are awarded station area land parcels, these companies would enter into partnership with PRASA for a forty to fifty year period. Furthermore, station area land parcels are within the rail reserve and if PRASA technical decide that the land is required for the operational of rail, this decision takes precedent over proposed developments, and therefore PRASA Intersite are required to remove this land parcel from the market (SM2).

Station Land Ownership and Devolution

The National Rail Plan, Green Paper, (2015) and the National Development Plan 2030 (n.d) seek to devolve transport management to local government and seek to enable concessionary corridors to private operators. In a similar way, the Draft National Rail Policy, White Paper, (2017) promotes the same ideologies and plans. C1 indicated that,

> "the Competition Commission began the process in 2017 of conducting the inquiry into the state, nature and form of the public transport market. It was through this process that the Competition Commission supported the devolution of rail, and as is supported by the South African Constitution".

Devolution of rail is not a new concept as the Democratic Alliance (DA) in their 2019 election campaign sought Metrorail services (rail and land) and its allocated budget to be devolved into metro councils (Payne, 2021). This was further supported by the City of Cape Town who had also indicated it wanted to take over passenger rail in the municipality (Payne, 2021). C1 argued that,

> "through this process GIBB won the COCT tender to undergo the inquiry process to inform the proposed devolution of rail. However, the Minister of Transport halted this process, which resulted in the GIBB tender coming to an end".

Devolution in various forms have been explored before, Transnet in 1998-1999 sought to devolve rail and land responsibility to private companies, however given the centralist ideologies of the National Government, this was not possible at the time (C1). Rail operates differently within different socio-economic environments, and therefore what might have worked in Japan, or the Netherlands would not holistically work in South Africa, given the lack of synergies between private and public sector in South Africa. Given that PRASA are commissioned by National Government all employees still receive a salary even if nothing is done to improve the rail system and the associated land (PPO1). If these systems were taken over by a private company, whose livelihoods depend on the revenue generated through the success of capital and operational rail and land developments, the country would in all likelihood experience improvements (C1). According to SPO1 despite the process of devolution having been halted, the COCT are in the process of completing a feasibility study to understand the viability of rail in Cape Town. In order for the COCT to consider taking on rail and the associated land, the municipality will require a thorough understanding of the risks associated with taking on the responsibility. According to SPO1 the COCT have always been the planning authority for rail, however, have not had much influence in the development of the associated station area land parcels. Nevertheless, these efforts towards achieving devolution have been slow, and provide a complicity that is left unresolved to date, on how rail and the associated vacant or developed land parcels would be devolved. Therefore, the current plans for station area land parcels are as they have been administered and influenced to date by PRASA Intersite. However, with a shadow of uncertainty of how these will be changed as a result of shifts in political decision making power.

5.3. Current Development Incentives

The current development status of station area land has been left to the preferred development process of PRASA, as discussed above. There have been attempts at changing the legal ownership status of these land parcels through devolution, to better position rail responsibility within Provincial and/or Municipal institutions, however this process to date has been slow. Nevertheless, despite the current status of station area land, the COCT have with PRASA administrated incentives to enable station area land parcels. PPO1 argued that these incentives have not been specifically directed or aimed towards the development of station area land, however, these incentives have been included within municipal and district plans that indirectly have been meant to attract development of station area land.

According to M1 most of the urban rail, especially the rail within the case study area for this research, falls within the commissioned Urban Development Zones as approved by National Government. According to the COCT (2018) Urban Development Zones are areas demarcated in accordance with the Income Tax Act, Act 59 of 1962 as amended by the Revenues Laws Amendment Act, Act 45 of 2003. In terms of these incentive zones, the taxpayer who constructs, improves or purchases a building or part of a building from a developer within this area will be allowed to claim a reduction in taxable income (Schalekamp, 2017). According to M1 the Parow, Tygerberg and Bellville stations fall within these defended zones. The zones seek to address the issue of urban decay within inner cities and to maintain infrastructure, yet seeking to encourage investment within certain areas. M1 advised that the incentive zones are based on market trends within the Parow, Tygerberg and Bellville areas, and that these areas include the station areas, and that these zones are a means of establishing control by influencing the type of developments that are encouraged. These incentive zones allow developers to apply for tax rebates on high density residential developments and improved TOD infrastructure developed within the incentive zones. The tax rebate is monitored through the purchasing of dilapidated buildings for redevelopment (M1). PPO1 advised that these incentive zones are initiatives by the COCT to optimise on the densities within the Parow, Tygerberg, and Bellville areas. These initiatives indirectly, yet positively, impact rail station development. PPO1 argued that

> “the incentive zones provide the same benefits to be realised by station area developers, however, to date these opportunities have not been realised at station areas within these incentive zones”.

In addition to the incentive zones the COCT have sought to stimulate development through the application of Public Transport Zones. DEV2 advised that these zones are currently inactive, as the COCT currently seek to amend these zones, however, had been active in previous years and if the new Public Transport Zones are approved, they will continue to be active for years to come. SPO 1 argued that the Public Transport Zones (PT1 and PT2) reduces the parking requirements for properties located within these Public Transport Zones. However, through the application of the Public Transport Zones, property developers within these zones are permitted to provide less parking through their on-site developments. Therefore, providing maximum use of land for their property developments and encouraging higher development densities than permitted for outside of these zones (Schalekamp, 2017). These incentives are based on the impact that scheduled and current high-quality public transport systems will have on reducing private vehicle usage and subsequently lowering the demand for parking in areas that are served by these trunk and feeder services (SPO1). SPO1 advised that this initiative affects station area developments, as it promotes transit-oriented development by reducing parking requirements set in the Municipal By-Law. Public Transport Zones are specifically located at train stations throughout Cape Town, and specifically at all stations along the Northern Corridor. PPO1 indicated that due to the limited space for large scale developments on station area land, the reduced parking requirements for these land parcels provide an opportunity to maximise land coverage. C1 argued that the application of Public Transport Zones are best applicable when the provision of an integrated transport system is efficient. M1 advised that the provision of an efficient integrated public transport system in Cape Town has not been realised to date, which has resulted in the less of appeal for the uptake of development at stations through the use of these Public Transport Zones.

An example in application, has been at the Goodwood station area, the developer of this land parcel indicated that the zero parking requirement for their development, as a result of the PT zones, assisted them to develop most of the land in order to generate an income (DEV2). DEV2 argued that these requirements benefited their development as they seek to develop social housing on the land and the expectation for parking is lower than for developers who require onsite parking and who might not find these restrictions appealing. On the other hand, for the current development in construction at the Cape Town Station area land parcel, the developer applied for 1000 parking bays. Given the extent of the development, the developer will require substantial amount of parking for residents. However, the COCT offered to drop the developers Development Contribution fees in exchange for the provision of less parking bays been located on site. DEV1 advised that the COCT only approved 333 parking bays on site in 2017, which had been in accordance with the PT zones at the time and allowed the developer to increase their development bulk. This was not accepted by the developer, given that tenants require parking. However, due to the extensive process of procuring the development rights, having taken 6 years to procure, and the developer over looked the parking provision for the current phase of their development. Yet, will seek to apply for a departure for their second phase of the development (DEV1).

5.4. Current Hindering Factors

PPO1 argued that the areas around stations along the Northern rail line are not stable for development. DEV2 argued that a key constraint with developing PRASA owned land parcels are that these land parcels have been subdivided multiple times over many years, and developers are granted with current land parcels that are various shapes and sizes. DEV2 advised that these land parcels are long and narrow, which requires a very complicated design process. Additionally, as a result of not having been developed in decades these land parcels more likely than not, possess landmarks of significance or historical artefacts which increases the time at which developers have to wait to receive their development rights (DEV1). Moreover, there complications result in required specialist studies to be done on the site, which further increases professional fees.

These professional fees are further increased through the extended nature of obtaining the require land zoning rights to enable developments. DEV1 indicated that the process of obtaining rezoning approvals could take between 3 – 6 years to acquire, due to the increased complex nature of these land parcels. PPO1 argued that

> "the COCT are not responsible, nor are the COCT entitled to the rezoning of PRASA owned land. PRASA as owner of the land are responsible for the rezoning of their own land parcels."

However, PRASA have left the application process of acquiring land use rights changes to potential developers. Therefore, providing a hindering factor to those developers who are unable wait an extended period of time to acquire the required development rights before commencing with construction.

Secondly, PPO1 indicated that station area land parcels are located within established communities, many of which require urban revitalisation, and located within areas that are in need of improved urban management mechanisms. PP01 argued that where urban management mechanisms have been applied, they to date have not been highly successful at deterring gangsterism, violence and squatting within the residential blocks located in close proximity to stations. The decline in security within areas that surround stations, especially along Voortrekker Road, has limited attraction to the land and could further have been hindering development of these station area land parcels (PPO1).

M1 argued that PRASA have received increased political pressure to enable mechanisms to alleviate these issues along the Voortrekker Road, especially at the Parow station. C1 indicated that PRASA had undergone the process of conceptualising ideas, and went out on tender for this land parcel, however due to complex nature of this station precinct there had been very little attraction to develop this land parcel. The Parow station includes a massive informal taxi rank that stretches along the railway line, and the station is surrounded by decaying infrastructure, and dilapidated and overcrowded residential buildings. PPO1 argued that efforts from PRASA and the COCT have been slow in stimulating development at and around the Parow station. The current conditions of this station and other stations of a similar nature will be less successful at attracting developers (C1). DEV1 argued that the Parow station land parcel that went out to tender was too small and given the current conditions regarding urban management issues it did not seem worth the risks.

5.5. Current Development Initiatives: Northern Corridor

According to SM3, the development of station area land parcels is a new concept for PRASA and that PRASA are less likely to sell these land parcels as the station area land, despite not been developed, are still apart of the rail reserve. SM4 argued the same, as the land along the rail tracks and at stations are primarily for the improvement of rail first, and the development of these land parcels is a secondary PRASA objective of generating an income from these land parcels. SM4 argued that for this reason PRASA Intersite are required to be certain of which land parcels are put out to tender for development, and which land parcels are required to remain undeveloped as result to their requirement for the current and future operation of rail services.

Therefore, while the development of station area land parcels have been new and slow to PRASA, the Northern Corridor consists of two stations area development projects that are underway. These include the Cape Town and Goodwood station area land parcels.

Cape Town Station Area Land Parcel Development

According to DEV1 the Cape Town station area land parcel (known to PRASA as the Station Precinct) – Erf 148638-RE - went out to tender in 2011. Through a bidding process, a national property development group were awarded the tender in 2012, and offered the opportunity to develop on this 16 hectare land parcel (DEV1). However, according to DEV1,

> "We indicated in 2011, through our bid and proposal, in response to PRASA's tender for the land parcel, that we would like to approach the tender through a phased approach and to further package the larger 16 hectare land parcel into smaller land parcels and take it from there".

According to SM4 the land parcel was put out to tender during which time PRASA were looking towards a 2030 vision of sinking the railway line at the Cape Town station. In 2011 the tender included the development of the full 16 hectare land parcel, as indicated in figure 16, which included the land which the station is currently located. Through the proposed 2030 vision put forward by PRASA, the station and tracks were proposed to have been relocated underground through proposed tunnels. However, given the high costs associated with the proposed construction to enable this vision, the development has not taken place to date (DEV1; SM4). At the time of tender, the developer sought to phase the development of the land parcel to enable PRASA with time to facilitate their proposed vision for the station and rail tracks.

DEV1 advised that their rental agreement for the land parcel is for forty five years, post the completion of construction and upon the start of generating a rental income from the constructed development. DEV1 argued that,

> "There are limited amount of vacant land parcels in the inner city of Cape Town, which provides property developers with two options, of either purchasing land parcels with existing buildings on it and demolish the building or renovate the building, or developers could lease government owned land parcels through long term lease agreements".

DEV1 advised that both options possess respective risks. However, despite the risks that were prominent with the development of PRASA's station area land parcels, DEV1 advised that developers will not find a 16 hectare land parcel for development in the inner city Cape Town. Furthermore, the developers chose to develop this land parcel had been motivated by not needing to pay for the land parcel upfront. However, like any land development process, the process of obtaining the required development rights and land use rights required several million Rands to complete (DEV1). However, DEV1 advised that this process suited the developer's cash flows, as there was no need for the initial massive land holding costs.

Figure 16: Cape Town Station Land Parcel, portion of which is currently a development site (Adapted Google Earth)

The land parcel was awarded to the developer in 2012, however it took the developer six years to obtain the required land use rights to proceed with the development. This was the highest risk associated with the project thus far, as the developer lost time in the market during this period. According to DEV1, in 2012 there was a high demand for office and retail rental space in the property market. However, by 2017 the developer had to complete a market Segmentation, Targeting and Positioning process to test the property market against what was financially viable (DEV1). DEV1 advised that due to the changes in the property market, the developer had chosen to further divide their current phase into two phases. The first phase is currently under construction and commenced in September 2021 with the construction of 23 storey student accommodation building and ground floor retail, as seen in figures 17. According to DEV1 the second phase will be constructed in future, which will require re-testing of the market at the time. DEV1 indicated that the developers applied for General Business 7, as seen in blue on the site in figure 16, which provided the team with flexibility in the market. If the company did not have flexible land use rights they would have been stuck, given that the developers had to amend their supply to the market. DEV 1 argued that, “if the company did not apply initially for a flexible basket of rights, we would not have been able to commence with our preferred development option nine years after the original land use application, and would have needed to apply for a new basket of rights”.

Figure 17: Proposed re-development of the Station Area Land Parcel (Eris Property Group, 2021)

DEV1 advised that PRASA Intersite owned land parcels have not been developed since the construction and implementation of rail, which provides potential developers with ample amount of heritage risks associated with obtaining development approvals from council. DEV1 advised that there were large mosaics with historical significance located on the site, which the developers were instructed by council to keep intact upon commencing with construction. However, given the sensitivity and large size of the mosaic, the contractor was unable to keep the mosaic intact during excavation. DEV1 advised that the team had to seek consultation from council which took six weeks to resolve, during which time construction had to halt. DEV1 advised that this placed the developers programme at risk, given that student accommodation is needed in January for students starting early 2024, therefore by delaying construction the developer was put at risk of missing the January intake of students in 2024. DEV1 advised that this was a programme risk that the team will still need to mitigate during the two year construction process.

DEV1 advised that the developer in partnership with PRASA agreed on how their long term commitment would be structured. DEV1 advised that the developer originally requested to pay PRASA upfront through a lump sum payment for the 45 year lease, however, this changed because PRASA did not accept this agreement. According to DEV1, PRASA advised that the lump sum would reflect in PRASA Intersite's financial statements, and will either reflect as revenue unspent at the end of their financial year or it would have been used elsewhere within the organisation. PRASA as a state owned entity, cannot afford to have large unspent CAPEX carried over to the next year, unless it is allocated for future long term expenditure.

Therefore, in 2012 PRASA Intersite structured the leasing agreement to include an initiation fee, which was paid upfront in 2012 upon awarding the developer with the rights to develop the set land parcel. DEV1 advised that based on this agreement between the developer and PRASA, the developer is also responsible for a commencement fee in addition to the initiation fee, and further responsible for an agreed leasing payment upon completion of the development. SM4 argued that these leasing agreements between the developer and PRASA are drawn up to suit the developer's financial viability, and the structure of payment varies between developers. However, the payment of an initiation fee, commencement fee and lease payments, whether monthly or annually, is a standard requirement from developers to PRASA. These fees are calculated on an agreed to percentage of the land value at the time of development. Therefore, the developer does not purchase the land from PRASA, however the developer pays a fraction of the land value to procure their use of the land parcel for an agreed to rental period.

Despite the challenges with initiating the development on PRASA land, and given that it took ten years before construction on site could beginning, the developer is confident in their decision of developing this particular land parcel. DEV1 argued that through the development process the developer was not required to put forward millions of Rands to purchase the land, and that the rest of the development process could have been worked into the financial viability for the development. Furthermore, the procurement of a 45 year lease provides the developer with enough time to maximize on returns of their investment (DEV1). DEV1 advised that their 45 year lease only commences once the developer is in the position of receiving an agreed upon rental. Therefore, between 2012 and 2024, PRASA have only received their initiation fee and commencement fee, and the developer has been working on borrowed time from PRASA to complete their development. DEV1 argued that once the 45 year lease agreement expires the land parcel, the development and associated subleases are reverted to PRASA as the new owner. DEV1 advised that after forty five years the property market would most likely have changed, and the current development might not reflect the highest and best use of the land at the time. Furthermore, the property would have suffered physical, functional and economic obsolesce, and would require redevelopment. DEV1 advised that a shorted lease agreement would have been too short a period to receive maximum returns on their investment, given that the current phase alone will cost the developer R1.5 Billion.

Goodwood Station Area Land Parcel Development

According to DEV2, the Goodwood Station area land parcel, now known as Erf 36580 and 36581, went out on tender late 2012/early 2013, and the developers were awarded the land parcel at the end of 2013. However, given that the developers planned on enabling Social Housing on the given land parcel, once the land was awarded to the developers they had to apply to the Social Housing Regulatory Authority (SHRA) to obtain the required grants in order to start the development process. The developer of the Goodwood station land parcel advised that development of the station area land parcels are financially viable for social housing given that the developer does not require a large sum of capital upfront to purchase the land parcel (DEV2). This had been the similar case for the developer of the Cape Town station land parcel. Secondly, given the location of the Goodwood station area land parcel, this provided the optimal location for social housing, given that the station is located within close proximity to the train station and Voortrekker Road, as an activity corridor (DEV2). DEV2 advised that the Goodwood station area land parcel is one of the few land parcels available for development within the larger Goodwood area, specifically given its optimal location characteristics.

According to DEV2, the developers had applied to council to rezone the land parcel from Transport Zoning 1 to General Residential 4, which took the developers five years to obtain. DEV2 advised that the greatest risk associated with obtaining the required development rights for the Goodwood station land parcel, as seen in figure 18, had been the additional required studies as requested by council. The land parcel is situated on either side of the Elsie's Kraal, which triggered the possibility of the proposed development falling within the flood line. Furthermore, due to the age of the station building, the developer had been requested to complete a Heritage Impact Assessment. DEV2 advised the both studies provided positive outcomes for the developer, however had delayed the process of obtaining the required land use rights. DEV2 advised that "these risks are consistent with PRASA owned land parcel's due to the untouched nature of the land parcels".

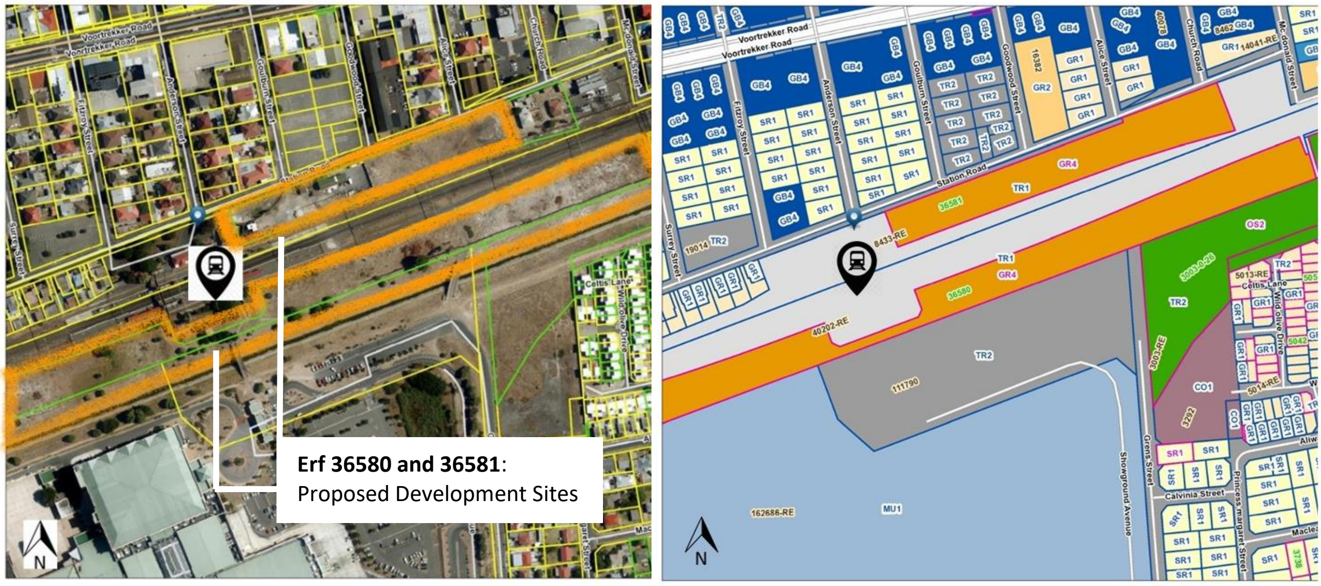


Figure 18: Goodwood Vacant Station Land Parcel –Development sites (Adapted Google Earth)

DEV2 argued that the current location of station area land parcels, within existing communities, possess a socio-political risks as there is an expectation of job creation through the development of the land parcel. DEV2 advised that this risk will be mitigated on site through the creation of multiple short term jobs, however that majority of employment created through construction will be done by the contractor. This risk is likely to be consistent with all station land parcels along the Northern Corridor given the location of each station within established communities (DEV2). According to DEV2, the developer had not been faced with many other land options, and that the other option would have been to lease out a land parcel with an existing building and renovate the building or reconstruct a building on the land parcel. However, given the extended process of acquiring the required grants from SHRA, the option of station area land parcels had been financially more viable to the developer than entering into an agreement with a private land owner. Private land owners would have required a larger sum of capital upfront, which would have been less feasible to the developer (DEV2). DEV2 advised that despite the long waiting periods, the proposed programme was agreed upon by PRASA, who had worked these payments into their own financial models. The developer of the Goodwood station, like the developer of the Cape Town station, were responsible for an Intersite Facilitation fee upon award of the land parcel, and will be responsible for a commencement fee upon the initiation of development. However, given the constraints and risks that have been mitigated, the developer had been granted the required development and land use rights, and will start with construction on site in January 2022. Once the development has been constructed and the developer is generating a full rental income from the development, the developer's 40 year lease agreement will commence.

5.6. Successful Developments to date: PRASA Station Area land

As per the sentiment put forward by SM4, the process of developing station area land parcels are new to PRASA. However, there are a few successful developments else were in South Africa that are not particularly along the Northern Corrioder. The Langa Junction and Springfield developments are fairly new developments, however insight to these developments required primary data findings and have been used to assist in the justification of the potential success that the development of station area land parcels in Cape Town could have within the immediate surroundings. Furthermore, the development of these station land parcals provided value-added mechnisms towards the applciation of TOD principles that have previously been ill equpied for implementation within local policy.

eThekwini –Springfield PRASA Land Parcel Development

The development of the Springfield PRASA owned rail staging yard in eThekwini Municipality initiated in 2012 when a national property development company had been awarded the land parcel. DEV3 indicated that the land awarded to their company is a 12 hectare site, and that their award of the land parcel followed the company's response to an advertised tender for the lease hold rights to the land parcel. The development of the site has taken a phased approach, and to date 3.5 hectares of the site has been developed, and includes various tenants. DEV3 argued that their company had procured tenants before constructing structures on the site. This extended the period before PRASA had received lease payments, since the lease agreement with PRASA for site begins once construction of each proposed development has been completed. The company has a forty year lease agreement for each constructed development on the given site, which is in addition to the agreed to facilitation fees and development fees that PRASA receives to compensate the development of their site (DEV3). The company are in the process of initiating the next development phase of the land parcel. Once those developments have been constructed and generating an income, the company's next forty year lease with PRASA will commence. The lease agreements with

PRASA will be staggered, and the process of handing the developments over to PRASA post the completion of each lease will be staggered in future as well.

DEV3 argued that given the city's current development footprint there are fewer options for developers to initiate and construct new developments. Therefore, PRASA's land parcel had been prime land for development, given its current location within an established retail and industrial node. DEV3 argued that the surrounding areas within Springfield include retail mixed use, and if the development company were unwilling to enter into the property market to supply retail and industrial/warehouse space for the required demand, the uptake of the development within its current location would not have been such a success. DEV3 argued that the process of acquiring development rights and land use rights had taken the company five years to acquire and implement. During this five year period the municipality had implemented the required bulk infrastructure. Furthermore, this process was expedited as the development company were aware of the current challenges on the site, which included the requirement for an Environmental Impact Assessment given that site is located along the Umgeni River (DEV3). DEV3 advised that due to the extensive work completed and proposals to prevent unsustainable development along the river, the company were granted the development rights under said conditions per their EIA. However, the company were also required to rehabilitate river banks, re-plant indigenous vegetation to the area, and include a 20-30 buffer between the proposed developments and the Umgeni River (DEV3).

The land parcel leased out to the development company is a part of PRASA's current rail staging yard, however PRASA have plans to implement a passenger station on the land parcel in future depending on the passenger demand for rail within the surrounding area (DEV3). Before the development company had under taken the construction of the site, the land parcel had been largely vacant. However given the current and planned construction of this PRASA owned site the future demand for train services will potentially increase with movement of more people in and out of the area. Therefore, the development process of this particular land parcel has provided a supply of rental space within the current node, and has enabled future planning for rail passengers. Therefore, providing PRASA with double the opportunity, given the development of their land parcel and increased passenger thresholds.

Cape Town - Langa Junction Station Area Land Parcel Development

The development of the Langa Junction precinct took place in the early 2000's and the construction was completed in early 2003. According to DEV4 the development of this station land parcel included a land parcel adjacent to the current Langa Junction precinct, on which the company had developed 250 social housing units that are currently been leased out to local families. DEV4 indicated that their company have been active in the marketplace with a primary objective to promote and facilitate the provision of affordable and low-cost housing in South Africa. However, seek to enable an aspect of commercial development opportunities on their land parcel to facilitate employment opportunities for residents. Therefore, upon winning the tender the development of the Langa station land parcel, the company sort to ensure that the required land rezoning would fulling enable their and the communities development demands. Therefore, upon award of the land parcels, the company applied for a subdivision of the larger land parcel into 250 single erven which were rezoned to Single Residential 2, and the site immediate to the station was rezoned to General Business 4, in order to enable the Langa Junction Mall (DEV4).

DEV4 advised that the company had undergone a full market study of the surrounding area to ensure that the highest and best use of the mall space was achieved. Therefore, through the market research the developer was able to propose contextual needs within the surrounding community, which included the demand for shopping spaces and for employment opportunities. This information was included in the company's bid and proposal in response to the tender advertised. Therefore, South African Rail Commuter Corporation (SARCC) at the time (previous rail entity) were well informed of the developers intension to develop the land parcel and what these intensions included (DEV4). To date, the company have seen their returns and the shopping complex has provided convenience and employment that had not been available in the area previously (SM4). DEV4 advised that the company had ensured that the community were involved throughout the development process of the site. Prior to construction in the early 2000's the company set up job seeking desks on site for surrounding community members with construction experience and skills to apply for a job during the construction of the site. DEV4 advised that this process ensured that the community involvement remained a priority to establish ownership of the space, and to ensure that upliftment was recreated within the community during and post the construction phase.

DEV4 advised that there were no major incentives in place to attract them to develop the land station land parcel. DEV4 argued that their company seek to promote sustainable human settlements within communities and that the Langa station land parcel provided such a space to envision this goal and to see it through. According to DEV4 their company over the past ten years have submitted multiple unsolicited bids and proposals to the now PRASA Intersite in order to develop various station area land parcels. However they have not received a response to a single proposal nor have any of these land parcels been placed out to tender in the past thirteen years since PRASA took over the rail and the associated land parcels (DEV4). In 27 years the current develops at the Langa station will revert back to PRASA, which will be forty five years after the development was constructed. DEV4 advised that their lease provides them with an opportunity to renew their lease with PRASA Intersite, if this is accepted by them.

5.7. Synthesis – Answering the Research Question

Through the presented research it is evident that there are a number of indirect forces that have hindered development of station area land. It has also been evident that PRASA are not opposed to the development of station area land, however regulatory processes and institutional control has hindered land development processes. This sub-section presents the gathered insights from the research conducted as a means of answering the research question.

Why have real estate developments not been enabled and located at stations along the Northern Corridor railway line in Cape Town?

INSIGHT #1: Institutional control over land parcels – not all land parcels are available for development

Through this research it has become evident that PRASA as the gate keepers to rail land parcels, not only choose which land parcels are put out to tender but choose when these land parcels may or may not be developed. Therefore, developers are only able to win a tender of a land parcel advertised, rather than placing in unsolicited bids for land parcels that they are interested in developing. The process of placing land parcels out to tender has been slow through PRASA's internal processes. However, PRASA Intersite have placed land parcels out to tender and have thereafter removed these land parcels from the market. These decisions have been based on land parcels later been reserved for technical reasoning's, among other internal reasoning.

It had become evident through this research that there is an issue regarding PRASA's future ownership of these land parcels as these have been questioned through legislative and policy pieces and proposed devolution strategies of rail and land parcels. Which have been yet to be confirmed, and thus have played an indirect role on which land parcels are placed out to tender for development. Additionally, the issues regarding PRASA Intersite's future ownership of station area land parcels have been questioned since Tembinkosi Bonakele, Commissioner of the South African Competition Commission, recommended that certain divisions of PRASA be unbundled after the completion of an investigation into the public transport market in South Africa. Thus, further providing uncertainty of how these land parcels will be managed in the future, which has yet been resolved.

INSIGHT #2: Different land sizes and shapes result in less attractive outcome for developers

The station area land parcels in particular those within established communities are in many cases narrow land parcels of varied sizes. These constraints place potential developers under pressure to seek out creative professionals to develop the set land parcels, as had been the case at the Goodwood station. However, not all developers have the ample resources to make those conditions work in their favour. Due to the economies of scale for these land places of odd shape and sizes there are high risks to developers. However, there have been developers, as indicated in this research, who have placed unsolicited bids for station land parcels of various sizes, however have not received communication back from PRASA years later.

Despite these risks to the developers, the process of drawing up a personalised lease agreement with PRASA is a positive to developers. This could be seen in that private developers do not require large sums of capital upfront which would been required if they leased land from private land owners. Thus, despite the various land sizes, there are land parcels that are workable for developers, however have not been accepted for development.

INSIGHT #3: The extended period required to obtain the required development rights and land use rights to initiate development

Given that PRASA land parcels have not been developed since the initial implementation and construction of rail, this has resulted in lengthy process of acquiring heritage and land use approvals from the COCT. These processes are expensive and time consuming which not all developers are able to afford.

INSIGHT #4: The facilitation fees and construction fees are too high for local/small scale developers

PRASA Intersite together with the developers construct a lease agreement based on what is best for the developer's cash flows and financial viability. However, PRASA Intersite are in the market to generate an income from these land parcels, which place local and small scale developers at a disadvantage. Therefore, the current development of these land parcels and the improvement of TOD at rail stations areas are dependent on the demand of larger development companies, and is less reliant on opportunity been afforded to small scale developers. Therefore, if there is less demand upon larger property development companies for station area land parcels put out to tender, these will remain undeveloped, as smaller land developers are unable to afford and to pay hefty facilitation fees. The development process of station area land parcels, despite being state owned, have been noted to be exclusive to large scale developers.

INSIGHT #5: PRASA Intersite have not collaborated with the COCT on the development of station area land parcels

Despite, PRASA's objective to generate profits through station area land, there is less effort been placed into collaborating with the municipality and surrounding developers to implement urban management and other related tools at and around station areas that require it, in order to improve demand and to improve attraction to the land. Current station land parcels along the Northern Corridor require social and economic upliftment in order to attract developers, an example of this had been seen through the lack of interest in the development of the Parow station land parcel.

The COCT have pushed an agenda of improving the various development Corridors in Cape Town. These corridors have been primarily focused on the position and focus of the rail as the centre of each of the corridors. However, partnership between the Municipality and PRASA have been slow at enabling mechanisms (urban management, land use rights or other incentives) into attracting developers to the set Northern Corridor.

INSIGHT #6: There is less transport integration within the municipality to enable TOD type of developments.

As a result of the current lack of integrated transport systems there is less means of traveling between transport nodes, and therefore less demand for development in and around these nodes. The station area land parcels would become prime land parcels once successful integrated transport systems are implemented, which would enable TOD type developments at these nodes.

5.8. Findings Synthesis

The findings put forward in this chapter highlighted that PRASA's internal planning processes are the key informants towards what constitutes, determines, and defines development on station area land parcels. Thus, presenting a current development process that resembles that of the structure model, as described in chapter 2. Despite private companies developing detailed plans and providing extensive proof of their company's financial stability, PRASA have rejected proposed development of land parcels that have gone out to tender with no explanation to interested parties. As seen in Chapter 2, the structure model, like the current development process followed by PRASA, is critiqued for not considering the role of human agency and decision making within the broader framework of capital flows (Healey, 2020; Ismail, 1996). In the same way PRASA have been critiqued for not considering external attraction from private companies for PRASA owned land, and not considering a more dynamic and adaptive system which could respond to internal and external institutional changes. The current development process that resembles that of a structured approach, has resulted in less partnership with local government – as in the instance of our case study, has considered less partnership in land development with the City of Cape Town. And has further, limited the development of station area land to larger companies who are more prone to pay the required fees for use of the land up front.

These constraints have further limited the creative use of the station land parcels and has also constraint involvement of government to influence or steer Transit Oriented Development. To date, private companies who have development station area land parcels are limited to the use of land made available to them from PRASA, thus the influence of these developers to extend their developments to achieve TOD type development at stations are restricted to the land that is released by PRASA under a lease. Nevertheless, successful TOD type development can not be hinged on property development alone. As seen in the literature review the transport-land use feedback cycle together with the review of the precedent studies has highlighted that the success of rail station area development (and verse visa that of the rail) is dependent on positive cohesion between transportation planning, land use planning and property development. While the improvement of Cape Town rail had not been the objective of this study, it is imperative to consider the positive indirect influence that the improved rail system could have on rail corridor development in Cape Town and TOD type developments at rail stations.

Through this findings chapter, this study has made available insights and an empirical study of South African rail station area land parcels which has not been investigated in academic research before. The insights from this chapter are further utilised to inform the recommendations put forward in the next chapter.

CHAPTER 6: INSIGHT BASED RECOMMENDATIONS AND CONCLUSION

Through the findings displayed in chapter 5, the main aims and objectives of this research have been accomplished. Additionally, chapter 5 concluded with direct answers to the research question put forward in this research. In this chapter, four key recommendations have been put forward based on the insights drawn up to answer the research question as displayed in the previous chapter. These recommendations have further drawn on key outcomes from the literature review, precedent studies, and legislative and policy reviews. The chapter concludes with recommended future research options and final concluding thoughts to this research.

6.1. Insight Based Recommendations

Recommendation 1: Encourage and Prioritize Station Area Development

Through this research it is evident that there are a limited number of station land parcels available to the public for development, despite there being multiple land parcels vacant at railway stations. The participants for this study have indicated that there are limited suitable land parcels within current development nodes and along current development corridors for new development. This issue had been experienced in the Netherlands and in Japan as well, and this scarcity had been considered as a driving factor to stimulate station area developments. Since the year 2000 the Tokyo Metropolitan Government (TMG) have intervened into station areas and the surrounding area developments as part of new urban regeneration programmes. These programmes have facilitated partnerships between the TMG and rail operating companies who own these land parcels, which has led to a number of proactive planning and financial instruments been enabled to attract developers to the station land parcels (Chorus, 2012). These interventions have further ensured that station area land parcels are available for development by potential developers. In the Netherlands, the station area land parcels are developed by the state-owned rail company who pay a concessionary fee to operate on the railway tracks. These developers initiate their own developments on station area land parcels in order to generate an income from these developments.

In a similar way it is recommended that PRASA undertake a baseline assessment of the current land parcels along the Northern Corridor, and along the other rail corridors in Cape Town, to identify the current state of these land parcels. This baseline assessment should be weighed against long-term feasible and financially viable plans for rail. Such an assessment and long-term planning should be undertaken together with the local municipality, and to be aligned with the Comprehensive Integrated Transport Plan (CITP) and the Integrated Public Transport Network Plan (IPTN), which are council approved plans. Through this strategic alignment of future plans for rail PRASA will be well equipped to identify which land parcels can be advertised for development, and thus reduce the process of placing land parcels up for advertisement only to be removed at a later stage as a result of rail operational and technical concerns.

For this to take place, a systems approach to property development will be required. In chapter 2 of this study, the systems approach was unpacked, which draws on the complexity of the development process and highlights that it is a highly dynamic and adaptive system which should respond to changes in its surrounding cultural, political, and economic environment (Bulloch and Sullivan, 2009). This approach would be achieved through private and public co-ownership of the land, improved involvement in the development process from the City of Cape Town or through improved private company concessionary use the current vacant land at stations. The systems approach to the development of these land parcels could provide an opportunity for interconnections between the rail and the current vacant land parcels, that is currently not enabled. Furthermore, through this approach factors such as contemporary economic and social activates could be considered when developing these land parcels, thus recreating connections between not only the rail and vacant land parcels but extending this connection into the surrounding areas.

Lastly, just as the development of station land parcels in the Netherlands are initiated on the bases of generating an income, PRASA Intersite and PRASA CRES should be held accountable to generate their own revenue in order to meet the majority of their operational costs. This incentive will drive PRASA to seek and to effectively project, manage and develop the assets allocated to them. Which will also have an indirect positive impact on urban regeneration at stations and their respective land parcels. The institutional model could provide a complimentary role to the previous proposed systems approach. The institutional model will be required to develop station area land parcels, to address the complexity or rather increased complexity between private and public institutions to enable improved development of station land parcels. Through the institutional model it is recommended that a detailed business plan, following the previously proposed baseline assessment, to provide the public and private institutions involved with a proposed medium to long term plan towards successful development of station area land parcels. However, a key informant that will be required before the two development processes are enabled (namely the systems approach and the institutional model) is the outcome of whether or not National Governments will devolve responsibility of rail from PRASA to the City of Cape Town, or to the Western Cape Government. Such a decision would enable all parties involved to better plan for the future of rail and its associated land parcels.

Recommendation 2: Improve Application of Incentives and TOD Mechanisms to Attract Developers

Based on the research findings, developers had indicated that the highest risk of developing station area land parcels are the extended periods required to acquire a positive outcome for zoning right applications. A counter reaction to this problem in Tokyo can be seen when the TMG had enabled station land located in specific areas with preapproved commercial zoning rights and with higher densities to further ensure that these land parcels are developed. In Cape Town the Public Transport (PT) Zones have provide an incentive for higher densities, however an attraction to enable these higher densities require improved integrated public transportation. The PT Zones provide an opportunity to reduce parking on site, and thus provide options for higher densities. However, given that the current public transport is not reliable, this option is less viable to developers as this will increase tenant concerns regarding their own mobility and therefore require a safe parking bay onsite (DEV1). Through the application of viable and feasible long term plans for rail into the CITP and IPTN, as previously recommended, developers will be provided with the medium to long term plan for rail which can be used within their own long-term planning for these land parcels. The improved reliance on rail in the medium to long term will reduce the requirements for parking, as seen in the Netherlands and Japan, and future improve the application of the current PT Zones.

Furthermore, this research recommends that PRASA together with the COCT enable specific land parcels with the required land use rights to attract developers. Therefore, ensuring that land parcels are systematically rezoned as they are advertised. The provision of land use rights should be compensated for, to a certain degree, within the structured lease agreements between PRASA and the potential developers. Which will provide developers with the opportunity to start development within the first year or two of signing a lease, compared to the standard waiting period of five years as experienced by previous developers. This research seeks to propose that PRASA together with the COCT enable station land parcels with respective General Business or Mixed Use Zonings, depending on the location of the land parcel, within or outside current development nodes, and the size of the respective station land parcel. According to PPO1 the process of land use applications between government institutions are expedited, compared to applications form the private sector. This process should prove to be a fast tracked process compared to the extended waiting period for land use rights as experienced by private developers.

However, there is a calculated risk of PRASA not attracting developers to land parcels that have been prepared for the development. This possess a risk of these rights lapsing after five year of receiving the required land use rights and with no development been enabled on the site (COCT, 2015). Conversely, given that these land parcels are owned by National Government there are two proposed recommendations to mitigate these risks. Firstly, PRASA together with the COCT enable a longer period than five years to enable PRASA to retain the acquired land use rights once received, to allow PRASA with an appropriate amount of time to attract a developer for the site. Secondly, PRASA should apply for land use rights at the same time or before advertising the land parcel to gain an indication of the interest and demand in the market for the respective land parcels. This process will provide PRASA with a proactive means of attracting developers to the respective land parcels, and to enable specific types of development to enable TOD, through the preapprove land zoning rights to these land parcels.

Recommendation 3: Coordinated Programmes between Stations to Stimulate Corridor Development

The land use transport cycles, as discussed in chapter 2, illustrate that improved access to transport provides opportunities for increased land use densities close to these transport stations (Wegener and Furst, 2004). Through the implementation of the previously discussed strategies regarding improved rail, strategic selection of land parcels placed on the property market and the provision of attractive development incentives, this will in the medium term likely increase nodal development at each station along the corridor. Thus, strengthening the concept of corridor development, through focused interventions at each station. The concept of corridor development is used in Japan, as private rail operators develop long term plans that seek to be carefully aligned along railway corridors in order to generate bi-directional travel flows and to maximize their returns (Chorus, 2012). In the Netherlands, railway operators are granted temporary concessionary use of the rail however these companies ensure that their stations apply significant influence within its surrounding areas, and to increase connections through rail between their stations. In the Netherlands, rail operating companies are restricted, like PRASA, in terms of their property influence along the corridor as a result of limited land ownership. However, in the Netherlands rail operators have sort to partner with private developers within surrounding station land parcels to enable large and impactful developments (Chorus, 2012). Therefore, it is proposed that PRASA in partnership with surrounding land owners at each respective station and with the COCT align their plans for property development through precinct based planning. This aligned planning could provide long-term integrated planning for each station and improve the COCT's current plans towards development corridors in Cape Town, like the Northern Corridor.

Recommendation 4: Provide Local Government with improved involvement into Station area Development

The unresolved issue regarding devolution of rail in the medium to long term provides a level of uncertainty for the way forward for PRASA. However, given that PRASA is a state-owed entity their operations and functions continue until they are instructed otherwise. Furthermore, the medium-long term plans put forward by PRASA in partnership with the COCT will go to council for approval, and thus continue despite proposed devolution of rail. In addition to plans put forward above, PRASA together with the COCT identify, coordinate and implement urban management mechanisms within particular station areas, like those stations along Voortrekker Road. These urban management tools should include the implementation of social housing options within the current high density and poor quality areas that are within close proximity to stations along the Voortrekker road. These options will seek to stabilize the overcrowded spaces, and provide revitalization to the current area. The implementation of social housing will be more structured thus ensuring a household contribution, while small, to the maintenance of the public facilities within the area. Furthermore, urban management tools should seek to include involvement from local developers and property owners within the station area precincts. These processes could be managed between PRASA and the COCT, to coordinate similar yet tailor designed urban management mechanisms around station land parcels, perhaps starting at the current high density Core stations and within areas that require urban revitalisation. Given that railway lines run between municipalities, at a later stage, through a phased approach PRASA should seek to partner with provisional government to enable regional type planning and urban management for these corridors and their respective stations.

6.2. Recommendations for Future Research

Based on the research put forward in this paper, there have been several limitations to this study as presented in chapter 3. However, through this research two key areas for further research have been presented. ***Firstly***, this research has presented an opportunity to investigate the possibility of inclusive housing opportunities to be located on station area land parcels. As per the Draft Western Cape Inclusionary Housing Policy Framework (2021) inclusionary housing contributions can be met on the site of the development making the contribution, or on another site available to the developer. The location of station area land along a rail line is an immediate best option if the provision of inclusive housing were not included by the developer on their main development site. Therefore, the option of station area land as an option for 'another site' for the developer to enable inclusive housing should be investigated. Mechanisms within policy for the application of TOD is limited, this recommendation for future research would therefore provide another opportunity to facilitate TOD implementation specifically at rail station. The research put forward in this paper had been primarily qualitative research, therefore the recommended research to investigate inclusive housing opportunities at stations should be a mixed method study, or quantitative study to understand the financial implications of these proposals. Based on the research put forward in this paper, it is advised that the recommended further studies include an investigation into the implications that station area land development, and the associated inclusive housing would have on the surrounding station precinct land values.

Secondly, further investigation is recommended into the management and maintenance of rail at local government tiers. This research explored current policy and legislative pieces that paced great significance on municipal level governance, however further research into how devolution as a national strategy could be enabled would provide contextual input that was not particularly the main research focus of this paper. Furthermore, this recommended study could also investigate provincial level rail management, and options for devolution if rail and the associated land are not devolved to the COCT as a result of political influence and human behaviour.

6.3. Conclusion

This paper sought to answer the research question put forward in this paper, which had been included in chapter 5. Whereas, Chapter 2 of this research sought to meet the objective of unpacking key international precedent studies of where development of station land have been successful. Chapter 4 met the objective to critically analyze current legislation, policy frameworks and institutional influences that govern station area land. Whereas, Chapter 5 unpacked the four main objectives of this study, that were informed by primary data collection methods that informed the findings for this research.

Through the findings for this research it is evident that PRASA are not opposed to the development of station area land parcels, and have in fact sporadically advertised a few of these land parcels for private developers to develop. Such successful developments can be seen along the Northern Corridor, and at the Langa station in Cape Town and the Springfield Rail yard in the eThekwini Municipality. These developments on station area land have been undertaken through long term lease agreements, and through the required facilitation and construction fees payable to PRASA Intersite from the developers. Through this research it is evident that the development of station area land could facilitate an entry mechanism towards successful implementation of TOD, and further starting point to initiate TOD within areas along the Northern Corridor. Due to the current plans to modernise rail and to improve integrated transport within Cape Town specifically, PRASA could take an incremental approach towards the development of station area land parcels together with local government (COCT) to improve the future enablement of TOD at and around stations in the future. This research has indicated that there is demand among property developers to develop station area land parcels, even if this is made available to them through long term leases.

While there have been challenges and hindering factors towards development of station land parcels in the past, there are a few successful developments of station land parcels and high demand among private developers for such land. These have provided an indication that this research had been justified and that there is a demand in the market for station area land parcels, more so given that the majority of these land parcels are the only vacant spaces within their respective areas. However, that the process of leasing out land on a long term agreement has also been favourable to private developers, and sought after. Therefore, placing the strain on PRASA as a government institution to enable processes to avail more of these land parcels for development. The recommendations put forward in this chapter provide a starting point for PRASA to initiate this process.

The proposition of this paper indicated that the lack of development could be attributed to the current zoning of the land parcels, however it is evident through the research that the process of rezoning is a lengthy and expensive process that PRASA have left to potential developers to enable. This process is a lengthy process for private developers given the lack of bulk services to station area land parcels, and the environmental and heritage concerns that come along with these land parcels. Despite these risks, through this research it is evident that private developers seek out the development of station area land due to the location of these land parcels that outweigh the risks in the medium to long term.

A key focus of this research, other than having met the aims and objectives put forward in this paper, had been to close the gap in South African academic research on this topic. This research has provided a critical analysis of current literature on the topic internationally and has analytically assessed national, provincial and municipal legislative and policy pieces that govern station area land parcels, in order to provide informed findings, which have been put forward in this research paper. The key outcome of this research is an informative piece based on empirical observations and research that seeks to inform policy makers, rail institutions (specifically PRASA – and future institutions that are successful through the proposed devolution strategies) and property developers, of the reasons why developments have been limited at station area land parcels. Such informed outcomes have not been presented through academic writing before in South Africa, and thus this research seeks to be an informative and discerning research piece aimed towards improved development processes for station area land parcels along the Northern Corridor in Cape Town specifically.

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ANNEXURE 1 – LIST OF PRIMARY RESEARCH DATA COLLECTION ACTIVITIES

PARTICIPANT ID	ENTITY	DATE	ACTIVITY	Additional Notes
-	-	27 April 2021	Informal Site Visit	Site Visit to confirm current development on each station along the Study area.
-	-	28 April 2021	Informal Site Visit	Site Visit to confirm current development on each station along the Study area.
PPO1	City Growth Management at Municipal entity	02 September 2021	Semi-structured Interview	45 minutes
SPO1	Integrated Transport Planning, at Municipal entity	03 September 2021	Semi-structured Interview	45 minutes
SM1	Interface Coordination on Station Developments, at South African Rail Entity	10 September 2021	Semi-structured Interview	30 minutes
M1	Development Management, at Municipal entity	10 September 2021	Semi-structured Interview	45 minutes
SM2	Infrastructure Management, at South African Rail Entity	10 September 2021	Semi-structured Interview	30 minutes
C1	Private company	13 September 2021	Semi-structured Interview	1 hour
SM3	Property leasing, at South African Rail Entity	13 September 2021	Semi-structured Interview	1 hour
SM4	Property Investment , at South African Rail Entity	29 September 2021	Semi-structured Interview	45 minutes

-	-	31st October 2021	Informal Site Visit	Informal review of stations against and to confirm Ariel photography used for the study
DEV01	Property Developer at a station along the Northern Corridor	8th November 2021 And 9th November 2021	Semi-structured Interview	40 minutes And 55 minutes
DEV02	Property Developer at a station along the Northern Corridor	10th November 2021	Semi-structured Interview	43 minutes
DEV03	Property Developer at a station in eThekwini Municipality	19th November 2021	Semi-structured Interview	40 minutes
DEV04	Property Developer at a station in Cape Town	24th November 2021	Semi-structured Interview	55 minutes

ANNEXURE 2 – EXAMPLE OF QUESTIONNAIRE

1. Why do developers choose to develop station area land parcels?
2. What incentives are in place to attract developers to these land parcels?
3. What initiatives have been put in place to enable development of station area land parcels? How successful have these been in the past? What plans are in place to enable the development of station area land parcels?
4. Have PRASA partnered with local or provisional government to enable the development of station area land parcels? What efforts have these included?
5. What is the development process followed by developers to enable station area land development?
6. What risks are associated with the development of station area land parcels?
7. What strategies have been successful at enabling development of these land parcels?
8. How does PRASA chose which land parcels are developed? How are these land parcels managed and who leads these process?
9. What plans do PRASA have for the enablement of development on station area land parcels?