

**An Exploratory Study of Project Financing Urban Infrastructure  
in Affordable Housing, South Africa**

A Thesis presented to the Graduate School of Business  
University of Cape Town

In partial fulfilment of the requirements for the  
Master of Commerce in Development Finance Degree

By

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January 2016

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## **ABSTRACT**

This research paper aims to explore the use of project finance to fund urban infrastructure in order to aid the development of affordable housing. This is due to the high rate of urbanisation in developing nations, leading to the challenge of providing adequate shelter and the requisite infrastructure. Although South Africa has been lauded for making observable strides in housing and infrastructure provision, infrastructure is still required. There is reluctance to bring private finance into infrastructure development in developing economies because full recovery of invested capital is not easy to achieve. Project finance is recommended to improve the rate of shelter provision as well as to catalyse the eradication of slums. Project finance was investigated through interviewing selected participants, based on their role in the infrastructure provision sector. The outcomes indicated that project finance is an appropriate tool due to its characteristics.

Key words: Affordable housing, housing infrastructure finance, private sector participation, project finance

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**GLOSSARY OF TERMS**

BNG	Breaking New Ground Policy
DFI	Development Finance Institutions
DoHS	Department of Human Settlements
DoPLG	Department of Provincial and Local Government
IDP	Integrated Development Plan
IIP	Infrastructure Investment Plan
MDGs	Millennium Development Goals
MFMA	Municipal Finance Management Act
MIG	Municipal Infrastructure Grant
MTEF	Medium Term Expenditure Framework
NT	National Treasury
PF	Project Finance
PFMA	Public Finance Management Act
PSP	Private Sector Participation
RHIG	Rural Household Infrastructure Grant
SPV	Special Purpose Vehicle
SSA	Sub- Saharan Africa
UN	United Nations
USDG	Urban Settlement Development Grant

## **ACKNOWLEDGEMENT**

I would like to acknowledge a number of people who have supported me through this research process. Firstly, thank you to my supervisor, Dr. Steven Nabieu Rogers, for his guidance and patience. The completion of this report would not have been possible without his input and encouragement.

I would also like to thank my bursar for affording me this opportunity to pursue this degree as well as the participants who willingly shared their knowledge to make this research a success.

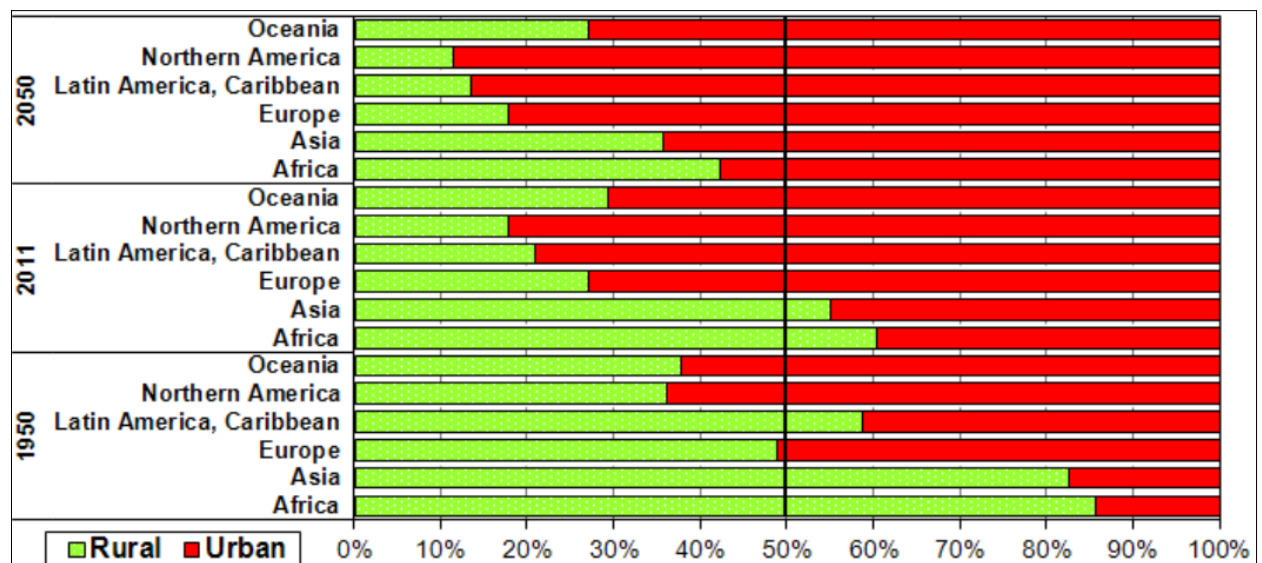
Lastly, I would like to thank my family and friends for always encouraging me and showing unwavering support.

# 1. INTRODUCTION

## 1.1. Research Area

Recent literature has shown that there is an identifiable relationship between economic growth and urbanisation in developing countries. In the past decade, researchers such as Cohen (2006) noted that many urban areas in developing countries have experienced a level of growth that is dramatic in comparison to the previous 20 years – as illustrated in Figure 1 below. This has resulted in a significant departure from the spatial distributions of population growth of the past, which was a picture of a more evenly dispersed population, between urban areas and rural parts of the regions (Cohen, 2006). Much of these observed migration patterns could be attributed to a growing desperation to access employment opportunities, critical amenities and an improved standard of living, given the important opportunities for economic and social development which cities offer (Cohen, 2006). Therefore, the rapid pace of urbanisation in developing countries has far exceeded most cities’ ability to provide adequate services for their citizens (Cohen, 2006).

**Figure 1: Global Urbanisation Patterns per World Region**



Source: National Treasury Provincial Budgets and Expenditure Review, 200/11-2016/17

Unfortunately, while many developed regions of the world see this growing trajectory as an advantage, things are different for Africa. Africa is at a greater disadvantage compared to other developing nations, particularly when considering its growing number of citizens who are classified as the world's poorest, increasing levels of illiteracy and a population growth rate that is twice as fast as other major regions of the world (Cohen, 2006). Sub-Saharan African (SSA) countries in particular are currently experiencing some of the fastest rates of urbanisation in the world, largely due to their limited urban base (Grooves, 2004). Furthermore, the development of SSA countries carries a distinct difference when compared to that of cities in similar developing nations, such as Latin America and South Asia (Grooves, 2004). The sub-continent is characterised by a very dominant informal sector and the implications are that housing is not a challenge restricted to the poor, because adequate housing is scarce for households that are not necessarily poor (Grooves, 2004). The percentage share of urban citizens who live in poor housing conditions in SSA was 61% in 2010. The most disadvantaged are still the low-income families who have been driven into informal shelter and slums within the city (Tiwari & Hingorani, 2013). This introduces the growing challenge of providing adequate shelter and requisite infrastructure for the poor; within the full context of the Millennium Development Goals (MDGs), which aim to eradicate slums. Tibaijuka (2005) expresses in the United Nations (UN) Habitat Report that access to housing and adequate infrastructure by low-income earners is a critical development issue within a prevailing system where affordable shelter is inadequate and adequate shelter is unaffordable (UN-Habitat Report, 2005).

Housing development has been perceived to have a substantial impact on economic development and growth of middle income countries, since the 1970s (Harris, 2005). This can be explained through its threefold impact as a major employment source due to the level of construction opportunities that arise from this type of exercise, through its value as an

investment asset, and the social consequences derived from home ownership (Harris, 2005). This debate was received with scepticism by economists, although the World Bank joined the discussion and gave it much-needed credibility when it admitted to being fully persuaded that housing and its complementary urban services could play a role in promoting economic development (Harris, 2005). This demonstrates that housing is an important economic development tool for Africa. Despite the prevailing challenges within the continent to provide housing security; South Africa has often been lauded for making the most visible strides in addressing the problem. This is supported by Grooves' (2004) view that South Africa is developing a supply side capacity in housing delivery, which other countries can only envy. However, like all infrastructure programmes, it is a highly capital-intensive programme that is often left in the hands of the central government. Many states have not been able to properly address the problem due to various financial commitments. Therefore, an adequate and proper financing scheme in housing infrastructure is critical to the success of providing housing to meet the rising urbanisation trend, particularly in the affordable housing sector.

## **1.2. Problem Statement**

Recent data has indicated that approximately three billion people will require housing and infrastructure by the year 2030 (Tibajuka, 2013). This suggests that a fair amount of urban infrastructure development is needed in order to accommodate the expected housing demand. Swaroop (1994) confirms that most infrastructure is provided by the public sector in developing countries, which relies extensively on the funds raised through general taxes to fulfil this responsibility. In SSA, the majority of governments have served as the provider of public goods, including housing, due to very poorly developed and ineffective private sectors. These provider-led forms of governance indicate that developing countries have had difficulty getting the private sector to engage in a meaningful way in certain capital-intensive

programmes in a manner that is both profitable and sustainable. It is difficult to achieve the required level of infrastructure development through self-financing, and therefore almost all developing country governments welcome the prospects of private sector participation (PSP) in the provision of infrastructure services (Swaroop, 1994).

In the next 20 years, it is evident that many developing countries' conventional sources of funding infrastructure will not be sufficient to meet the projected demand for urban infrastructure and housing (UN-Habitat Report, 2005). Numerous countries face public budget deficits and weak financial sectors to such an extent that local governments have started to realise the need to look for funding in global markets (Ryneveld, 2007).

Moreover, several World Bank studies suggest that although private sector participation is preferable as an alternative to financing infrastructure, full cost recovery is more of an exception than a rule when it comes to developing nations (Swaroop, 1994). This can be attributed to the fact that these economies are characterised by a large number of citizens who are considered to be poor, and also have a high level of political instability, which creates regulatory related risks that are hard to predict from an investment perspective. Swaaroop (1994) further elaborates that the political climate of tariff setting plays an influential role in low/inappropriately designed user charges, which can lead to an inability to recover the full investment. Furthermore, in the context of predominantly poor societies, efficient pricing to achieve total cost recovery is likely to conflict with social welfare objectives. This serves as an obstacle until governments and public sector players are able to provide assurance that an appropriate rate of return can be achieved by private sector investors who pursue these ventures. The biggest challenge is that, while the private sector has demonstrated a willingness to engage in this space, it is not clear which particular model of financing works best and would be sustainable not only in terms of affordability, but also pricing and

profitability. The traditional model has hinged mostly on commercial lending instruments through commercial banks. This has proven difficult to maintain, however, as private financial sector banks will only extend credit to government entities if they can be assured of repayment. Thus, in the absence of guarantees or convincing financials, banks demand extensive collateral and security commitments from the public sector. This makes the exercise of financing infrastructure very expensive as the capital outlay required upfront is very high and commercial lenders place onerous requirements and lending rates on public sector lenders in order to provide the required amounts. This research proposes to look at project finance as a mechanism that can enable both the private and public sector to embark on a joint infrastructure finance venture to realise the goals of adequate infrastructure provision, as well as achieve a return on capital invested.

The post-apartheid government of South Africa which came into power in 1994 pursued the challenge of providing adequate shelter for all its citizens with commitment as it is linked to the country's constitution. A great deal of emphasis has been placed on extending services to poor areas of the country and, as a result, South Africa has succeeded in addressing a significant urban services backlog (Ryneveld, 2007). However, Venter (2014) concedes that additional bulk and connector services will need to be created in order to expand human settlements. The residing government has to explore beyond the conventional means of infrastructure and the constraints of conventional finance approaches for infrastructure development. This can be overcome by carefully preparing for projects, specifically with regards to the way infrastructure development is planned, funded and implemented (Olivier, 2010).

The above research therefore aims to explore the use of project finance to fund housing urban infrastructure in order to aid the development of affordable housing.

### **1.3. Purpose and Significance of the Research**

The purpose of this research is to investigate the use of project finance as an instrument to finance urban infrastructure. It is prompted by the realisation that other alternatives need to be explored in order to enhance and improve the rate of provision of adequate shelter for urban poor citizens. The outcomes of this research will help advise the process of delivering urban infrastructure, thus facilitating the delivery of affordable housing in order to minimise inadequate shelter and slums. It will also contribute to pursuing the United Nations MDGs of improving the lives of the urban poor through the inclusion of slums target. The slums target endeavour aims to improve the lives of at least 100 million slum dwellers by the year 2020 (UN-Habitat Report, 2005). Lastly, it will assist the Department of Human Settlements to pursue its Breaking New Ground Policy goals. Findings of this research may be particularly important to local government stakeholders as municipalities are directly concerned with the financing of urban infrastructure for housing developments. The Department of Human Settlements (DoHS), the National Treasury (NT) and various Development Finance Institutions (DFIs) can also benefit from the outcomes of the research.

### **1.4. Research Ethics**

This investigative study was conducted in a considerate and ethical manner where the respondents were adequately appraised about the aims of the research in order to ensure voluntary participation. The researcher ensured that the participants were aware of the right to choose not to participate while taking care not to use unethical means to solicit participation, such as remuneration for involvement. The Ethics Code of the European Commission (2010) advises that research on human beings should only ensue upon their informed consent, upholding the fundamentals of respecting the autonomy of the individual as well as observing the need for voluntary participation. The investigator undertook to protect the rights of

respondents by following the correct process to obtain institutional permission to carry out research, as well as exercising the necessary care to ensure that confidentiality and anonymity were maintained. All of the above is upheld by the University Of Cape Town Graduate School Of Business and as such the researcher committed to comply with the school's policy for responsible conduct in research, to report honestly on the information gathered, and to interpret findings with professionalism and integrity.

## **2. LITERATURE REVIEW**

### **2.1. Introduction**

The literature review set out below looks at the subject of project finance as a tool to fund urban infrastructure to enable the development of affordable housing. It broadly looks at urbanisation and its role in the formation of cities, which is achieved through outlining prominent urban trends that have been observed and documented in existing literature. Upon establishing the disproportionate dispersion of the population into urban areas, the research endeavours to identify the impact that this has on housing demand, particularly housing that is affordable to the majority of the population, as this segment of housing often forms on the outskirts of cities, where infrastructure is not adequately available to accommodate the resident population. The literature review then examines how project finance can be considered in order to fund infrastructure which will ensure the provision of affordable housing.

As a part of the investigation proposed, the literature considers the role of local governments in the provision of urban infrastructure specifically concerned with delivering affordable housing, to uncover the need for private sector participation, and to assess the prospects of private sector participation. Project finance has been discussed in several sources of literature as one of the proposed forms of private sector participation in the provision of the infrastructure outlined above. Therefore, the literature on project finance is rigorously discussed and analysed as a starting point of discussion in this paper.

### **2.2. Urbanisation Trends**

Urbanisation is a world-wide phenomenon that has gained much attention in recent decades as its challenges are becoming prominent in developing countries. It is viewed as a manifestation

of the development process and is thus an important part of explaining economic change, housing challenges, as well as the extent of infrastructural inadequacies that are often exhibited in developing economies. Urbanisation is linked to internal growth, human welfare and the process of societal development within a city, which makes it an integral part of urban infrastructure provision.

Urbanisation is exhibited through different trends, such as the instance outlined by Kasarda and Crenshaw (1991) who cited that third world countries are experiencing an urban explosion due to the growth in the urban population from 16% in 1950 to 30 % in 1985, prompting a projection that it is likely to double. This can be attributed to any one of the common trends of urbanisation, such as when a single city dominates other cities in terms of its intra-urban system, or where several cities deviate substantially in population size when compared across the board (Kasarda & Crenshaw, 1991). It is also prevalent to experience urbanisation due to the natural increase of the urban population or migration of people from rural regions of a country into urban spaces.

The occurrence of rapid urbanisation has been attributed to its positive societal outcomes. Kasarda and Crenshaw (1991) suggest that urban areas offer an improved standard of living in comparison to rural areas as there is improved access to recreational facilities as well as exposure to technological innovations. Arimah (2004) adds that local governments in urban areas tend to have a higher budget, which implies that financial resources for infrastructure needs are better distributed.

While urbanisation has positive attributes, it also introduces negatives spin-offs, such as the burden on city authorities to provide infrastructure that is adequate to accommodate the burgeoning population (Arimah, 2004). Furthermore, it is often the case that the financial

resources available to invest in infrastructure are far out-weighted by the need (Arimah, 2004). This can create problems of liveability in the cities, such as the formation of slums.

### **2.3. The Impact of Urbanisation on Housing and Spatial Form**

The history of colonisation in Africa forms an integral part of explaining the evident urbanisation crisis as well as its impact on housing provision and the spatial formation of African cities. After political independence, the infrastructure design of many African countries remained compatible with the economic infrastructure of the time, which supported economic growth in that era. The economic situation in the continent took a downward turn in the 1990s due to a slowdown in economic activity and growing interest in regional trade, as well as the formation of regional economic groupings (Estache, 2005). These developments no doubt led to rapid urbanisation of the continent, leading to change in the urban dynamics. They also led to growing mismatch between supply and demand for infrastructure in the region. This gap grew significantly larger towards the beginning of the 2000s, even as the economies had started gaining traction. It therefore meant that infrastructure became a top priority for the majority of the continent's countries. As part of their MDG targets, it would be necessary to raise the average infrastructure expenditure to 9% of GDP of many African countries (Estache, 2005).

The household demand for infrastructure did not wane, even during the various economic cycles, though the necessary supply to correspond with the increasing urbanisation process grew only modestly. The gap in infrastructure was less about the demand from the agricultural and service sectors that were associated with these increasing economies; rather, they were a result of progressive changes in the economic structure, fuelling both the qualitative and quantitative mismatch (Estache, 2005). The policy response and investments in these much-needed programmes have, however, remained far more complex in SSA than

other developing regions, leading to an increasing mismatch in which demand continues to surpass supply.

In South Africa in particular, the population grew by 2.1 % per year on average , but because the average household size decreased from five people per household to four people per household, the housing need further increased (Tomlinson, 2006). Therefore, the government's expectation that the economic situations of households would improve over time, thus enabling them to meet their housing needs and incrementally improve their housing circumstances, diminished as poverty worsened (Tomlinson, 2006). This added to the urbanisation trend, as the increase in population concentration became more evident in urban areas.

The formation of slums in urban areas can be traced back to the urban policies of the colonial era, which were designed to keep the urban poor out of the cities; preserving well-located land that is infrastructurally endowed for the exclusive inhabitation of white people (Maury, 2007). The new age of liberation in Africa opened the city gates to the poor, and this factor, jointly with the attraction of economic opportunities in cities, left the newly appointed governments of the day with an excessive urban management problem, as the existing infrastructure in cities did not possess adequate capacity to accommodate the level of growth in population (Maury, 2007). The rate of urban population growth observed in African cities can be demonstrated in Maury's (2007) statement that approximately 72% of its Sub-Saharan population lives in slums; due to their desire to access opportunities in the city stead. This is as a result of urban planning in these countries. The impact of poor urban planning is linked to the ability of city managers to provide adequate shelter, space and services that enable them to better handle rapid migration – especially that of low-income households (Ramanathan & Ramanathan, 2007).

Furthermore, urbanisation goes hand in hand with human settlement, as settlement is limited to a choice of either moving to the city or rural areas in the African context, while the growth of the city as explained above is one of the many aspects of settlement (Baranov, 1970). The evident influx of people into cities automatically implies a high level of strain on the infrastructure previously designed to cater for a smaller white population, and the fact that the persons moving into the cities are typically job seekers from rural parts of the country immediately indicates a shortage in adequate housing. This is further supported by Kasarda and Crenshaw (1991) who state that many cities in developing worlds are dotted by non-standardised, poor-quality housing units as well as sanctioned land uses. These settlements rest on land that is typically unserved by public utilities and infrastructure, creating concerns of public health, political unrest and poor urban development. The above situation clearly outlines that appropriate planning for the housing needs of the poor is mandatory in order to curb the problem of slum formation. This requires governments to allocate adequate land that is well positioned, with good access to transportation, infrastructure, and access to economic opportunities (Maury, 2007).

#### **2.4. Infrastructure Provision and Finance**

While we have outlined above that, governments needs to devise an active approach to consolidate the existing spatial forms of the city in order to achieve the goal of providing sufficient housing opportunities within the economic centers of the city; the provision of adequate urban infrastructure as well as the finance thereof seem to be central to this argument. This is due to the fact that the lack of affordable housing can lead to the development of residential areas in isolation from existing urban infrastructure networks, thus raising the infrastructure finance needs of the resident governments (Hwan-Kim, 1997).

Although the role of providing urban infrastructure lies with local municipalities, the responsibility to provide the finances concerned with infrastructure for housing provision typically lies in a number of hands, as the responsibility of finance, operation and maintenance does not lie with urban local governments (Hwan-King, 1997). This leads to many municipalities having inelastic revenue sources that generate inadequate earnings when compared to the accumulated costs. Hwan-King (1997) proposed that some institutional arrangements within governments cause perverse incentives, such as transfers from central governments that are unrelated to the financial performance of local governments. This discourages efforts to collect taxes and fines in a diligent manner that would put local governments in a financially sustainable position. Arimah (2004) further highlighted the negative impact of the above, as infrastructure spending increases as government income increases, and the income will most often come from the collection of taxes. Some of the short comings that have been observed in the way that local governments finance infrastructure also include line item budgeting that is not linked to a specific output. This is regarded as wasteful government spending as it discourages efforts to save costs once the budget has been allocated, ultimately reducing the optimisation of government finances (Hwan-King, 1997).

It can easily be agreed that there exist an overabundance of reasons outlined as causes for inefficient finance and provision of infrastructure by governments, such as the co-existence of grants and loans in the state financial system, which is conducted at the expense of losing the opportunity to enhance financial discipline through responsible borrowing (Hwan-Kim, 1997). Lastly, the existence of specific grants that are targeting infrastructure investment without provision for the maintenance also introduces a decapitating factor for local governments as they cannot provide the required upkeep of the infrastructure. Arimah (2004) suggested that in order for governments to provide infrastructure adequately and efficiently,

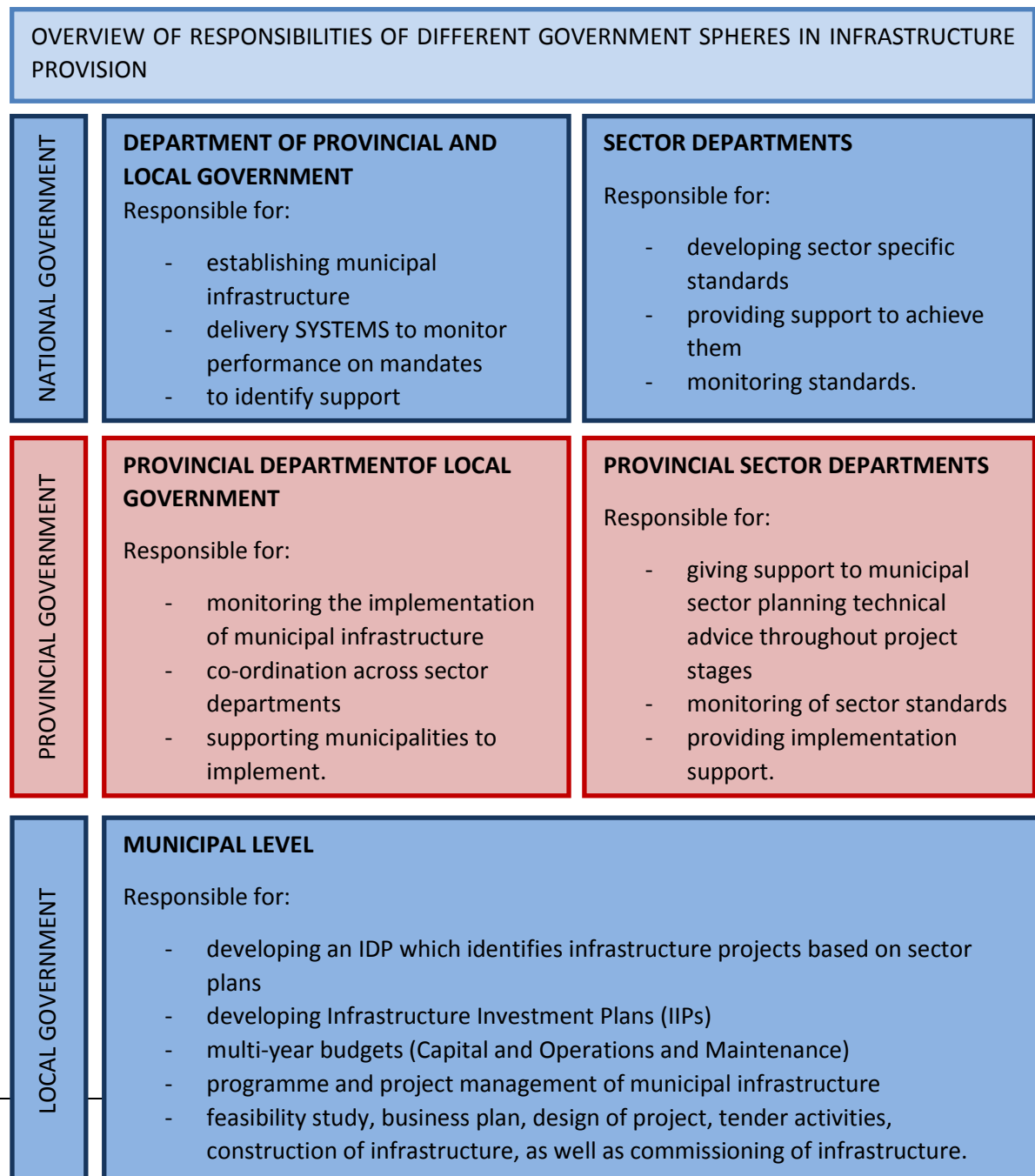
they need a one-time finance source that will serve as the initial capital investment, and that thereafter they need a continuous flow of funds to ensure consistent operations and maintenance of the capital asset. Hwan-King (1997) added that prudent borrowing is one of the appropriate means for governments to achieve the above, but that better financial management and an acceptable balance sheet is required from the state's end. The absence of financial accountability in practice means that municipalities of developing countries do not find it easy to raise funds from banks or open markets for the purpose of achieving infrastructure development. Hwan-Kim (1997) advocates that the inability of municipalities to tap into these avenues of finance is due to the fact that they are not considered credit worthy by investors, largely as a result of their poor financial performance.

According to the Municipal Infrastructure Roles and Responsibilities Report released by the Department of Provincial and Local Government (DoPLG) in 2013, the process of infrastructure provision and finance in South Africa unfolds as follows. The local government initiates a public participation process where community members are encouraged to participate in identifying infrastructure needs that the municipality should prioritise. This information is used to advise the Integrated Development Plan (IDP) that is developed every five years. The municipality is also tasked with the duty of developing an Infrastructure Investment Plan (IIP), which consolidates all the projects that have been identified in the IDP and identifies resources that can be used to facilitate construction, operation and the maintenance of proposed infrastructure. The IIP also includes a three-year capital plan which details the operational and maintenance budget for infrastructure developed.

This plan is then shared with the provincial government, where different sector departments use it to devise a provincial approach to addressing each infrastructure item. The national

government's responsibility is to ensure that each department works towards a common macro plan to address infrastructure provision, establish infrastructure delivery systems and procedures, and establish processes for this function. Once the planning stage is concluded, the municipality implements the projects that have been approved, which entails overseeing the construction phase of the infrastructure and ensuring its operation and maintenance once it has been commissioned.

**Figure 2: Roles and Responsibilities of Government Spheres in Infrastructure Provision**



Source: Department of Provincial and Local Government, 2013

The finance for the infrastructure required for infrastructure related to housing development in South Africa is allocated by the National Treasury Department to the National Department of Human Settlements, which then distributes the funds to the Provincial Departments so that they can disperse the funds to municipalities at a local government level (Financial & Fiscal Commission, 2013). The funding for these ancillary functions of housing development has been criticised to be scattered between multiple government departments whose planning activities are different and thus hinders speedy development of infrastructure. However, it appears that the government is now expanding the role of municipalities so that there is integration in the process of housing and infrastructure development planning (National Treasury, 2011).

The grants that are available for the development of infrastructure in South Africa are the Rural Households Infrastructure Development Grant (RHIG), which is specifically allocated for rural land development; the Urban Settlement Development Grant (USDG), which is allocated by provincial department according to a set urban development criteria; and the Municipal Infrastructure Grant (MIG), which is aimed at developing a particular class of infrastructure that is identified by municipalities (Financial & Fiscal Commission, 2013). The distribution of this funding is governed by the Public Finance Management Act (PFMA), in conjunction with the Municipal Finance Management Act (MFMA). Any diversion from these acts has to be approved by the Department of National Treasury (National Treasury; 2011). It is through these Acts that measures can be put in place to facilitate municipalities' abilities to access the borrowing markets. As such, national government does not stand surety for municipal debt through sovereign guarantees or in any other way, except where such surety or guarantee has been explicitly approved in terms of the PFMA. If a municipality defaults on its debt, lenders may follow the normal legal route to attach certain of the

municipality's assets and revenue streams (National Treasury, 2011). The MFMA allows a municipality to provide any appropriate security for its debt obligations, and sets out a range of options in this regard, including pledging specific revenue streams, ceding rights to future revenues as long as they can be addressed according to the approved medium-term expenditure framework (MTEF).

The above factors point to the reality that the housing and urban infrastructure sector has lacked an efficient management system within a well-functioning finance system, this efficiency that determines the sectors ability to expand; thereafter improving the housing conditions of a nation (Hwan-Kim, 1997). In pursuit of this, the General Strategy for Shelter, proposed by the UN and the World Bank in 1998, advocated an approach where private sector participation was sought in order to exploit the comparative advantages in efficiency. The idea is that infrastructure is better managed when placed and managed within the private sector.

## **2.5. Private Sector Participation**

According to Amirah (2004), the concept of private sector participation in infrastructure finance has been gathering momentum since the late 1980s, and has accounted for over 15% of infrastructure developments in emerging economies over the past decades. One of the ways that this form of finance has come to be accepted is through privatisation, involving a complete divesture of ownership from the public sector to the private sector (Arimah, 2004). However, the private sector can also finance infrastructure through contractual and partnership agreements with the public sector.

Private sector participation would be beneficial in the instance of urban infrastructure finance as Hwan-Kim (1997) argues that the public sector can draw on the financial, managerial and

technical abilities of the private sector when a cooperation or partnership is formed to pursue a uniform goal. This can be attained through placing the decision making on private contractors and investors, as they have incentive to pursue maximum efficiency and attain the required profit out of the proposed venture. A role in which public sector excels is in securing the political will and commitment required to avoid political or country risk. The operational experience that is demonstrated in private sector participation has produced successful results when adequate legal, regulatory and administrative structures are in place (Hwan-Kim, 1997). When correctly planned and executed, private sector participation holds the potential to increase productivity while enhancing economic proficiency (Hwan-Kim, 1997). However, Arimah (2004) is quick to add that the competitiveness of the private sector is of importance in ensuring the competence required.

Despite the above-mentioned optimism regarding the involvement of the private sector in the finance of urban infrastructure, there are a number of concerns that arise as a result of stark divergences in the mandates of both the public and private sector. These differences are apparent in a number of instances, such as the matter of pricing for the service being jointly provided by the parties. On the one hand, Amirah (2004) indicates that pricing is an important funding mechanism that addresses the cost recovery as well as realises the projected return on investment for private participants. This is a crucial matter for private investors, as full recovery has been reported to be a rare case in the majority of developing countries due to the imposition of ceilings on charges by local governments. This can pose a challenge for private capital originators. Governments are mindful of the above but can often be unwilling to agree with tariffs that they consider being too high; based on political consideration as well as the realisation that the poor will not be able to access the infrastructure provided unless government intervenes to ensure this (Arimah, 2004). On the other hand, it is believed that the private sector will not necessarily concern itself with the needs or constraints of low-income

groups. The private sector is also hindered by the fact that certain infrastructure investments may entail long-term investment, especially in instances where a low tariff is charged in order to meet public sector objectives of producing an affordable product (Arimah, 2004). This can have a substantial impact on the viability of the project, as the long-time lag of investment increases the risk involved. The above constraints around pricing also lead to a concern about the model of recoupment, as this is often regulated and implemented by the public sector in the instance of urban infrastructure finance for housing. Arimah (2004) proposed that user-charges should match the long-run marginal costs of delivering the service in order to be self-sustainable. This will also eliminate the tendency to rely on taxation to fulfil the financial shortcomings of a service provided.

## **2.6. Project Finance**

Given the outlined advantages and disadvantages of private sector participation in the provision of infrastructure (a role that had historically been played by the public sector), project finance has been considered in order to assess how the goals of the two different sectors can be matched to produce a mutually beneficial solution in infrastructure finance. When considering how project finance can be used to benefit the funding of urban infrastructure that will enable the development of affordable housing, this research looked at the characteristics of the project finance mechanism and elaborated on how these could circumvent the challenges that governments experience in providing the infrastructure at question. This section of the research looks at the benefits vested in the fact that project finance introduces an independent entity with a finite life in order to pursue the venture. This analysis also looks at the different participants and how they make project finance a beneficial option to fund urban infrastructure development. Furthermore, the subject of the risks involved has been investigated with the intention to reveal the existing mitigants that

can be considered in this instance. Upon assessing the risks, the study considered the appropriate risk allocation, non-recourse as well as the limited recourse nature of project finance, which is closely tied to risk management and thus considered the contractual nature of this structure as well as its strict and controlled dividend policy.

The idea of project finance dates as far back as 1299 AD, but has enjoyed renewed attention of late, due to the growing prevalence of privately owned infrastructure projects in developing countries (Comer, 1996). It is without a finite definition as it has been referred to as the financing of a major independent capital investment that a sponsoring company has segregated from its assets and general purpose obligation (Comer, 1996). Projects financed in this manner are usually large-scale in nature, exhibiting a high need for debt and equity capital, while in turn the lender essentially accepts future revenues from the project as a guarantee for the loan being extended to furnish this need (Slivker, 2011). It is an advantageous form of finance as it can enable the project to raise large amounts of funding over a long-term period through multiple avenues, including foreign debt and equity capital markets (Comer, 1996). This then enables countries to build infrastructure that is necessary to stimulate economic growth – especially in emerging economies, as it introduces the ability to share and distribute risks to parties than can best manage it, helping to expand the available financing volume (Slivker, 2011).

Project finance has been touted by many scholars, such as Comer (1996), as a means of financing large infrastructural programmes such as the suggested urban infrastructure development, because it has many advantages. Firstly, proponents argue that the fact that a single-use entity is established for the specific purpose of the proposed venture enables the funds as well as the risk accrued to be ring-fenced and managed easily as they are separated from any other projects in which the parties may be involved (Slivker, 2011). This single-use

entity is often referred to as the special purpose vehicle (SPV) and enjoys legal recognition as a juristic person. For this reason the SPV plays the important role of conducting legal contracts with all the parties that may be involved in the project (Slivker, 2011).

Project Finance provides a very significant development in addressing the risk factor that private sectors have faced in dealing with large-scale infrastructural programmes. This finance model is made up of a number of participants that partake in order to share the risks that may arise from pursuing a venture based on the anticipated cash flows. Participants may include banks and other financial institutions, governments, contractors, suppliers and off-takers in order to harvest the investment (McPherson, 2014). This transaction or project will often be led by a sponsoring company, which is an entity with extensive expertise that would have initiated the project, orchestrated the formation of the SPV and will ultimately manage the project and lobby for the participation of appropriate stakeholders (McPherson, 2014). The collaboration of the different stakeholders in the project has benefits as it avails credit to borrowers who would traditionally be considered high-risk by financial institutions (Comer, 1996). This can thus be used in favour of local governments or municipalities. Furthermore, due to the fact that these projects can have a lifespan of 15 to 20 years as indicated by the World Bank, financial institutions will often form consortiums when venturing on developments of a large scale, over a long period of time in order to manage financial risk (McPherson, 2014). The benefits of this cooperation of financial institutions is that the project enjoys fewer and less-stringent covenants and fixed borrowing rates, which decrease the financial strains of the project (Comer, 1996).

In a project finance structure, governments usually participate in an indirect manner, to either influence approval of the project, monitor the state company that is participating, supply guarantees, implement regulations or policies, or to offer tax reliefs (McPherson, 2014).

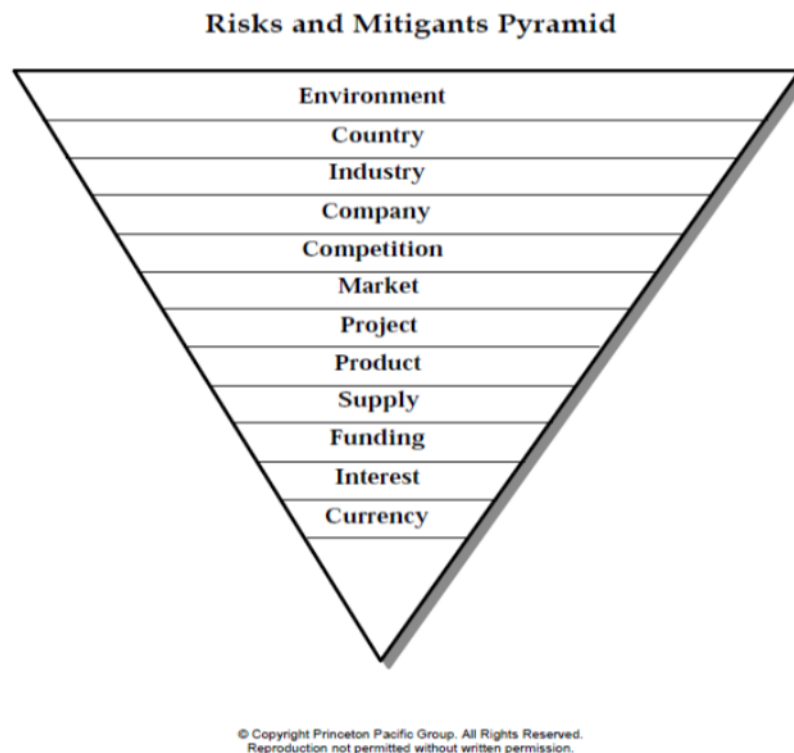
Thus, their role can be summed up as participation to limit political risk. This is of course instrumental to draw in other participants such as a contractor, whose role is quite self-defining as his sole function is to build the project according to the specifications outlined in the contract with the SPV (Comer, 1996), as well as the responsibility to employ subcontractors from local firms. A contractor will usually own a stake in the project through the sponsoring company (Comer, 1996). Once the contractor has been identified, a supplier will also become part of the project development chain in order to provide the equipment and other critical input components required to build the project (McPherson, 2014). The supplier does not necessarily provide tangible commodities. For instance, it could be government providing the right of way for construction or offering some type of concession (McPherson, 2014). Finally, a customer is the party willing and able to purchase the projects output. The SPV will generally strive to engage customers which are able to sign a long-term contract or off-take agreement (Comer, 1996).

The above participants immediately assume a great deal of risk as project finance entails non-recourse or limited recourse for them. These terms imply that the lender can only rely on the anticipated revenues of the project or otherwise that the lender can look to the sponsoring company for partial recourse in the instance of project failure to realise revenue (World Bank, 2001). This stems from the fact that the sponsoring company would have put together a proposal that demonstrates future value for the envisaged stakeholders, and therefore not have the burden of proving asset value or ability to put forward security. Slivker (2011) immediately points to the fact that there would be no security for repayment in the instance of a loss, as what would have been enjoyed in a corporate finance structure.

The potential loss of capital forces the participating stakeholders to conduct a due diligence on the risks that could arise. The benefits of project finance can again be outlined in the fact

that it relies strongly on the identification of risks and the appropriate allocation of these risks in order to ensure that they are handled by the party most suited to manage the identified risk (McPherson, 2014). Figure 3 below depicts the numerous risks that are considered when embarking on a project finance venture. As projects are carried out over a long period of time, these risks arise at different stages of the project cycle (McPherson, 2014).

**Figure 3: Pyramid of Risks in Infrastructure Provision**



Source: Comer, 1996

As a result of the abundant risks involved, project finance transactions are costlier than traditional financing due to the higher need for reliable information, monitoring and contractual agreements (Comer, 1996). These contractual agreements ensure recourse for the project company, while clearly documenting responsibilities regarding the allocated risks, for each party. The cost is also based on the fact that guarantees are also designed and put in place as mitigating instruments because they are essentially credit enhancement devices used

to limit the impact of default (Slivker, 2011). Insurance is another form of risk mitigation and is generally used to transfer risk that cannot be managed by project participants directly (Gossel, 2014). The ability to ring-fence funds in an SPV structure is an important aspect of risk management. The justifications are to limit an institution's exposure to the risks of insolvency of the shareholders of the participating entities; to insulate a project from the risks associated with any other business that may be carried out by the either party; to ring-fence the cash flows and expenditure of the project from that of any other non-project business; and to facilitate the creation and spread of empowerment equity, including simplifying the monitoring of the performance of the project (McPherson, 2014).

From the above literature it can be concluded that there is a substantial need to consider private sector participation in the financing of urban infrastructure that is concerned with addressing affordable housing development. In achieving this governments will combat the formation of slums that arise as a result of urbanisation into areas with inadequate spatial design and form. This inadequacy in turn leads to uncoordinated housing development as well as strained infrastructure. Project finance should be explored as a mechanism that will accommodate public and private sector goals through its risk management and off-balance-sheet orientated approach.

### **3. RESEARCH METHODOLOGY**

#### **3.1. Introduction**

This chapter considers how the study of project finance for urban infrastructure, in aid for affordable housing development, was carried out. Essentially it demonstrates the procedures by which the researcher went about their work of describing, explaining as well as predicting phenomena so this could be compared to a work plan. The work plan of this research initially outlined the research approach and strategy used. It further outlined the research design followed by the research methods section, which was largely concerned with the way data sampling, data collection and data analysis were handled.

#### **3.2. Research Approach and Strategy**

This research attempts to evaluate the use of project finance to fund urban infrastructure in order to aid the development of affordable housing. This research therefore employed an inductive, qualitative approach. A qualitative approach supports the construction or development of theories and the generation of propositions or hypotheses (Sofaer, 1999). An inductive approach is considered appropriate for this research as the aim is for discernible “patterns in the data” to allow the researcher to develop propositions (Taylor & Bogdan, 1998, p. 7). Bryman (2012) described this strategy as being inductive in nature as it seeks to generate theory from the findings of the research. The approach adopted is beneficial to the research as it primarily uses detailed readings of raw data to derive concepts, themes, through interpretations from the raw data by an investigator. The fact that the research relied on words rather than quantification in order to predict phenomena equates it to a qualitative research work and as such this research will be considered a qualitative research study, using a general inductive approach.

The research was based on a multiple-case comparative study involving the infrastructure finance and affordable housing delivery fraternities in the Johannesburg area of South Africa. A comparative case study design was deemed appropriate for this research because, as previous studies of this nature have shown, it can be used to test and generate theory (Eisenhardt, 1987). Moreover, it allows for a better understanding of a potentially complex research area involving multiple parties (Yin, 2003). The probe into the use of project finance to fund urban infrastructure was executed by exploring the research question in more detail through the perceptions of the interviewees. As prior theory is not going to be used in order to ascertain answers; knowledge was constructed based on the findings from the interviews, which resulted in an epistemological position known as interpretivism. Bryman (2012) describes this position as one that expresses that the subject matter of social science is fundamentally different to that of natural science and thus requires research procedures that reflect the distinctiveness of humans in relation to natural order. Due to the above, the research shied away from rigid forms of investigation, relying on flexible research structures. Carson (2001) describes this as common of interpretivist studies, as the knowledge acquired in this discipline is socially constructed rather than objectively determined.

### **3.3. Research Design**

As the research is an exploratory study, the process of gathering information had to conform to the flexible and elastic nature demanded by this method of research, and as such, semi-structured interviews were used to gather the data. The researcher used a questionnaire as a guiding paper to keep the discussion with participants relevant to the study and although such a guide was used, the interview remained an open and flexible discussion, enabling the interviewer to probe and explore topics that arose from the discussions. The questionnaire looked at the issue of bulk infrastructure finance broadly as it considered how it is currently

being executed and who participates in the financing thereof. It also proved the efficiency of the process and looked at the challenges and risks arising from the above process, particularly from a regulatory and policy perspective. Finally, it examined the possibility of recovering the invested capital. Primary data was collected in this manner and pre-existing interviews were avoided in order to maintain the credibility of the study.

### **3.4. Sampling**

Purposive sampling was implemented as the participants were chosen by the researcher to include representatives from different disciplines within the infrastructure finance and affordable housing delivery fraternities. Generally, a purposive sample is “one chosen by the researcher to include representatives from within the population being studied who have a range of characteristics relevant to the research project” (Gorman & Clayton, 2005, p. 128). Therefore, participants were carefully selected based on the relevance of their professional knowledge to the research project. This process included the initial identification of 13 professionals in the above-mentioned fields of practice. They came from a wide variety of housing supply-side sectors that included developers, housing development researchers, senior municipality managers, town planning officials, affordable housing development practitioners and financiers from the National Treasury as well as fund managers from the private sector. The researcher remained cognisant of the extent to which opinions within a single organisation may differ between individuals employees, and as such would have ideally liked to meet with a senior executive responsible for overall strategy to ascertain his or her view on the organisation’s broader approach to the issue, and juxtapose this against a response from an employee within the organisation who is involved on a more day-to-day level with infrastructure programmes and initiatives. However, in cases where this was not

possible, preference was given to individuals whose technical expertise and daily assignments directly promoted infrastructure programmes.

The purposive style of sampling was considered appropriate because probability sampling can be unsuitable for qualitative research as sighted by Barbie (2004) as well as difficult to achieve, purposive sampling was therefore more appropriate for this study. Moreover, this concept is similar to that of “theoretical” sampling, and differs from statistical sampling in that each respondent was selected based on the appropriateness of the industry that the respondent worked in, in order to meet “theoretical categories and provide examples of polar types” (Eisenhardt, 1987, p. 537) as opposed to being randomly selected. Theoretical sampling provides researchers with a number of advantages. Most importantly, it enables them to “take advantage of fortuitous events” (Corbin & Strauss, 2008). The proposed theoretical categories or contexts are highlighted above. The goal was to obtain as diverse a data set as possible given the relatively limited sample size and time available. Below is a table (Table 1) outlining the source and number of interviews the researcher conducted. The exact number and organisation was dependent on the willingness and availability of certain individuals. Contact was made with people with whom there was some form of connection, though it also relied on referrals from the interviewees themselves for subsequent potential respondents.

<b>RESPONDENT</b>	<b>ORGANISATION</b>	<b>ROLE AND EXPERIENCE</b>
Mr Yusuf Patel	Basil Read Developments (18 years working experience in industry)	Former managing director at Basil Read, headed up large-scale affordable housing developments division; previously worked for national government in formulation of policies in planning and infrastructure investment for municipality, which resulted in the formation of the Municipal Infrastructure Grant roll out; former president of South African Planners

		Institution.
Ms Adelaide Steedley	Centre for Affordable Housing Finance (23 years working experience)	Director, developed business intelligence dashboard to enhance understanding of affordable housing trends and market. Works closely with developers on infrastructure availability.
Mr Leon Dykman	Old Mutual Investments: HIFSA Fund (7 years working experience)	Heads Development Impact Funds and Assets manager, finances companies undertaking urban infrastructure development.
Ms Davina Piek	Basil Read Developments (11 years working experience)	Development director of Savanna City, a project under Basil Read, manages bulk infrastructure installation for project and secures funding for the required infrastructure.
Mr Peter Hofmeyer	Johannesburg Financial Securities (13 years working experience)	Director and founder of company; manages and raises funds for infrastructure installation as well as land procurement for affordable housing projects.
Mr Peter Pappas	Basil Read Developments (5 years working experience)	Financial manager for all land development project of division; creates financial models for all projects in division.
Mr Moabi Nekani	City of Johannesburg Metro Municipality (9 years working experience)	Director for housing projects entailing land acquisition, infrastructure and top structure finance for mega projects.
Mr Bruce Welshman	Midvaal Local Municipality	Infrastructure manager in charge of MIG projects which entails infrastructure finance.
Mr James Aiello	National Treasury (40 years working experience)	Senior project advisor for the PPP division of National Treasury, headed investment fund that provided finance for municipal infrastructure projects

Mr Jon Busses	Urban Dynamics Inc. (15 years working experience)	Director and co-founder heading up town planning for affordable housing developments, including lobbying for MIG/USDG funds to unlock projects.
Mr Villiers Straus	Bigen Africa Pty Ltd (40 years working experience)	Executive director for New Business Development and former managing director of Land Development Division, with experience in land procurement and infrastructure finance.
Mr Hope Segone	Old Mutual Investments: HIFSA Fund (6 years working experience)	Senior investment professional managing the financing of housing projects as well as the infrastructure requirements.
Ms. Linda Ngcobo	Provincial Department of Human Settlements, Johannesburg (11 years working experience)	Chief Director at Department of Human Settlements Johannesburg region, responsible for ensuring affordable housing delivery including infrastructure finance where required.
Mr Burchert Johannes	Old Mutual Investments: HIFSA Fund	Senior Investment Professional managing the financing of housing projects as well as the infrastructure requirements.
Mr Constant van Deventer	Urban Dynamics Inc. (27 years working experience)	Strategic planning assisting with developing spatial framework for urban areas.

Table1: List of Respondents and Experience in Infrastructure Development and Finance

### 3.5. Data Collection

The researcher used multiple data collection methods, recognising that this approach “strengthens grounding of theory by triangulation of evidence” and “provides stronger substantiation of constructs and hypotheses” (Eisenhardt, 1989, p. 533). The data collection for this research was therefore based on semi-structured interviews with industry participants, as well as short questionnaires. Wherever possible, additional information was also gathered from other industry sources, including material published by the subjects themselves, such as

information available on their websites, and from on-site observation during the interviews. This allowed for greater control over the data collection process, introducing a level of standardisation and aiding in the search for cross-case patterns. The researcher also made use of field notes which are “an ongoing stream-of-conscious commentary about what is happening in the research, involving both observation and analysis” (Eisenhardt, 1989, p. 539).

The process of interviewing started with an introductory session centred on explaining the context of the study as well as the ethical considerations that exist in qualitative research work. This was then followed by the questioning session, which entailed 11 questions that were broadly about the interviewee’s role in relation to infrastructure finance, their understanding of it and their opinion of project finance in this instance. The preparation of the interview questions was informed by the literature review as well as the research objectives. The researcher was careful not to suggest or pre-empt any type of opinion in this regard, and this was achieved through keeping the questions standard as well as probing the participant without being presumptions. The interviews were recorded with the permission of the participant and notes were taken in order to provide an opportunity for accurate analysis of each interview. The interviews took between 20 minutes and 56 minutes based on the openness of the discussion with each individual. Upon interviewing each of the participants, the researcher asked the interviewee to recommend people they thought would be suitable to interview. The researcher then followed up on the leads provided, ending up with 15 interviewees.

### **3.6. Research Criteria**

Byman (2012) notes in his work that reliability, validity and generalisability are important criteria in assessing and establishing the quality of a research project. Furthermore, he

concedes to the fact that these cannot be easily achieved in qualitative research, and as such suggests that they are substituted with a new criteria list entailing credibility, transferability, dependability and confirmability.

### **3.7. Data Analysis**

A qualitative research approach of this nature is inherently iterative because the “central idea is that researchers constantly compare theory and data, iterating toward a theory which closely fits the data” (Eisenhardt, 1989, p. 541). While the nature of a multi-case comparative study complicates data analysis, there were a number of techniques used to overcome this problem. The first technique adopted was the analysis of a within-case data. Case study write-ups were produced as the first step in the overall analysis. These write-ups allowed each institutional respondent to be understood as a stand-alone case, allowing any distinctive, case-specific findings to surface before any further analysis were performed. Once the individual findings from each case were understood, the next step was to perform a cross-case comparison, which helped identify patterns or relationships between the individual cases.

Analysis also involved the replication approach. In essence, as each individual interview was conducted, the data was analysed, rather than waiting for the completion of interviews prior to doing so. This overlapping approach, whereby data is collected and analysed almost simultaneously, is advantageous as it “speeds analyses and reveals helpful adjustments to data collection” (Eisenhardt, 1989, p. 533). This iterative review process is a very practical approach, as the researcher conducted interviews at the convenience of the interviewees, so meetings were dispersed over a period of time. This ensured that observations made were detailed while the proceedings of the interview were fresh in the mind of the researcher.

Furthermore, this research considered thematic analysis in order to analyse the data collected. Bruan and Clarke (2006) provide a step-by-step approach based on literature, indicating how to conduct this analysis. In order to become familiar with the data set, the researcher took notes during each of the interviews as well as listened to the recordings after each interview. The segmentation process was applied to generate initial codes. This was achieved by extracting and isolating keywords that were common from the respondents. Following this, the researcher grouped the transcribed data according to the questionnaire sequence and consolidated those responses that were similar, in order to form themes. Once the themes had been identified they were revised into appropriate labels to enable the consolidation of meaning and explanation of the data collected. In addition to identifying key themes and other relationships between the cases, cross-case comparison also helped counteract “the reality that people are notoriously poor processors of information” (Eisenhardt, 1989, p. 540). This also helped reduce the impact of the researcher’s subjectivity on the research process (Flick, 2002).

## **4. RESEARCH FINDINGS, ANALYSIS AND DISCUSSION**

### **4.1. Introduction**

This section of the report discusses the key findings which emerged from the collected data, and also provides an analysis of the findings in relation to the reviewed literature. The researcher conducted 15 interviews with senior professionals in the infrastructure and affordable housing development sector in order to acquire data on the subject of project finance to fund bulk infrastructure that will aid the development of affordable housing. A list of the questions that were used to guide the discussion has been attached as Appendix A.

There were four main themes which emerged out of the collected data. These included challenges to bulk infrastructure finance, recoupment mechanisms, environmental risks, and asset separation. They respectively deal with how bulk infrastructure for housing is currently being financed, where the interviewees were asked to share their opinion on the relationship between the cost of installing bulk infrastructure and its impact on delivering an affordable house as well as to describe how bulk infrastructure for housing has been financed, and comment on the use of project finance in this regard. The recoupment mechanisms were also explored, which gave rise to the question of efficiency in the current collections systems as well as the risks involved in investing private funding. The issue of environmental risks emerged to expand on the regulatory as well as human resources challenges that were raised by participants. Lastly, asset separation looked at the policy consideration to be addressed in order to execute privately funded infrastructure projects.

### 4.1.1. Summary of Findings

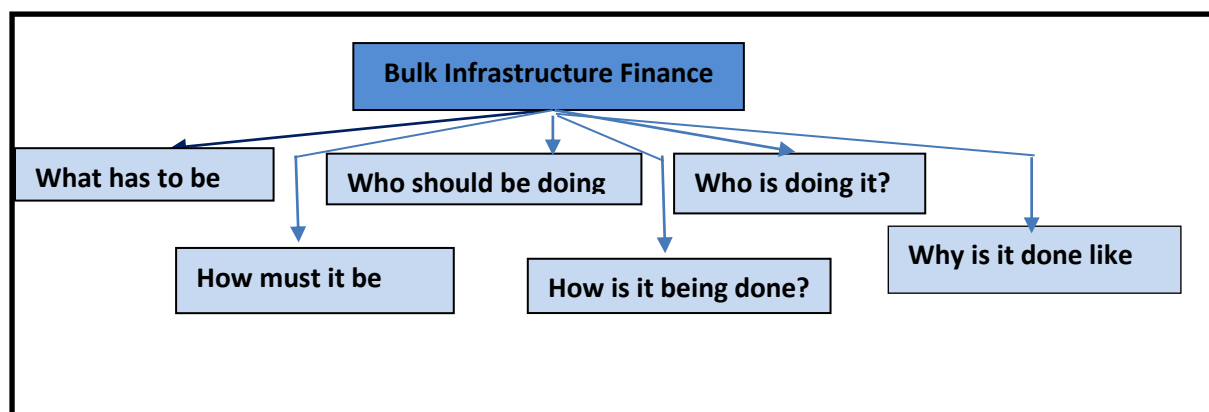
Figure 4: Summary of Research Findings

<b>BULK INFRASTRUCTURE FINANCE</b>	
<b>What has to be done?</b>	A spatial framework masterplan must be used to identify investment nodes.
	The state must identify well-located land and lead the delivery of infrastructure for affordable housing projects.
	The MFMA must be adapted to enable project finance implementation.
<b>How must it be done?</b>	Infrastructure must be provided by national and local government through USDG and MIG.
	Municipalities must charge contributions for the use of infrastructure.
<b>Who should do it?</b>	The state should identify capable partners.
	The private sector should participate to devise development concept, lobby for funding and devise adequate risk management tools.
<b>How is it being done?</b>	The state cannot afford to cater for the existing infrastructure demand so it is left to the private sector to identify opportunities and finance them.
	Lenders are showing keenness to participate in infrastructure finance that targets affordable housing.
<b>Why is it done in this manner?</b>	The existing tax base is too small compared to the demand pool.
	It takes time to execute projects due to existing inter-governmental dependencies.
<b>RECOUPMENT MECHANISMS</b>	
<b>Advantages</b>	Existing recoupment mechanisms are adequate but poorly executed.
	Public sector can carry out the collections function.
<b>Disadvantages</b>	The annual budget process is slow and the

	period of commitment too short for infrastructure projects.
<b>RISKS</b>	
<b>Market Risks</b>	There is a risk that the end users may not afford to pay for the service, the interest rates may increase and change the financial requirements as well as default risk between public and private sector.
<b>Regulatory Risk</b>	Lack of uniformity in the application of regulations.
<b>Job Expertise</b>	Public sector personnel are not well equipped to participate in infrastructure development.
<b>ASSET SEPARATION</b>	
<b>Advantages</b>	Provides separation of funds and improves chances of recovery investment.
<b>Disadvantages</b>	Not easy to achieve due to the need to protect constitutional rights of all South African citizens.

#### 4.1.2. Bulk Infrastructure Finance

**Figure 5: Challenges of attaining Bulk Infrastructure Finance**



Bulk infrastructure is key in affordable housing development. The term bulk infrastructure is synonymous with urban infrastructure for housing and drills down to the detail of the urban infrastructure that is associated with housing development – particularly affordable housing

development in the case of this research. Bulk infrastructure is the encompassing term that is commonly used to refer to the main plant that is designed and erected in order to distribute and disseminate services to households. These services include electricity, roads and storm-water drainage, sewer and water. They are distributed from the main bulk supply plant such as a water reservoir in the case of water, through internal services distribution channels such as a water pipeline in the instance of water, and ultimately made available for individual household consumption, such as a tap in the house.

Bulk infrastructure finance was a major issue of concern among the majority of the respondents of all sectors. It became evident that this was a major impediment to adapting project finance for affordable housing infrastructure – particularly in developing countries like South Africa. The questions posed included, “What has to be done to attain bulk infrastructure from the perspective of delivering affordable housing developments?” The general opinion of those respondents with a town planning background was that bulk infrastructure provision must be based on a spatial framework masterplan that will enable government to identify investment nodes. This will improve the process of planning for infrastructure while decreasing the investment amount required to provide bulk infrastructure. This was further substantiated by the respondents who commented that the state must identify land that is well located in relation to economic opportunities and lead the delivery of inclusionary housing projects, as this will enable private sector goals of participating in bulk infrastructure finance to be channelled in line with those of government, with respect to investing in bulk infrastructure finance.

The majority of respondents echoed the sentiment that local and national government must provide the bulk infrastructure required for housing development through the use of the provisions that exist from the Urban Settlement Development Grant (USDG) as well as the

Municipal Infrastructure Grant (MIG). They further confirmed that municipalities should charge developers for bulk infrastructure contributions in accordance with the Town Planning Ordinance. Despite the above-mentioned response, there were respondents who conceded that project finance is a recommendable mechanism to fund bulk infrastructure costs but will be difficult to achieve under the existing financing policy framework. Project finance was received by the respondents as a practical mechanism of funding that enhances capital investment ability through public-private partnerships. It was also touted as adoptable if a practical mechanism was devised to accommodate a sound feasibility study being conducted beforehand, enable appropriate agreements to be in place with a good risk management strategy, as well as the formation of a separate entity such as an SPV.

When considering who should implement the financing mechanisms as envisioned by the national government, respondents indicated that on the one hand it is preferable for local and national government to provide the funding for the bulk infrastructure costs, lead the process and identify capable parties as private sector financing is more expensive due to the high return on investment expectations. They were also forthcoming on the fact that the state often does not have enough resources and finance to carry out the required housing infrastructure investment. This was supplemented by the sentiment that the private sector should participate in the investment process as well as put together the infrastructure development concept, lobby for finance and identify appropriate insurance to limit the financial risks involved. The participants furthermore indicated that provincial and local government departments provide all the required finance if the project is a government priority.

There was indication from the interviews that government must remain in control of the bulk infrastructure provision process in order to widen the tax base and improve its ability to raise capital through collections. This is a particularly strong held view of developers who

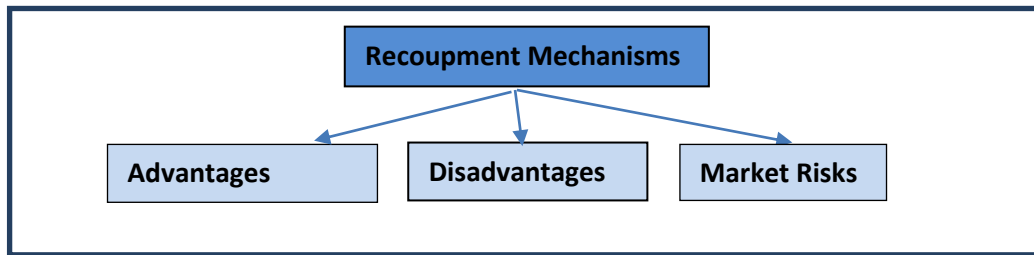
emphasised that the Municipal Finance Management Act (MFMA) needs to be reviewed in order to facilitate the implementation of project finance to fund bulk infrastructure.

This subject of bulk infrastructure financing also looked at how this process is being initiated by inspecting who is currently doing the work on the ground, and how bulk infrastructure for housing development is being carried out in this manner. The current experience is that the cost of providing bulk infrastructure for housing development has been passed onto the private sector. This is due to the fact that public sector cannot adequately provide for the investment demand for the above. There are challenges in delivering affordable housing partly because development and infrastructure costs keep rising while affordable housing requires these costs to be contained and kept at a minimum. This leads some developers to look for land that already has bulk infrastructure in place. Despite the above, lenders seem increasingly interested to getting involved in the financing of bulk infrastructure for affordable housing. They also appear to be showing more tolerance of existing processes.

The interviewees indicated that the financing of bulk infrastructure is carried out in this manner as municipalities are financially constrained and unable to address the demand of the population since post-apartheid, the tax base has become much smaller in comparison to the population that requires the infrastructure. Furthermore, the cost of bulk infrastructure is impacted by inter-governmental relations and the time taken to execute infrastructure projects. This is further exacerbated by the fact that current government entities are not structured to enable the flexibility required to design a specific funding vehicle, such as that of project finance.

### **4.1.3. Recoupment Mechanisms**

Figure 6: Recoupment Mechanisms Theme Breakdown



The subject of recoupment mechanisms seeks to expose the ability for financiers and infrastructure investors to recover the invested capital. A small number of respondents were of the opinion that the existing mechanisms for recuperating capital that have been invested in bulk infrastructure are a good concept and the most efficient way considering processes within government, though they are poorly executed. They also believe that finances invested through a project finance structure can be recovered even if the process of collections is in the hands of the public sector – provided there are sound marketing and sales strategies in place. They also approved of a user-pay model but indicated that economies of scale are required in the context of affordable housing in order to achieve cross-subsidisation.

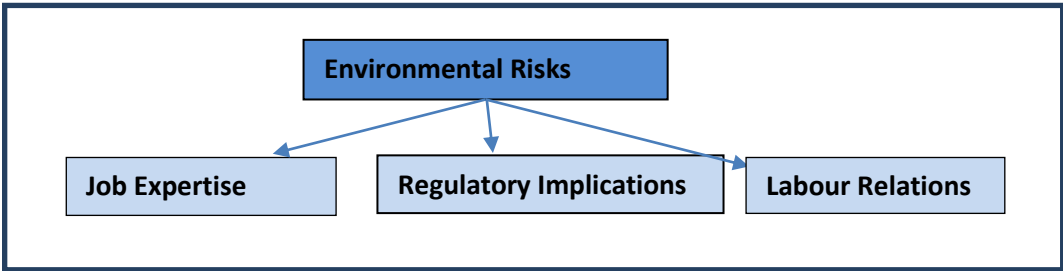
While the above views appear optimistic regarding the ability to recover capital that has been invested in infrastructure, the majority of respondents indicated that there were a number of disadvantages associated with the process, such as the fact that annual budgeting procedures of the state are slow and money is not always spent correctly. Furthermore, the medium-term expenditure framework of government restricts the ability of state organisations to participate in a project finance structure and make financial commitments beyond a three to five-year term, while infrastructure projects require long-term financial commitment. Also, it takes long to deliver the necessary infrastructure because of bureaucratic processes, such as the lack of uniformity in how to establish bulk contributions costs. These issues take a long time to resolve and delay the project as well as the potential to retrieve costs earlier. Similarly, there are issues of over-regulation, as government places onerous conditions on private sector

participants, such as new standards and specifications on the work that has to be executed or not issuing approvals on time, which increases project costs. Lastly, some participants were despondent about the ability to recover capital investments made and attributed this to the fact that municipalities are not collecting rates and taxes adequately to finance infrastructure, which will impede the recoupment process.

The participants expressed that the issue of recoupment is also governed by market risks that exist, such as the fact that if the end-users cannot afford the final product and in the event that interest rates could rise causing project costs to increase. The respondents also cited default risks between parties in the instance of a project finance structure where the government is unreliable and unable to honour financial agreements as set out on contract, or the developer is unable to deliver the infrastructure according to contract specifications.

**4.1.4. Environmental Risks**

**Figure 7: Environmental Risks**



There are environmental risks associated with investing in urban infrastructure that is specific to housing delivery. Particular emphasis was placed on risks related to job expertise within public sector organisations, the implications posed by existing regulations and the impact of labour relations with respect to the delivery of housing infrastructure. Respondents commented that personnel under the employ of municipalities do not have the adequate

experience required to execute infrastructure developments appropriately and jointly with the private sector.

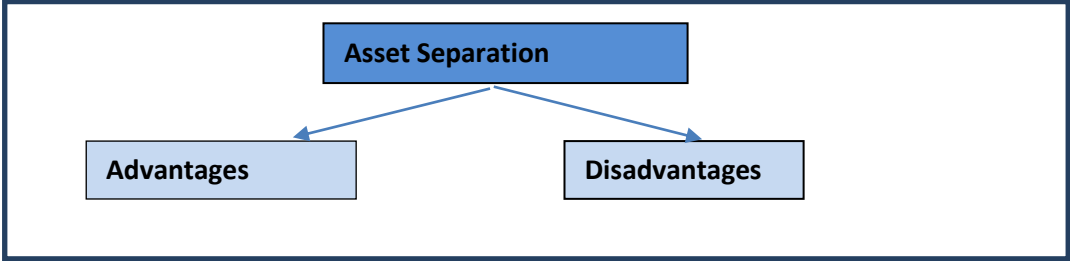
One of the issues raised was numerous regulatory constraints when it comes to private sector participation in the provision of bulk infrastructure. The fact that it takes a long time to get regulatory approvals creates lengthy lags that result in holding costs, which in turn increase development finance costs. Interview feedback showed that there are stringent regulations aimed at protecting the environment. These have negative ramifications for private sector financiers as they result in the reduction of developable land, which results in a reduction of envisaged project earnings. There appeared to be a strong consensus among respondents for housing legislation to re-examine and eliminate the split in duties between provincial and local government departments. Respondents also indicated that while the USDG fund allows municipalities to get money directly from NT, eliminating some of the bureaucratic challenges, it should be revised to allow for infrastructure finance and maintenance thereof. Interviewees also said that current policies need to allow for infrastructure transfer processes once a consortium meets its function, and that, from a private sector perspective, investors need to be more flexible and not have stringent investment criteria to satisfy before they pursue a venture. The Provincial Financial Management Act (PFMA) and the Municipal Financial Management Act (MFMA) create limitations as tendering processes need to be met, preventing municipalities from raising finance independently. Government structures change often and their requirements also change, which make planning for project finance difficult.

Part of the environmental risk of investing in housing urban infrastructure lies in the perception that there is a big culture of non-payment in South Africa, which poses political risk for infrastructure projects financed through a project finance mechanism, as governments are often unwilling to intervene when users do not want to pay for services rendered. This

also covers the risk that politicians may not share the same vision as the venture consortium, leading to land invasions as well as strike action and demonstrations, as municipal unions are opposed to private-public partnerships.

**4.1.5. Asset Separation**

**Figure 8: Asset Separation Theme Breakdown**



The feedback indicated that a private entity cannot ring fence government funds for the purposes of a specific project, this has further been emphasised by the fact that the National Treasury Department does not support ring-fencing of state funds. This inability to separate the project asset from a pool of existing project portfolios of government is driven by policy and constitutional considerations that government has put in place in order to protect the rights of the general population. There is a single tax base that is used to provide infrastructure equitably for all South African citizens, which came into existence as a result of the experience in the era leading up to the establishment of a democratic state in 1994. This makes it difficult for private sector investors to commit funds to housing infrastructure projects. Ring-fencing in this instance is related to a project finance SPV being able to register as a ring-fenced company, allowing all proceeds from project execution to be strictly used to address debts and costs related to the specific project.

## **4.2. Discussion of Findings**

The above findings in conjunction with the literature point to a few problems that can be reduced as follows: the existing spatial planning approach does not translate to a consolidated infrastructure development plan; there is no existing way to gain control of the collections system in order to ensure recovery of invested capital; there is a lack of adequate controls to regulate the relationship between public sector and private sector in order to ensure mutual benefit; there are identified risks that exist in infrastructure investment which have not been appropriately allocated as well as the incumbent issue of being unable to ring-fence infrastructure project investments. These issues will be analysed within the confines of the prevailing infrastructure development and finance framework in South Africa and the proposed project finance solutions will be identified in order to establish the viability of the mechanism.

### **4.2.1. Summary**

It is apparent in literature and the findings that urban spatial planning should be used as a tool that will direct urban infrastructure investment. Establishing and diligently implementing a spatial framework masterplan will make it easier for the state to identify land that is suitable for infrastructure investment as well as to indicate to the private sector where to direct their investment. This is the initial step to establishing a mutually beneficial private-public partnership, as suggested in the project finance structure because the above will ensure that the investment and development goals of the public sector are aligned with those of the private sector. Furthermore, initiating an appropriate urban planning strategy will decrease the investment amount required as there will be concerted effort to consolidate infrastructure development and thus its finance, based on one masterplan.

The ensuing issue is tied to recovering the invested capital once the funding has been distributed. The findings indicate that the current systems of extracting money that comes as a result of using infrastructure services are either through tax proceeds which will be distributed by the state or through a user-pay system where a fee is charged for the service upon its use. There is confidence that these methods of recovery are good methods, but are currently poorly executed by public sector. Despite this sentiment, the function of collecting proceeds for the use of infrastructure services lies with the state and cannot be delegated to a third party that is not affiliated with the state. This presents a barrier in the ability of the private sector to participate in the financing of bulk infrastructure.

The next issue lies in the fact that there are numerous risks that can be identified in the process of providing finance for the development of bulk infrastructure. The main risks that were highlighted can be classified as market risks, counter-party risks, regulatory risks, political risks, and operational risks. These risks are considered unattractive by the private sector as they are not easy to overcome in the existing infrastructure framework. Moreover, they present themselves in the form of inadequate measures to ensure financial accountability from the public sector, lack of measures that are initiated to ensure professional competence within the public sector entities, lack of uniformity in the application of regulations, as well as political decision making that is discretionary and not applied consistently. The public sector also identifies risks associated with private sector participation, which exist in the form of default between parties as a result of objectives not being aligned, especially on the subject of pricing and cost recovery. This also points to the fact that there is great mistrust between the private sector and the public sector when it comes to conducting business together. The contractual nature of a project finance structure can be used to overcome this as it provides the comfort of contractual recourse.

The final issue lies in the inability to ring-fence. This feature is the premise and the heart of the reasons to advocate for project finance in the financing of the infrastructure at question. The inability to achieve this creates scepticism for private sector parties to participate in infrastructure finance as it takes away the ability to allocate and monitor risks within a project, create executable contractual agreements that can be relied upon as recourse in the instance of non-performance, and to isolate the project costs and proceeds in order to ensure recovery of funds invested.

## **5. RESEARCH CONCLUSIONS**

### **5.1. Concluding on Research Findings**

This research set out with the objective to investigate the use of project finance to fund housing urban infrastructure, in order to aid the development of affordable housing in South Africa. This was prompted by the existence of the Millennium Development Goals (MDGs), which were established by the UN to encourage African countries to pursue the goal of eradicating slums, among other goals, and improve the lives of slum dwellers. This was also considered in conjunction with the Breaking New Ground Policy (BNG) goals of the Department of Human Settlements, which aim to approach the task of providing affordable housing in an integrated and sustainable manner. These goals are impeded by the fact that the population in urban areas of the country is growing at a rapid rate, which has resulted in a huge increase in infrastructure demand for housing services. This infrastructure demand cannot easily be met by the proceeds collected through taxation and thus other forms of financing it need to be considered.

The growing trend of private sector participation prompted a probe into project finance as one of the tools that can be used to overcome financing housing infrastructure development. The research findings indicate that the project finance mechanism provides for a special purpose

vehicle which carries out the function of contracting with parties concerned. This is to ensure that the risks inherent to the project are allocated to the party that can best mitigate it as well as to ensure that parties fulfil their duties accordingly. This addresses the risk issues that have arisen both in the literature as well as in the findings of the investigation. The benefits of an SPV are also evident in the fact that all functions that are to be addressed for the project execution can be allocated based on performance and ability of each party. This will assist the state to satisfy its role of identifying appropriate partners and leading the process of infrastructure delivery, while also enabling the private sector to participate in the process within the confines of a contract that allows recourse in the instance of non-performance. Project finance can also play a part in ensuring that the process of recovering invested capital is improved by dealing with the problems of competence and personnel capacity improvement.

Despite the above benefits of project finance, there are policy adjustments that need to be implemented in order to enable private sector to participate in the process of revenue collections as well as the ability to implement a project through a ring-fenced structure. These policy amendments would be to unequivocally establish that these two functions can be allocated to protect the interests of all parties participating in a transaction. Although the National Treasury Department published the standardised public-private partnership provisions in 2004, advocating the ability to ring-fence funds on a project basis, as well as having implemented other infrastructure projects with this ring-fencing ability, there still exists a lack of uniformity in the implementation of this as the aforementioned department has publically commented that they do not support ring-fencing. This has created reservations and scepticism in potential investment partners.

The above can be achieved with a change in legislative practice so as to ensure that the proceeds and costs of a particular project are ring-fenced and the ability to collect proceeds as a result of using the infrastructure in question is placed with the private sector.

## **6. RECOMMENDATIONS FOR FUTURE RESEARCH**

### **6.1. The Future of Infrastructure Development and Finance**

This study paid particular attention to factors that impacted on infrastructure provision as a result of finance and as such looked into bulk infrastructure provision, the risks thereof and the measures that can be put in place to deal with the risks. The parties that are affected by this study may find value in the investigation of the process of compiling the mentioned IDPs as it became apparent from the discussions held during the investigation of the topic that the formation of a central master plan that will advise the infrastructure investment decision is a pertinent issue. This process can be better outlined to address existing issues from a private financier perspective.

Lastly, a probe into how to effect the proposed legislative changes in order to implement project finance in housing infrastructure development is an area that has been left unexplored. This could assist in highlighting the practical steps required and thus expose any challenges that would render this option unviable.

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## 8. APPENDICES

### 8.1. Appendix 1

#### Interview Questionnaire

##### Research Title:

Project Finance for Affordable Housing Urban Infrastructure

##### Research Objectives:

To explore the use of project finance to fund housing urban infrastructure, in order to aid the development of affordable housing

##### Questionnaire Themes:

Affordable housing provision, urban infrastructure finance, project finance

##### Interview Questions:

- 1) Please tell me a bit about your role in the organisation? (main question)
    - a) How long have you been in this position (leading question)
    - b) What are your responsibilities/duties (leading question)
    - c) Your experience in urban infrastructure finance (leading question)
  - 2) In your professional opinion, is there a relationship between the **cost of installing bulk infrastructure** and **the cost of buying a house**?
    - a) Does it increase/decrease the cost of buying a house?
    - b) Is it based on circumstances such as greenfield/brownfield housing developments?
  - 3) Please explain, in your experience, how bulk urban infrastructure for housing is financed?
  - 4) Do you believe this to be an efficient way to finance this type of infrastructure?
  - 5) What is your opinion on the use of project finance to finance this type of infrastructure?
  - 6) Please describe how project finance can be considered?
    - a) Participating stakeholders
    - b) Their roles
  - 7) What is your opinion on the risk involved in the application of project finance for the provision of this infrastructure?
  - 8) What challenges do you foresee in the implementation of project finance under the current policy framework?
  - 9) Do you foresee any other challenges that are not policy related?
  - 10) Do you believe the invested capital can be successfully recouped through user-pay charges?
-

- a) What are your recommendations with regards to recoupment of capital invested?
- 11) Please share any other ideas/comments you may have on research topic?

Thank you